PROGRAM AND ABSTRACT BOOK OF
THE JOINT 8th IUNS-INTERNATIONAL SYMPOSIUM ON
CLINICAL NUTRITION (8th ISCN) AND 5th ASIA-PACIFIC
CLINICAL NUTRITION SOCIETY (5th APCNS) CONFERENCE 2006
HANGZHOU, ZHEJIANG PROVINCE, CHINA
Sunday October 15-Wednesday October 18
Theme: Food, Health and Economic Development

Asia Pacific
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Editor-in-Chief
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HOSTED BY

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GaoFeng Yuan, Zhejiang University
Tao Huang, Zhejiang University
Zuquan Zou, Zhejiang University
### Program

#### 2006-10-15 星期日  SUNDAY 15 OCTOBER 2006

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<td>0925-0945</td>
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<td>0945-1000</td>
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<td>Supplementation of black rice pigment fraction improves antioxidant and anti-inflammatory status in patients with coronary heart disease Q Wang</td>
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<td>Effects of enteral nutrition on pro-inflammatory cytokines in growing rats with obstructive jaundice JF Yu</td>
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<td>NUTRIOSE® is a soluble resistant dextrin with outstanding tolerance and very low glycemic response.</td>
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<td>Green tea and lycopene protect against prostate cancer</td>
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<td>The research of the standard nourishment intervention on the metabolize syndrome</td>
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<td>1630-1645</td>
<td>Anti-glycation activity of phenolic compounds from Thai plants</td>
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| 1615-1630 | The effect of micronutrient supplements on the growth and development in rats and children  
Y Wang |
| 1630-1645 | Alcohol and breastfeeding: what do Australian mothers know?  
RC Giglia |
| 1645-1700 | A study on growth references of height, weight and body mass index for children aged 0-7 years in Urban Xuzhou  
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| 1700-1715 | Infants' first feeds in Hangzhou, PR China  
L Qiu |
| 1715-1730 | Home fortification for controlling anemia among young children  
N Choudhury |
| 1600-1730 | Symposium 9: Clinically Relevant Biomarkers of Food Intake  
Chairs 主席: Anna Gramza, Linchun Mao |
| 1600-1630 | Clinically relevant biomarkers of food intake  
I Puddey |
| 1630-1645 | Serum phospholipid fatty acid profile and its relationship with plasma lipid in patients with type 2 diabetes  
XY Mao |
| 1645-1700 | Determination and investigation of information technology parameters effective to food industry development  
H Ahmadi |
| 1700-1715 | Determinants of plasma homocysteine in Japanese healthy young adults  
N Morita |
| 1715-1730 | Serum beta carotene, lycopene and alpha tocopherol levels of healthy people in northeastern Thailand  
P Boonsiri |

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报告 报到 |
| 0830-0900 | Plenary 4: Nutrition and Stroke  
报告 4: 营养与中风  
Chairs 主席: Ian Puddey, Yuexin Yang |
| 0900-1000 | Plenary 5: Food Industry and Economic Development  
报告 5: 食品工业和经济发展  
Chairs 主席: Zongmao Chen, Pingfan Rao |
| 0900-0930 | Food industry and economic development – Asia Pacific Region  
J McKay |
| 0930-1000 | Food industry and economic development in China  
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| 1000-1030 | Morning Tea  
茶歇 |
| 1030-1115 | Plenary 6: Emergency Nutrition in Fragile Economies  
报告 6: 脆弱经济体的应急营养  
Chairs 主席: Richard Weisinger, Guoqing He |
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| 1115-1200 | Plenary 7: Tea and Health                   | 报告 7：茶和健康  
ZM Chen  
Chairs 主席：Jing-Fan Gu, Antigone Kouris-Blazos |
| 1200-1330 | Lunch and Poster Sessions                   | 午餐以及海报时间                                                        |
| 1330-1545 | Workshop 1: Natural Products/Medicine Relevant to Clinical Practice | 研讨会 1：天然产物/中药临床应用的最新进展  
Chairs 主席：Maitree Suttajit, Ying Zhang |
| 1330-1345 | Clinical evaluation of green tea extract in treatment of pharyngitis in human subjects | YF Wang |
| 1345-1400 | Hypolipidemic effect of flavonoids from mulberry leaves in triton WR-1339 induced hyperlipidemic mice | JJ Chen |
| 1400-1415 | Enhancing oxidative stability of rice snack with ethanolic extract from Cratoxylum formosum Dyer | Pitchaon Maisuthisakul |
| 1415-1430 | The micro-CT analysis of vacuum freeze-drying process of strawberry | X Xiao |
| 1430-1445 | Effect of solanine on the ratio of RNA and DNA in the tumor cells of tumor-bearing mice | YB Ji |
| 1445-1500 | Isolation and antihypertensive effect of exopolysaccharides from Lactobacillus casei LC2W | LZ Ai |
| 1500-1515 | Effect of Trigonella foenum graecum extract on blood glucose, lipid and hemorheology in diabetic rats | WL Xue |
| 1515-1530 | Protective effects of Momordica Charantial L. extract on HIT-T15 cells acts as an antioxidant | LW Xiang |
| 1530-1545 | Protective effect of Portulaca oleracea extracts on hypoxic nerve tissue and its mechanism | WY Wang |
| 1330-1600 | Workshop 2: Nutritious Food: Its Measurement & Promotion | 研讨会 2：营养食品的进展和评价  
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| 1330-1345 | Evaluation of the nutrition and function of Bacillus Natto fermented soy meal for feed | FQ Feng |
| 1345-1400 | Nutrition evaluation of jade perch and extraction as well as refinement of fish oil derived from its viscera | NP Tao |
| 1400-1415 | The nutritional assessment of elderly inpatients during perioperative period | QH Wang |
| 1415-1430 | Study on developing college-based nutritional education through peer-education approach | Y Zhao |
| 1430-1445 | Nutritional evaluation of different bacterial douche | H Li |
| 1445-1500 | Expert system prototype of food aid distribution | N Singh |
| 1500-1515 | Development of Coping Strategy Index (CSI) to Measure Household Food Insecurity | S Norhasmah |
| 1515-1530 | Vitality resonance technique for the application in nutrition | YA Su |
| 1530-1545 | Dietary fat effect on lipid raft composition and insulin signaling | Z Madar |
### 2006-10-17  TUESDAY 17 OCTOBER 2006

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<td>A Malhotra</td>
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<td>Chairs: Shouming Zhu, Yunqing Cai</td>
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<td>1330-1355</td>
<td>Nutrition risk screening in China’s large metropolitan hospitals: a multi-centers surveillance of more than 14,000 patients by the NRS-2002 method</td>
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<td>1355-1420</td>
<td>Effect of enteral ecoimmuno nutritent on postoperative patients with gastrointestinal malignant tumor: nutrition status. inflammatory response .change of prognosis</td>
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<td>1420-1445</td>
<td>Effects of enteral nutrition and astragalus on expression of TGF-β1 and IL-10 mRNA of the liver in growing rats with obstructive jaundice</td>
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<td>Pre- and postoperative enteral supply of a symbiotic composition reduces the incidence of postoperative infectious complications in abdominal cancer surgery.</td>
<td>CM Han</td>
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<td>Effect of polysaccharide of cassiae seeds on intestinal microflora of piglets</td>
<td>ZY Deng</td>
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<td>0830-0900</td>
<td>Plenary 8: Food Safety and Legislation 报告 8：食品安全和立法</td>
<td>Chairs: John R Lupien, Tiejin Yin</td>
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Pre1

Dietary supplementation and alternative medicine use among Malaysian Cancer Survivors
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Background – The number of cancer survivors in Malaysia is increasing, but little is known including their use of dietary supplements and alternative medical therapies.

Objective – This study aimed to explore the use of dietary supplements and alternative medicine in a cross-sectional sample of Malaysian cancer survivors.

Design – Ninety patients comprising 18 males (20.0%) and 72 females (80.0%) and who fulfilled the selection criteria were interviewed using a pre-tested questionnaire. The questionnaire elicited information on personal characteristics, cancer history, use of dietary supplements, and use of alternative medicine.

Outcomes – Subjects comprised Malay (48.9%), Chinese (42.2%) and Indian (8.9%). One-third of the patients have primary school education while slightly more had secondary and tertiary education. Breast cancer was the single most common cancer seen in these patients (45.6%). About 49% of the respondents have a mean survival duration of > 3 years while 31% were between 1.00-2.99 years. Two-thirds of the subjects had been diagnosed at stage 1 and 75.6% have had surgery. Dietary supplements are used by 68.9% of the respondents and the mean duration of use is 3.28 years. Multivitamin is the most common type used (56.5%) followed by vitamin C (32%). Alternative medicine is practiced by 60.0% of the respondents and the mean duration of usage is 3.56 years. Religious pursuit (53.7%) was the most common alternative therapy practiced followed by massages and traditional Chinese medicine. Among the sociodemographic factors, ethnicity was the only factor associated with use of alternative medicine ($\chi^2 =10.702, p=0.001$) but not with dietary supplement use.

Conclusions – In conclusion, this study shows that dietary supplementation and alternative medicine practices are common among cancer survivors. Future research needs to assess the efficacy and safety of these practices in specific cancer populations.

Pre2

The study of relationship between serum magnesium and type 2 diabetic retinopathy
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Background - The diabetic retinopathy is a serious complication occurring in the eyes of individuals with diabetes and may result in poor vision or even blindness. The Diabetes Control and Complications Trial (DCCT) investigated the effect of hyperglycemia in type 1 diabetic patients, as well as the incidence of diabetic retinopathy, nephropathy, and neuropathy. Recent studies have found that hypomagnesemia may play a role in pathogenesis of diabetic retinopathy of diabetic individuals with magnesium deficiency.

Objective - To investigate the effect of serum magnesium on the pathogenesis of diabetic retinopathy (DR) and to evaluate magnesium deficiency as a risk factor of DR.

Design - Serum magnesium was determined by chemical color-developing process on 30 cases of normal controls, 30 cases of NDR groups and 30 cases of DR groups. Fasting blood sugar (FBS), glucosylated hemoglobin (HbA1c) and 24 hours urine albumin were also determined.

Outcomes – The results showed the serum magnesium of in patients with diabetes were $0.85 \pm 0.25 \text{mg/dl}$ which were lower than those of controls ($1.01 \pm 0.32 \text{mg/dl}$) ($p<0.05$). The DR group was $0.70 \pm 0.18 \text{mg/dl}$ and was lower than on NDR group ($p<0.01$). The FBS, HbA1c and 24 hours urine albumin of DR group were $11.4 \pm 4.3 \text{mmol/l}, 9.6 \pm 2.1 \text{mmol/l}$ and $524.53 \pm 78.56 \text{mg/dl}$. While FBS, HbA1c and 24 hours urine albumin of NDR group were $9.6 \pm 3.4 \text{mmol/l}, 6.2 \pm 1.2 \text{mmol/l}$ and $102.35 \pm 35.72 \text{mg/dl}$. There was difference between DR group and NDR group on serum magnesium, FBS, HbA1c and urine albumin ($p<0.01$). Spearman Correlation Analysis showed serum magnesium was related to hyperglycemia, high HbA1c and increased 24 hours urine albumin. The coefficients of correlation were 0.181, 0.206 and 0.349.

Conclusions – The present study found an association of magnesium deficiency in patients with diabetics. Magnesium deficiency was related to abnormalities in fasting glycaemia, overall glucose control (Hba1c) and microalbuminuria. Randomized controlled clinical trials with magnesium replacement are warranted in patient with diabetes to assess whether the effect of magnesium deficiency is causal or simply an association.
Pre3

Serum Copper and Zinc Concentrations are lower in Iranian Patients with Angiographically defined Coronary Artery Disease

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Background – An imbalance between zinc and copper metabolism has been reported to predispose to coronary artery disease (CAD) in Western populations, but there is little data in other racial groups.

Objective – We have investigated the association between serum copper and zinc, and CAD in Iranian subjects undergoing coronary angiography.

Design – Serum copper, zinc, fasting lipid profile and blood glucose levels were measured in 114 patients (67 male and 47 female) undergoing routine coronary angiogram. Anthropometric features including blood pressure were determined using standard procedures. Demographic characteristics, including menopausal status and smoking habit were assessed.

Outcomes – Male patients had lower serum copper (p<0.05) and higher serum zinc (p<0.05), and serum zinc/copper ratio (p<0.05) than females. Serum copper and zinc concentrations were significantly lower in the subjects with angiographically-defined CAD, although the zinc/copper ratio was higher in these patients (p<0.05). Serum copper (r=-.303, p<0.001) and zinc (r = -0.250, p<0.01) concentrations were both inversely related to age, and copper was positively associated with fasting serum triglycerides (r=0.188, p<0.05).

Conclusion – Serum copper concentrations and the zinc/ copper ratio were significantly lower in Iranian patients with abnormal versus those with a normal angiogram. Serum zinc and copper concentrations appear to be influenced by several physiological factors including: age, gender and menopausal status.

Pre4

The consumption of indigenous fruit and vegetables and health risk in rural subjects of Limpopo province, SA

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Background – Indigenous foods contain phytochemicals that are linked to protection against the development of diseases such as cancer, diabetes and hypertension (1). Some of these indigenous foods have been chemically analysed and contain active compounds such as organic sulphur, hypoglycaemic alkaloids, flavonoids, phytosterin glycosides and polyacetylenes (2).

Objectives – To determine the consumption of indigenous fruit and vegetables and health risk in rural subjects.

Design – An exploratory field study was carried out. Subjects were selected from 15 villages in the Vhembe district of Limpopo province. In phase one, dietary consumption of the indigenous fruit and vegetables was collected from 800 subjects. In phase two, health risk was determined from a sub sample of 300 subjects. Blood pressure, glucose tolerance, blood lipid profile, obesity and presence of other chronic disease of lifestyle were determined in the subjects.

Outcomes – Sixteen indigenous vegetables were consumed by between 33.0 – 92.5% while 15 indigenous fruits were consumed by 32.3 – 81.5% when in season and accessible. There was no significance difference in health risk in subjects (p<0.05). Group one consisted of those who reported to consume indigenous fruits and vegetables at least once a week (frequently) while group two consisted of those who consumed indigenous fruits and vegetables occasionally (once in three months or seasonally).

Conclusions – The consumption of indigenous fruits and vegetables is generally good when such foods were in season and accessible.

Pre5

The applications of econutrition in postoperative patients with colorectal diseases

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Background – Bowel function disorders, dysbacteria, flora translocations, acute inflammatory reactions, immune function damages and bowel disfunctions so on often happen in postoperative patients with colorectal diseases. Prof. Bengmark introduced the econutrition which is combined by intestinal beneficial flora and normal nutrition in 1996. His study indicated that the econutrition can inhibit the intestinal pathopoiesis flora, protect intestinal function, improve the immunity and reduce the occurrence of infection.

Objective – To investigate the effect of econutrition applying to postoperative patients with colorectal diseases.

Design – 32 patients undergoing the colorectal operation were randomized into the econutrition EN (enteral nutrition) group and the normal EN group. The econutrition EN group received econutrition EN from the 3rd day after the operation to the leaving hospital day, and the normal EN group receive the normal EN. A series parameters were measured before and after the operation.

Outcomes – (1) Compared with the normal EN group, the econutrition EN group had less days with flatulence and abdominal pain \( P<0.05 \). At 6th day the econutrition EN group had a less occurrence of flatulence and abdominal pain \( P<0.05 \). (2) The econutrition EN group had less occurrences of diarrhea at the 6th day \( P<0.05 \). In the econutrition EN group, the total occurrences and days of diarrhea are lower than those of the normal EN group \( P<0.05 \), and the mean diarrhea scores were also lower at 6th day \( P<0.05 \). (3) Intestinal flora ratios were higher in the econutrition EN group at 6th day \( P<0.05 \). (4) While acute inflammation makers and immune function makers were compared, there were no significant difference between two groups.

Conclusions – The applications of econutrition in postoperative patients with colorectal diseases are beneficial in alleviating gastrointestinal symptom and diarrhea, and correcting intestine flora disturbance.

Pre6

Effect of antioxidant capacity on the blood profile in hyperlipidemic patients: relation between malondialdehyde and atherogenic index

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Background – It has been known that increased intracellular generation of reactive oxygen species plays an important role in atherosclerosis. However, little is known about association of malondialdehyde (MDA) with atherogenic index (AI).

Objective – The present study was performed to investigate the effect of the antioxidant capacity on the blood lipid profile in human. Furthermore, the relationship between MDA and AI was studied.

Design – The serum levels of lipid profile, lipid peroxidation and antioxidant status were determined in normo-/hyperlipidemic subjects and compared. In all, 15 hyperlipidemic patients (female:5male:10 mean age:52.2 years) and 30 normolipidemic subjects (female: 12male:18 mean age:50.5 years) were involved in the study. Among the 30 normolipidemic subjects, Blood lipid level of 15 is lower and another 15 is near up limit of normal value. None of these subjects took drugs known to influence blood lipid level.

Outcomes – A significant increase in the levels of lipid peroxidation and total cholesterol (TC), triglycerides (TG), LDL-cholesterol (LDL-C) and a decreased HDL-C concentration in hyperlipidemic patients were observed. Total antioxidant capacity (TAC) and the activities of antioxidant enzymes such as superoxide dismutase (SOD), glutathione peroxidase (GPx), decreased in hyperlipidemic patients. There was a positive correlation between MDA and AI \( r = 0.7532, P<0.05 \).

Conclusions – These data indicate that the level of oxidative stress is increased in hyperlipidemic patients. The cellular oxidative stress is correlated with the disturbance of lipid profile.

Key words: antioxidant capacity; hyperlipidemia; human
Pre7

The comprehensive treatment of diabetic nephropathy

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Background – Diabetic nephropathy is one of the capillary complications of diabetes. It is directly related to hyperglycaemia. Early comprehensive treatment, especially nutrition treatment, may improve the prognosis of diabetic nephropathy.

Objective – To explore the effects of comprehensive treatment of diabetic nephropathy, especially nutritional therapy.

Design – 50 diabetic nephropathy inpatients were recruited, with diabetic nephropathy III or IV, and no other apparent disease which could cause microalbuminuria (Alb). Various physiological parameters and biochemical analytes were assessed. The specific nutrition approach was designed to provide enough energy to satisfy demand, usually 35KJ/kg·d. If patients were obese, 30KJ/kg·d was used. Fat supplied 20-25%, protein 10-15%, and carbohydrate no less than 60% of energy intake. The protein could chosen was mainly animal protein, but soybean was also used as it is a good quality protein and may improve kidney function.

Outcomes – The data determined before and after the comprehensive treatment, including fasting blood glucose, systolic pressure, diastolic pressure, GHb, fibrinogen and microalbuminuria, showed differences (P <0.05).

Conclusions – 1. The basic treatment of diabetic nephropathy is important, especially the nutrition treatment. 2. Control the blood glucose: all these sufferers accept insulin to control FBG below 7mmol/L. 3. Choose ACEI to control the blood pressure, because it also favourably influences pressure inside the renal glomeruli, and retards the progress of diabetic nephropathy. When the blood creatinine went up, angiotensin receptor blockers (ARB) were used to decrease blood pressure, and if warranted, calcium channel blockers (CCB), selective β-receptor blockers and/or diuretics were used to achieve blood pressures below 125/75mmHg. 4. Some traditional medicines, such as Chinese caterpillar fungus, were used to improve the microcirculation, inhibit blood platelet from gathering and improve immunity.

Pre8

Vitamin A, E levels and prognosis in hospitalized Thai patients

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Background – Oxidative stress plays an important contributory role in medical illness. In hospitalized patients, oxidative stress is a major problem that results from several compounding factors such as inflammation, and the nutritional inadequacies. This can impact on clinical outcome. Antioxidant vitamins have roles in protection against oxidative damage and they are influenced by nutritional intake and degree of oxidative process. Thus, antioxidant vitamin status may reflect the outcome of the hospitalized patients.

Objective – We aimed to evaluate antioxidant vitamins (vitamin A and E) in hospitalized patients and compared these variables with nutritional status and clinical outcome.

Designs – We enrolled the patients who were consulted to Division of Nutrition, Srinagarind hospital, Khon Kaen, Thailand. Serious liver and kidney diseases were excluded. Nutritional assessment was stratified as Subjective Global Assessment (SGA) and serum albumin level. SGA, serum albumin, vitamin A, and E levels were assessed within 24 hours after consultation. Vitamin A and E levels were performed by High Performance Liquid Chromatography (HPLC) and serum albumin level was determined by bromocresol green method.

Outcomes – Seventy patients, age range 17-95 years old, were included in this study but 52 patients had complete blood sample evaluation. Of these, 15 patients (28.9%) were found to be moderately malnourished and 37 patients (71.2%) were severely malnourished according to SGA classification. Serum vitamin A were significantly higher in survivors (n = 33) than in non-survivors (n = 19), 1.13 ± 0.10 M vs 0.79 ± 0.09 M, (P = 0.034). Vitamin E levels were non significantly higher in the patients who survive than non survive group, 20.09 ± 1.62 M vs 18.13 ± 1.63 M, (P = 0.433). Serum albumin were also higher in survivor group than in non survivor group, 2.79 ± 0.11 vs. 2.30 ± 0.14 mg/dl, (P = 0.007). No statistically significant difference in serum vitamin A and E according to the severity of malnutrition classified by SGA or serum albumin level was found.

Conclusions – The lower level of serum vitamin A and albumin were associated with poor clinical outcome. More sample sized study is required to validate the prognostic value of serum vitamin E.
Food culture is most influenced by the locality of its origin, which will have been one of food acquisition and processing by various means. It is generally agreed, and is the basis of much UN (United Nations), especially FAO (Food and Agriculture Organisation) strategic development policy, that successful agriculture, horticulture and aquaculture along with fishing, underpin economically viable and healthy communities with their various food cultures. We also know that this must be in tandem with maternal literacy and operational health care systems. These elements are best represented on a regional basis.

There is a growing consumer interest in knowing where one’s food comes from as a measure of “food integrity”. However, food production alone can be a precarious business and relate to a lesser or greater extent to local food culture and to trade, which may be complementary or at-odds with each other. Likewise, the local food culture may have its strengths and weaknesses as far as its ability to meet nutritional and health needs is concerned. Local food production may be restricted because of geographical or socio-economic conditions which preclude food diversity, although this may be compensated for by trade. Where food adequacy and diversity is compromised, and soils poor, various macronutrient, micronutrient (from animals and plants) and phytoutrient (nutritionally-advantageous food component from plants) deficiencies may be in evidence. These food system problems may be intertwined with food culture – for example, “rice-based and water-soluble vitamin poor”; “few animal-derived foods like meat, fish, eggs and milk with associated low calcium, vitamin D, Vitamin B-12 and long chain n-3 fatty acid intakes”; “low fruit and vegetable intake with limited carotenoids and other phytoutrients”(1)

Geo-satellite surveillance and mapping as identifying such “hot spots”: for regional food problems, as well as hot spots where most of the world’s biodiversity is found. On the other hand, regional food culture can confer considerable advantage for health and economic development (2), but does not necessarily do so. The challenge is to respect and retain traditional food knowledge and sustainable food systems, with good governance for food security (3,4).

There has been a recent awakening of interest and concern about the lack of documentation of traditional and indigenous food cultures which are important not only for their own sake, but for the legacy of food knowledge which they can confer on future generations, provided they are not lost. Hence, the value of a special focus on African food cultures (www.healthyeatingclub.org/Africa), including Rift and Nile Valleys and North West African foods, which are the cradles of human food systems and habits (5). This is the case too with indigenous foods and food cultures (whether hunter-gatherer or subsistence agriculture) (6); with relatively long-living food cultures in North East Asia (7,8), with food cultural distinction and fusion (FHILL and SENECA) and with migratory Food Habits (9).

By and large, there is a remarkable resilience and ingenuity of people and their food systems, but monoculture and lack of diversity encourage food system failure.

S1-1

Supplementation of black rice pigment fraction improves antioxidant and anti-inflammatory status in patients with coronary heart disease

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Background – The dietary supplementation of whole black rice has been shown to inhibit atherosclerotic plaque formation in animal model and its active components were considered to be located in the pigment fraction (1). However, this beneficial effect of black rice pigment fraction (BRF) in human remains unknown.

Objective – The aim of this study is to evaluate whether dietary supplementation of BRF can exert the similar healthful effect on patients with coronary heart disease (CHD).

Design – Sixty patients with CHD aged 45 - 75 years were recruited in the second affiliated hospital of Sun Yat-sen University, and then they were randomly divided into the test group and the control group. The 30 g BRF product containing 10 g BRF was daily supplemented in test group for 6 months whereas 30 g white rice outer layer fraction (WRF) product containing 10 g WRF was consumed in placebo group.

Outcomes – At baseline, the levels of plasma antioxidant status, inflammatory biomarkers and other measured variables were similar between two groups. Over the 6-month intervention, we observed that supplementation of BRF enhanced plasma total antioxidant capacity (TAC) (P = 0.003) without any influence on plasma SOD activity, and reduced soluble vascular cell adhesion molecule-1 (sVCAM-1) (P = 0.03), soluble CD40 ligand (sCD40L) (P = 0.002) and high sensitive C-reactive protein (hs-CRP) (P = 0.002) compared to placebo group. However, no significant changes were found in lipids and carotid artery intima-media thickness (IMT) in both groups after 6-month intervention.

Conclusions – Consumption of BRF exerted beneficial effects on patients with CHD, probably by improving their antioxidant and anti-inflammatory status.


S1-2

Prognostic value of oxidative stress, antioxidant activities, inflammation and serum albumin in malnourished patients at Srinagarind Hospital, Khon Kaen, Thailand

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Background – Protein energy malnutrition (PEM) is a common problem in hospitalized patients and associated with poor outcomes. Stress was occurred in critically ill patients. This may lead to morbidity and mortality.

Objective – We aimed to determine the oxidative stress marker, malondialdehyde (MDA), total antioxidant capacity (TAC) C-reactive protein (CRP) and albumin (ALB) in malnourished hospitalized patients who were consulted for nutrition support.

Design – Blood samples were collected on the consulted day and two weeks after. The exclusion criteria were serious liver and renal diseases.

Outcomes – Of 70 patients, 30% and 70% had moderate severe PEM respectively, by Subjective global assessment (SGA). Initially, good clinical outcome patients (group1) had higher ALB level (2.70 ± 0.68 g/dl, N = 42) than poor outcome patients/ dead (group 2) (2.37 ± 0.58 g/dl, N = 28) (P = 0.038) but lower CRP level (median = 21.35 mg/l) than group 2 (median = 36.10 mg/l) (P = 0.031). ALB level was inversely correlated with CRP level (P = 0.001, r = -0.388). Group 1 had no statistically significant lower TAC and MDA than group 2. After 2 weeks, group 1 had increasing ALB level and still higher (2.88 ± 0.50 g/dl, N = 18) than group 2 (2.35 ± 0.65 g/dl, N = 7). No statistically significant difference in CRP, TAC and MDA between 2 groups on 2 week follow up.

Conclusions – The patients with higher CRP and/or lower ALB level had poorer prognosis than those who had not. The trend to increase in serum ALB may indicate better outcome. The degree of oxidative stress and antioxidant capacity did not seem to be good predictive value of clinical outcome.
Effect of Astragalus-supplemented enteral nutrition on immune function and nutritional metabolism in severe brain injury

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Background – Radix Astragali (Huang Qi), a drug for warming yang and replenishing Qi, is used to strengthen the immune system and improve nutritional metabolism. Also, it is a prevention and auxiliary cure for cardiac and brain vessel diseases. In Traditional Chinese Medicine, it has been used as a dietary supplement for thousands of years. This study aimed at investigating the effects of Astragalus-supplemented enteral nutrition support in severe brain injury.

Objective – To study the effect of Astragalus-supplemented enteral nutrition on immune function and nutritional metabolism in severe brain injury.

Design – 60 cases of severe brain injury were randomly divided into experimental group and control group. The experimental group was treated with homogenized diet and Radix Astragalis (equivalent to 60g crude drug), and the control group was treated with nutrition fibre. Two groups were given with nutrition support of 126KJ/(kg.d) for 20 days. Venous blood from cubital vein was collected before and after treatment to detect the IgA, IgG, IgM, T-lymphocyte subsets, fasting blood glucose, serum proteins, and nitrogen balance were measured during enteral nutrition support.

Outcomes – Compared with the control group, IgG, CD4 (%), CD4/CD8 ratio in the experimental group increased significantly (P<0.05, P<0.01). Compared with the control group, fasting blood glucose in the experimental group decreased (P<0.01). Compared with the control group, nitrogen balance became positive, and the levels of serum albumin and transferrin in the experimental group increased (P<0.01).

Conclusions – Astragalus-supplemented enteral nutrition can improve immune function, blood glucose and protein metabolism of severe brain injury.

Key words – Radix Astragalis; homogenized diet; severe brain injury; immune function; protein metabolism; fasting blood glucose

Effects of enteral nutrition on pro-inflammatory cytokines in growing rats with obstructive jaundice

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Background – Obstructive jaundice (OJ) frequently associates with endotoxemia, even multiple organ dysfunction. The mechanism of host immune defence depression may related to endotoxemia, cellular immune depression factors. Enteral nutrition is superior to parenteral nutrition in the maintenance of gut barrier.

Objective – To investigate the effects of enteral nutrition on serum and ileal mucosa cytokines in growing rats with obstructive jaundice.

Design – Forty growing male Wistar rats were randomly divided into four groups: control (I), sham operation (II), OJ (III), OJ + enteral nutrition (IV). Rats in group III had standard chow, in group IV, nutritional formulae were given to the rats for seven days. Total calorie was 610KJ/(kg.d) and nitrogen amount was 1.0g/(kg.d). All animals were sacrificed on postoperative day 8. Serum and intestinal mucosal interleukin-6 (IL-6), tumor necrosis factor (TNFα) level were monitored by ELISA.

Outcomes – In group IV, serum TNFα level was lower than that of group III, P<0.05. Serum IL-6 level was higher in group III and IV than in group I and II, P<0.05, respectively. Intestinal mucosal TNFα and IL-6 level in group IV was significantly lower than in group III, P<0.01.

Conclusions – It is suggested that the administration of enteral nutrition is a useful way to reduce the production of pro-inflammatory cytokines and systemic inflammatory response in experimental OJ.

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Effects of modified citrus pectin on enhancement and regulation of immune function

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Background and Objective – It is well known that dietary fibers stimulate immunity function. Most dietary fibers, however, have only digestive tract-local immune action. Modified citrus pectin (MCP), a soluble, low molecular, edible fiber, has been reported to interfere with tumor metastasis and other anti-cancer functions. We speculated that these functions may be related with a stronger immune system regulated by MCP. To test this hypothesis, we investigated the effect of MCP on immune function in experimental animals.

Design – A total of 60 ICR healthy female mice (Weitonglihua Experimental Animal Technology Co., Beijing, China) were evenly divided into 4 groups. The animals were administered orally with MCP at the doses of 0 (control), 0.1, 1, 3 g /kg body weight daily. The delayed type hypersensitivity (DTH), peritoneal macrophage swallowing chicken red blood cell test, serum hemolytic index (HC50), antibody formation cell count, fractional carbon particles clearance rate, Concanavalin A (ConA) -induced lymphocyte transformation, and natural killer (NK) cell activity were determined at 30 days after administration.

Outcomes – MCP was found to enhance Cell-mediated immune responses, with a positive response in DTH reaction with a dose-dependent relation and an increased ConA-mediated lymphocyte transformation. MCP also boosted humoral immune responses. It significantly increased the antibody formation cells counts (range from 60 to 80%) with dose-dependence. MCP was found to have no significant effect on HC50. MCP increased mononuclear lymphocytes and macrophage function. It increased macrophage phagocytosis of chicken red blood cells and mononuclear-macrophage carbon clearance rate. MCP significantly increased NK cell activity at all of the dosages as compared to the control.

Conclusion – MCP enhances and regulates cellular and humoral immune responses, including the increase of mononuclear lymphocytes, macrophage function, and NK cell activity. MCP’s strong immune regulation function may be related with its improved physical and chemical property, namely, lower molecular weight, higher solubility, and modified structure.
S2-1  
**The effect of anthelminthic treatment on helminth infection and anaemia among the female workers of the Ayesha Abed Foundation in Bangladesh**

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**Background** – Generally rural people are at greater risk of getting infected by worm infestation. Albendazol drug is famous for treating worm-infestation in world wide. The treatment was tested on the female workers of Ayesha Abed Foundation (AAF), a craft centre of BRAC in rural Bangladesh.

**Objective** – To test the impact of anthelmintic treatment on Hb concentration at different doses in different time schedules.

**Design** – It was a single blind placebo control trial tested on 620 female workers of AAF for 24 weeks. Female were randomly allocated into 5 groups. Group 1 was assigned to have single dose at baseline, 12 and 24 weeks; Group 2 received double doses for the same time schedule of Group 1; Group 3 was with single dose at baseline and 24 weeks; Group 4 was with double doses for the same time schedule of Group 3 and Group 5 was with Placebo at baseline, 12 and 24 weeks.

**Results** – Mean Hb concentration (measured by Hemocue) of the workers was 125 g/L at baseline, with no group difference. After 12 weeks of treatment, Hb concentration increased significantly (p=0.000) to 134 g/L(mean Hb concentration) in both groups 1 and 2 but in case of placebo, there was no significant difference of Hb concentration. *Ascaris* count was significantly decreased in Group 1 and 2. At the end of intervention (at 24 weeks) mean Hb concentration significantly decreased to 121 g/L, compare to baseline level in all groups. As a result of these changes in Hb concentration, anaemia prevalence (Hb <120 g/L) decreased from 29% to 9% from baseline to 12 weeks in groups 1 and 2 but increased to 43% at 24 weeks, although worm infestation, especially *Ascaris*, became almost nil in these groups except in placebo.

**Conclusions** – Treatment with Albendazol for 12 weeks even in single dose is enough to control infestation, which can raise Hb level and reduce anaemia significantly. However, this situation was not being sustainable after 24 weeks, even after receiving a second dose (single or double) at 12 weeks. Dietary supplementation is possibly needed to sustain the effect of deworming on anaemia control.

S2-2  
**Addition of antioxidant of bamboo leaves and extract of tea polyphenols, two novel methods to effectively reduce the formation of acrylamide in fried bread sticks**

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**Background** – The recent investigation of considerable acrylamide levels in fried foods evoked an international health alarm. Most of efforts focused on the optimization of thermal processing conditions for the reduction of acrylamide. However, few studies reported the effective way to reduce acrylamide by addition of food antioxidants.

**Objective** – This paper is to investigate the efficiency of antioxidant of bamboo leaves (AOB) and extract of tea polyphenols (ETP) on the reduction of acrylamide in fried bread sticks and summarize the optimal level of two additives.

**Design** – Seven experimental groups including a control group were organized for both of additives and fried bread sticks were made via traditional processing technology. The flour was mixed with different levels (0.002–4.9 g/kg flour) of AOB and ETP, respectively. The acrylamide level in fried bread sticks was determined by LC-MS/MS. The sensory evaluation was performed in double blind manner.

**Outcomes** – Nearly 82.9% and 72.5% of acrylamide were reduced when the AOB and ETP addition levels were 1 and 2.5 g/kg, respectively. The elevated inhibitory effects of AOB and ETP on the acrylamide formation were achieved with the increase of additive levels unless the spiking levels of AOB and ETP were > 1 and 2.5 g/kg, respectively. Sensory evaluation results showed that the flavor and texture of fried bread sticks processed by AOB and ETP had no significant difference compared to normal food matrixes (P>0.05) when both AOB and ETP addition levels were <2.5 g/kg.

**Conclusions** – The present study indicated that both AOB and ETP could significantly reduce acrylamide formation in fried bread sticks in a concentration-dependent manner. This study could be regarded as a pioneer contribution on the reduction of acrylamide in various foods by natural antioxidants.
S2-3

Change in food and calorie consumption among the Ultra Poor: Is the poverty reduction programme making a difference?

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Background: Poverty persists at an alarming level in Bangladesh. To reduce extreme poverty and create the foundation for a sustainable livelihood change, BRAC undertook a targeted programme since 2002 named, challenging the Frontiers of Poverty Reduction/Targeting the Ultra Poor (CFPR/TUP).

Objective: To investigate the impact of the CFPR/TUP programme on food and calorie consumption.

Design: Two cross sectional surveys on food consumption were conducted, a pre-intervention survey in 2002 and a post-intervention survey in 2004 covering 180 intervention and 193 non-intervention households. During both these survey rounds, a three-day recall method was employed to collect data on household food consumption.

Results: The baseline food consumption survey showed an inadequate food intake in all households, which did not differ between the two groups. At post-intervention, the quality and quantity of food intake improved significantly in the intervention households as compared to baseline. In this group, the consumption of various food items such as rice, pulse, vegetables, fish, fruit, milk and egg showed significant improvement (P<0.001). Particularly, the level of fish consumption was doubled in intervention households while in control households it was almost unchanged (14g to 27g for intervention vs. 11g to 13g for control). The intake of calorie increased from 1750±650 Kcal/day to 2138±704 Kcal/day in intervention households (P<0.001), whereas no significant change was observed in control households. Percentages of calorie from cereals decreased from 85% to 78% in intervention households (P<0.001) while it remained unchanged in control households. The intervention households increased their calorie consumption by 362 mean units (95% CI 181.8-542.7).

Conclusion: The CFPR/TUP programme has a direct impact on a family’s ability to significantly increase their consumption of food and calorie through challenging the vicious circle of their poverty.

S2-4

A pilot study on the effects of almond consumption on DNA damage and oxidative stress in smokers

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Background – Cigarette smoking, a well-documented source of reactive oxygen species (ROS), is a major risk factor for cardiovascular disease and cancer (1). Evidence suggests that certain dietary components have chemopreventive effects on cancer by scavenging oxygen radicals or interfering with the binding of carcinogens to DNA.

Objective - The effects of almond consumption on DNA damage and oxidative stress among cigarette smokers were studied.

Design - Thirty healthy adult male regular smokers were randomly divided into 3 groups, 10 subjects per group. Group A (control group) did not receive any almond. Subjects in groups B and C received 3 and 6 ounces (84 and 168 g) of almond each day respectively for 4 weeks. Two known biomarkers for DNA damage, urinary 8-hydroxy-2'-deoxyguanosine (8-OH-dG) and single strand DNA breaks of peripheral blood lymphocytes, were measured by ELISA and comet assay, respectively. In addition, plasma malondialdehyde (MDA) level, superoxide dismutase (SOD) and glutathione peroxidase (GSH-Px) activities were measured as biomarkers for oxidative stress.

Outcomes - The results showed lower levels of urinary 8-OH-dG and single strand DNA breaks in the two almond-treated groups as compared with the control group. Furthermore, MDA levels in the almond-treated groups were lower than the controls. However, no significant effects of almond on SOD and GSH-PX activities were found.

Conclusions - Results from this pilot study indicate that almond consumption has preventive effects on oxidative stress and DNA damage caused by smoking.

The relationship of the regional food cultures and people’s health

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Background – China is a large country with an abundance of products and is divided into six main regions. On this land there are fifty-six peoples living. For the differences in history, traditions, geographical environments, religious belief and so on various regional food cultures exist within this land and influence each other. However, there has been no data on the interaction between the regional food cultures and people’s health.

Objective - To investigate the interaction between the regional food cultures and people’s health.

Design - People have similar diet habits within a special main region and thus particular health status. These data were collected from many different sources such as books, magazines, newspapers, internet and so on then they were analyzed by a special software to find the inside rules.

Outcome – The average height of north China people who usually eat flour products is much taller than those from south China who often eat rice. And it’s especially obvious on Guangdong people who often make food that infused in boiling water by doing what most of the nutrients are destroyed. The incidence of stomach cancer is highest in north China where people often sit on their hunkers while eating their meals. People from southeast of China who are addicted to having spicy food are prone to cancer of esophagus, rectal cancer and infectious diseases. The distribution of endemic diseases is also closed related to the regions.

Conclusions – The present study indicated that the regional food cultures can greatly influence people’s health.

1. Zhenfan Zhu. unofficial history in food culture, 2004;191-195
2. Bai Xiao. Go around China, 2004;422-430 The tourist culture of China
S3-1

**Omega-3 fatty acids and the brain**

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The brain is a lipid-rich organ containing mostly complex polar glycerophospholipids, sphingolipids, gangliosides and cholesterol. These lipids are involved in the structure and function of cell membranes in the brain. The glycerophospholipids in the brain contain a high proportion of polyunsaturated fatty acids (PUFA), the main PUFA being docosahexaenoic acid (DHA, all cis 4,7,10,13,16,19-22:6) an omega 3 fatty acid, and arachidonic acid (AA, all cis 5,8,11,14-20:4) and docosatetraenoic acid (all cis 7,10,13,16-22:4), both omega 6 fatty acids. Experimental studies in animals have shown that diets lacking omega 3 PUFA lead to substantial disturbances in neural function, which mostly can be restored by the inclusion of omega 3 PUFA in the diet. In the past 10 years there has been an emerging interest in treating neuropsychological disorders (depression and schizophrenia) with omega 3 PUFA. This paper discusses the clinical studies conducted in the area of depression and omega 3 PUFA and the possible mechanisms of action of these PUFA. It is clear from the literature that DHA is involved in a variety of processes in neural cells and that its role is far more complex than simply influencing cell membrane properties.

S3-2

**Essential fatty acids and CNS development**

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Numerous studies over the past 30 years have evaluated the impact of lipid nutrition in early life on central nervous system development. These studies have clearly demonstrated that reductions in energy and/or essential nutrient supply during the first stages of life have profound effects on somatic growth, and on the structural and functional development of the brain. It is now clear that n-3 LCPs are crucial for the development of the brain and retina in humans. We and others have demonstrated that provision of n-3 LCPs in preterm and term babies is associated with enhanced retinal electrical responses to light stimuli, and to a pattern of brain cortex related visual acuity maturation which is similar to that observed in human milk fed infants. Docosahexaenoic acid (C22:6 n-3; DHA) particularly has been shown to affect retinal and brain development in humans. Provision of n-3 long chain PUFAs in preterm and term newborn is associated with enhanced retinal electrical responses to light stimuli and with a pattern of brain cortex visual maturation which is similar to that observed in human-milk fed infants. Evidence supporting the potential importance of n-3 fatty acid consumption for good cognitive health in older age is also beginning to emerge. The effects of n-3 LCPs on brain development and ageing may be explained by several mechanisms which can be broadly grouped into: membrane effects, modulation of eicosanoid and docosanoid production, actions on neurotropic factors and apoptosis, finally effects on the regulation of gene expression. We will review the role of n-3 lipids on brain development and ageing, and the mechanisms that may explain the observed effects.
S3-3

Metabolism of Diacylglycerol in Humans

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Background – It is known that the obesity resides upstream of the constituents of metabolic syndromes such as diabetes, hypertension, hyperlipidemia, and arteriosclerosis. Postprandial hyperlipidemia, defined as the state of elevated serum triacylglycerols (TAG) in the fraction of chylomicron and their remnants, are also implicated in atherogenesis. Therefore, factors that influence the body adiposity and the magnitude of postprandial hyperlipidemia have been intensively investigated. Diacylglycerol (DAG) oil, which is defined to contain DAG 80% (w/w) or greater in the present presentation, is an edible oil with similar taste and usability compared with conventional edible oil rich in TAG. Safety of DAG has been extensively investigated in several animals and humans. DAG oil had been listed as a GRAS (Generally Recognized as Safe) substance by US FDA.

Objective – The aim of this review was to summarize the metabolism and nutritional functions of DAG.

Design – I collected the data from scientific journals and conference publications, MEDLINE and current content which included 23 papers.

Outcomes – Postprandial elevations of serum TAG in the chylomicron fraction are significantly smaller after DAG consumption compared with TAG with a similar fatty acid composition in healthy subjects, and postprandial serum TAG was remarkably reduced in subjects with insulin resistance. DAG ingestion significantly decreased respiratory quotient and increased fat oxidation as compared to eucaloric TAG ingestion. Body adiposity was significantly decreased following DAG consumption compared with the control TAG oil with the similar fatty acid composition. Conclusions – DAG oil consumption might be beneficial in reducing the risk factors for lifestyle-related diseases such as obesity, visceral obesity, postprandial hyperlipidemia, insulin resistance, atherosclerosis.

S3-4

Designer eggs and global marketing strategy of Columbus Concept
(Supply of balanced n-6 and n-3 Fatty Acids in Foods)

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Modern agribusiness and food processing industry have dramatically altered the pattern of nutrients and lifestyles in the human regimen. Energy-dense, processed fat-rich foods have become a standard way of life around the world. Public awareness of the crucial link between nutrition and health is growing rapidly, especially the awareness of the role that diets play in combating age-associated chronic diseases, such as cardiovascular disease, malignant disease, diabetes, osteoporosis, arthritis, and alzheimer's disease. Over the last 150 years, a major change occurred in food fats, becoming (1) ever richer in – and unbalanced between - omega-6 and omega-3 fatty acids, with ratios exceeding 20 to 1, far from the optimal 1:1 ratio, and (2) extremely depleted in antioxidants. Essential fatty acids and antioxidants cannot be produced within the human body; they must be supplied from foods we eat to sustain human-gene expression and overall metabolic homeostasis. Industry and consumers alike are searching new food fat sources supplying both long chain omega-3 and omega-6 polyunsaturated fatty acids in an adequately balanced, ideally 1:1, ratio and sufficiently stabilized with natural antioxidants. The primary goal of Designer Food Technology is to mimic today’s food production as closely as possible to the nature’s unaltered food composition. Therefore, Designer Egg is mimicking Nature’s unaltered egg yolk fats enriched with sufficient amount (>500 mg) of omega-3 fatty acids in an exactly 1:1 ratio of omega-6 to omega-3 fatty acids by feeding laying hens rations containing omega-3 fatty acids and natural antioxidants. The Columbus Concept is a global marketing strategy that stresses the urgency to return alpha-linolenic acid, herein referred to as wild- or game-type land-based fatty acid, into the feed ration of land-based bred animals to such an extent that their body fat triglycerides exhibit a balanced ratio of essential fatty acids (EFAs), ω6:ω3-EFAs/TGs = 1:1, characteristic of body fat in wild animals or game and in the Paleolithic human diet. The present paper focuses on the far-reaching nutritional significance of Designer Eggs and its wider exploitation by adopting the Columbus Concept as a global egg marketing strategy.
S4-1

**Effect of low GI diet on insulin resistance in rats**

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**Background** – Chronic diseases have become the main factors relevant to health and life in China now, of all these chronic disease, insulin resistance maybe an important reason. Therefore, if insulin resistance can be prevented or improved, these chronic conditions maybe consequently prevented. In this study, the effects of resistant starch (low GI) on insulin resistance of rats were observed.

**Objective** – To see the Effects of resistant starch on rats with insulin resistance

**Design** – Insulin resistance model rats were induced by high safflower oil diet feeding. Seventy Wistar rats were randomly assigned to seven groups, one group was fed with chemical purified normal diet (N) and the other groups were fed with high safflower oil (59% of total energy) diet (HF). Five weeks later, blood lipid was measured and OGTT (oral glucose tolerance test) was carried out in each group and insulin sensitivity index (ISI) was calculated and compared to ensure the model is successful. Then insulin resistant rats were assigned to consume N, HF, high RS (HS), middle RS (MS), low RS (LS) and low fat RS (LFS) diet (group N1, HF, HS, MS, LS and LFS to represent them, the initial N diet group was group N). Six week later, OGTT was carried out in each group again. ISI was calculated and compared among each groups.

**Outcomes** – Insulin resistance was induced in high fat diet feeding rats 5 weeks later. The insulin resistant rats had higher body weight and blood total cholesterol (TC) and triglyceride (TG) levels compared to control group (p<0.05). Six weeks of high RS diet increased the ISI in group N1, HS and LFS were significantly lower than that in group HF, HS, MS and LS(p<0.05). Group N1, HS and LFS showed similar effect on improvement of insulin resistance, but group LFS also had similar body weight with group N.

**Conclusion** – RS added to high fat diet may improve insulin resistance in rats. RS may also help to reduce the body weight of insulin resistant rats.

S4-2

**Dietary Control and Lipid Profiles of Type 2 Diabetes Mellitus Patients In Mazandaran province, Iran**

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**Background** – Medical nutrition therapy (MNT), physical activity, and medical therapy are the main components of diabetes management, with medical nutrition therapy being the cornerstone of type 2 diabetes management, especially in diabetes self management. It is defined as the use of specific nutrition services to treat an illness, injury, or condition.

**Objective** – To investigate of relation between the dietary and blood lipids between type 2 diabetes subjects and non diabetes subjects living in Mazandaran Province (North of Iran).

**Design** - A total of 81 Patients with Type 2 diabetic subjects (25 women, aged 55.8 ± 9.3 years with disease duration of 5.6 ± 4.2 years and 56 men, aged 56.5 ± 8.8 with disease duration 7.0 ± 5.3 years) attending 3 different outpatient diabetic clinics in Sari city (Mazandaran -Iran) took part in the study. Body weight, blood pressure and waist circumference were determined at the first visit by the same investigator and with the same material. Fasting blood samples were taken from the antecubital vein after a 12-h fast and then glucose, total plasma cholesterol and triglycerides were analysed by standard methods. Total cholesterol and triglycerides were measured by enzymatic methods (Sigma Diagnostics).

**Outcomes** – compared to diabetic men, dietary intakes were significantly higher in non diabetic men but not significantly higher in diabetic women compared to diabetic women. Dietary fiber was significantly higher in diabetic men and women compared to non diabetic subjects. Type 2 diabetic patients of both sexes had a triglyceridemia level higher than non diabetic patients. However Type 2 diabetic men had a cholesterolemia level lower than non diabetic men and there was no difference between cholesterolemia of type 2 diabetic women and non diabetic women.

**Conclusions** – The present study indicated that type 2 diabetic subjects are consuming diets that are varied and nutritionally adequate for a healthy adult. To optimize nutrition therapy of type 2 diabetic subjects in Mazandaran Province.
S4-3

Low dose STZ combined with high energy intake can effectively induce type 2 diabetes through altering the related gene expression
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Background - High energy-intake in daily life is a major factor to increase the risk of getting type 2 diabetes. A number of animal models have been adopted to unravel the mechanism of type 2 diabetes, but the methods to induce the symptom are always different far from the real life style of human.

Objective - To set up a suitable animal model which is similar with the real process of human type 2 diabetes.

Design - Twenty five-week-old Wistar male rats consumed a basic diet (BD) for seven days before they were randomized into four groups. One group was still fed with BD and the others were transferred to a high energy diet (HD) of 20% sucrose and 10% lard. After four weeks, BD and one of HD were sampled, and the other two HD groups continued to consume HD, but one of them was treated by one injection of low dose of STZ (30mg/kg body weight). After another four weeks, these two groups were also sacrificed. Changes in body weight were recorded, and levels of glucose, Tg, Tc, LDL in serum were analysed by standard methods. Moreover, expressions of genes related to carbohydrate and lipid metabolism in liver, muscle and fat were measured by real-time RT-PCR.

Outcomes - Consumption of HD for four weeks had no notable effect on body weight and serum indices as compared with those of BD, but it altered gene expressions in a tissue-specific manner. Two receptors of adiponectin, leptin, PPAR, UCP2 mRNA levels in fat were up-regulated, whereas most of them were down-regulated in liver and did not show any change in muscle. After treatment with STZ, symptoms of diabetes were observed, and the expressions of the above mentioned genes exhibited changes in both tissue- and gene-specific manners.

Conclusions - The results suggest that a combination of low dose STZ and high energy intake can effectively induce type 2 diabetes by altering the related gene expressions in major metabolic tissues.

S4-4

Nutritional quality and glycemic index of traditional Omani breads
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Background - Glycemic Index (GI) of foods is a useful tool for elucidating the effects of carbohydrate rich foods on postprandial blood glucose response and has shown its significance as a useful nutrition concept for classifying the carbohydrates. The available evidence to date suggests a positive role of the glycemic index of foods in the prevention and management of chronic diseases.

Objective - To evaluate the nutritional quality and glycemic index of some traditional Omani breads.

Design - Eight different types of commonly consumed Omani wheat breads (White toast bread, Brown toast bread, Khubz Lebanani white (local commercial bread), Khubz Lebanani brown (local commercial bread), Chapati (local homemade bread), Poratha (local homemade bread with fat), Goleh (local homemade soft bread), Rekhal (local homemade thin bread) were used for this study. Representative samples of these breads were either randomly purchased from the local market or prepared according to the traditional homemade recipes. The breads were analyzed for their proximate chemical composition and dietary fibre contents according to the methods of AOAC (2000). The glycemic index of these breads was determined in healthy human volunteers (both male and females with almost similar age, weight and body mass index) according to the method as described by Wolever et al. (1991), FAO/WHO (1998) and Brouns et al (2005). Pure glucose was used as a standard food.

Outcomes - Significant (P<0.05) differences were observed in the proximate chemical composition, dietary fibre content and energy values of these breads. The moisture, crude protein, total fat, crude fibre, ash, and nitrogen free extract (NFE) contents (g per 100g on fresh basis) ranged 24.9-51.4, 3.7-10.3, 0.7-12.4, 0.2-1.1, 1.6-2.5, and 34.1-62.9, respectively. The energy content ranged between 216 and 428 kcal / 100g of bread on such basis. The glycemic index of these breads also differed significantly (P<0.05) and the values for White toast bread, Brown toast bread, Khubz Lebanani white, Khubz Lebanani brown, Chapati, Poratha, Goleh, and Rekhal were 62.8 ± 12.2, 57.8 ± 17.1, 62.5 ± 10.5, 56.6 ± 20.4, 58.2 ± 11.0, 31.8 ± 13.5, 42.9 ± 16.9, and 39.1 ± 8.3, respectively.

Conclusions - Significant variability exists in the proximate chemical composition and glycemic index of different types of Omani breads. The results of this study will help in developing the appropriate dietary management strategies in meal planning utilizing the concept of GI of foods for reducing the risk of chronic diseases.
S4-5

Effect of L-carnitine supplementation on glycemic profile in patients with type 2 diabetes mellitus

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Background – It has been thought that L-carnitine is effective in improving insulin-mediated glucose disposal either in healthy subjects or in type 2 diabetic patients and carnitine plays an important role in diabetes mellitus complications.

Objective – We designed this study to investigate the effects of oral L-carnitine administration on fasting plasma glucose (FPG) and glycosylated hemoglobin (HbA1c), in patients with diabetes mellitus type II.

Design – The effect of L-carnitine on FPG and lipid parameters was investigated in 22 male and 14 female type II diabetic patients, mean age ± SD was 51.3 ± 3.7 years. The patients were randomly divided into 2 groups (i.e. test and control groups). One gram of L-carnitine or placebo was given orally three times a day to the test and control groups respectively for a period of 12 weeks.

Results – Fasting plasma glucose in the test group decreased significantly from 143 ± 35 mg/dl to 130 ± 35 mg/dl (p=0.03). There were no significant changes in HbA1c, between the two groups.

Conclusions – L-carnitine significantly lowers fasting plasma glucose in type II diabetic patients.

S4-6

Study on the satiety index, glycemic index, glucose and insulin response of different types of breakfast cereals in China

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Background – The importance of breakfast for working efficiency and health has been well recognized. However, the data relates to the influence of breakfast cereals on glucose response and energy lasting is very limited in China.

Objective – To investigate the effect of oatmeal on blood glucose, insulin response and energy sustainability in comparison with other traditional Chinese breakfast cereal meals.

Design – After scrutinized, 21 health subjects (10 males, 11 females) entered into the study. The influence of Quick oatmeal, Steam Bread, Commercial white bread, Chinese rice congee, Corn porridge on satiety index (SI), glucose and insulin response was tested and anhydrous glucose was taken as reference. During each test, subjects were asked to intake one of those test foods containing 50 grams of available carbohydrate, and feeling of satiety was scaled just before feeding (0 min) and then scaled at 15 min intervals during 1 h and at 30 min during 2, 3 and 4 h one mL of blood sample was collected before feeding (-5.0 min) and just before feeding (0 min), and then being collected as the same scheme as that of scaled satiety. The serum of the blood samples was used for glucose and insulin measurement. The glycemic index of each test point is similar to that of GI according to the method of FAO, 1997 and the SI and insulin index calculation is similar to that of glycemic index.

Outcomes – The results show that the SI of Quick oatmeal is significantly higher than that of rice congee and corn porridge while lower than that of steam bread and commercial white bread at h 1,2,3,4 (P<0.05). The glycemic index of Quick oatmeal is significantly lower than that of other 4 cereal meals during h 1,2,3,4 (P<0.05). The insulin index of Quick oatmeal is significantly lower than that of rice congee at 1 hour and than that of commercial bread at each test time point (P<0.05). The serum glucose incremental ratio (ratio of glucose concentration at each test point of time to the fast glucose level) of Quick oatmeal is lower than that of rice congee at 15, 30 min, of steam bread at 30, 45, 60 min, of corn porridge at 15,30,45,60 min (P<0.05), while higher than that of rice congee after 120 min and corn porridge, steam bread, commercial white bread after 150 min.

Conclusions - The results indicate that compared with some traditionally cereal meals, oatmeal lead relatively mild postprandial glucose increase and long lasting energy in healthy adults.
S5-1

Use of plant extracts in summer and winter season butter oxidative stability improvement
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Background – Edible fats and fat containing products undergo oxidation, both during production and storage, causing a sequence of unfavorable changes. From a nutritional and technological point of view, it is desirable to control oxidation processes by addition of inhibitory substances. Enrichment of lipids with plant polyphenols can profitably influence their oxidative stability; additional introduction to human body can also decrease the degenerative diseases morbidity (1).

Objective – To investigate antioxidative properties of green tea (Camellia sinensis) and rosemary (Rosemarinus officinalis) ethanol extracts in different season butter in comparison to other strong antioxidants.

Design – Two seasons butters quality were analyzed: winter and summer season. Oxidative stability of butter was conducted on Rancimat and Oxidograph test conditions (110°C). To evaluate antioxidant activity of different plant extracts lipid samples were enriched with tea and rosemary extracts, tocopherols and BHT at concentration of 0.02% counted over lipid content.

Outcomes – It was found that pure winter butter was more stable than pure butter from summer season in Rancimat test conditions (P<0.05). No statistical differences between samples in Oxidograph test were found. Addition of antioxidants resulted in longer induction period, testifying better oxidative stability of lipid samples. Best antioxidative activity showed green tea extract, were induction period was 66.5 h for Rancimat and 64.0 h for Oxidograph test. Also rosemary extract and tocopherol mixture showed strong antioxidative activity, weaker however than green tea extract. BHT - strong synthetic antioxidant, showed much lower activity in butter oxidative stabilization.

Conclusions – The present study indicated strong antioxidant activity of examined plant extracts in lipid systems.


S5-2

Effect of antioxidant supplementation on progression and management of Parkinson’s disease at a referral centre in India
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Background – Excessive oxidative stress may be a causative factor in the development of Parkinson’s disease (PD) and the substantia- nigra in the mid-brain is in the state of precarious oxidative balance. The metabolism of L-dihydroxyphenylalanine (L-dopa used in the treatment of PD) is also known to produce free radicals. (1) However, the exact dosages and type of antioxidants that are likely to be effective in delaying PD progression have yet to be identified precisely.

Objective – To study the effect of antioxidant supplementation on progression and management of Parkinson’s disease (PD).

Design – 100 PD patients were assigned randomly either to the antioxidant supplementation or non-supplementation group. Coenzyme Q10-90mg, Vitamin C-250mg & Vitamin E-200 I.U./day were administered to the antioxidant supplementation group for six months duration and the neurological status was assessed at the beginning and end of the six months in both the groups.

Outcomes – In the antioxidant supplementation group evaluation of the disease progression by modified Unified Parkinson’s disease rating scale (UPDRS) at the end of the sixth month showed statistically significant improvement in the scores of activities of daily living (UPDRS – II).

Conclusions – It is reasonable to expect that antioxidant vitamins supplementation in PD patients should be able to prevent disease progression.

S5-3
Introduction of complementary foods to infants in the first six months postpartum in Xinjiang, PR China
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Background – Nutrition is the basis for the health and development of infants. The timing and types of complementary foods are very important in determining nutritional status.

Objective – To document the introduction of complementary foods, including water, cow’s milk and solid foods in Han, Uygur and other ethnic groups living in Xinjiang.

Design – A longitudinal study of infant feeding practices was undertaken on different ethnic groups. A total sample of 1219 mothers who delivered babies during 2003 and 2004 were randomly recruited and interviewed while in hospital. After discharge the mothers were contacted in person or by telephone at approximately monthly intervals to obtain details of their infant feeding practices.

Outcomes – The overall introduction rates of water, cow’s milk and solid food in Xinjiang were, respectively, 23%, 2% and 6% before discharge and 76%, 39% and 78% at six months. The rates were different between ethnic groups. Uygur mothers were most likely to feed water to their babies, with introduction rates of 57% before discharge and 95% at six months, while the corresponding rates were 6% and 77% for Han and 12% and 52% for other minority groups. The introduction rates of cow’s milk in Uygur, Han and minority groups were 2%, 1% and 4% before discharge and 45%, 26% and 52% at six months, respectively. For solid foods, Uygur mothers have the highest introduction rates (10% pre discharge and 91% by six months) when compared to Han (3% pre discharge and 85% by six months) and other minorities (4% pre discharge and 48% by six months).

Conclusions – Many mothers in this region are not following internationally recognized practices of exclusive breastfeeding to six months suggesting the need for further education of health professionals and parents.

S5-4
NUTRIOSE® is a soluble resistant dextrin with outstanding tolerance and very low glycemic response.
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Background - Well-balanced diet should provide about 40% of energy from complex sugars, like fibers.

Objective – To evaluate if NUTRIOSE®, a range of soluble fiber, can allow reaching this nutritional goal through different studies.

Design – NUTRIOSE® 06 and 10 were evaluated for their dietary fiber content by the AOAC 2001-03 method. Glycemic and insulinenic responses of NUTRIOSE® have been studied after overnight fasting on 6 healthy men after ingestion of either 50 g dextrose or NUTRIOSE®. Finally, tolerance studies have been conducted (1, 2).

Outcomes – NUTRIOSE® is a soluble dextrin produced from wheat or maize starch, and provides with a total fiber content of nearly 85% for NUTRIOSE® 06 and nearly 70% for NUTRIOSE® 10.

NUTRIOSE® weakly digested in the small intestine (15%) and largely but slowly fermented in the colon (75%), NUTRIOSE® induces a low glycemic response (GR = 25 for NUTRIOSE® 06). It is beneficial for colonocytes through volatile fatty acids production and exhibits an outstanding digestive tolerance (about 45 g/day, undetermined mean laxative threshold > 100 g/d) (1,2).

NUTRIOSE® is a completely soluble fiber, very stable to food processes (heat, pH…) and with neutral taste. It induces low viscosity change, can be easily incorporated in liquid products and is very stable throughout its shelf life.

Conclusions – Based on the present results, NUTRIOSE® is a key ingredient from a nutritional and technological point of view in the world context of epidemic obesity.

**S5-5**

Green tea and lycopene protect against prostate cancer

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**Background** – Prostate cancer is the most common male cancer in developed countries and is increasing in other parts of the world. Its long latency and geographical variation suggest the possibility of prevention or postponement of onset by dietary modification.

**Objective** – To investigate the associations between green tea, lycopene consumption and their joint effect on prostate cancer risk.

**Design** – A case-control study was conducted in Hangzhou, southeast China with 130 incident patients with histologically confirmed adenocarcinoma of the prostate and 274 hospital controls. Information on tea, dietary intakes was collected using a structured questionnaire. The risks of prostate cancer for the intake of tea and lycopenes and their joint effect were assessed using multivariate logistic regression, adjusting for age, locality, education, income, body mass index, physical activities, marital status, family history of prostate cancer, total fat and caloric intake.

**Outcomes** – The protective effect of green tea was significant (odds ratio 0.14, 95% CI: 0.06-0.35) for the highest quartile relative to the lowest after adjusting for total vegetables and fruits intakes and other potential confounding factors. Intakes of vegetables and fruits rich in lycopene were also inversely associated with prostate cancer risk (odds ratio 0.18, 95% CI 0.08-0.39). Interaction analysis showed that the protective effect from tea drinking and lycopene intakes was synergistic ($P<0.01$).

**Conclusions** – This study suggests that habitual drinking tea and intakes of vegetables and fruits rich in lycopene could lead to a reduced risk of prostate cancer in Chinese men. Together they have a stronger preventive effect. This is the first epidemiological study to investigate the joint effect between tea drinking and lycopene intake.

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**S5-6**

Composition of ready cooked foods sampling in southern Thailand

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**Background** – Databases on the nutrient composition of isolated ingredient of meals have been published and used in various analyses of dietary patterns. However, these have limits in reflecting real life consumption (1). Establishment of a database on the nutrient content of meals and overall diets will be an alternative tool for solving the disadvantages of the single ingredient database.

**Objective** – To investigate the nutrient composition of ready cooked foods commonly consumed amongst southern Thai people.

**Design** – Fourteen types of local foods, commonly consumed amongst southern Thai people, were purchased from 4 shops in different areas around the Hat Yai district community. The edible part was blended and subjected to proximal analysis and analysis for vitamin B1, vitamin C, calcium and iron, in duplicate. All values for each type of food were calculated for mean ± standard deviation. Percent (%) values are the amount/100g edible portion.

**Outcomes** – Eight curry dishes, one sweet and sour curry, a soup dish, one stir-fried curry, one stir-fried dish and two single plate dishes were analyzed. Foods that were a good source for vitamin B1, vitamin C, calcium and iron were: Cassia leaves curry (145 g%), Thai noodle salad (2.20 mg %), Ark shell curry (0.23g%) and Fermented fish gut dish (6.07 mg%), respectively. Moisture, ash, fat, protein and carbohydrate were high in Mungbean noodle soup (92.6 g%), Fermented fish gut dish (4.1 g%), Cassia leaves curry (9.9 g%), Stingray stir-fried curry (16.7 g%) and Thai noodle salad (24.2 g%), respectively.

The protein content of Stingray stir-fired curry was 2-4 times higher than other dishes of higher or similar price. Cassia leaves curry, the cheapest dish, is the best source of vitamin B1 and fat.

**Conclusions** – The main ingredients and the cooking process determined the nutritional values of the ready cooked foods. With Thai noodle salad, for example, its carbohydrate content was from its large amount of noodles and its vitamin C level was from its fresh cucumber and other blanched vegetables. More data on ready cooked foods, calculating recipes and manipulation of these data together with the published food composition databases will facilitate the task of dietary patterns analysis that are much closer to real life consumption, without ambiguity.

S6-1

Effects of Conjugated Linoleic Acid on Human Colorectal Carcinoma Cell Line Caco-2
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Background – Conjugated linoleic acids (CLA) have many biological activities. In the recent years, much attention has been paid to the anticancer effect of CLA.

Objective – To investigate the effects of two isomers of CLA and their mixture on the human colon adenocarcinoma cell line Caco-2.

Design – Caco-2 were incubated in serum-free medium. The effects of different concentrations (0, 25, 50, 100, 200μmol/L) of linoleic acid (LA), c9,t11-CLA, t9,t11-CLA and the mixture of these two isomers (1:1 v/v) on the Caco-2 in various time (1d, 2d, 3d, 4d) were inspected. The expression level of mRNA of Caspase-3 gene was determined by RT-PCR.

Outcomes – The different concentrations of LA, c9,t11-CLA, t9,t11-CLA and the CLA mixture can inhibit the Caco-2 cell proliferation. The effects of CLA anti-proliferative are closely related to the treatment time (p<0.05) and the concentration. When Caco-2 cells were treated by same concentration of the four substances in the same time, the result shown that the mixture of CLA have higher anti-proliferation activity, following is t9,t11-CLA, c9,t11-CLA, and LA respectively. The cell apoptosis induced by mixture of CLA was in dose-dependent and time-dependent. The result of RT-PCR shown that the mixture of CLA induced caspase-apoptosis in Caco-2, and the mRNA level of caspase-3 gene was increased compared with the control.

Conclusions – The mixture of CLA, t9,t11-CLA, c9,t11-CLA, and LA could inhibit the Caco-2 proliferation. The mixture of CLA induced apoptosis of Caco-2, which might be an important function of CLA on cancer cells.

S6-2

Modulation of blood pressure, lipid profiles and oxidative stress in hypertensive patients taking different edible oils
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Background: Free oxygen radicals and insufficiency of antioxidants have been implicated in the pathogenesis of hypertension.

Objective: We determined the effect of edible oils on blood pressure, lipid profiles and redox status in hypertensive patients given antihypertensive therapy (nifedipine–calcium channel blocker).

Design: 530 patients medicated with nifedipine were divided into 3 groups (356 patients–sesame oil; 87 patients–sunflower oil; 47 patients–groundnut oil) and the control group (n=40) received only the drug, nifedipine. The respective oils were supplied to the patients and instructed to use as the only edible oil for 60 days, which comes to 35 g of oil/day/person. Blood pressure, lipid profiles [total cholesterol (TC), low density lipoprotein cholesterol (LDL-C), high density lipoprotein cholesterol (HDL-C) and triglycerides (TG)], lipid peroxidation [thiobarbituric acid reactive substances (TBARS)], enzymatic [superoxide dismutase (SOD), catalase (CAT) and glutathione peroxidase (GPx)] and nonenzymatic [(vitamin C, vitamin E, β-carotene and reduced glutathione (GSH))] in blood were measured at baseline and after 60 days of oil substitution.

Outcomes: Patients with nifedipine alone or with respective oils had significantly lowered blood pressure. The dosage of the drug, nifedipine was reduced as there was fall in blood pressure in sesame oil group. TC, LDL-C and TG decreased while HDL-C elevated in sesame and sunflower oil groups. Increases of HDL-C and TG were noted in groundnut oil group. TBARS levels reduced in all the groups whereas the reduction was remarkable in sesame oil group. Activities of SOD elevated in the 3 oil groups whereas GPx and CAT increased only in sesame oil group. Levels of vitamin C, vitamin E, β-carotene and GSH increased in sesame oil group whereas vitamin E and β-carotene were elevated only in sunflower and groundnut oil groups. GSH increased in drug control group also.

Conclusions: Among the 3 oils, sesame oil offers better protection over blood pressure, lipid profiles and lipid peroxidation and increases enzymatic and nonenzymatic antioxidants.
S6-3  

**Effect of fish consumption on Heart rate and blood pressure**  
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**Background:** Research has shown that fish consumption may decrease the risk of coronary death. We tested the effect of fish consumption on blood pressure and heart rate in an institutionalised population aged 50 and over.

**Methods:** A total of 258 men and women aged 50 and over living in elderly institutions were randomly allocated to a case or control group for 12 weeks (142 cases and 116 controls). Cases have been offered trout fish two times a week with an average intake of 110 gram cooked fish per meal. Dietary intake assessment, drug history and medical exam performed before and after intervention.

**Results:** Fish consumption decreased the systolic blood pressure in cases, significantly (p<0.001). The effect of fish consumption was stronger in women than in men (13mm Hg in women 11.7mm Hg in men p<0.001). Decreasing systolic blood pressure was also significant in controls but the magnitude of the changes was less than that of the cases (13 mmHg vs 0.8 mmHg in cases and controls, respectively). No effect of fish consumption was noticed on diastolic pressure. Fish consumption, also, decreased heart rate in women by 4.36 bit per minute with no effect in men and no change in controls.

**Conclusion:** These data demonstrate that fish consumption by two times a week is associated with decreased heart rate and systolic blood pressure. Both heart rate and systolic blood pressure are positively associated with the risk of sudden death; this association may explain, at least in part, the lower risk of sudden death among fish consumers.

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S6-4  

**Risks and benefits of omega-3 polyunsaturated fatty acids supplementation in Thai schoolchildren: A randomized double blind placebo controlled intervention trial.**  
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**Background** – Many studies showed that Omega-3 polyunsaturated fatty acids supplementation are beneficial to neurodevelopment in infants and protection of coronary heart disease in adults. However, there is no evidence of its effect in schoolchildren.

**Objective** – To determine the efficacy of Omega-3 polyunsaturated fatty acids supplementation in Thai schoolchildren aged 6-12 years old.

**Design** – A randomised double blind placebo controlled intervention trial was done in Thai primary schoolchildren. They were randomised allocated in 2 groups to receive either 1200mg Omega-3 polyunsaturated fatty acids from fish oil or placebo (4g of 100% Soybean oil) mixed with UHT milk on every schooldays for 4 months. Episodes of illness like upper respiratory tract infection was counted and severity was measured by counting days with symptoms. Fatty acids profiles in red blood cells were also determined. Immune response and oxidative stress were also monitored. Child behaviour checklist and child depression inventory were used for behavioural study. Outcomes – Duration of illness of those in treatment group was less than in control group significantly. Immune response monitoring showed that Omega-3 fatty acids supplementation could increase numbers and functions of T-lymphocytes. Oxidative stress did not increase in the supplementation group as well as in the control group. Some behavioral change could also be seen in this study.

**Conclusions** – Omega-3 polyunsaturated fatty acids supplementation can reduce the severity of common illness found in childhood. It is anticipated that Omega-3 polyunsaturated fatty acids supplementation may enhance immune response in schoolchildren and may be beneficial to some behaviour such as depression.
S6-5

Antioxidant and protective effect of an oleanolic acid-enriched extract of *Actinidia delicosa* root on carbon tetrachloride induced rat liver injury

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Background – The ethanol extract of *Actinidia delicosa*(A.Chev.) C. F. Ling et A. R. Ferguson root (EEAD) have been proven to possess anticancer properties in vitro and in vivo. However, few studies have been reported on the part of oleanolic acid-enriched n-butanol extract (EEAD-Bu) from EEAD on injured rat liver protection.

Objective – To study effect of the EEAD-Bu on injured rat liver protection.

Design – the various EEAD fractions were studied for its in vitro antioxidant activity using ferric thiocyanate (FTC) and thiobarbituric acid (TBA) methods, and the in vivo hepatoprotective activity using model of CCL4-induced liver toxicity in rats

Outcomes – The EEAD-Bu had higher antioxidant and hepatoprotective activities then other types of extract (*P*< 0.05). When the EEAD-Bu at a dose of 120 mg kg\(^{-1}\) treatment in the CCL4-induced rat, the activities of alanine transaminase (ALT) and aspartate transaminase (AST) in rat serum decreased 90.10 % and 80.69 %, respectively, the lipid peroxidation (MDA) decreased 42.11 % and glutathione (GSH) increased 114.12 % in the rats liver homogenate, as compared with that of the CCL4 control rats. Moreover, the activity of the EEAD-Bu (at the dose of 120 mg kg\(^{-1}\)) was higher then that of the reference drug *silymarin*. OLA pretreatment also produced a dose-dependent protection against CCL4 hepatotoxicity.

Conclusions – The findings indicated that the EEAD-Bu had significant and concentration dependent hepatoprotective potential as it reversed the majority of the altered hepatic parameters in experimental liver damage in rodents.

S6-6

Tissue-specific changes in gene expression in high-fat diet induced hyperlipidemia mice

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Background – Hyperlipidemia has been one of the most critical diseases, and its possible happening mechanisms in various animal model systems have been intensively investigated. However, the molecular mechanisms underlying how hyperlipidemia causes severely bad influence in the health have still not been clearly known.

Objective – To investigate expressions of a kind of genes that might be involved in some important physiological aspects possibly related to the bad influence of the hyperlipidemia process.

Design – Ten four-week-old ICR male mice consumed a basic diet (BD) for five days before they were randomized into two groups. One group was fed BD as a control group (BD) and the other was fed a fat-supplied BD as a high-fat diet group (HFD). The components of HFD are as follows: 10% lard, 10% yolk powder and 1% cholesterol per kg diet. On day 29, tissues and blood were collected for further analysis. Combined with the analysis of Total cholesterol(Tc), triglycerides(Tg), HDL-C, LDL-C and VLDL levels in serum by standard methods, the gene expression of Sod1, Sod2, Gpx1, Gpx2, LDL receptor (LDL-r), HMG-CoA reductase (HMG-red), cholesterol 7-alpha-hydroxylase(CYP7A1), inhibitor of DNA-binding-1(ID1) and ID3 in different tissues, such as liver and heart, were measured by real-time quantitative RT-PCR.

Outcomes – Compared to Group BD, Group HFD showed a significant increase in Tc, HDL-C, LDL-C and VLDL levels (*P*<0.01) and a significant decrease in Tg level (*P*<0.05) in the serum. The expression levels of two Sod, two Gpx, and HMG-red genes in liver were significantly reduced, but the level of ID1 mRNA greatly increased (*P*<0.05). In contrast, no such significant change in the gene expression was observed in heart (*P*<0.05).

Conclusions – The present study indicates that the change in the above gene expression may account for the hyperlipidemia-brought bad consequence in other physiological aspects.
S7-1  
**Mechanism study of chitosan on lipid metabolism in hyperlipidemic rats**  
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²Affiliated Hospital of Nantong University, Nantong, China, 226001

**Background** - Hyperlipidemia is an important risk factor for cardiovascular disease. Chitosan has demonstrated hypolipidemic effects on animal and human studies (1). However, few studies have examined the mechanism by which this material exert this effect.

**Objective** – To determine the effect of dietary chitosan on plasma lipoprotein cholesterol metabolism

**Design** – Thirty weaning male 4 wks old Sprague-Dawley rats were randomized into normal group, hyperlipidemia group and treatment group. Normal group were fed on a commercial rat chow diet for 12 weeks, while hyperlipidemia group were fed on a lipid-rich diet containing 5% lard, 1%cholesterol and 0.25% cholate and treatment group were fed on lipid-rich diet plus a level of 5% chitosan. The lipid levels in plasma and liver, the bile acids concentrations of fecal and hepatic low-density lipoprotein (LDL) receptor mRNA levels were observed.

**Outcomes** – Compared with hyperlipidemia group, in the treatment group, chitosan can markedly decrease total cholestero(TC), LDL-C in plasma (P<0.05), and TC, TG in liver (P<0.05), and increase the output of fecal bile acids (P<0.05), but the level of triglycerides(TG) was unchanged(P>0.05). In addition, the result of RT-PCR test showed that high fat and high cholesterol feeding can significantly induce the reduction of LDLR mRNA levels, while chitosan can increase hepatic LDLR mRNA levels(P<0.05).

**Conclusions** – Chitosan can prevent disorder of lipid Metabolism by regulating TC and LDL-C through upregulation of LDLR transcription level. In addition, chitosan can increase the excretion of fecal bile acids.


S7-2  
**The research of the standard nourishment intervention on the metabolize syndrome**  
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**Background** – According to the diagnose criteria of diabetes section of Chinese medical association, the prevalence rate of the metabolic syndrome among upwards 20-year-old Chinese in city community currently reaches 14%-16%, while standard nutritional intervention is still in its starting stage.

**Objective** – Through the intervention study on the metabolic syndrome, inquire the feasibility of the standard nutritional intervention.

**Design** – Select metabolic syndrome patients from people undergoing a health check-up in our hospital and divide them into four groups. The standard intervention group, receive both the nutritional intervention and the health education; the simple intervention group only receive the intervention of the nutritional intervention; the simple health-education group, only receive the health education; the control group , not receive any intervention measure. Examine each group before and half a year after the intervention with the related index: Waistline, blood pressure, triglyceride, fasting plasma glucose etc. K-W test and Chi-square test, Bonferroni correction are used in the study.

**Outcomes** – The related index of metabolic syndrome show statistically significance among the four groups before and after intervention(P<0.05) . The total index between the standard nutritional intervention group and the control group, the simple health-education group show statistically significance, but it shows no statistically significance in other index(P>0.005) between the standard nutritional intervention group and simple nutritional intervention group, except that the waistline variety show statistically significance(P<0.005).

**Conclusion** – The standard nutritional intervention is an effective strategy for the patients with metabolic syndrome.
S7-3

Anti-glycation activity of phenolic compounds from Thai plants

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Background – Glycation, a non enzymatic formation between sugar aldehydes and proteins, is one key molecular basis of diabetic complications due to hyperemia. Phenolic compounds have been reported to have anti-glycation activity.

Objective – The aim of this study was to determine the total phenolic compounds content and their inhibitory effect on glycation in Thai plants.

Design – Seven edible plants were collected from Thailand, namely Pak Pai (Limnocharis flava Buch), Mulberry leave (Morus Alba), Sa dao (Azadirachita indica siamensis Valeton), red and green Pak Tew (Cratoxylum formosum), Pak Khom (Amaranthus gracilis Desf) and tamarind seed coat (Tamarindus indica). Five grams of sample was extracted by 50% ethanol at 30°C, total phenolic compounds was determined using the Folin-Ciocalteau with Gallic acid as standard at 760nm. Bovine serum albumin (BSA) was incubated with D-fructose in potassium phosphate buffer for 7 days. The fluorescence intensity was measured at an excitation of 370 nm and an emission of 440 nm with a spectrofluorometer.

Outcomes – Total phenolic compounds content was expressed as mg/g of gallic acid equivalents (mg/g of GAE). Glycation inhibitory was expressed as mg/g of aminoguanidine equivalents (mg/g of AGE), Mean ± SD, n=3.

<table>
<thead>
<tr>
<th></th>
<th>Pak Pai</th>
<th>Mulberry Leave</th>
<th>Sa Dao</th>
<th>Tew (Red)</th>
<th>Tew (Green)</th>
<th>Kun Jong</th>
<th>Pak Khom</th>
<th>Tamarind</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total Phenolic compounds (mg/g of GAE)</td>
<td>7.4 ± 1.1</td>
<td>14.5 ± 1.3</td>
<td>28.2 ± 2.1</td>
<td>459.8 ± 25.3</td>
<td>25.8 ± 4.3</td>
<td>15.5 ± 1.7</td>
<td>7.7 ± 1.9</td>
<td>256.8 ± 32.6</td>
</tr>
<tr>
<td>Anti-glycation activity (mg/g of AGE)</td>
<td>14.0 ± 1.6</td>
<td>117.6 ± 11.2</td>
<td>221.8 ± 21.3</td>
<td>898.9 ± 78.9</td>
<td>317.8 ± 41.5</td>
<td>47.2 ± 6.2</td>
<td>9.3 ± 1.4</td>
<td>392.9 ± 43.1</td>
</tr>
</tbody>
</table>

Conclusions – The total phenolic compounds content was varied greatly in Thai edible plants. The activity of anti-glycation of phenolic compounds from Thai edible plants may not depend only on the total phenolic compounds content but also on compositions of phenolic compounds.

S7-4

Effect of extract by supercritical CO₂ extraction from cole pollen on lipid metabolism in experimental hyperlipidemic rats

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Objective – This study aimed to evaluate the effect of extract by supercritical carbon dioxide extraction from cole pollen on lipid metabolism in experimental hyperlipidemic rats.

Methods – The experimental hyperlipidemic rats were established by providing with high cholesterol diets. The rats were randomized into six groups including normal control group (NC), high fat control group (HFC), medicinal control group (MC), lo-pollen’s extraction group (LPE), mid-pollen’s extraction group (MPE) and hi-pollen’s extraction group (HPE). After four weeks of perfusion diets into stomach, the rats were executed, and lipid levels of serum and hepatic tissue were detected.

Results – The plasma levels of total cholesterol (TC) and triacylglycerol (TG) were significantly lower in the pollen’s extraction group and medicinal control group than in the high fat group. Hepatic TG and TC levels were decreased in rats fed pollen’s extraction and medicinal diets compared with high fat diets. A higher concentration of HDL-C and apoAI in hepatic tissue were found after intake of the pollen’s extraction diet compared to the high fat diet (P<0.05), whereas pollen’s extract diets showed difference effects on reducing the hepatic LDL-C and apoB concentration. LCAT in serum of pollen extraction was significantly higher than HFC, also HMG-CoA reductase show decrease tendency in pollen extraction group. In pollen extract group the content of DHA were higher than that in HFC group.

Conclusion – These results suggest that extract from cole pollen enriched in alpha-linolenic acid effectively decrease levels of lipid in plasma and hepatic tissue to various extents compared to high fat diet. It is possible that cole pollen extract can increase level of HDL-C, activity of LCAT and the clearance speed of free cholesterol, decrease activity of HMG-CoA reductase so as to promote transportation, excretion and metabolism of cholesterol in hepatic tissue and serum, also indirectly increase in DHA concentration of hepatic tissue.
S7-5

Ultrasound measurement of area of inferior part of perirenal fat is related to anthropometric, imaging and clinical parameters of metabolic syndrome

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Background – Visceral adipose tissue (VAT) plays a key role in metabolic syndrome. Easy detection of VAT could be an important tool to increase knowledge of metabolic syndrome.

Objective – To study the relationship of area of inferior part of perirenal fat (AIPPF) (figure) to anthropometric and clinical parameters of metabolic syndrome.

Design – Seventy-two subjects with metabolic syndrome were recruited including 44 men and 38 women (age: 26-66 yr). Each subject underwent ultrasound detection of AIPPF and magnetic resonance imaging (MRI) to calculate abdominal VAT. Anthropometric and cardiovascular risk factors were also evaluated.

Outcomes – AIPPF showed better correlation with MRI abdominal VAT (P<0.001) than waist circumference (P<0.001) and body mass index (BMI) (P<0.001). Controlling for age and BMI, AIPPF showed highest correlation with MRI abdominal VAT (P<0.001), waist circumference (P<0.001), fasting C peptide (P<0.001), fasting insulin (P<0.001), C reactive protein (P=0.031), insulin area under curve (P=0.034), low density lipoprotein cholesterol (P=0.031) and diastolic pressure (P=0.048). Stepwise regression analysis confirmed that MRI abdominal VAT (P<0.001), fasting insulin (P=0.001), BMI (P<0.001), waist circumference (P<0.001) and fasting C peptide (P=0.019) were the strongest independent variables correlated with AIPPF.

Conclusions – AIPPF could be applied as an easy and reliable imaging indicator of VAT and cardiovascular risk factors in metabolic syndrome.

S7-6

Effect of Laiju extract on anti-hypertension in SHR and RHR

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Background - Semen Raphani and Chrysanthemum are officinal and edible. Studies show that Semen Raphani which was recorded in ShiJing earliest can decrease blood pressure obviously. The history of Chrysanthemum in China isn’t less than 1500 years, recorded in Shennongbencaojing as follow: “Taking it for long-term, it can benefit Blood Qi, light bodies, delay aging and macrobiosis”. Chrysanthemum has obvious function on reducing blood pressure and blood fat. Now we combine Semen Raphani with Chrysanthemum in a piece of prescription and get Laiju extract (flavonoids) by purification, then select two rat models to carry out the anti-Hypertension experiment.

Objective - To investigate the effect of Laiju extract on anti-Hypertension in SHR and RHR.

Design - Laiju extract (LJE,correspond to 22.5 mildigram flavonoids in one gram extract). Two kinds of rat models, Renovascular Hypertensive Rat (RHR) and Spontaneous Hypertensive Rat (SHR), respectively, were randomly divided into four groups with 10 in each: LJE-high group (9mg/kg), LJE-middle group (4.5mg/kg), LJE-low group (2.25mg/kg), negative control group(NS). First, Preparation of RHR Model: SD rats were anesthetized to make the left renal artery stegnosis with ligation. After 30 days, rats whose SBP ≥21.3Kpa(160mmHg) and stabile is RHR. BP and HR were measured at oh,1h,2h,3h,4h,5h,6h after intragastric administration with 1.0ml/100g. Second, SHR: Measure BP and HR at oh,1h,2h,3h,4h,5h,6h after administration. Measure BP and HR at 2 hours after administration once every day, lasting 7 days. Measure BP and HR at 2 hours after administration once every week, with administration every day for 4 weeks. Observe the influence of LJE on BP and HR.

Outcomes - RHR: All three groups of LJE can decrease BP of RHR at different degree, and the effect on BP of LJE-high and LJE-middle groups can last from 2 hours to 6 hours after administration. SHR: Different groups of LJE can decrease BP of SHR at different degree, and LJE-high and LJE-middle groups can decrease BP at 2 hours, whose effect can be lasted 5 hours after administration. Three dosages of LJE had the effect on decreasing BP at different degree after administration for 28 days, and the decreasing action was stability, little fluctuation with time going, which indicated that LJE can significantly and permanently decrease BP. Compared with the control group, LJE has no influence on HR in RHR and SHR during the whole experiment.

Conclusions - Laiju extract can obviously decrease blood pressure and hardly influence on heart rate
**S8-1**

**Urinary tract infections in malnourished children**  
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**Objective** – Malnutrition is common in developing and under developing countries and Urinary tract infection (UTI) is a well-recognized complication in malnourished children. This study surveyed UTI, bacteriuria and pyuria in malnourished children.

**Method:** We examined 61 malnourished and 47 normal children in this study. Of 61 patients (19 boys) 1 had severe, 15 had moderate and 45 had mild malnutrition. A normally nourished control matched for age, sex and presence of fever was included. Clean catch midstream urine specimens from patients and control group were examined microscopically and cultured.

**Results:** The incidence of UTI, bacteriuria and pyuria in malnourished subject was 44%, 44% and 13% respectively. The incidence of UTI, bacteriuria and pyuria in control children was 19%, 19% and 11% respectively.

**Conclusion:** Our observations show that malnourished children are at risk for UTI. Urinalysis and urine culture is useful for screening for UTI in these subjects.

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**S8-2**

**The effect of micronutrient supplements on the growth and development in rats and children**  
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2National Institute for Nutrition and Food Safety, Chinese CDC, Beijing, China, 100050

**Background** – The marginal deficiencies in micronutrients such as iron, vitamin A, iodine, calcium, zinc and vitamin B1 are rather common among Chinese children, adolescents, which would had negative effect on the growth and development of children.

**Objective** – In order to study the effect of micronutrient supplements on the growth and development in rats and children.

**Design** – Experiment one, forty weaning male 3 wks old Wistar rats were on a basal diet for one week, and then they were randomized into one of four diet groups, that is group one as a control group fed with basal diet and three groups fed with 0.5g, 1.0 and 1.5/kg BW micronutrient supplements included carbonate calcium, taurine, vitamin C, ferrous gluconate and lactate zinc, respectively, which micronutrient intakes for the rats would meet their normal nutrition requirements for 42 day study. Experiment two, after the animal study, one hundred and twenty children with aged 8-10 years, who had a low body weight within 1 SD less than the National averaged value, were selected and randomly divided into two groups, group one was given with the micronutrient supplement and the group two was given with a placebo as control for six months.

**Outcomes** – Compared the with control group A, the three groups given with micronutrient supplement had a higher gain in the body weight and length at the 28d and 42d feeding period. However, there was no significant difference in the diet bioavailability among the four groups. The intervention study in children showed that the micronutrient supplement could markedly improve the children growth and development compared with the children given with a placebo. The height and body weight, chest circumference in the supplemented group were significantly higher than those of the control group (P<0.05) after the study.

**Conclusions** – The present study indicated that the micronutrient supplement could markedly improve the growth and development in children with a low body weight.
**S8-3**

**Alcohol and breastfeeding: what do Australian mothers know?**

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**Background** – Drinking alcohol during pregnancy can cause many birth defects and developmental disabilities. There is considerable information available for pregnant women regarding the dangers of drinking alcohol during this time. Postpartum many women enter the period of lactation, which can last for several months to years. However information regarding safe levels of alcohol consumption during lactation is limited despite potential harmful effects on infant development and maternal lactational performance.

**Objective** – This study investigated the level of understanding that Australian women have regarding the relationship between alcohol and lactation.

**Design** – A series of six focus groups were conducted from February 2004 to December 2006. Group participants were recruited through one private and one public maternity hospital, and child health nurses. Women eligible to participate in the focus groups were currently breastfeeding or had been breastfeeding within the previous 12 months.

**Outcomes** – The mothers were largely unaware of the effects of alcohol on breastfeeding performance and the development of the infant. Most women expressed concern at the lack of information available regarding ‘safe’ alcohol consumption during lactation and reported being more diligent during pregnancy with regard to abstaining from alcohol.

**Conclusion** – There is a variable level of knowledge regarding consuming alcohol and breastfeeding among Australian mothers. Many participants were aware of the recommendations regarding alcohol during pregnancy and felt that a similar level of information was required to provide direction and support during lactation.

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**S8-4**

**A Study on growth references of height, weight and body mass index for Children aged 0-7 years in Urban Xuzhou**

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**Objective** – To compare the standards generally used in the world, some percentage standards had been studied. The percentage standards includes growth references of height for age (HFA), weight for age (WFA), body mass index (BMI) and for Children aged 0-7 years in urban Xuzhou. And the critical references of BMI for over-weight and fatness were also developed.

**Design** – (1) To compare other standards, randomized stratified clustered sampling method was used. The data of height and weight of 11747 children (6261 boys, 5486 girls), which measured in 2002-2004 in urban Xuzhou, were collected. (2) To construct the HFA, WFA and BMI percentage curve of the children aged 0-7 years in urban Xuzhou by using LMS method.

**Outcomes** – By using LMS software, nine percentage curves of the children aged 0-7 years were plotted for HFA, WFA and BMI respectively. They are percentage P3, P5, P10, P25, P50, P75, P90, P95 and P97 of the HFA, WFA and BMI. (2) The height of the children in urban Xuzhou keep increasing with the age of them. But the curves become less sharply after age of 6 years for boys and 5 years for girls. The heights of boys and girls before the age of 7 years in Xuzhou are all higher than those from WHO. (3) The weight of the children in urban Xuzhou also keep increasing with the age of them. But the curves become less sharply after age of 6 years for both boys and girls. The weights of boys and girls before the age of 7 years in Xuzhou are all higher than those from WHO. (4) Based on the recommended BMI value of International Obesity Task Force on overweight and obesity cutoff points for children at age 7, the corresponding percentile of these BMI value for Xuzhou boys are P72.6 and P92.6, and for Xuzhou girls are P82.1 and P96.5. The prevalence of overweight is 27.4% and 17.9% for Xuzhou boys and girls respectively at age 7. The prevalence of obesity is 7.4% and 3.5% for Xuzhou boys and girls respectively at age 7.

**Conclusions** – The percentage references of the height, weight and BMI of the children aged 0-7 years in urban Xuzhou have been developed by using the LMS software.
S8-5

Infants’ first feeds in Hangzhou, PR China
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Background – Breastfeeding is the foundation of good nutrition and provides the basis for health throughout the life span. The WHO and the Chinese Ministry of Public Health recommend exclusive breastfeeding to six months of age. Pre-lacteal feeds may interfere with the establishment of good breastfeeding practices.

Objective – To investigate the prevalence of prelacteal feeds in Hangzhou and feeding methods while in hospital.

Design – A longitudinal study of infant feeding was conducted in Hangzhou, China. A total of 638 mothers were recruited and were interviewed while in hospital and at regular interval until their infants were six months of age. The questionnaires included full details of infant feeding methods and factors likely to influence the initiation and duration of breastfeeding. Binary logistic regression was used to analyse factors in breastfeeding on discharge.

Outcomes – In Hangzhou almost all babies are born in hospital and the median length of stay was 5.6 days. The incidence of caesarian section was high at 77%. In 26% of births the infants were given formula or water as their first feed. However on discharge from hospital 91% of infants were receiving some breastmilk, but only 36% of mothers were exclusively breastfeeding. Breastfeeding on discharge from hospital was inversely related to giving prelacteal feeds (OR 0.115, 95% CI 0.055-0.238)

Conclusions – While in hospital most infants received supplementary feeds. Breastfeeding rates on discharge from hospital are quite high, but the rate of exclusive breastfeeding is low.

S8-6

Home fortification for controlling anemia among young children
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Background – Home fortification with Sprinkles, delivering iron and other essential vitamins and minerals, is effective and safe for treating and preventing anemia among infants and young children. To scale up this intervention, a country-specific and comprehensive strategy needs to be developed to promote acceptability and use of Sprinkles on a sustainable basis.

Objective – To identify factors that may influence the acceptance and use of Sprinkles.

Design – Trial for Improved Practices (TIPS), an intervention-based behavior-change research methodology, was used to gather information from potential consumers. The study was conducted during August-September 2004 on 334 mothers (of children aged 6-24 months) living across 9 upazilas of urban and rural Bangladesh. Mothers attended education sessions in groups where they were also provided with educational materials. In addition, each mother was given 60 sachets of Sprinkles for their child with instructions to use one sachet per day. At the end of the 60-day TIPS, data were collected from the mothers on different aspects of the intervention using quantitative and qualitative research tools.

Outcomes – Awareness of anemia was low among the mothers and other caregivers. The mean compliance with Sprinkles use was 81%. Most mothers reported that their children had greater appetite after receiving Sprinkles and their children seemed to like foods mixed with Sprinkles. If side effects occurred (like diarrhea and constipation), these did not dissuade mothers from continuing to provide Sprinkles to their children. When asked about the most effective media to promote the concept of home fortification with Sprinkles, most mothers identified television and radio. Most mothers indicated that they would be willing to purchase Sprinkles if available in the market and would pay an average of US$ 0.01 per sachet.

Conclusions – High compliance and positive attitudes toward the use of Sprinkles suggests that mothers were ready to accept home fortification with Sprinkles. These results can be used to help scale-up Sprinkles for potential country-wide distribution to children in Bangladesh.
S9-2

Serum phospholipid fatty acid profile and its relationship with plasma lipid in patients with type 2 diabetes

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Background – Dietary different fat have different effect on diabetes and cardiovascular disease risk factors. However, there is no accurate method to assess dietary different fatty acids intake. Serum/plasma phospholipids fatty acid have been reported that it reflects the relative long – term dietary intake.

Objective – To investigate the status of serum phospholipid fatty acid profile and its relationship with plasma lipid and lipoprotein in patients with type 2 diabetes (DM).

Design – Serum phospholipid fatty acid profile was analyzed with capillary gas chromatography. Plasma lipids and lipoprotein were measured by enzymatic assay.

Outcomes – The percentage of fatty acids (C16:0, C18:0, C18:1, C20:0 and C20:1), saturated fatty acid (SFA), monounsaturated fatty acid (MUFA) and the ratio of n-6 polyunsaturated fatty acid (PUFA) to n-3 PUFA were higher in DM than those in normal control group (NC). But the percentage of fatty acids (C18:2n-6, C20:3n-6, C22:6n-3, n-6PUFA and n-3PUFA) and the ratio of PUFA to SFA were lower in DM group than those in NC group. There were negative correlations between C16:1, C20:1, C22:2n-6 and total cholesterol (TC) (\(P < 0.05\)), C22:2n-6, n-3PUFA and triacylglycerol (TG) (\(P < 0.05\)); C16:1, C22:2n-6 and low-density lipoprotein cholesterol (LDL-C)(\(P < 0.05\)). N-6 PUFA, total PUFA and PUFA/SFA were positively correlated with high-density lipoprotein cholesterol (HDL-C) (\(P < 0.05\)). C18:0 was positively correlated with LDL-C (\(P < 0.001\)).

Conclusions – Serum phospholipid fatty acid profile is different in DM and NC group. The percentage of SFA and MUFA in serum phospholipid of DM group was higher than those of NC group, but PUFA are lower in DM group than those in NC group. SFA, MUFA and PUFA have different effects on plasma lipid in patients with type 2 diabetes.

S9-3

Determination and Investigation of Information Technology Parameters Effective to Food Industry Development

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Background - Information Technology (IT) parameters are very important to develop of food industry.

Objective In this research we try to determination and investigation of information technology parameters that are effective to food industry development.

Design - Information technology parameters that we have considered in our research are electronic customer relation management (e-CRM), material requirement planning (MRP1), material resource planning (MRP2), enterprise resource planning (ERP), electronic supply chain management (e-SCM), data base application those are useful to food industry development. Also we determined the food industry index and investigate the effective of information technology indexes on each it. The food industry parameter that we consider in our research were best using of resources, economic benefit, equivalent distribution of resources, improve human recourses, and improve quality of production.

We design question sheet paper and distributed that to our population. Our statistical population for determines the information technology parameter was the employment and management of food industry. After that we determined the present condition of those parameters in our food industry.

Outcomes - according to the result of our research respectively data base application, Internet application, and intranet network are more effective to improve electronic industry management. The results showed that MRP1 and MRP2 are more effective in best using of resources and equivalent distribution of resources. The result of research showed that using the e-CRM, e-SCM, could improve economic benefit. According to our result using ERP can improved the human recourses.

Conclusions - the results can help the managers of food industry to planning for improve their industries. We determine the current status of those parameters in our statistical population and we propose several ways to improve those indexes to improve the food industry development.
S9-4

Determinants of plasma homocysteine in Japanese healthy young adults

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Background – Risk of atherosclerosis has been suggested to begin in childhood and continue through to adulthood, when several cardiovascular risk factors appear. By postponing development of atherosclerosis, preventative measures taken early in life might thus more effectively decrease or retard the occurrence of clinical cardiovascular disease. Recently, attention has been paid that mildly to severely elevated plasma homocysteine (HCY) levels are positively associated with increased risk of inborn errors, in addition to atherosclerosis (1).

Objective – Evaluate the determinants of HCY concentration in young adults, to initiate preventative measures against such risks early in life.

Design – In 40 healthy Japanese young adults, plasma total HCY and other biochemical markers, such as serum folate, vitamin B12, creatinine and albumin were measured. Height, total body mass and percentage of body fat mass were also measured. Total body potassium (TBK) was calculated by whole body counter. Pearson correlation analysis and multiple regression analysis were performed to identify determinants of plasma total HCY.

Outcomes – Although Pearson correlation analysis showed that total HCY correlated with body mass index, TBK, serum creatinine and folate levels, multiple regression analysis after adjustment for age and sex showed that only serum folate level significantly correlated with plasma total HCY (r = 0.53, P<0.01).

Conclusions – These preliminary results suggest the importance of folate intake from early in life, to reduce future risk of atherosclerosis.


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S9-5

Serum beta carotene, lycopene and alpha tocopherol levels of healthy people in northeastern Thailand

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Background – Human serum contains many different antioxidants which may be important in the maintenance of antioxidant status. Carotenoids intake probably protects against cancers and may affect the risk of several chronic conditions (1). Lycopene and beta carotene are carotenoids with potent antioxidant activity. Alpha tocopherol is well known for its function as antioxidant and in reduction of heart disease and cancer risk (2).

Objective – To study the serum lycopene, beta carotene and alpha tocopherol in healthy northeastern Thai subjects.

Design – Fasting serum beta carotene, lycopene and alpha tocopherol from 348 healthy subjects aged 23-75 years old from 4 provinces in northeastern Thailand (Khon Kaen, Mahasarakham, Loei and Nakhornratchasima) were determined by High performance liquid chromatography (HPLC).

Outcomes – The mean serum beta carotene, lycopene and alpha tocopherol levels were 0.53 ± 0.32 µM, 0.57 ± 0.37 µM, and 26.64 ± 14.84 µM respectively. Serum beta carotene and lycopene levels in females (n = 146) were significantly higher than the value for males (n = 202), ie 0.60 ± 0.31 µM versus 0.48 ± 0.32 µM (P = 0.002) for beta carotene and 0.74 ± 0.38 µM versus 0.46 ± 0.33 µM (P < 0.0001) for lycopene and whereas alpha tocopherol level in males (28.60 ± 14.34 µM) was significantly higher than in females (23.72 ± 15.16 µM) (P = 0.006). Beta carotene and lycopene levels tended to decrease significantly with age (P < 0.05). Beta carotene level was positively correlated with alpha tocopherol (r² = 0.22, P < 0.0001) and lycopene levels (r² = 0.63, P < 0.0001). LDL, cholesterol and triglyceride levels did not exhibit any statistically relevant correlation with beta carotene level.

Conclusions – The results from this study give the baseline data of serum lycopene, beta carotene and alpha tocopherol levels in healthy northeastern Thai population and also suggest future study on the relationship of dietary intake

Nutrition and stroke

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Stroke is one of the leading causes of death and certainly the major cause of disability in the world. WHO has estimated that between 1990 to 2020 the world will witness an increase in stroke mortality of 78% in woman and 106% in man. Much of this increase will be in developing countries which are witnessing rapid change in lifestyle and nutrition. Hypertension, diabetes mellitus, smoking, atrial fibrillation, hyperlipidemia, Homocysteinemia, and alcohol are the most significant modifiable risk factors of stroke. Of these, hypertension, diabetes, smoking, hyerlipidemia, homocysteinemia and alcoholism are obviously affected by lifestyle and nutrition. However, whilst epidemiology studies have noted an association of nutritional practice with stroke risk, further research is needed to show how nutritional interventions can be effective in stroke prevention.
The food industry in the Asia Pacific region is gigantic in size, and is therefore a key element in the economic development prospects for the region. It is estimated that in 2000, for example, total expenditure on food and beverages in China was worth $US 188.5 billion, second only to that in Japan at $322 billion. Yet it is clear that given the expansion of both populations and incomes in the region that this market will expand rapidly over the next few years. Particularly important will be the continued growth of cities and of the share of employment in industrial and service activities. Much of this growth in food purchases will be supplied from local sources, but this will demand some fundamental changes in domestic food production systems. There will also be a substantial growth in the food trade, with ever increasing levels of national and regional specialisation. These developments will put increasing pressures on quality standards at all levels, with a growing emphasis on food safety, integrity, quality, and nutritional and health impacts. This paper will review the current status of the food industry and the food trade in the region, and will present some projections for future developments. Particular emphasis will be given to policy choices that must be made to ensure that the food system in the region develops in ways that are sustainable and most beneficial to the population as a whole.

Food Industry and Economic Development in China

GQ He

The food industry is a group of companies to process, manufacture, distribute, market, and/ or sell foodstuffs for human consumption. The process of the farm products aims to extend the shelf life, to increase the nutritional values and utilized values after the various treatments, such as physical, chemical, biological and microbiological methods, etc. Food industry includes food products, beverages and tobacco industries [1] according to the Global Industry Classification Standard (GICS). Food industry in China is the predominant one, which shows tightly bound up with the human life and health.

After the reform and opening-up in China, food industry has become the first largest industry. Therefore with the guide of the Central plenary meeting and economic working conference on the economic and the 11th five-year Plan, it is potential to develop and promote Chinese food industry.
Tea and human health

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Tea is originated in China. It was adopted as medicinal use as early as in 2780 B.C. in ancient China and sustained a long period of time in Chinese history. Due to the expanding of tea cultivating acreage, tea was transferred from the medicinal use to the beverage use since Tang Dynasty. Tea was used mainly as a beverage since 19th century due to the wider cultivating area in Asia and Africa. However, the investigation in the medicinal function of tea was developed intensely since the discovery of inhibitory activity of tea polyphenols on the cancer cells firstly reported by Dr. H. Fujiki in Japan in 1987. Around more than 300-500 research papers on the tea and human health were published every year in the world. Up to now, many miraculous medicinal functions were proved via the investigations conducted in the world. The following major functions of tea were verified and described in this paper. 1. Antioxidative activity; 2. Free radicals scavenging effect; 3. Blood-cholesterol depressing and blood-blotting preventing effects; 4. Anti-caries activity; 5. Improvement of immunity; 6. Anticarcinogenic activity. According to the results of research conducted in USA, Japan, UK, China and other many countries, a definite positive results on the anticarcinogenic activity were reported in the in vitro experiments, in vivo experiments and clinic experiments, however, some contradictory results were appeared in the epidemiological experiments, especially in the western countries. This difference in the results is may be related to the different drinking habits and the various tea kinds consumed in those western and eastern countries. Although the final definite conclusion of anticarcinogenic function couldn’t be drawn up to now, however, the beneficial functions of tea drinking to human health can be believed and recognized by the people in the world. In recent years, the proposal of “Tea as a national drink” was put forward in China and gained wider and wider popularity and recognition in the China society. Tea is beneficial to human health. Tea drinking could bring you a good health. Hope you to drink more tea in your day life.
W1-1

Clinical Evaluation of Green Tea Extract in Treatment of Pharyngitis in Human Subjects

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Background - Pharyngitis is a common patient complaint in hospitals and reliable treatment is expected. The anti-inflammation effects of green tea extract were found in rat's hind paw edema model.

Objective - The aim of the current study is to investigate the effects of green tea extract on pathogenic bacteria and virus and confirm clinically the effectiveness of green tea extract in the prevention and treatment of pharyngitis.

Design - The antibacterial effects of green tea extract were investigated with continuous tube dilution method and the antiviral effects were evaluated by hemadsorption assay and virus plaque inhibitory test. The clinical evaluation of green tea extract in the treatment of pharyngitis was conducted in human patients for 15 days. 110 adult volunteers with chronic pharyngitis were randomly assigned to either a placebo control group taking balms buccal tablet or treatment group taking green tea extract buccal tablet. Pharyngeal changes were clinically examined and compared using laryngeal signs and symptoms as outcome measures.

Outcomes - Significant bacteriostatic effects of green tea extract were found in all the bacteria tested and inhibitory effects on influenza and Coxsackie virus B4 were observed. The placebo-controlled and double-blinded clinical evaluation with chronic pharyngitis patients confirmed that pharyngeal symptoms and signs were reduced obviously and significant improvement in pharyngodynia, pharynx itching, pharyngoxerosis, pharynx myxedema, mucous coat congestion and lymph follicle overgrowth were observed in green tea extract group (P<0.01) as compared with both the placebo control and the pharyngitis patients beginning this clinical evaluation experiment.

Conclusions - Green tea extract can be used as a reliable and effective functional food in the treatment and prevention of pharyngitis in buccal tablet or no-colloid chewing gum forms.

Key Words: Green tea extract; Clinical evaluation; Pharyngitis; Human subjects

W1-2

Hypolipidemic effect of flavonoids from mulberry leaves in triton WR-1339 induced hyperlipidemic mice

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Background - Mulberry leaves have popularly been used to infuse tea, which considered as a health drink on weight reducing. Moreover, the aqueous extract of mulberry leaves, rich in flavonoids, acts as a scavenger of blood lipid radicals in our prior study on sugar metabolism and antioxidation in diabetic rats. And the lipid lowering activity of the total flavonoids from mulberry leaves (MTF) is urgently required to be confirmed in more experiments.

Objective - To investigate the lipid lowering activity of the total flavonoids from mulberry leaves.

Design - The total flavonoids for experiments have been extracted from mulberry (Morus alba L.) leaves and purified by macroporous resins. The ICR mice were acclimatized for one week and then randomly divided into six groups. Twelve hours following the triton WR-1339 (400 mg kg-1) injecting, MTF groups were administered MTF at doses of 7.5, 15 or 30 mg kg-1 respectively, orally by gastric intubation. Simultaneously, the positive control group was intragastric administered ginkgetin (15 mg kg-1), the normal control group and model group were given NS with the same volume. The blood samples were collected at 12, 18 and 24 h after triton WR-1339 injecting, and the serum lipid levels were assayed.

Outcomes - The hypolipidemic effect of MTF on serum lipid levels was more significant at 12h post MTF administration than at 6h. The levels of TG, TC and LDL-C were remarkably reduced to 388.0, 256.6 and 189.2 mg 100 ml-1 in MTF (30 mg kg-1) treatment mice, compared with 540.1, 463.7 and 298.8 mg 100 ml-1 in only triton WR-1339 treatment group. The ratios HDL-C/TC and HDL-C/LDL-C were increased to 0.42 and 0.57 post MTF (30 mg kg-1) administration, whereas these two ratios presented low levels of 0.33 and 0.52 in model group. The results indicate the serum lipid lowering activity of MTF.

Conclusions - The present study indicated the lipid lowering activity of dietary flavonoids from mulberry leaves, and the beneficial effects were dose dependent and time dependent.
W1-3
Enhancing oxidative stability of rice snack with ethanolic extract from *Cratoxylum formosum* Dyer

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**Background** – *Cratoxylum formosum* Dyer, which is commonly known in Thailand as Teaw, is consumed throughout the year as food and medicine. Teaw contains large amount of chlorogenic acid (5-CQA) and quinic acid derivatives.

**Objective** – This study was aimed at investigating the potential use of the ethanolic extract of Teaw leaf to provide a new source of natural antioxidant for use in rice snack.

**Design** – The free radical scavenging activity of the ethanolic extract and its components were determined and compared with α-tocopherol and butylated hydroxytoluene (BHT) using the DPPH and ABTS methods. The antioxidant activity of the extract was studied in rice snack without any seasoning. They were stored in accelerated oxidation conditions at 40°C, 80%RH in the dark for 18 days. The oxidative state of each sample was monitored by analysis of the peroxide value (PV) and thiobarbituric acid reactive substances (TBARS) as well as odor analysis by quantitative descriptive analysis (QDA). The acute toxicity of plant leaf extracts was investigated in mice.

**Outcomes** – The Teaw extract scavenged both free radicals more strongly than α-tocopherol and BHT, and the activity of the extract was consistent with the concentration of chlorogenic acid that was present, confirming that this component is a major contributor to the antioxidant activity. Teaw extract was more effective than α-tocopherol due to metal present in the snack, which made α-tocopherol less effective as an antioxidant. Sensory odor attributes of rice snack were related more closely to TBARS than to PV values by linear regression analysis. The acute toxicity of the Teaw leaf extract was investigated in mice, and it was found that the LD50 of the extract is >32 g/kg.

**Conclusions** – The present study indicated that *C. formosum* extract is nontoxic and a promising source of a natural food antioxidant and was effective in inhibiting lipid oxidation in rice snack.

W1-4
The micro-CT analysis of vacuum freeze-drying process of strawberry

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**Background** – Freeze-drying has become one of the most important processes for the preservation of biotechnological products. Also, more and more freeze-dried foods are appearing in the market. The freeze-dried strawberry could maintain the maximal intrinsic flavor and is popular to people. But it consumes much time and energy. So it is necessary to study how to reduce the energy consumption and how to keep the nutrition well.

**Objective** – Study a new equipment and a novel technique—micro-CT(computer tomography) analysis of the freeze-dried foods.

**Design** – Different freeze-drying technics are used in the vacuum freeze-dried of various form strawberries. The strawberries are scanned with micro-CT scanner after freeze-drying. The cross-section and the section images are obtained, the pore distributions in all kinds of situations are analysed. In all kinds of situations the dehydration ratios in the freeze-drying are calculated and the variations of the sublimation velocity are discussed both by mass measuring. The contents of ascorbic acid are determined before and after freeze-drying using the dimthylbenzene—two,six-dichlor indophenol’s colorimetry method and the rehydration ratios after freeze-drying are also determined. These parameters and the inner structures can be analyzed comparatively.

**Outcomes** – The porosities of different freeze-dried strawberries are also quite different. The thin slices can keep more ascorbic acid than the thick ones. Also there are remarkable differences on dehydration ratios, sublimation velocities and rehydration ratios.

**Conclusions** – This study provide an overall recognition and the data clarify the mechanism of the move of water in the freeze-drying in the direction of heat transfer and mass transfer. The freeze-dried strawberries’ special flavor, good tasty and rich nutrition make investigators study much more. So the micro-CT is a useful tool for studying the inner structure of porous freeze-dried foods.
W1-5

Effect of Solanine on the ratio of RNA and DNA in the Tumor Cells of Tumor-bearing Mice

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Background - Solanine is found mainly in the tuber of the potato (Solanum tuberosum L.) and in the whole plant of the nightshade (Solanum nigrum Linn.) of the family Solanaceae. The content of this substance is rather high in the green peel and the sprouts of potato and is the main toxic substance. The whole plant of the nightshade contains many steroid alkaloids, including solamargine, solasonine, and solanine, as well as sponin and other substances. It can be used for anti-tumor purposes, with a strong inhibitory effect on tumors in animals and a clearly toxic effect on tumor cells.

Objective - To observe the effect of solanine on the ratio of RNA and DNA in tumor cells of S180 and H22 mice.

Design - S180 and H22 mice were divided into solanine (37.50, 18.75, and 9.37 mg/kg) groups, negative control group, and Cytoxan (30 mg/kg) group, each of which was given drug through sc. Ratio of RNA and DNA in tumor cells in each group were measured using a laser scanning confocal microscope.

Outcomes - In the 37.50 and 18.75 mg/kg solanine groups, value of RNA/DNA in the tumor cell of both S180 and H22 mice was significantly lowered.

Conclusions - Solanine can lower the value of RNA/DNA in the tumor cells of S180 and H22 mice, which may be one of the mechanisms for the antitumor effect of solanine.

W1-6

Isolation and antihypertensive effect of exopolysaccharides from Lactobacillus casei LC2W

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Background - The exopolysaccharides (EPS) produced by the food-grade lactic acid bacteria (LAB) have been extensively studied during the last few years. They have been reported to have beneficial physiological activities such as antitumour activity and improving immunity.

Objective – To isolate and purify EPS produced by Lactobacillus casei LC2W and study the antihypertensive effect of the main fraction of EPS.

Design – Crude EPS were prepared from cell-free whey of skim milk fermented by Lactobacillus casei LC2W by eliminating proteins with trichloroacetic acid and precipitated with cold ethanol, and were further separated by anion exchange and gel chromatography. The main fraction of EPS was determined for the purity by high-performance size-exclusion chromatography (HPSEC) and capillary electrophoresis (CE) and for the effect on blood pressure of spontaneously hypertensive rats (SHR) and normal Wistar rats (NR). SHR and NR were randomized respectively into two groups, test groups and control groups. SHR groups were continuously fed respectively with the sample and maltodextrin at the dose of 15 mg/kg once a day for seven days and NR groups were singly fed. The blood pressure and heart rate were measured after oral administration.

Outcomes – Three fractions (LCP1, LCP2 and LCP3) were obtained by anion exchange and gel chromatography. The main fraction LCP1of EPS, with a molecular weight of 3.27×10^6 Da, was testified to be a single component using HPSEC and CE. LCP1 showed significant lowering blood pressure effect (P<0.01) and no effect on heart rate of SHR, while it showed no effect on the blood pressure and heart rate of NR.

Conclusions – The main fraction LCP1 of EPS from Lactobacillus casei LC2W has significant antihypertensive effect on rats.
W1-7  
Effect of *Trigonella foenum graecum* extract on blood glucose, lipid and hemorheology in diabetic rats  
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**Background** – *Trigonella foenum graecum* is a well-known herb in traditional Chinese medicine. It is commonly used as a hypoglycemic agent in food preparation in several Asian and African countries.  

**Objective** – To further evaluate the effects of *T. foenum graecum* extractions (TE) on blood glucose, blood lipid and hemorheology of diabetic rats.  

**Design** – Streptozotocin-diabetic rats were treated separately with low dose (435mg/kg · d), middle dose (870mg/kg · d), high dose (1740mg/kg · d) of TE, and Metformin HCl (MF) (0.175g/kg · d) by stomach perfusion for 6 weeks. At the end of the experimental period, level of fasting glucose, glycosylated hemoglobin (GHb), serum total cholesterol (TC), triglyceride (TG) and, high density lipoprotein-cholesterol (HDL-C) and hemorheological parameters were measured.  

**Outcomes** – Compared with diabetic control group, rats treated with high, middle and low dose of TE had lower glucose, GHb, TC, TG and higher HDL-C in a dose-dependent manner (P<0.05). High and middle dose of TE obviously reduced the plasma viscosity, whole blood viscosity of high shear rate (200s⁻¹) and low shear rate (40 s⁻¹), whole blood reduction viscosity (P<0.05) and inhibited platelet conglutination of diabetic rats(P<0.05). However, low dose of TE was not found to be effective in correcting these alterations.  

**Conclusion** – The present study indicated that TE could lower blood glucose, blood lipids levels and improve properties of hemorheology in diabetic rats.  

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W1-8  
Protective Effects of *Momordica Charantial L.* Extract on HIT-T15 Cells Acts As An Antioxidant  
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**Background** – Fruits of *Momordica Charantial L.* were frequently used in China and southeast Asia as antidiabetic herbal medicines. *Momordica Charantial L.* extract (MCE) have been shown to have potent antidiabetic effects clinically. Neither the effective ingredients nor the mechanism of MCE’s cell protective effects have been understood.  

**Objective** – To determinate the superoxide dismutase (SOD) activity of MCE and its cell protective effects on HIT-T15 Hamster Pancreatic beta cells.  

**Design** – In this study, the MCE was prepared by water extraction of the pulp of sun-dried young fruits of *Mormordical Charantia L.*, vacuum concentration at 70°C. The SOD activity of MCE was determined by xanthine oxidase assay. The proliferation rates of HIT-T15 cells with or without MCE treatment were determined by MTT assay as a major parameter of MCE’s cell protective activity. Insulin concentration in the cells’ cultivation supernate was measured by radioimmuno assay(RIA).  

**Outcomes** – MCE’ SOD activity was 19.84 Nu/mL. The treatment of MCE(0.02%, w/v) after alloxan damage achieved the highest proliferation rate of 45.6%(P<0.01) on alloxan damaged HIT-T15 cells, while 0.2%MCE achieved proliferation rate of 35.4%(P<0.05) on normal cells. 0.2%MCE increased insulin secretion by 12.0% and 29.4% respectively in alloxan damaged cells and normal cells, which are higher than those of 0.02%MCE. The high molecular weight dialyzed fraction(MW>3000 Dalton) had higher proliferation rate(32.1%, P<0.05) on alloxan damaged cells than The low molecular weight dialyzed fraction(MW≤3000 Dalton) of MCE, while the later one obtained the higher increasing rate(25.5%) on insulin secretion than the former one.  

**Conclusions** – MCE has significant protective effects on HIT-T15 cell against superoxide anion radicals. And the results also indicate the different fractions of MCE may make different contributions to MCE’s cell protection activity and its ability of stimulating insulin secretion.
W1-9

Protective effect of *Portulaca oleracea* extracts on hypoxic nerve tissue and its mechanism

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**Background** - Our previous studies showed one of the extracts from *Portulaca oleracea* (*PO*) had hypoxic protective effect. Brain is usually the most sensitive tissue in organic body to hypoxia, which, if prolonged, can cause danger to health, and sometimes even death. Thus, we suppose that the extracts of *PO* have the protective effect on the hypoxic nerve tissue/cells.

**Objective** - To investigate the hypoxic neuroprotective effect of *PO* extracts and its mechanism.

**Design** – The male BALB/c mice were used for experiments. The cerebrum of mice was used for histological analysis by HE, the degrees of PK, PFK, LD, LDH and ATP were detected, and the mRNA and protein levels of EPO in the cortices were analyzed. PC-12 cells and primarily cultured nerve cells were used for MTT assay. The degree of LDH in cell culture medium was checked to confer the results.

**Outcomes** – The extracts could enhance EPO mRNA and protein expression in the cortices of hypoxic mice. Compared to the control group, mice treated with the extracts 1 mg/d, had the significantly high levels of PF, PFK, ATP and LDH in the cortices, especially under hypoxic environment for 24 hours. Histological analysis indicated that the extracts could lessen the damage of the brain. MTT assay results showed the extracts or herb-containing serum could raise the viability of the cells under the tested hypoxic conditions and decrease the degree of LDH in culture medium in a dose-dependent manner.

**Conclusions** – In present study, we demonstrated the *Portulaca oleracea* extracts had the hypoxic neuroprotective effects.
W2-1  
Evaluation of the nutrition and function of Bacillus Natto fermented soy meal for feed  
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**Background** – Bacillus natto fermented soy bean (Natto) was reported to have the function to enhance the growth of weaning piglets, However, there has been no data on the nutrition and function of Bacillus natto fermented soy meal for feed.

**Objective** – To evaluate the nutritional and functional properties of the Bacillus natto fermented soy meal for feed application.

**Design** – Soy meal instead of soybean was used to prepare the Bacillus natto product considering the relative low-cost of it by fermentation at 37 ℃, 16 hours, 65% water content of the medium, radiation-sterilized powdered corn at a ratio of 2:1 (wet weight of fermented soy meal: corn powder) was mixed into the fermented soy meal before dried in oven below 60 ℃. The protein, the trichloroacetic-acid soluble peptides, the dipicolic acid and the Vitamin B2 of the final preparation were analyzed, and animal experiments were carried out with weaning piglets of 30 days.

**Outcomes** – The count of Bacillus natto in the final dried preparation was 7.5*10^8 cfu/g. The protein content of the soy meal decreased a little from 49.65% to 45.43% (dried base) after fermentation, and some of the protein was hydrolyzed to low molecular weight components which made the trichloroacetic-acid soluble peptides increased from 0.63% to 2.68% (dried base). The dipicolic acid in the preparation which was considered responsible for the anti-microbial activity against some pathogens was 2.09mg/g, and the Vitamin B2 was 0.20mg/100g, that were respectively 9.5 and 9.0 times of that of corresponding unfermented mixture. The piglet feeding results showed that the fermented soy meal preparation could decrease the intestinal E.coli count and increase the lactobacillus and bifidobacteria counts significantly (P < 0.01), and the growth performance of piglets was significantly improved (P < 0.05).

**Conclusions** – The present study suggested that the Bacillus natto fermented soy meal preparation was nutritious and rich of functional components, and it could be used as the feed additive to enhance the growth and to improve the intestinal microflora population of the weaning piglets.

W2-2  
Nutrition evaluation of jade perch and extraction as well as refinement of fish oil derived from its viscera  
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**Background** – Large oil agglomerate exists in the viscera of jade perch (Scortum barcoo), in which the amount of lipid was up to 87.06%. By analyzed, the amount of unsaturated fatty acids (UFA) in total fatty acids was 56.82%, while eicosapentaenoic acid (EPA) and docosahexaenoic acid (DHA) in poly-unsaturated fatty acids (PUFA) was 4.18% and 16.16% respectively. However, fish oil in jade perch’s viscera has not been utilized comprehensively.

**Objective** – To evaluate the nutrition of jade perch, to investigate the technical conditions of extracting and refining fish oil derived from its viscera as well as the anti-oxidative stability of fish oil.

**Design** – Chemical components, the composition of fatty acids and amino acids in muscle and viscera of jade perch were analyzed. By the method of water-bath with the index of extraction ratio of fish oil, the factors of temperature and time of extracting fish oil were optimized. Then, the crude oil was refined by adding alkaline liquor in order to neutralize free fatty acids. The influence of the turn of adding alkali when extracting oil or after extraction on acid value (AV) was compared. In addition, effects of four antioxidants, t-butyl hydroquinone (TBHQ), ascorbyl palmitate (AP), tea-polyphenol (TP), α-vaatamine E (α-VE) on the stability of fish oil were also studied by Schaal Oven test.

**Outcomes** – Both water and ash contents in muscle of jade perch were rather low, amino acid score was 116. Water-bath was used as the extracting method of fish oil derived from viscera: under the conditions of 85 ℃ and 40min, 74.6% extracting yield of fish oil was obtained. The method of refinement was 5% caustic sodium added after extraction, the amount being 1.75% of viscera. The oil of jade perch achieved was up to the first-grade of refined fish oil. TBHQ was the most effective antioxidant in fish oil with the optimal amount of 150mg/kg.

**Conclusions** – Jade perch has abundant UFA, particular DHA in fish oil, which has high value of application in human’s health and medicine development. And it can be further processed in soft capsule and powder of fish oil.
W2-3

The nutritional assessment of elderly inpatients during perioperative period
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Background – Malnutrition is known to be prevalent and largely unrecognised in hospitalized elderly patients. Malnutrition contributes to increased mortality and also enhances the risk of different complications. It is a need for a simple and robust screening tool. Having a screening tool as fast and simple as possible could increase its use in clinical nutrition.

Objective – The aim of this study was to evaluate the Mini Nutrition Assessment (MNA) and the Nutritional Risk Screening (NRS) 2002 and traditional Nutritional assessment methods and to provide reliable data for nutritional support during perioperation period.

Design – A cross sectional survey was done among a sample of 260 elderly patients who were admitted to the Binzhou medical college affiliated Hospital during a period of 12 months, nutritional assessment was determined in 260 elderly patients with three kinds of nutritional assessment methods.

Outcomes – 1. Average score of the MNA was 19.50 ± 5.01 and 14.90 ± 4.49 preoperative and postoperative 7 days respectively, according to this scale, 40.3% and 72% of the patients were malnourished. The incidence of malnutrition in male and female was 23.8% and 29% respectively preoperation. 2. Average score of the NRS2002 was 2.10 ± 1.45 and 3.80 ± 1.30 preoperative and postoperative 7 days respectively, according to this scale, 35.5% and 77.5% of the patients were malnourished preoperative and postoperative 7 days respectively. The incidence of malnutrition during preoperative period in male and female was 18.4% and 17.1% respectively. 3. 41.8% and 92.2% of the patients were malnourished according to traditional Nutritional assessment preoperative and postoperative 7 days. The incidence of malnutrition peroperative period in male and female was 25.6% and 16.2%.

Conclusions – MNA was useful as a screening and assessment tool to exclude patients who were not malnourished. NRS2002 was useful as a screening tool for all adult patients, but it has a low sensitivity and a high specificity. It can do as a screening tool for inpatients. Traditional assessment method could evaluate nutritional status of preoperative elderly patients. But it was not suggested as a assessment method for the postoperative patients.

W2-4

Study on Developing College-based Nutritional Education through Peer-education Approach
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Background – College students are a special group, whose good nutrition status is the basis of their health. However, up to now, many problems of nutrition exist among college students, which will impose a negative impact on the development and study of the college students.

Objective – To investigate feasibility and effectiveness of college-based nutritional education through peer-education approach.

Design – A cluster sample was drawn in 18 classes of freshmen in two colleges in Chongqing, and freshmen were divided into intervention group (amount to 289 students) and control group (amount to 344 students). Peer education was conducted among intervention group for one month by the peer-educators selected from students in Chongqing University of Medical Sciences and experimental college, meanwhile, the evaluation process was conducted. The progression of K-A-B in target population was evaluated immediately after the intervention, 4 months later, and 6 months later.

Outcomes – The results of intervention group were prominent. The scores of nutrition knowledge, attitude and behavior of intervention group immediately after intervention, were higher than that of control group (P<0.001, P<0.05, P<0.05), and especially the score of nutrition knowledge was 0.78 higher. The scores of nutrition knowledge and attitude of intervention group 4 months after intervention were higher than that of control group (P<0.001, but the score of nutrition behavior wasn’t (P>0.05) The scores of nutrition knowledge and nutrition behavior of intervention group 6 months after intervention were obviously higher than that of control group (P<0.001, P<0.01), but the score of attitude wasn’t (P>0.05).

Conclusion – The study indicated that it was feasible and effective of college-based nutritional education through peer-education approach, so it should be further applied.
Nutritional evaluation of different bacterial douchi

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Background - Douchi, a traditional Chinese soybean product fermented by either bacteria or mould, has been used as a medicinal food and seasoning for millennia in China. However, there is no data on nutritional evaluation of bacterial douchi.

Objective - To determine the content and/or composition of lipids, fatty acids, protein, the profile of peptides, amino acid nitrogen and trichloroacetic acid soluble protein in different bacterial douchi.

Designs - Eight bacterial (BBDC1, BBDC2, BBDC3, BBDC4, BBDC5, BBDC6, BBDC3 + BBDC4, BBDC1 + BBDC3) douchi were obtained by standard fermentation method. Content and composition of Lipid, fatty acids were analyzed by standard methods. Total protein and trichloroacetic acid soluble protein were analyzed by micro-Kjeldahl method and amino acid nitrogen was analyzed by potentiometric titration. Peptides were analyzed by high performance liquid chromatography with a gel permeation chromatography column.

Outcomes - Protein and lipid content in douchi were ranged from 39.59% to 42.69% and from 20.67% to 23.45%, respectively, similar to control (41.35%, 19.69%). The percentage of phospholipids in lipid of douchi fermented by BBDC4 (15.46%) and BBDC5 (16.39%) were significantly higher than control (10.27%, P<0.01). Predominant fatty acids in douchi were same as those in control, including palmitic (10.62%-11.31%), oleic (20.50%-21.91%), linoleic (54.21%-55.61%) and α-linolenic acid (8.16%-9.09%). Unsaturated fatty acids and essential fatty acids in douchi amounted to more than 84% and 62%, respectively. The ratio of n-6 polyunsaturated fatty acids (PUFAs) to n-3 PUFAs in douchi was ranged from 6.10 to 6.66, similar to control (6.40). Amino acid nitrogen and trichloroacetic acid soluble protein in douchi except that fermented by BBDC6 were ranged from 1.34% to 1.83% and from 2.17% to 4.00%, respectively, much higher than control (0.19%, 1.26%). Peptides in douchi were mainly composed of those whose molecular weight was between 100 and 1000, accounted for more than 58 percent.

Conclusions - Bacterial douchi was abundant in protein and lipid. There were much more free amino acids and peptides in bacterial douchi than in control. Bacterial douchi was also a good source of unsaturated fatty acids, essential fatty acids and low molecular weight peptides.

Expert system prototype of food aid distribution

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Background – Numerous investigative reports have cited the problem of inefficient food aid distribution by various international disaster relief organizations. This problem deprives disaster victims of life-giving support, while discouraging potential sources of aid. Lack of organizational monitoring and evaluation process has been a cause of inefficiencies in these agencies. Investigations have revealed the need for a state-of-the-art monitoring and logistics system.

Objective – An overall objective of this study was to develop artificial intelligence based prototype expert system for monitoring and evaluating food aid by international disaster relief organizations, to improve the efficiency of their food aid distribution process.

Design – Existing data related to monitoring and evaluation program cycles were obtained. An expert system shell called CLIPS© (National Aeronautics Space Administration) was used to develop a prototype system named Food Aid Monitor, a rule-based expert system, which uses facts and heuristic rules to provide adaptive feedback regarding monitoring and evaluating processes at various stages of food aid operation.

Outcomes – Data were gathered and structured according to required CLIPS syntax for developing a knowledge base and writing source code; the Food Aid Monitor was verified and validated by three expert panels checking the prototype system for completeness, relevancy, consistency, correctness, precision, and usability.

Conclusions – The present study reveals the need for an effective method of monitoring food aid by using artificial intelligence technology to build and validate a prototype expert system to improve disaster food aid monitoring and evaluation processes of international disaster relief organizations.
W2-7

Development of Coping Strategy Index (CSI) to Measure Household Food Insecurity

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Background – Valid and reliable indicators for measuring the prevalence and severity of food insecurity are important to gauge progress on reducing incidence of food insecurity. There are indirect and direct indicators to measure food insecurity, however, direct measure of food insecurity is not readily available in Malaysia.

Objective – This paper will report on the development of Coping Strategy Index (CSI) items to measure household food insecurity in Malaysia.

Design – In the first phase, in-depth interviews were conducted with 57 women of childbearing age from selected rural and urban areas regarding their experiences with coping strategy responses to food insecurity. Audiotapes were transcribed verbatim and transcripts were read to identify emerging themes. Factor analysis and internal consistency were run to identify the categories of food and non-food related coping strategies and their related items. In the second phase, further validity and reliability testing of the coping strategy items will be carried out on 100 households.

Outcomes – Based on the in-depth interviews, the food related coping strategies fall into four basic categories – consume less expensive and less preferred foods; increase household food supplies through procurement of wild foods and purchase of foods on credit; decrease the number of people in the households e.g. send the children to family members’ or neighbors’ homes; ration food intake in a day. The non-food related coping strategies fall into six basic categories - adjust the pattern of purchasing clothes, adjust school allowance for children, postpone bill payment, adjust life style, adopt longer-term alteration in income earning and adopt longer-term one-off responses such as assets sales. Based on factor analysis, three-factor solutions with 13 food-related and 21 non-food related coping strategies items were identified. The three factors of food related coping strategies include quality of food, quantity of food and social alteration related to food. The three factors of non-food related coping strategies include adjustment in household lifestyle, children expenses and household expenses. All the factors were found to be reliable indicators for measuring household food insecurity. The frequency and severity of these coping strategies will then be combined into a single score of Coping Strategy Index (CSI) that will be further tested in the second phase of the research.

Conclusions – It is hoped that the developed Coping Strategy Index (CSI) can be utilized as a direct indicator to measure household food insecurity in the Malaysian population.

W2-8

Vitality resonance technique for the application in nutrition

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Background – Vitality resonance conditions can fire up and coordinate the “biology field” of the human body, which includes the “Qi-field” and the “information field”, with levorotational (left spin) resonance, and then reinforce the communication between the “human body field” and the “heaven-earth-nature field”, which is the interaction between the “nature information field” and the “human body field of the material world”, and thereby gain more natural life energy.

Objective – Through energizing or vitalizing process, the spectra of materials including water, food etc. can be restored to their natural states. Vitality resonance can lead to following effects on an organic body: (1) Balance the bio-electromagnetic field between cell quantum state through quantum resonance induced live rhythm wave transmission. (2) Beneficial to DNA’s normal structure of the protein design instruction; change abnormal protein structure inside cells. (3) Enhance the vitality of human cell and enzyme; restore the function s of human’s self-healing system. (4) The normal operation of human’s metabolism can prevent disease and slow-down aging. (5) Strong resonance wave, can not only excite water molecules in cells, but also adjusts the disordering cell movements so that it can recover to their original orderly states.

Design – Through scientific equipment testing diet supplements to evaluate their effect on the functionality in a human body. Techniques includes: QRS Quantum Resonance Equipment from US, Life Field Test from Japan, Auracom from Korea, 3D Sonar Scan Diagnostic equipment from Russian and Meridian Energy Analysis Device from Japan.

Outcomes – The medical values of quantum resonance dietary supplements ophthalmofundus capillary hyperplasia, the MRI report showed “Coronary Artery Blockage” and Behcet’s syndrome.

Conclusions – Vitality resonance technique can be used in the fields such as human health maintenance, plant cultivation, animal husbandry, food preservation and dissolution and cleansing.
W2-9
Dietary fat effect on lipid raft composition and insulin signaling
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Background – Caveolae are specialized cell membrane rafts rich in the structural protein caveolin-1 that regulate the clustering of signaling proteins such as insulin receptor. Disruption of caveolae lipid composition has been shown in vitro to displace proteins from lipid microdomains, thereby altering their functionality and subsequent downstream signaling. Some studies have shown that the loss of caveolin-1 leads to marked alterations in insulin signaling in adipose tissue. However, little is known regarding the role of caveolin-1 in liver tissue where insulin also plays an important function.

Objective – Our study investigated the effect of various dietary fats on membrane lipid composition, lipid rafts/caveolae and insulin signaling.

Design – Both in vivo and in vitro models were used. Because lipid rafts are rich in cholesterol, we chose to investigate the effect of a high cholesterol diet fed to rats on membrane caveolin-1, the predominate coat protein of caveolae.

Outcomes – Preliminary results showed that a high cholesterol diet increased caveolin-1 and caveolin-2 protein levels in liver tissue. Insulin receptor β (IR- β) number was not affected by the high cholesterol diet, whereas IR tyrosine phosphorylation in response to insulin treatment was increased. Furthermore, the high cholesterol diet disrupted the interaction between insulin receptor and IRS-1. Consequently, hepatic insulin-induced IRS-1 tyrosine phosphorylation was depressed in hypercholesterolemic rats despite the increase in IRS-1 basal levels. An in vitro model was used to evaluate the influence of different fatty acids on caveolin expression in isolated primary rat hepatocytes. Hepatocytes incubated for 48 h with 800 μM oleic acid demonstrated increased caveolin-1 and caveolin-2 protein levels compared to controls while 800μM palmitic acid reduced caveolin-2 levels with no change in caveolin-1 protein expression.

Conclusions – This data supports the hypothesis that the lipid composition of plasma membranes alters the distribution of caveolae structures and can modulate insulin signaling.

W2-10
Diet quality and nutritional status of rural adolescent girl beneficiaries of ICDS in north India
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Background - Optimal nutrition for girls during adolescence can go a long way in breaking the intergenerational cycle of malnutrition. However, in India the diets of these girls are reported to be inadequate (1). Kishori Shakti Yojna of Integrated Child Development Services (ICDS) is a programme targeted towards the nutrition/health needs of these girls.

Objective - To assess the diet quality and nutritional status of adolescent girl beneficiaries of Kishori Shakti Yojna

Design - 209 girls (aged 11-21 years) from six rural blocks - Delhi (Alipur, Kanghawala and Mehrauli), Haryana (Madhosinghana), Rajasthan (Deeg) and Uttar Pradesh (Fatehpur Sikri) comprised the sample. Weight and height were measured and dietary intake data were gathered by one day 24 Hour Recall coupled with Food Frequency approach.

Outcomes - Incidence of thinness (‘BMI for age’ <5th centile) and stunting (‘height for age’ <3rd percentile) was 30.6% and 29.7%. The subjects followed a two-meal pattern and their diets were monotonous and cereal-based. Further, 49.3% of them were found to have energy intake less than 75% of RDA while a substantial proportion of them had inadequate nutrient intake (NAR <0.66) with respect to most of the micronutrients especially iron (84.7%), folic acid (79.4%) and vitamin A (73.2%). The mean daily intake of cereals (250 g) and sugar (20 g) met more than 90% of the recommended allowances; that of milk and milk products (234 g), fats and oils (16 g) and roots/tubers (72 g) met nearly half to three-fourth of the RDA; but the intake of pulses (22 g), green leafy vegetables (26 g) and other vegetables (34 g) was only one-third to one-fourth of the recommended allowances while the fruit intake (3g) was almost negligible.

Conclusions - The present study reveals a high incidence of under-nutrition as well as a deficit in energy and micronutrient intake among the adolescent girl beneficiaries of Kishori Shakti Yojna (an intervention by the Government of India). Therefore, sustained efforts are needed to strengthen the scheme for improving its field-level implementation.

W3-1

Nutrition risk screening in China’s large metropolitan hospitals: a multi-centers surveillance of more than 14,000 patients by the NRS- 2002 method


Background – Kondrup et al demonstrated that randomized controlled clinical trials showed patients obtained benefit from clinical nutrition support when they with nutrition risk. This new method was announced by ESPEN 2002 Congress & it is the first tool including with previous randomized clinical trials results.

Objective – Aim of this study is to survey the prevalence of malnutrition & nutrition risk in hospital patients by NRS 2002 tool as well as to find out the appropriate clinical nutrition support status in current China’s large hospital.

Design – There were more than 14,000 patients at China’s 15 large hospitals of 13 metropolitans join this Protocol. All patients were enrolled as consecutive sampling when age 18-80.

The NRS scores 3 or high are considered as nutrition risk existence. Based on documented data of Chinese investigation so far, we adopted BMI less than 18.5 as “solid” criteria of malnutrition in Chinese. Because there was no normal value of mid-arm circum of Chinese people, we adapted serum albumin less than 30g/l as “soft” criteria of malnutrition (undernutrition, Clinical Nutrition, 2006) for patients when BMI data were unavailable (as severe edema, can not stand, etc).

Outcomes – The results on the table 1. NRS tool can be used on more than 90 % Chinese large hospitalized patients. Average nutrition risk and malnutrition prevalence were 33.9% and 12.6%. There were 22.9% patients have been given nutrition supports.

Conclusions – NRS tool is applicable in most Chinese large hospitalized patients. Present data already showed that malnutrition rate in surgery was much lower than other departments in China. The appropriate clinical nutrition support should be based on NRS 2002 assessment in future nutrition support practice.

Prevalence of Malnutrition, nutrition risk and the nutrition support rate of patients

<table>
<thead>
<tr>
<th>Malnutrition (%)</th>
<th>Nutrition Risk(%)</th>
<th>With clinical Nutrition support(%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>General Surgery</td>
<td>11.3</td>
<td>33.9</td>
</tr>
<tr>
<td>Chest Surgery</td>
<td>15.0</td>
<td>36.4</td>
</tr>
<tr>
<td>Respiratory</td>
<td>13.6</td>
<td>34.7</td>
</tr>
<tr>
<td>G-I</td>
<td>15.8</td>
<td>38.4</td>
</tr>
<tr>
<td>Renal</td>
<td>10.3</td>
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</tr>
<tr>
<td>Neurology</td>
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<td>34.7</td>
</tr>
<tr>
<td>Average</td>
<td>12.6</td>
<td>33.9</td>
</tr>
</tbody>
</table>

W3-2

Effect of enteral ecoimmuno nutrient on postoperative patients with gastrointestinal malignant tumor : nutrition status , inflammatory response ,change of prognosis

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Background – The bacteria in gastrointestinal was the source of in-infection. Gastrointestinal is the target organ when occur MODS, preventing the bacteria translocation and protecting the function of gastrointestinal mucosa barrier has been a heat-pot in the study of prevention and cure the postoperative complications.

Objective – To study the effect of perioperatively administrated enteral ecoimmuno nutrient in gastrointestinal malignant tumor on nutritional status, immune and inflammatory response, postoperative morbidity and prognosis.

Design – 62 patients with gastrointestinal malignant tumor were divided randomly into ecoimmuno nutrition group (study group) and regular enteral nutrition group (contrast group). From postoperative day 2 to 8 Enteral feeding was initiated 24 hours after surgery. Host immunity and inflammatory response were evaluated before operation and postoperative day1, 5, 9.

Outcomes – After a week of nutritional support, in the ecoimmuno nutrition group, transferring level, albumin level, IgG level, IgA level were significantly higher than those in contrast group,IL-6 level, CRP level and the incidence of postoperative complications were significantly lower than those in contrast group and shorter days of hospital stay compared with standard group.

Conclusions – The perioperatively administrated of enteral ecoimmuno nutrient in patients with gastrointestinal malignant tumor can improve nutritional status, preservation intestinal mucosa barrier, prevent bacteria translocate and can significantly modulate the postoperative the immunosuppressive and inflammatory responses at the early postoperative day, can significantly decrease the occurrence of infectious and overall postoperative complications as well as the length of hospital stay.
W3-3
Pre- and postoperative enteral supply of a synbiotic composition reduces the incidence of postoperative infectious complications in abdominal cancer surgery.

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Background — Abdominal cancer patients are susceptible to postoperative infections. Bacteria of gastrointestinal origin are a major source of post-op intraabdominal bacterial infections. Efforts to reduce the infection rate by aggressive antibiotic policies have generally failed. Recently, significant reduction in postoperative infection rates have been obtained by supplementing a combination of pre and probiotics (synbiotics) to patients with severe acute pancreatitis, to patients undergoing extensive abdominal operations, and liver transplantation.

Objective — The present study is undertaken to investigate if synbiotic preparations can reduce the infection rates in patients undergoing abdominal cancer surgery.

Design — A prospective randomized double-blind trial was undertaken in 45 patients divided into 3 groups all undergoing similar major intraabdominal cancer procedures. One group received enteral nutrition with supply of a novel synbiotic composition (containing live probiotics and bioactive fiber)(LEN) for 2 days preoperatively then for 7 days postoperatively. One group received only the bioactive prebiotic (four fiber combination)(FEN), and a third group received standard parenteral nutrition (PN).

Outcomes — The incidence of postoperative bacterial infections was significantly reduced; being 47% with PN, 20% with FEN and 6.7% with LEN. Laboratory studies were performed preoperatively and on post op day 3 and 6. Significant improvements were observed in prealbumin (LEN, FEN), C-reactive protein (LEN,FEN), white cell blood count (LEN), serum endotoxin (LEN, FEN) and IgA(LEN). The first defecation occurred significantly earlier in the LEN group compared both to the FEN and PN groups. The supplemented fiber and LAB were well tolerated and no side effects observed.

Conclusions — Pre- and postoperative enteral nutrition containing synbiotics is an effective tool to control postoperative infections in abdominal cancer surgery patients.

W3-4
Effects of enteral nutrition and astragalus on expression of TGF-β1 and IL-10 mRNA of the liver in growing rats with obstructive jaundice

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Background — Obstructive jaundice (OJ) may results in hepatic damage. It is known that transforming growth factor-betal (TGF-β1) may contribute to liver damage by adjusting some gene expression.

Objective — To evaluate the effects of enteral nutrition combined with astragalus on liver impairment in immature rats with OJ.

Design — Fifty growing male Wistar rats were randomly divided into five groups: control (I), sham operation (II), OJ(III), OJ+enteral nutrition (IV), OJ+astragalus(V). In group V, 250mg/kg.day astragalus injection was applied intraperitoneally daily from day 1 to 7 of the study. In other four groups, 0.5ml normal saline were given intraperitoneally daily. All animals were sacrificed on postoperative day 8. Liver function, morphology, expression of TGF-β1 mRNA, IL-10 mRNA of the liver were detected by biochemical analysis, electron microscopy, and RT-RCR technique.

Outcomes — (1) Liver function parameter in each OJ group were significantly higher than that of group I and II. (2) In group III, obvious degeneration and severe mitochondrial swelling of hepatocytes was seen. There were slight ultrastructural alterations in group IV and V. (3) Over expression of TGF-β1 mRNA and IL-10 mRNA in group III was seen compared with group I, II, IV and V, respectively.

Conclusions — Enteral nutrition combined with astragalus injection can restore the liver morphological changes and function, diminish expression of TGF-β1 mRNA and IL-10 mRNA of hepatic tissue, thus these methods may be effective in preventing hepatic damage in obstructive jaundice.

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S10-1

Sialic acid in milk enhances learning and memory of newborns
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Background – The rapid brain growth of infants places exceptionally high demands on the supply of nutrients from the diet. Human milk is the best source of food for brain growth and cognition. One of nature’s richest sources of sialic acid (Sia), a vital component of brain gangliosides and the building block of polysialic acid on neural cell adhesion molecule (NCAM), is found a large amount in human milk, but infant formulas contain little. Gangliosides and polysialated NCAM in the brain have an important role in cell-to-cell interactions, neuronal outgrowth, modifying synaptic connectivity, and memory formation.

Objective – An exogenous source of Sia may be critical under conditions of extremely rapid brain growth, particularly during the first months after birth.

Design – Piglets (n=54) were allocated to 1 of 4 groups fed sow’s milk replacer supplemented with increasing amounts of Sia as casein glycomacropeptide for 35 days. Learning speed and memory were assessed using an easy and difficult visual cue in an 8-arm radial maze. Brain ganglioside and sialoprotein concentrations and mRNA expression of two learning-associated genes (ST8SiaIV and GNE) were determined.

Results – The supplemented groups learned significantly faster than the control group, with a dose-response relationship in the difficult task (p=0.018) but not the easy task. In the hippocampus, there were significant dose-response relationships between level of Sia supplementation and mRNA levels of two learning related genes, ST8SiaIV (p=0.002) and GNE (p=0.004), corresponding to proportionate increases in protein-bound Sia concentration in the frontal cortex.

Conclusion – Sia is a limiting nutrient in the neonatal period. An exogenous source of SA enhances brain development, providing a mechanism to explain the link between breast-feeding and higher intelligence.

S10-2

Effect of perinatal protein malnutrition on spatial learning memory and brain BDNF level in young rats
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Background – It is known that perinatal malnutrition has adverse effects on brain memory function in later life, and BDNF plays an important role in memory formation in the brain.

Objective – To investigate the effect of perinatal protein malnutrition on BDNF expression in the brain and the effect on the spatial learning and memory behavior.

Design – Nine pregnant Wistar rats were assigned into three groups. One group was fed with a control diet containing 20% protein and the remaining two groups were fed with a diet containing 6% protein from gestation day eight and 15 respectively till four weeks after birth. Then, the rat pups were evaluated for spatial learning ability using Morris Water Maze task. At the end of the behavior tests, brain tissue samples were collected for measurement of total protein and BDNF concentrations.

Outcomes – The concentration of BDNF in the hippocampus was significantly lower in rat pups suffered protein malnutrition from early pregnancy when compared with the controls. Morris Water Maze tests showed that perinatal protein deprivation, particularly from early pregnancy, significantly impaired learning and memory ability.

Conclusions – Perinatal protein malnutrition had adverse influence on spatial navigation and brain BDNF levels in rats. The reduced hippocampal BDNF concentration might partially contribute to the poor learning memory performance.
S10-3

Effects of psychological stress on serum iron and erythropoiesis
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Background – There are about one billion patients with iron deficiency anemia all over the world. Recently, researchers have reported successively that stress can cause decrease of serum iron, in consistent with our studies showing that heat exposure and overload exercise led to significant decrease of serum iron in rats. However, so far whether pure psychological stress can cause decrease of serum iron and consequently affect erythropoiesis has not been reported. Our research group conducted a systematic and in-depth study within this area funded by Danone Nutrition Research Center (France). This article covers only a part of this series of studies.

Objective – To study the characteristic effects of psychological stress on serum iron and erythropoiesis through investigation of the changes of bone marrow iron, serum iron and serum EPO, and to establish a useful experimental basis for further study involving how insufficient intake of non-dietary iron causes decrease of serum iron and the consequent effects on physiological function of the human body.

Design – Psychological stress was administered to 20 rats with Communication Box model adopted from the literature. On the seventh and fourteenth day after administration, 10 rats were executed respectively, and the rat blood and femoral bone marrow were collected for analysis of serum iron, ferritin, hemoglobin (Hb), RBC count, RBC distribution width (RDW), mean corpuscular volume (MCV), serum EPO and bone marrow iron. Results were statistically analyzed with SPSS 11.0.

Outcomes – For rats analyzed on the seventh and fourteenth day in psychological stress group, (1) femoral bone marrow iron was significantly decreased; (2) serum iron was decreased by 28.6% (P<0.01) and 27.5% (P=0.01); (3) Hb was decreased by 10.0% (P<0.01) and 12.8% (P<0.01), RBC count was decreased by 5.1% (P<0.05) and 9.8% (P<0.01), MCV was decreased by 1.7% (P<0.05) and 7.3% (P<0.01), RDW was increased by 10.7% and 22.9%; (4) serum ferritin and EPO showed no significant changes in comparison with controls.

Conclusions – For rats receiving different period of pure psychological stress, (1) serum iron and bone marrow iron showed significant decrease in comparison with the controls; (2) erythropoiesis was significantly inhibited; however, (3) how psychological stress affects serum iron and erythropoiesis need to be further investigated.

S10-4

The Effects of Polysaccharides of Cordyceps gunnii Berks on Learning and Memory Ability of Mice
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Background – The present studies indicated that water-ethanol extracts from Cordyceps gunnii Berks (CGB) improve the learning and memory ability (LMA) of Kunming mice (KM). However, published information on correlation between substance and improvement of LMA is very limited.

Objective – The polysaccharides of CGB were investigated using KM as the animal model in order to evaluate the effect of the polysaccharides on improvement of LMA in mice.

Design – KM was randomly divided into 4 groups: control group (CG), model control group (MG), piracetam group (PS) and cordyceps polysaccharides group (CPG). Mice’s memory behavior ability were measured by using diving platform and dark evading apparatus respectively after filling physiological saline (PS), piracetam and polysaccharides extracts respectively into the stomachs of MG, PG and CPG once a day for one month. Nothing was filled into the stomachs of CG, unless PS. Model of memory consolidated barrier and memory reappearance barrier were established using sodium nitrite and ethanol for the other groups except CG before measuring mice’s memory behavior ability. Then the MDA and SOD in the brain’s of all groups were also determined. Pathological change of cortex, hippocampus and the change of nerve cell number of all groups were observed under light microscope with HE and Nissl’s staining.

Outcomes – Error rates of CPG was lower than that of other groups (P<0.05). Latency periods of CPG in the diving platform and dark evading apparatus test were significantly longer (P<0.05) compared to other groups. For CPG, MDA was decreased while increase in SOD was observed. The quantities of neuron in CPG in hippocampus were more than in MCG. Cortical and hippocampus nerve cell regression, degeneration, and necrosis were found in MCG.

Conclusions – The polysaccharides of CGB not only improve the LMA of KM, but also reduce the rate of cortical and hippocampal cell apoptosis with ischemia/reperfusion injury, and possessing antioxidative activity. The effect of polysaccharide of CGB on the LMA of mice was found to be more significant than that of piracetam.
S11-1

Advances in nutrition support for the quality of life in HIV+/AIDS
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Globally, acquired immunodeficiency syndrome (AIDS) is an epidemic, severe and fatal disease. Among its etiological factors which are human immunodeficiency virus infection (HIV+) and decreased immunity, there are a number of other risk factors including opportunistic infection, malnutrition, wasting syndrome, and oxidative stress. The nutritional problems have been shown to be significant and contribute to health and death of HIV+/AIDS patients. Weight loss, lean tissue repletion, lipoatrophy, loss of appetite, diarrhea, and hypermetabolic state cause a high risk of death for patients. This presentation will review the role of nutrition and how oxidative stress are involved in pathogenesis of HIV+ condition leading to AIDS. Intensive studies have shown that the serum levels of antioxidant vitamins and minerals decreased while the status of oxidative stress increased during AIDS progression. The optimization of nutritional status, intervention of foods and supplements including nutrients and non-nutrients are therefore needed for maintaining their immune system. Specific vitamins, antioxidants and minerals are recommended to reduce the incidence and severity of infectious illnesses to protect or reduce oxidative stress induced by reactive oxygen species which stimulate HIV replication and AIDS progression. Probiotics or lactic acid bacteria should be also given to support and maintain the integrity of the mucosal surfaces, improving antibody responses and increasing white blood cell proliferation. The people with HIV+/AIDS should be instructed about basic concepts of optimal nutrition by identifying key foods and nutrients, along with lifestyle changes, that contribute to a strengthened immune system. Moreover, nutritional management, counseling and education will be beneficial to the quality and extension of life in the AIDS patients.

Keywords: HIV infection, AIDS progression, oxidative stress, antioxidants, nutrition, diet supplements

S11-2

Vitamin A deficiency in patients with diarrhea and HIV infection in Ethiopia
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Background - Diarrhea, micronutrient deficiencies and HIV/AIDS are major public health problems in developing countries, especially in sub-Saharan Africa.

Objective - To investigate serum levels of vitamin A in diarrheic patients with and without HIV co-infection compared to healthy controls.

Design - Two hundred eleven consecutive diarrheic patients (110 HIV infected), 87 apparently healthy controls and 41 asymptomatic HIV seropositive blood donors who visited the University of Gondar Hospital, in Gondar, Ethiopia were included. Stool samples were examined for enteropathogens following standard procedures. Serum vitamin A levels were measured by high performance liquid chromatography.

Results - Shigella species were isolated from 8.5% of the patients while intestinal parasites were detected in 32.2% without significant difference by HIV serostatus. The mean±SD serum vitamin A in diarrheic patients with (0.82±0.59 μmol/L) and without (0.84±0.54 μmol/L) HIV co-infection and in asymptomatic HIV infected blood donors (0.96±0.52 μmol/L) was significantly lower than that in healthy controls (1.52±0.71 μmol/L), P<0.001. Vitamin A deficiency (VAD, serum retinol < 0.7 μmol/L) was observed in 52.7% and 45.5% of diarrheic patients with and without HIV co-infection, respectively. About 13% of healthy controls and 29.3% of asymptomatic HIV infected blood donors were deficient in vitamin A. The levels of serum vitamin A were not associated with the presence of intestinal parasites or Shigella species.

Conclusions - The findings demonstrate that VAD is a severe public health problem among diarrheic patients in Gondar, Ethiopia. Intervention programmes involving health and nutrition education and supplementation of vitamin A might help in reducing morbidity in such patients.
S12-1

The problem of obesity: is there a role for antagonists of the renin-angiotensin system?
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Obesity, the excess accumulation of adipose tissue, is a major health problem worldwide. It is associated with more than 30 medical conditions, including type 2 diabetes and cardiovascular disease and is a leading cause of unnecessary deaths. Adipose tissue not only acts as an energy store, but also behaves like an endocrine organ, synthesising and secreting numerous hormones and cytokines. The focus of the present manuscript is the peptide angiotensin II (ANG II), the biologically active component of the renin-angiotensin system (RAS). The RAS is present in adipose tissue and evidence suggests that ANG II, in addition to its major role in body fluid and cardiovascular homeostasis, is intimately linked to obesity. Indeed, ANG II increases fat cell growth and differentiation, increases synthesis, uptake and storage of fatty acids and triglycerides and possibly inhibits lipolysis. Evidence obtained using genetically modified animals has shown that the amount of body fat is directly related to the amount of ANG II, i.e., animals with low levels of ANG II have reduced fat stores while animals with excessive ANG II have increased fat stores. In humans, epidemiological evidence has shown that body fat is correlated with angiotensinogen, a precursor of ANG II, or other components of the RAS. Furthermore, blocking the production and/or actions of ANG II with drugs or natural substances decreases body fat. The decrease in body fat caused by such treatments predominantly occurs in abdominal fat depots and appears to be independent of energy intake and digestibility. Clearly, ANG II has an important role in the accumulation of body fat. Thus, the possibility exists that the treatment of obesity will be enhanced by the use of natural or synthetic substances that interfere with ANG II.

S12-2

An assessment of the effectiveness of weight reduction program in case of adolescents under sanatorium conditions in Poland including the role of low-energy diet and energy balance
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Background – In Poland 10% population of teenagers aged 13-15 years are obese (1). An inappropriate slimming therapy may lead to growth inhibition, the occurrence of psychoneurological disorders or losses of lean body mass. Thus it is necessary to monitor thoroughly and systematically the course of the therapy in a way making it possible to monitor changes in the components of body composition (BC).

Objective – The aim of this study was to assess the effectiveness of weight reduction program and to develop recommendations for the therapeutic program conducted under sanatorium conditions, taking into consideration the composition of the diet and the share of macrocomponents in the negative energy balance.

Design – Investigations were conducted for 6 years during 12 sanatorium stay periods of 24 days each. The study included 174 obese adolescents aged 12 - 16 years. The nutritive value of 288 diets prepared at the sanatorium was established on the basis of daily menus. Total daily energy expenditure (TDEE) during therapy was assessed by 24-hour HR monitoring. The body composition (fat mass - FM, fat free mass - FFM, body cell mass - BCM, total body water – TBW) were measured using bioelectrical impedance before and during therapy as well as six month later.

Outcomes – Weight reduction program consisted of low energy diet (5.47 MJ/24h, 18% protein, 26% fat) and physical exercises. TDEE of individuals staying at the sanatorium considerably (P<0.001) exceeded energy intake from the diet, which was manifested in changes of body weight and BC of adolescents during the therapy. Six months after therapy at the sanatorium no statistically significant changes were recorded in the mean FFM, BCM and TBW contents.

Conclusions – These results made it possible to establish optimum recommendations concerning low-energy diet and the degree of negative energy balance and their interrelations, determining the maximization of fat mass losses at the simultaneous minimization of lean body mass losses.

S12-3
Differences in the body composition and relationships between anthropometric measurements in Japanese and Australian Caucasian males and Japanese females
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Background – Total amount and location of fat deposition are both important factors in the development of obesity and metabolic syndromes. There has been no study that assessed ethnic and gender differences in body composition and fat distribution pattern in Japanese and Australian young populations.

Objective – To assess body composition of young Japanese and Australian Caucasians using whole-body dual energy x-ray absorptiometry (DXA) and anthropometry to examine body fat patterns.

Design – Body composition of 45 Japanese males and 42 Australian Caucasian males living in Australia (18-40 years) and 139 Japanese females living in Japan (18-30 years) were measured using whole-body DXA scanning and anthropology. Differences in relationships between BMI and waist circumference (WC), sum of skinfolds (ΣSF) and %BF obtained from DXA were assessed using multivariate analyses.

Outcomes – Distinct gender and ethnic differences (P<0.05) in bone density, bone mineral content, lean and fat mass were observed but no ethnic differences in BMI, sum of skinfolds and %BF. Both Japanese males and females showed a greater %BF at given BMI, WC and ΣSF values (P<0.05).

Conclusions – The results indicate differences in relationships between %BF and anthropometric measures in young Japanese compared to Caucasians and an importance of population-specific cut-off points for these indices. These results have implications for the development of chronic disease and further research, including studies in other Asian countries are recommended.

S12-4
Prevalence of obesity and overweight among preschool children in big Khorasan province northeast of Iran
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Background – Obesity in children has become increasingly a world wide public health burden especially in developing countries. Obese children are at higher risk for developing obesity in later years and suffer from its complications. This study was carried out to assess the prevalence of obesity among preschool children in Khorasan province northeast of Iran.

Methods – A total of 70889 preschool children aged 0 to 59 months (36102 boys and 34787 girls), recruited in July 2004 for 20 days from those attending community clinics for routine health checks. The selected cohort was an 11% sample of preschool children born in Khorasan. Anthropometric measurements were made by trained health staff using WHO methodology and body mass index (BMI) values were calculated. Overweight and obesity were defined as, >=85th and >=95th percentile, respectively, of age- and sex-specific BMI values from the Iranian BMI reference data.

Results – The overall prevalence of overweight and obesity were 11.2 and 8.9, respectively. The difference in the prevalence of overweight and obesity among sexes was not statistically significant. Children within rural areas were significantly at higher risk for overweight and obesity than those living in urban areas after adjustment for age and sex (OR; 1.56, 95%CI 1.51-1.62). Age-associated risk of overweight and obesity decreased significantly after the age of 4 month in boys and girls, similarly. Before the age of 55.5 month, median values of sex and age-specific BMI in this study were statistically lower than corresponding values in the reference population (NCHS) (P< 01). After the age of 55.5 month their differences in median values with the reference population were not statistically significant.

Conclusion – According to the results of this study, overweight and obesity is a public health problem in preschool children especially in rural areas in the big Khorasan province in Iran. Seeking for obesity risk factors in this population and especially in rural areas may be necessary.
Prevention and Control of Food Safety Risks: The Role of Governments, Food Producers, Marketers, and Academia

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Background - Food systems are rapidly changing as world population grows, increasing urbanization occurs, consumer tastes and preferences change and differ in various countries and cultures, large scale food production increases, and food imports and exports grow in volume and value. Consumers in all countries have become more insistent that foods available in the marketplace are of good quality and safe, and do not pose risks to them and their families. Publicity about food risk problems and related risks, including chemical and microbiological contamination of foods, mad-cow disease, avian flu, industrial chemical contamination all have made consumers and policy makers more aware of the need of the control of food safety risk factors in all countries.

Objective - To discuss changes in food systems, and in consumer expectations, that have placed additional stress on the need for better control of food safety risks.

Outcomes - Food producers, processors, and marketers have additional food law and regulations to meet; government agencies must increase monitoring and enforcement of adequate food quality and safety legislation and coordinate efforts between agriculture, health, trade, justice and customs agencies; and academia must take action to strengthen the education of competent food legislation administrators, inspectorate, and laboratory personnel for work in government and industry, including related food and food safety research.

Conclusions - Both Government and the food industry must assure that adequate control programs are in place to control the quality and safety of all foods, raw or processed, throughout the food chain from production to final consumption. This includes appropriate laboratory facilities to perform necessary analysis of foods for risk and quality factors, and to carry out a wide range of food science, toxicological and related research.

Innovations in Food Technology For Health

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Modern nutritional science is providing ever more information on the functions and mechanisms of specific food components in health promotion and/or disease prevention. In response to demands from increasingly health conscious consumers, the global trend is for food industries to translate nutritional information into consumer reality by developing food products that provide not only superior sensory appeal but also nutritional and health benefits. Today’s busy lifestyles are also driving the development of healthy convenience foods. Recent innovations in food technologies have led to the use of many traditional technologies, such as fermentation, extraction, encapsulation, fat replacement, and enzyme technology, to produce new health food ingredients, reduce or remove undesirable food components, add specific nutrient or functional ingredients, modify food compositions, mask undesirable flavors or stabilize ingredients. Modern biotechnology has even revolutionized the way foods are created. Recent discoveries in gene science are making it possible to manipulate the components in natural foods. In combination with biofermentation, desirable natural compounds can now be produced in large amounts at a low cost and with little environmental impact. Nanotechnology is also beginning to find potential applications in the area of food and agriculture. Although the use of new technologies in the production of health foods is often a cause for concern, the possibility that innovative food technology will allow us to produce a wide variety of food with enhanced flavor and texture, while at the same time conferring multiple health benefits on the consumer, is very exciting.
**P10**

**Food, nutrition, physical activity and the prevention of cancer: a global perspective**

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**Background** – The first comprehensive global report on the prevention of cancer by healthy food and nutrition was published in 1997 (1); the second such report, incorporating findings published in the last decade, and using a new systematic methodology for displaying and judging the evidence, will be published in late 2007.

**Objectives** – To outline the special features of both reports. These include assembly of panels of experts from all over the world; a methodical approach to the epidemiological and experimental literature, made more systematic in preparing the second report (2); a matrix technique for assessing the evidence and displaying judgements also adapted by the World Health Organization (3); and recommendations that take into account other chronic diseases and also nutritional deficiencies and relevant infectious diseases.

**Outcomes** – Of many outcomes, the literature reviewed for the first report generated advice to prefer plant-based diets, consistent with traditional food systems and dietary patterns such as those of the Mediterranean region, India and China. More recent published findings now being considered notably in the case of breast cancer emphasise the value of early life nutrition, beginning in the womb, continuing in infancy and childhood.

**Conclusions** – The methods used for these reports may be of value in future integrated approaches to the prevention of all types of food-related disease and the promotion of well-being throughout life.

Health Economics of Weight Management
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Obesity costs Australia over $11 billion a year with its population of about 20 million, but government efforts at reducing the burden remain inadequate and a more radical approach is needed. There is a growing recognition that both Public Health & Clinical approaches, and Private & Public resources, need to be brought to this growing problem. A Special Report of the WMCACA (Weight Management Code Administration Council of Australia) (www.weightcouncil.org) on the “Health Economics of Weight Management” has been published in the Asia Pacific Journal of Clinical Nutrition for September 2006.

In 2006, 62 per cent of Australian men and 45 per cent of women are overweight or obese. This is up from 52 and 37 per cent 10 years ago, according to the annual National Health Survey, Australian Bureau of Statistics. The prevalence has been increasing since the 1970s due to a convergence of factors - the rise of TV viewing, our preference for takeaway and pre-prepared foods, the trend towards more computer-bound sedentary jobs, and fewer opportunities for sport and physical exercise. The almost two-thirds of men and nearly half of women who are obese or overweight pay a huge price - not just in the lack of self esteem, social and work discrimination, but also in the illnesses that go along with being overweight such as the metabolic syndrome (which increases the risk of developing heart disease, diabetes, hypertension, fatty liver), cancer, asthma, dementia, arthritis and kidney disease.

The cost to the economy is enormous with about $2.4 billion a year going towards the direct costs of treating obese and overweight people. The indirect costs are even higher at about $9 billion a year due to lost work productivity, absenteeism and unemployment. Alarmingly these costs are going to keep rising because the percentage of people who are overweight or obese will rise. According to the International Obesity Taskforce, by 2025 one in every three adults will be obese if current trends continue.

Australian health authorities first became aware of the problem in the 1970s, but there was little response from governments until 2002, when the state and federal health ministers set up a National Obesity Taskforce, composed of doctors’ groups, consumers’ associations, retailers, food industry bodies, sporting bodies and others. The Taskforce was given eight years to come up with intervention strategies and is due to make initial recommendations to the federal government in 2006.

In the meantime, individual governments have been implementing their own programs. In 2004 for example, the federal government committed $116 million over four years for programs aimed at families and schools to promote nutrition and physical activities. The Australian government has also made changes to Medicare so that GPs can refer people with chronic illness due to obesity to an exercise physiologist and dietitian and get a Medicare rebate. But so far these measures are having no perceptible effect on obesity levels.

A report by Murphy and Yates published in APJCN in 2005 on the economic comparisons of weight loss programmes versus drug treatments for the management of obesity concluded that weight reduction programs (like Weight Watchers) are far more economic than weight loss pills and that the government should spend more budget dollars on the former rather than the latter. However, the costs were based on a 3 month Weight Watchers program versus a 12 month supply of a weight loss drug like Rimonabant. It was not clear from this report if a 12 month weight reduction program would have similar costs to a 12 month supply of weight loss medication. Encouraging more and more WMCACA approved commercial weight management programmes with built in maintenance strategies for the long term and which are triggered during the initial encounter are desirable.

Health economist, Paul Gross, from the Institute of Health Economics and Technology Assessment claims there is too much reliance on health workers to treat the problem, especially GPs, who have not been given additional resources to manage obesity outside a typical doctor's consultation. Gross has recommended that further changes should be made to Medicare, private health insurance, and workplace and tax legislation to give people financial incentives to change their behaviour because obesity should not just be treated by governments as a public health problem but also as a barrier to productivity and a drain on resources. He says governments should consider:

1) Giving employers financial incentives to offer nutrition and weight loss programs to employees, in exchange for a cut in the corporate tax rate;
2) allowing private health funds to give subsidies or discounted premiums to members who enrol in such programs and maintain their weight loss (measures not allowed at present under the community rating system);
3) Pharmaceutical Benefits Scheme (PBS) subsidies for selected weight loss drugs for people who are seriously obese, where considered appropriate by their doctors;
4) Medicare rebates for accredited weight loss programs.

Gross is calling for a new body, a National Council on Obesity and Chronic Disease, to oversee a properly funded, targeted national policy, reporting directly to federal Cabinet.

The special report in APJCN on the Health Economics of Obesity has explored the cost benefit analysis of weight management in greater detail.
P11-2  

**Lifespan nutrition and changing socio-economic conditions in China**  
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**Background** – Twenty-five years ago, China introduced sweeping reforms in the structure of its rural economy, family planning program, and financial accountability within enterprises and service sector organizations. A rapid rise in economic productivity has resulted in continuing increases in income and changes to the traditional Chinese diet.  

**Objective** – The aim of this study is to examine how the social and economic transformation of China affects dietary patterns and nutritional status of people.  

**Design** – The data from a prospective study, China Health and Nutrition Survey, begun in 1989 and followed up in 1991, 1993, 1997, 2000 and 2004. The population used in this study included 5000 subjects aged 18-45 from 4280 households in nine provinces. Dietary intakes were measured using a combination of the weighing method and three consecutive 24-h recalls. All other data were directly measured or obtained by in-depth interviews.  

**Outcomes** – The average consumption of all animal source foods except milk and eggs increased by 34g per capita per day, while the average intake of cereals decreased by 130g per capita per day. The proportion of animal source protein increased greatly and fat contributed an increasing proportion of energy. However, vitamin A and calcium intake did not increase from their low levels of intake during this period. Child height and weight increased and were linked with a decline in undernutrition. For example, the prevalence of overweight increased from 11.4% to 22.8% in women and from 6.4% to 25.1% in men in the same period, climbing much faster than before. The rapid shift in diet and obesity linked with social and economic changes in China continues unabated.  

**Conclusions** – In association with the economic reform, the dietary pattern changed rapidly in these years.

P11-3  

**Mycotoxins in the food chain: Human health and economic implications**  
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Mycotoxins are secondary fungal metabolites that can be produced in crops and other food commodities both pre- and post-harvest. When ingested, mycotoxins may cause mycotoxicosis which can result in an acute or chronic disease episode. Reduced growth and development immunosupression and cancer are chronic conditions that have a higher prevalence in communities that have continual exposure to low level mycotoxin ingestion. As stable, natural contaminants of the food chain, mycotoxin reduction requires a multifaceted approach, including farmers, government agencies, food processors and scientists. This can have a significant impact on the cost of food production. International regulatory standards for mycotoxins in food commodities determines the extent of global trade in contaminated commodities.
P11-4
Strategic implications for nutrition and health among the aged in the Asia Pacific region from a Taiwan survey

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The major demographic shift currently underway in the Asia Pacific Region is that of ageing. With it comes a change in the relationships between nutrition and health. A growing number of population-based studies are available which allows us to identify both favorable and unfavorable dietary patterns, although longitudinal studies which provide for prediction of morbidity and mortality (DALES or Disability Adjusted Life Expectancies) in relation to food intake are few in the Region. The Taiwan Survey of 1999-2000 (Elderly NAHSIT) has much of its cross-sectional data now available, and the longitudinal follow-up data will eventually become available. It and the Asia-Pacific Region provide an opportunity to look at various food cultures and health, which allow the question of a protective role in health for Food Diversity to be examined. Elderly NAHSIT provides significant information in this regard. At the same time, the limitations of rice-based diets in regard to micronutrient and phytonutrient (like dietary fiber) status among the aged needs scrutiny, with caveats about how optimal macronutrient intakes might be achieved (e.g., from whole grains and root vegetables). Some of the particularly pressing issues for elderly Taiwanese are the nutritional determinants of body composition (sarcopenia and abdominal obesity), diabetes, macrovascular disease (MVD) (especially hemorrhagic stroke) and bone health. The Elderly NAHSIT provides information about homocysteine which is a risk factor for both MVD and osteoporosis. There may be a wide range of nutritional risk factors for bone health, not only calcium, but also sodium, soy isoflavones (probably protective), and both water and fat soluble vitamins. There are enigmatic problems like uric acid status (often high among Chinese), with its linkage to insulin resistance and how this should be addressed from an Asian food cultural perspective. The expectations for longer lives, less morbidity and wellness in ageing Asia Pacific populations will grow. The emerging data reveal opportunities for some of these expectations to be met with food based approaches.
Post 1

Use of tea extracts (*Camellia sinensis*) as polyphenols sources in human diet

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**Background** – Diet rich in polyphenols may be important factor in preventing cardiovascular, neoplastic diseases and slowing down the aging processes. Because tea (*Camellia sinensis*) is most popular beverage containing relatively large amounts of polyphenols, it could be tremendously important source of polyphenolic constituents in human diet (1). However, there has been no data on the tea extracts use in particular everyday snacks.

**Objective** – To investigate potential use of tea polyphenol extracts in jelly candies, its taste, colour, consistency and general consumers acceptance.

**Design** – Sensory analyses were conducted on two kinds of sweet jellies, with gelatine and agar used as thickening agents. As polyphenol source green and black tea extracts (*Camellia sinensis*) were used at concentration of 1.0% and 1.5%. Total polyphenol content in jellies ranged between 245.9-1256.5 mg/100g of candies and EGCG - strong antioxidant content ranged between 3.2-170.1 mg/100g of candies. Sensory analyses included evaluation of overall appearance, colour, taste, aroma, consistency (homogeneity, clot presence), clarity and porosity of jellies. Consumers acceptance was also evaluated according to overall desire of a jelly type sweet product.

**Outcomes** – Comparison of two thickening agents resulted in statistically better properties of gelatine jellies according to its quality: colour, clarity, consistency, taste and aroma (P<0.05). It was found that agar containing jellies were not so clear and aromatic as compared with gelatine (P<0.05). Colour and overall appearance was also much more acceptable by the consumers in gelatine jellies. According to tea extract used it was found that ethanol extracts resulted in lower acceptance for overall acceptance and consistency (P<0.05). Other quality indicators did not show any statistically important differences.

**Conclusions** – Present study indicated that tea polyphenols extracts were accepted by consumers as food product constituents, and might be an interest of wider usage as food components.


Post 2

Measurement of Zn in some bread -Mazandaran province,Iran

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**Background** - Zinc is an essential element for the maintenance of good health. It is necessary for the activity of several enzymes involved in energy changes and protein formation. Bread is one of the foods that have some zinc. Bread and other cereal products provide the most of calories and protein intakes of Iranian people in cities. Some bread such as lavash, taftoon and sangak generally are produced from soft white wheat flours of higher extraction levels compared to western type breads. The diet of Iranian people is more bread and other cereal products provide as much as 50-90 % of total caloric.

**Objective** - investigate and measure the content of zinc in some bread that the most consumed in Mazandaran province for improve of breads.

**Design** - For zinc monitoring in flat breads, 50 bread samples were collected from bakeries in Sari city in 2005 and analyzed by flame atomic absorption spectrophotometry for zinc metal.

**Outcomes** – The mean and standard deviation of zinc content in lavash, taftoon and sangak breads were 9.02±1.58, 7.45±1.22 and 13.13±2.23 mg/kg, respectively. Estimated intake of zinc based on consumption of studied breads is 4.244 mg per person per day in Mazandaran province of Iran

**Conclusions** – This study showed that above breads is good sources of zinc and they can supply some of zinc requirements of human body for preventing of zinc deficiency.

Post 3
The prevention effects and molecular mechanism of lipoic acid and N-acetylcysteine in rats fed a high fat
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Background-Cardiovascular disease is currently the leading cause of death in the world, and a search for factors limiting its occurrence is ongoing. Data from animal experiments and clinical studies suggest that lipoic acid (LA) and N-acetylcysteine (NAC) have been applied to the prevention and cure of many diseases as antioxidant. However, there has been no data about the effects of them on hyperlipidemia.

Objective- To investigate the effects and molecular mechanism of lipoic acid and N-acetylcysteine on lipid metabolisms in rats fed a high fat.

Design-Forty male Sprague-Dawley rats were randomly divided into 5 groups comprising 8 animals each according to limosis weigh: after a 1-week adaptation period. (1) normal control (NC, normal diet); (2) High-fat diet model (HFD, high fat diet); (3) Res 1(high fat diet plus 0.1% LA); (4) Res 2 (high fat diet plus 0.1% NAC); (5) Res 3 (high fat diet plus 0.1% LA and 0.1% NAC ). After 4 weeks of the study, tissues and blood were collected for the determination of lipid profiles changes, the activities of lipoprotein lipase (LPL) and hepatic lipidase (HL) and their mRNA expression in liver.

Outcomes- As compared to high fat control LA and NAC significantly reduced the serum TC, LDL-C, TG concentrations, and increased the HDL-C levels distinctly (P<0.05). They significantly deceased MDA content (P<0.05), increased the activities of HL and LPL in liver (P<0.05). The results of RT-PCR showed that high fat diets could induce the reduction of LPL and HL mRNA expressions (P<0.05), while LA and NAC could increase them. The difference is not significant (P>0.05) though hypolipemic properties of LA are better than those of NAC. LA and NAC don’t display synergistic action.

Conclusion- The present study indicated that both LA and NAC can prevent hyperlipidemia through upregulation of HL and LPL mRNA expressions, but they don’t display synergistic action.

Post 4
Concentration-dependence of prooxidant and antioxidant effects of epigallocatechin-3-gallate (EGCG) on DNA in vitro
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Background-Epigallocatechin-3-gallate (EGCG) has been identified as the main antioxidant component in tea. The active component seems to have different effects at different concentrations. Until now, there has been no data on its concentration-dependent effects.

Objective-To investigate the mechanism of antioxidant and prooxidant effects of this ingredient on DNA over a wide range of concentrations.

Design- Free radical scavenging activity of EGCG was measured with chemiluminescence methods in a reaction mixture containing one mM Luminol, 50 mM carbonic acid buffered saline solution (pH 10.2), and 10 μL of tested sample and 10 μL of 50 mM H2O2. Reducing power on iron ion was measured as described by Yen et al (2). Effects of EGCG on hydroxyl radical - induced DNA breaks in vitro were investigated using supercoiled plasmid DNA as the target. The degree of DNA damage was represented by the percentage of supercoiled form.

Outcomes- EGCG showed stronger free radical scavenging activity than mannitol and ascorbic acid. At lower concentrations, from 0.5 to 70 μM, EGCG exhibited protective effect on DNA. However, EGCG at 1.25 mM, had a prooxidant effect on DNA by about 51%. The supercoiled form was smeared at the treatment of EGCG (2.5 mM) with a 100% prooxidant effect. EGCG exhibited greater reducing power on iron ions than mannitol at higher concentrations.

Conclusions- Stronger reducing power of EGCG at high concentrations, reducing Fe3+ to Fe2+ which accelerate the generation of hydroxyl radical from the Fenton reaction, may play a key role in its prooxidant effect on DNA. With the decrease of concentration, its scavenging ability on free radicals gradually predominates over its reducing power on Fe3+, resulting in its antioxidant effect on DNA.

Post 5  
Effects of Gastrodin on Amino Acids after Cerebral Ischemia-reperfusion Injury in Rat Striatum  
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**Background** - Recent evidence suggests that natural Chinese medicine Gastrodia elata B1 had protective effect on cerebral ischemia-reperfusion injury. But the mechanism is unclear. Gastrodin is one of the main effective substances extracted from Gastrodia elata B1.

**Objective** - To explore the effect of gastrodin on the level of amino acids in striatum in the rats of cerebral ischemia-reperfusion injury.

**Design** - 30 male SD rats were randomly divided into three groups: the group of pseudo-operation (normal control group, NC group), the group of cerebral ischemia-reperfusion injury (CIRI group), and the group of cerebral ischemia-reperfusion injury treated with gastrodin (G group). The model of cerebral ischemia-reperfusion injury were induced through middle cerebral artery occlusion (MCAO). The volume of cerebral infarction were observed. The level of glutamic acid (Glu), aspartic acid (Asp), γ-aminobutyric acid (GABA), taurine (Tau), Glu/GABA in striatum in the rats of the three groups were measured with the method of microdialysis-HPLC techniques.

**Outcomes** - After cerebral ischemia, the volume of cerebral infarction in the G group were significantly lower than those in CIRI group (P<0.05). The levels of Glu, GABA, Tau, Glu/GABA and Asp in striatum in the rats of G group and CIRI group all increased after cerebral ischemia. But the increased extent in G group were lower than that in CIRI group. After reperfusion, the level of amino acids in striatum in the rats of G group and CIRI group all gradually decreased. But the decreasing velocity in G group were faster than that in CIRI group.

**Conclusions** - Gastrodin can decrease the volume cerebral infarction, ameliorate the brain injury in the rats of cerebral ischemia-reperfusion. The mechanisms may contribute to gastrodin can improve the level of amino acids in striatum.

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Post 6  
Fruit quality of transgenic tomatoes with suppressed expression of LeETR1 and LeETR2 gene  
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**Background** - Two stable transgenic lines from tomato (Lycopersicon esculentum Mill.) cultivar B1 with constructs containing the antisense sequences from tomato ethylene receptor LeETR1 and LeETR2 separately were obtained. The morphological and physiological changes of the transgenic lines ale1 and ale2 have been investigated, but there has no data on fruit quality of the two transgenic tomatoes.

**Objective** - To investigate the fruit quality of two stable transgenic lines, ale1 and ale2, which containing antisense LeETR1 and LeETR2 sequences.

**Design** - Fruits in different stages of ripening from ale1 and ale2 and their wild type B1 were investigated. Fruit quality parameters including fruit firmness, fruit color, fruit pigments, total soluble solids, total acidity, juice electrical conductivity, viscosity, elasticity, Vc content, total sugar content, pH were analyzed. Shelf life was also analyzed.

**Outcomes** - The individual fruit weight of the transgenic lines were significantly heavier than wild type B1, while the shape of the fruits was much flat than B1. During the different ripening stages, the firmness and elasticity of the transgenic lines were lower than B1 (P<0.05), while the viscosity were higher than B1 (P<0.05). The transgenic lines had a deeper red color compared with B1 (P<0.05). The content of the soluble solids of ale1 was significantly higher than ale2 and B1 (P<0.05). Electrical conductivity showed the same trend (P<0.05). The content of titratable acidity of transgenic lines were much higher than B1 (P<0.05). But the content of Vc, total sugar, fruit pigments and fruit pH in transgenic lines showed no significant difference to B1. The shelf lives of the transgenic lines were shorter than B1.

**Conclusions** - The transgenic antisense tomatoes of ale1 and ale2, compared to their wild type B1, showed accelerated fruit maturity and shortened storage life. However, the transgenic lines contain significantly higher total soluble solids, acidity and electrolytes. The nutritional implication of these changes remains to be further investigated.
Post 7

Effects of Enteral Immunonutrition on Inflammation Reaction and Immune Function of Severe Acute Pancreatitis Rats

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Background - The present study shows that severe acute pancreatitis (SAP) is correlated to systemic inflammatory response syndrome and multiple organ dysfunction syndrome, and cytokines lie at the heart of the problem and are involved in all aspects of these processes.

Objective - To evaluate the influence of enteral immunonutrition therapy on inflammation reaction and immune function of SAP rats in the early phase of the disease by measure cytokine and lymphocyte.

Design - Create severe acute pancreatitis rats by anti-pressure injection of sodium taurocholate into the biliopancreatic duct. Sixty SAP rats were randomly divided into total parenteral nutrition group (TPN group, n=20), traditional enteral nutrition group (EN group, n=20) and enteral immunonutrition (SEN group, n=20). As base therapy with Octreotide, during supporting nutrition 14 days, specimen were collected at different time. TNF-α, IL-10 in blood plasma and CD3+, CD4+, CD8+ in peripheral blood were measured.

Outcomes - (1) After modeling 24h, TNF-α of these three groups were all high and IL-10 were low. At the fourth day, TNF-α reduced sharply, however, IL-10 increased to the highest level, and after that, IL-10 decreased also. At the seventh day and the fourteenth day, TNF-α and IL-10 were significantly lower in the SEN group than those in the TPN and EN groups (all P<0.05). There was no significant difference between TPN group and EN group (P>0.05). (2) After modeling 24h, CD3+, CD4+, and CD4+/CD8+ of these three groups were all higher than normal group, and after that, they all increased by degrees. At the seventh day and at the fourteenth day, CD3+, CD4+, and CD4+/CD8+ were all significantly higher in the SEN group than those in the TPN group and EN group (P<0.05).

Conclusions - Enteral immunonutrition can reduce the cytokines, strengthen the immune function of severe acute pancreatitis rats.

Post 8

Food Stuffs and ESCC (esophageal squamous cell carcinoma) in Xinjiang

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Objective – To investigate ESCC mortality rate differences in various races of Xinjiang. Further investigations, Nutrients, Food, Diet, intake and risk in Kazak population-the highest mortality race on ESCC.

Methods – ESCC mortality rate differences in various races were investigated in a population-based study with retrospective survey. Nutrient, Food, Diet, intake of Kazak population, the data collection were obtained with face-to-face interviews eligible case or their first relativity.

Results – ESCC ranks as the first most common malignancy. The highest mortality rates are found in Kazak population, accounting for 68.88·10⁻³ in regions of north Xinjiang, especially in Toli County over 155.0·10⁻³. The lowest rates are found in Tajik population accounting for 6.67·10⁻⁵ in regions of South Xinjiang, like Yueidia County, had only 2.07·10⁻⁵. The risk factors of ESCC in Kazak population, there are considerable epidemiological evidences. In this study, suggesting that diets deficient in vitamins /protective antioxidant, (lack of green leafy vegetables, citrus, micronutrients, Zinc, riboflavin, vitaminA), intake of carcinogens (From stable food, like hard smoking cake, smoking meat, bad sour milk) and thermal injuries (preference for hot milk tea at 45°C to 60°C) are important in the pathogenesis of ESCC.

Conclusion – The highest mortality rate of ESCC is found in Kazak population at Toli county, has over 155.0·10⁻³, the lowest mortality rate of ESCC are found in Tajik population at Yuedia county. The risk factors of ESCC in Kazik population, had deficient in vitamins/protective antioxidant, intakes of carcinogens (from their frequent consumption foods) and physics injurious (hot milk and hard stable foods, e.g hard smoking cake, smoking meat, dry bad sour milk cake).
Post 9
Antioxidative activity and polyphenol content in different varieties of Thai rice grains
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Background - Rice (Oryza sativa L.) is the staple food in Thailand and it is the main agricultural product exported to other countries. Antioxidants and polyphenols in rice are important for human health. However, the antioxidative activity and polyphenol content of different varieties of Thai rice grains had not been previously reported.

Objective - To determine antioxidative activity and polyphenol content of 49 different varieties of Thai rice grains.

Design - In this investigation, the antioxidative activity (Trolox equivalent antioxidative capacity, TEAC) in vitro of the alcoholic extract from 49 different varieties of Thai rice grains have been determined by ABTS/potassium persulfate method compared with Trolox, an vitamin E analog. The total polyphenol content in dry rice grains methanolic extracts were determined by Folin-Ciocalteu method.

Outcomes - It was found that the antioxidative activity (TEAC) as mg Trolox/ 1 g of sample and total polyphenol content (as mg gallic acid/ 1 g sample) in dry rice grains methanolic extracts varied from the highest to the lowest as the followings: red jasmine rice, black jasmine rice, black sticky rice, black rice, unpolished rice, polished rice, mountain rice, polished sticky rice respectively. TEAC and polyphenol content were clearly correlated (r=0.9747) and were highest in red jasmine rice and markedly high in black rice and red rice. This property may be due to the high contents of rice anthocyanins, vitamin E, tocotrienols, and oryzanol.

Conclusions - The antioxidative activity of dry rice grain was highly found in black and red rice and less in white or polished rice. The antioxidative activity was also clearly correlated with the total polyphenol content. It indicated that the high antioxidative activity was closely related on the amount of anthocyanin and other polyphenol in each rice variety. The functional chemistry, nutritional value and health benefits of antioxidants and polyphenols contained in Thai rice grains and their products should be intensively studied and characterized for their ingredients and stability. Further development for the value addition of rice as diet supplements and maximum health benefits is needed.

Post 10
The effect of antioxidant on immune function in D-galactose induced aging mice
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Background - Cysteamine is a compound containing sulphhydril and consequently acts as radioprotectorant. However, there has been no data on the effect of cysteamine as a free radical scavenger on immune function in aging mice has not been elucidated.

Objective - To investigate the effect of cysteamine as a free radical scavenger on immune function in aging mice.

Design – Fifty male 5-wk-old Wister mice were fed on a commercial rat chow diet for four days, and then they were randomized into one of five groups. D-galactose inducing aging mice were adapted to different diets containing 0.000g/kg (aging group), low (0.015g/kg; LC), medium (0.030g/kg; MC), or high (0.045g/kg; HC) level of cysteamine. Adult mice of a fifth group consumed control diet. After 30d of oral feeding with cysteamine, malondialdehyde (MDA) concentration, superoxide dismutase (SOD) activity and organ index, phagocytic activity of peritoneal macrophage (PMΦ), lymphocyte transformation rate, hemolysin, immunoglobulin in serum were measured.

Outcomes –Higher MDA concentration and lower SOD activity were found in aging mice compared with adult mice. MDA concentration was lower and SOD activity was higher in groups consuming MC and HC diets than aging and LC group. Meanwhile, those in groups consuming MC and HC diets were approximate to control group. Organ index, phagocytic activity of peritoneal macrophage (PMΦ), lymphocyte transformation rate, hemolysin, immunoglobulin in serum of aging mice were enhanced and associated with dose-dependent cysteamine. Length of comet tail and percentage of DNA damaged thymocytes were significantly higher in aging mice than in adult mice. And the decreased extent of comet tail length and percentage of DNA damaged thymocytes was higher in the groups consuming MC and HC diets than in aging and LC group.

Conclusions – The present study indicated that cysteamine is a free radical scavenger to decrease variables of oxidative stress and may induce response of cell- and humoral-mediated immunity in aging mice.
Post 11
Skin carotenoids measured by Resonance Raman Spectroscopy BioPhotonic scanner and the effects of life styles and LifePak on human carotenoids nutritional status

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Background- Biophotonic Scanner was designed for clinical use to specifically determine skin antioxidant carotenoids, on the basis of a non-invasive technique of Resonance Raman Spectroscopy. Skin carotenoids represent steady state levels of antioxidant define capability in human bodies.

Design and outcomes- We examined skin carotenoids of 88,721 volunteers, and monitored changes in skin carotenoids as a function of life styles and in response to daily consumption of fruits, vegetables, and dietary supplements LifePak. Skin carotenoids presented as Biophotonic scanner scores are closely, positively correlated with serum carotenoids determined by use of HPLC (r^2=0.704, P<0.001). Non-smokers and subjects with less sun-light exposure had significantly higher scores than those for cigarette smokers/former smokers and people with high exposure to sun light (P<0.001). The higher the BMI is, the lower the scores are (P<0.001), indicating diluted fat-soluble carotenoids in the body as a function of increases in body fat mass. We also found that The more daily consumption of fruits-vegetables and dietary supplements, the higher the scores are (P<0.01). Daily LifePak intake resulted in increases in the scores by 24% after 4 weeks of LifePak and by 44% after 8 weeks (P<0.001).

Conclusions- Biophotonic scanner scores reflect steady state levels of antioxidant carotenoids in human’s skin. Fruits-vegetables intakes and LifePak supplementations increase body’s antioxidant capacity, but smoking and sun-light exposure reduce it.

Post 12
Consumers’ perception and attitude towards functional foods

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Background – Functional foods are one of the fastest growing sectors in the food market (1). However, there is little information on how New Zealanders perceive these foods and whether they appeal to those whom they could benefit.

Objective – To explore consumers’ knowledge and attitudes towards functional foods.

Design – In a qualitative study, data were collected from 7 focus group discussions with New Zealanders (N = 42) whose age ranged from 21 to 85. The participants in each group were of similar age, gender and health status.

Outcomes – Most participants were unaware of the terms fortified food and functional food. Also they were unaware of the fact that some foods in their diet were fortified. They appeared to have little knowledge about the concept of functional foods and were rather sceptical about their benefit. They did not think that food was a desirable delivery system for ‘functional ingredient(s)’ as they thought that there was little control of the active ingredient(s) dosage compared to supplements. They were also concerned that the substance might affect the flavour of the ‘functional food’ and were not prepared to necessarily trade taste for health benefits. Finally, they thought that adding functional ingredients resulted in unnatural foods that were inevitably more expensive than ‘normal’ food.

Conclusions – The research showed that the participants had little knowledge about functional foods and any attitudes they did have towards functional foods tended to be extremely negative. Clearly, consumer awareness about functional foods must be raised in New Zealand, and these barriers addressed, if consumers are to obtain the benefits available from functional foods.

Post 13

Antioxidant activities of various lotus (Nelumbo nuficera) rhizome extracts

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Background – Lotus rhizome has been applied in Chinese herbal prescriptions to alleviate tissue inflammation, cancer, and liver cirrhosis for a long time. This may be partially attributed to the antioxidants contained in the tubers. Thus the evaluation of antioxidant activity is a fundamental work for tapping the resource potential of the crop. However, no single solvent could extract all the antioxidants in lotus rhizome with different polarities and solubility.

Objective – To investigate the effect of extracting solvents on the yield, total phenolics and antioxidant activity in extracts of lotus rhizome.

Design – Five grams lotus rhizome powder was extracted by 50 mL of methanol, ethanol, acetone, ethyl acetate, dichloromethane or petroleum ether respectively. The extracts were weighed after solvents being removed. Then all extracts were dissolved in dimethyl sulfoxide (DMSO) and their antioxidant capacity were assessed by using a 2,2-diphenyl-β-picrylhydrazyl (DPPH) assay and a β-carotene bleaching method compared with ascorbic acid and BHA.

Outcomes – The higher the polarity of solvent, the higher the yield of extract. Methanol showed the highest polarity among all solvents used and the yield of its extract was the highest with 230 mg/5g lotus rhizome powder. Meanwhile, methanol extracts showed the highest (P<0.05) scavenging activity at 133.3 mg/L by the DPPH method along with the extract of acetone, which was also a high polarity solvent. The acetone extract showed the highest (P<0.05) total phenolics of 1266.0 mg catechin equivalents/100g extract. All extracts showed higher (P<0.05) antioxidant activity coefficient (AAC) than ascorbic acid by the β-carotene bleaching method, and extracts of dichloromethane and petroleum ether had the same AAC with BHA.

Conclusions – The present study indicated that the polarities of extracting solvents affected the yield of antioxidants, total phenolics and antioxidant capacity in extracts of lotus rhizome.

Post 14

Analysis of chemical constituents of zingiber officinale rosc. and rhizome of aplinia officinarum

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Background - Zingiber officinale rosc. and rhizome of aplinia officinarum both are of values in health food and traditional Chinese medicine. The volatile oils from them have been reported to have various activities. There are few reports about the volatile composition of the oils. Because volatile oils are important types of active components, analyses of volatile oils from these plants are necessary.

Objective - The aim of the present study was to extract the volatile oils of zingiber officinale rosc. And rhizome of aplinia officinarum and analyze the volatile compositions by gas chromatography – mass spectrometry.

Design - The volatile oils were extracted from zingiber officinale rosc. and rhizome of aplinia officinarum by simultaneous distillation extraction method, the chemical compositions of the volatile oils were analyzed by gas chromatography - mass spectrometry.

Results – Thirty five peaks were separated and thirty of them were identified for zingiber officinale rocs, the major constituents were pinene(8.77%), camphene(22.03%), phellandrene(25.98%), and thirty nine peaks were separated and thirty five of them were identified for rhizome of aplinia officinarum, the major constituents were pinene(7.40%), camphene(7.44%), eucalyptol (51.51%) and alpha.-terpineol (8.25%).

Conclusions – Based on the relative abundance of selected components of the volatile oils of zingiber officinale rocs and rhizome of aplinia officinarum, it might be possible to define those species.
Post 15

Effects of ultrasound-assisted extraction on extractability and quality of tea
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Background—“Tea cream”, a precipitate formed in cold tea liquor, does not favor the ready-to-drink tea production (1) and it can be controlled if tea is extracted at low temperature (2) but the yield of the extracted solids is low.

Objective-To investigate the effects of ultrasound on solids yield and chemical composition of tea liquor and develop ultrasound-assisted extraction method suitable for ready-to-drink tea production.

Design_Ultrasound-assisted extraction (UAE): Tea sample was extracted in distilled water in water bath at 50°C for 5-30min and sonication was performed using a KQ-250DE ultra-sonator. High temperature extraction (HTE): The tea was extracted in distilled water at 90°C. Low temperature extraction (LTE): The tea was extracted in distilled water at 50°C. Solids concentration, chemical composition, color difference and sensory quality of the extracted tea liquors were determined by methods of our previous paper (2).

Outcomes-Solids extraction yield of UAE for 30min was 353.8±2.6 mg g⁻¹ based dry weight (DW) of tea, being significantly higher than that of LTE (P<0.05) but 2.1% lower than HTE. The extracted total catechins of UAE was 125.91±0.12 mg g⁻¹ (DW), being significantly higher than those of THE and LTE, but the levels of amino acids and caffeine were between THE and LTE. The sensory quality of tea liquor extracted by UAE was better than THE.

Conclusions - UAE increases the yield and catechins concentration of extracted tea solids at low temperature and so is favorable for production of ready-to-drink tea


Post 16

Study on the micronutrient improve the androgen level of the male mice induced by D-galactose

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Background - Recent studies indicated that several micronutrients (especially vitamin A, vitamin E, Zinc and Selenium) might affect serum androgen level and sperm generating.

Objective - To study the effect of certain micronutrients on androgen level elevation and anti-oxidation in male mice induced by D-galactose.

Design - Sixty ICR male mice were randomly divided into two groups according to their weights, with 12 in the normal control group injected equal 0.9% sodium chloride and 48 in the D-galactose group treated with D-galactose through subcutaneous injection once per day in addition to normal feedstuff and drunk water freely. According to their serum androgen levels, the D-galactose group were further divided into four subgroups eight weeks later, treated with testosterone, micronutrients preparation, testosterone plus micronutrients preparation and 0.9% sodium chloride, respectively. Micronutrients preparation was given through lavage, daily, while testosterone being injected subcutaneously once a week. The following indices were observed four weeks later: the serum androgen level, the activity of GSH-Px and SOD in lung, liver, brain and heart.

Outcomes - The serum androgen levels of mice increased after supplementation including internal significance between the micronutrient group and the micronutrient-androgen group (P<0.05). The GSH-Px activities of the mice were significant between the micro nutrient group and the model control group in lung, heart and brain (P<0.05). The SOD activities in the micronutrient group were statistically higher than those in the model control group in heart and brain (P<0.05).

Conclusions - Multimicronutrients supplementation displayed positive effect on increasing serum androgen level as well as elevating the activities of GSH-Px and SOD.
**Post 17**

**Synergestic treatment effect of vitamin E and compound salvia miltiorrhiza tablet on male factor infertility**

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**Background** - It is difficult to clear the reason for male factor infertility affected by idiopathic oligozoospermia. Though there are many drugs for the treatment of the disease, few are considered as ideal method. In this study, we want to increase sperm quantity and improve semen quality through combined drugs treatment. The study may provide a better method for clinical treatment of male factor infertility.

**Objective** - To investigate the synergestic treatment effects of vitamin E and compound salvia miltiorrhiza tablet on male factor infertility affected by idiopathic oligozoospermia.

**Design** - The patients were selected according to semen routine analysis, referring to WHO standard, and clinical symptoms. Inclusion criteria included: (1) a history of infertility factor at least 2 years, (2) semen quantity of per ejaculation \( \leq 2.0 \text{mL} \), sperm count \( \leq 2 \times 10^8/\text{mL} \) at least three separate occasions, sperm survival rate \( \leq 60\% \), (3) concomitant or not concomitant lumbocural pain, dizziness and tinnitus, limbs acratia, impotence and prospermia. The patients with clear female factors were exclued. 57 patients fulfilled the inclusion criteria and were enrolled in the study. These patients were treated with vitamin E at a dose of 100mg on three times per day for 3 months, and with compound salvia miltiorrhiza tablet at a dose of 4g on three times per day for 3 months. Semen analysis were performed in all patients by the same operators before the study and after three months. Additionally, all patients were encouraged to have a special coitus frequency, at least two to three times per week, particularly at midcycle. All the patients were received therapeutic evaluations. The cure standard include semen routine was normal, clinical symptoms were improved and spouse were pregnant. The effectual standard was semen routine and clinical symptoms were partially improved. The inefficacy standard was semen routine and clinical symptoms were not improved.

**Outcomes** - In the 57 cases, 30 cases were cured (52.6%), 20 cases were improved significantly (35.1%), and 7 cases were inefficient (12.3%). Total effective rate was 87.7%.

**Conclusions** - Vitamin E can promote spermatogenesis, and compound salvia miltiorrhiza tablet have the abilities to dilate blood vessel, inhibit platelet aggregation, and improve the local testis blood flow. The combined apply of the both drugs can result in their synergistic treatment effects, improve spermatogenesis and sperm quality in male factor infertility affected by idiopathic oligozoospermia.

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**Post 18**

**An edible seed with high content in conjugated linolenic acid from China**

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**Background** - *Trichosanthes kirilowii* Maxim (TK) is a traditional Chinese medicine plants, its dried fruit, root and seed have long been used as traditional medicine. In China, the seed from some TK varieties has also been used as leisure food just like sunflower seed. TK seed has been reported to have bioactivities of anti-tumor, anti-bacterium. It is reported recently that conjugated linolenic acid has favorable physiological effects, such as antitumor and alteration of lipid metabolism.

**Objective** - The aim of our study is to determine the lipid classes and the fatty acid composition, especially the punicic acid content in the edible seed.

**Design** - TK seed oil was extracted with two solvents: chloroform-methanol (2:1, v/v) (CM extract) and petroleum ether (P extract). The lipid classes were analysed by latroscan TLC-FID and the total, phospholipids and triacylglycerol fatty acid composition were determined by capillary GLC. The triacylglycerol (TAG) and phospholipids (PL) were prepared by TLC using silica gel 60 plates.

**O comes** - The oil content of TK seed was 33.3-34.6%. The predominant lipid component was TAG (95.8-98.4%) with smaller amounts of steryl ester, free fatty acid, diacylglycerol, sterol and PL. Major fatty acids were linoleic acid (32.7-32.7%) and punicic acid (32.6%-33.3%) followed by oleic acid (22.6-22.9%) in the total fatty acid. The oils contained an appreciable amount of unsaturated fatty acid (91.8-92.5%), especially polyunsaturated fatty acid (69.2-69.6%). TAG fatty acid composition assembled as total fatty acid and PL of CM extract was dominated by linoleic acid (49.7%) followed by palmitic acid (22.7%) and PL of P extract was dominated by linoleic acid (33.7%) and oleic acid (27.1%).

**Conclusions** - This study showed that TK seed oil was rich in polyunsaturated fatty acid, especially punicic acid and the main lipid components was TAG. The results showed that TK seed oil has potentially important nutritional value.
Post 19
Antihypertensive effect of rice protein hydrolysate with in vitro angiotensin I-converting enzyme inhibitory activity in spontaneously hypertensive rats

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Background – Hypertension is a major risk factor for cardiovascular disease. In the rennin-angiotensin system, angiotensin I-converting enzyme (ACE) plays a crucial role in the regulation of blood pressure as well as cardiovascular function. Inhibition of ACE mainly results an overall antihypertensive effect.

Objective – The objective of the present study was to investigate the antihypertensive effect of rice protein hydrolysate prepared with protease Alcalase in spontaneously hypertensive rats (SHR) and to isolate the peptide responsible for ACE inhibitory activity in the hydrolysate.

Design – Rice protein hydrolysate was obtained by enzymatic hydrolysis for 2 h with protease Alcalase. Twelve male SHR (12 weeks old) with a systolic blood pressure (SBP) >180 mmHg were used. Samples were dissolved in 0.9% saline solution and orally administered to SHR by gastric intubation at a dose of 600 mg/kg (for hydrolysate) or 30 mg/kg (for peptide) of body weight. Control rats were given the same volume of saline solution. SBP and heart rate (beats/min) were measured before and 2, 4, 6, 8 and 12 h after administration.

Outcomes – The Alcalase-generated hydrolysate showed strong in vitro ACE inhibitory activity with the IC50 value of 0.14 mg/mL. A significant decrease in SBP in spontaneously hypertensive rats was observed following single oral administration of this hydrolysate at a dose of 600 mg/kg of body weight. Single oral administration of Thr-Gln-Val-Tyr (IC50, 18.2 μM) isolated from the hydrolysate also significantly decreased blood pressure in SHR.

Conclusions – In vitro ACE inhibitory activity and in vivo antihypertensive activity can be generated from rice protein by enzymatic hydrolysis. The rice protein hydrolysate prepared with Alcalase might be utilized to develop physiologically functional food with antihypertensive activity.

Post 20
Construct replace -disrupted vector to disrupt pksCT gene for citrinin biosynthesis in Monascus

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Background – Monascus produce three kinds of secondary metabolites: red pigments, monacolin K and citrinin. Red pigments are widely used as natural food colorants, and monacolin K is used as an antihypercholesterolemia agent. Citrinin is a nephrotoxic activity in mammals. Although some citrinin-nonproducing mutants of Monascus have been constructed by induced mutation, but t mutants easily generate revertants. Thereby the essential method is to disrupt the gene for citrinin biosynthesis. In Monascus species, gene disruption has been difficult to achieve. Only a research of pksCT- insert-disrupted has been reported in Monascus purpureus(1), and Revertants generated in disruptant restored citrinin production.

Objective – To investigate the homologous genes for citrinin biosynthesis in different Monascus strains, disrupt pksCT gene (accession no. AB167465 in GenBank) for citrinin biosynthesis and obtain citrinin-nonproducing Monascus strains.

Design – Genomic DNA were isolated from three high producers of red pigments and citrinin strains (M.purpureus 3.4451, M.purpureus 3.4453, M. aurantiacus Li 3.4384 ) and one citrinin-nonproducing and red pigments-lowproducing strain (M. rubber van Tieghem IFFI 5007). Two portions in both ends of pksCT were amplified by PCR, using genomic DNA as templet. A pksCT -replace -disrupted vector constructed to replace pksCT with a hygromycin resistance gene was transformed into Monascus through electroporation. Transformants were subcultured on selection plates (contain 50 mg L-1 hygromycin B ). The citrinin levels in fermentation of pksCT disruptants were analysed by HPLC.

Outcomes – Two portions of pksCT were gained from M.purpureus 3.4451, M.purpureus 3.4453, and M. aurantiacus Li 3.438, but M. rubber van Tieghem IFFI 5007. Results showed that pksCT disruptants produces little or no citrinin, and The pksCT disruptants havenot generated revertants by successive cultivate.

Conclusions – The study indicated that pksCT encoded PKS responsible for citrinin biosynthesis in Monascus. Disruption pksCT gene could gain the steadily citrinin-nonproducing mutants of Monascus.

Post 21

Study of Variance in the State Standard Methods for the Determination of Vitamin B_6

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**Background** – Determination of nutrient is a weakness in many determinative institutions. For the example with the determination of vitamin B_6, both State Bureau of Quality and Technical and the Ministry of Health has promulgated over the testing standard. But there has a disagreement on what is vitamin B_6 and understand of the state standards, so that lead to the variance of the determination of vitamin B_6.

**Questions** – Nutritionists define vitamin B_6 as the derivative of pyridine. There are three active forms in tissues – pyridoxine, pyridoxal, pyridoxamine. The molecular weight is 169. Drug scientists regard to the definition of vitamin B_6 as well as pyridoxine hydrochloride. The molecular weight is 205.6. The different concepts of vitamin B_6 lead to the differ of the determination in national standards, the variance is 20%, and there is no comparability to test a same sample among different laboratories.

**Reasons** – There are some flaws in the national standards. The lack of co-ordination and communication between the different standard departments. There is no compare between different methods to determinate vitamin B_6.

**Suggestion** – Cooperation and communication should be strengthen between the testing departments and technicians; Legislators and tipstaffs should frequently communicate and harmonize each other, to avoid the embarrassment of multi-administration and multi-constituted standards.

Post 22

The influence of compound lactobacilli on intestinal barrier function of severe acute pancreatitis in rats

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**Background** - Severe acute pancreatitis (SAP) is a very common disease with high mortality. How to improve the intestinal barrier function is very important in SAP patient.

**Objective** - To investigate the influence of different nutritional support with compound lactobacilli on intestinal barrier function of severe acute pancreatitis (SAP) in rats and its mechanism.

**Design** - SAP model was established in 96 male Sprague Dawley (SD) rats via injection of 1 ml of 3.8% sodium taurocholate beneath the pancreatic capsule and then were averagely divided into 6 groups: sham-operated group with early enteral nutrition support (Sham-EEN), ENN group, EEN with compound lactobacilli (EEN+ Lac) group, sham-operated group with total parenteral nutrition support (Sham-TPN), TPN and PN with compound lactobacilli (PN+Lac) group. Half of rats in each group were killed at 4d and 7d to determine the bacterial translocation (BT) in live and mesenteric lymph node (MLN), endotoxin (ET) plasm, intestinal transit index, epithelial cell apoptosis in intestinal barrier (by TUNEL), protein content in small intestinal mucosa (by BCA), SIgA content in small intestinal mucus.

**Outcomes** - 1. compound lactobacilli can benefit the intestinal barrier in SAP rats with nutrition therapy, by decreasing the occurrence of BT and endotoxin translocation (ET) in SAP rats, improving synthesis of intestinal mucous protein, decreasing the apoptosis of the epithelial cell, and enhancing the immunology barrier function of intestine by improving the excretion of the SIgA. 2. The EEN with compound lactobacilli is more effective than other groups.

**Conclusion** - EEN and PN with compound lactobacilli can significantly benefit the intestinal barrier function.
Post 23
Survey of Organic Phosphor Pesticides Residue of Green Tea
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Background – Pesticides have played an important role in increasing agricultural productivity. Because of their high toxicity and widespread uses in agricultural areas, the residues could be left in both our environment and product. Most determinations of pesticides were based on chromatographic methods with various detections, such as flame ionization detection (FID), mass spectrometric (MS) detection (1), and electron-capture detection (ECD). Because tea is now one of the most popular drinks in the world, and its safety had called lots of people’s attention.

Objective – Organophosphor pesticides is one kind of most usually used pesticides in tea production. The purpose of this study was to determine the concentrations of organophosphor pesticides (OPPs) in Zhejiang Green tea.

Design - The concentrations of 15 kinds of organophosphor pesticides in green tea of 16 tea garden (AN1, AN2, BN, CN, DN, EN, FN, GN, HN, AO, BO, CO, DO, EO, FO, GO, A stands for aera, N and O stands for normal and organic tea respectively) in Zhejiang Province were determined by solid-phase extraction(SPE) and GC-FPD in 2003.

Outcomes – Four kinds of pesticides were detected of four samples in all 16 samples, acephate were detected in samples of AN1, AN2, BN and DN, dichlorovos were detected in samples of BN, methamidophos were detected in samples of DN and dimethoate were detected in samples of AN2.

Conclusions – The results indicate that acephate residue is much more than other pesticides, the dichlorovos, methamidophos and dimethoate residue were also detected in a few tea samples. The methamidophos and dimethoate residue were reduced and the dichlorovos residue almost kept the same value during the procession, but the acephate residue was either increasing or reducing after process. The pesticide residue changed by different produce technology.


Post 24
Determination of oleanodic acid and ursolic acidin flowers of eriobotrya japonica by RP-HPLC-PDA
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Background – Eriobotrya japonica is also a precious traditional medicine with a history of hundreds of years in China. Flowers of eriobotrya japonica (Thunb) could be used to cure coughing and pharyngitis. There were abundant oleanonic acid and ursolic acid in flowers of eriobotrya japonica (Thunb). It has been reported that oleanonic acid and ursolic acid can suppress tumor growth. However, there has been no data on the content of oleanonic acid and ursolic acid in flowers of eriobotrya japonica (Thunb).

Objective – To establish a HPLC method for the determination of oleanonic acid and ursolic acid in flowers of Eriobotrya japonica (Thunb).

Design – A comparative study on Oleandric acid and Ursolic acid in flowers of Eriobotrya japonica was conducted through an optimized reversed phase high-performance liquid chromatography with photodiode array (RP-HPLC-PDA) detection on a Alltech Apollo PR-C18 Column (4.6mm×250mm,5μm particle) with methanol-acetic acid aqueous solution (pH3.4), 94:6 (v/v), as mobile phase, at a flow rate of 0.5 m L. min⁻¹, and UV detection at 210nm.

Outcomes – The method was shown to be highly reproducible, with precision (as RSD) < 5 %, both intra-day and inter-day. The calibration curves of Oleanonic acid and Ursolic acid were in good linearity over the range of 25.34~506.80 mg/L (r = 0.9966, n=7)、9.10~182.00 mg/L (r = 0.9996, n=7)， respectively. Absolute recoveries were 98.35%~103.80% with RSD<1.0%.

Conclusions – Assay was simple, accurate, and reproducible.
Post 25
Application of Aluminide Coatings Modified with Yttrium for Protecting Corn Post Harvest Processing Equipments against Erosion in Food Industries

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Background - Corn are handled mechanically in storage bins and post harvest processing equipments in food industries by augers and conveyors, airflow, or allowed to flow by gravity. When corn transported through these equipments, they are impact the body of equipments and cause serious erosion damage. Recent studies demonstrate that the aluminide coatings are beneficial to the wear and erosion resistance and also oxygen-active elements such as yttrium remarkably can improve these resistances.

Objective - To improve resistance of food industry equipment against erosion and wear, we were coated steel 1045 with aluminide coating with and without yttrium and then were investigated the resistance of these coating against wear and erosion.

Design - Micro-hardness and wear of the aluminide coating with and without yttrium, and steel 1045 were investigated. Erosion loss of specimens against corn was also evaluated using a slurry erosion test machine. The data analyzed statistically to study the effect of corn varieties, moisture contents at three levels (wet basis), and rotary velocity of slurry erosion machine at three levels on erosion resistance.

Outcomes - Results showed that aluminide coatings improved the wear and erosion resistance of substrate steel 1045; also yttrium remarkably improved the hardness of the aluminide coating and its wear and erosion resistance. The erosion loss of materials was significantly (p<0.01) influenced by type of corn, moisture content and rotary velocity.

Conclusions - Both of aluminide coatings showed that higher wear and erosion resistances than that steel 1045, so we can purpose this kind of coating to improve wear and erosion resistance of corn post harvest equipments in food industrials.

Post 26
Application of 1-methylcyclopropene prior to cutting reduces wound responses and maintains quality in fresh-cut apple

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Background – Marketing of fresh-cut produce has increased rapidly due to increased consumer demand for fresh and convenient foods. The USDA recommends that adults consume two to three servings of fruit per day (1), apple is a popular and commercially important fruit served as a fresh-cut item. Chilling disorders have been reduced or eliminated using 1-MCP, there is little information about 1-MCP effects on fresh-cut apple.

Objective – To investigate the effect of wounding and 1-methylcyclopropene (1-MCP) treatment before cutting on respiration rate, ethylene production, electrolyte leakage, firmness, soluble solids and color of intact and fresh-cut apple fruits.

Design – The selected apples (Malus sylvestris L.) were dipped in 200 μl l\(^{-1}\) sodium hypochlorite for 10 min and rinsed with deionized water, air-drying and were placed in six 55-l polystyrene containers at 20°C. Three containers of fruits were treated with 1 μl l\(^{-1}\) 1-MCP for 10 h. Other three containers of fruits were not treated with 1-MCP. After treatment, half of 1-MCP treated and untreated fruits were cut longitudinally in halves with a blade. Apples were placed on plastic trays (all trays with two fruits each) covered with 40 μm-thick polyethylene film and stored at 2°C.

Outcomes – This study observed that shelf-life of fresh-cut apple with 1-MCP pre-treatment was 14 d at 2°C. 1-MCP treatment significantly reduced wound-activated respiration rate and ethylene production. Application of 1-MCP retarded firmness loss and total soluble solids increase in apples. L values and WI values of flesh of apple with 1-MCP treatment were higher than those without 1-MCP treatment. Apples treated with 1-MCP had little changes in electrolyte leakage.

Conclusions – The present study indicated that treatment with 1 μl l\(^{-1}\) 1-methylcyclopropene (1-MCP) can significantly reduce wound-active responses on all parameters measured in fresh-cut apple.

Post 27
Effects of early enteral supply of synbiotics to severely burned patients - a randomized study
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Background – Severely burned patients are susceptible to infections. Bacteria of gastrointestinal origin are a major source of burn sepsis. Recently, significant reduction in postoperative infection rates have been obtained by supplementing a combination of pre and probiotics (synbiotics) to patients with severe acute pancreatitis, to patients undergoing extensive abdominal operations, and liver transplantation.

Objective – To investigate the influence of early enteral nutrition with synbiotics on plasma endotoxin levels, nutritional state, inflammatory response and incidence of infectious complications in severely burned patients.

Design – Randomized double blind controlled study in forty severely burned patients. The patients in group A received early enteral nutrition with a synbiotic composition containing four specific lactic acid bacteria and fours bioactive fibers, Synbiotic 2000®. The patients in group B received early enteral nutrition containing only the four prebiotic fibers from the synbiotic composition, but no lactic acid bacteria. Subgroups of patients with 80%-280% coefficient unit burned surface (UBS) were especially studied: A1 (n=10) and B1 (n=11) groups. The plasma levels of endotoxin, IL-1, IL-6 and prognostic inflammatory nutrition index (PINI) were examined was determined on the 1st, 3rd, 7th, 10th, 14th and 21st postburn days (PBD).

Outcomes – Both the plasma endotoxin level and abnormal rate of plasma endotoxin in group A were significantly lower than those in group B (p<0.05). There were 3 cases with positive blood culture in group A, and 5 cases in group B. No difference in the infectious complication could be found between the two groups. The plasma IL-6 level and PINI in group A1 on 10th and 14th PBD were significantly lower than those in group B1 (P<0.05).

Conclusions – Early enteral nutrition with synbiotics is more effective than only fibers to decrease inflammatory stress response and plasma endotoxin levels, but seems not to be superior to influence clinical outcome.

Post 28
Effect of Angiotensin I-Converting Enzyme Inhibitory Peptide from Rice Dregs Protein on Antihypertensive Activity in Spontaneously Hypertensive Rats
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Background – Angiotensin I-converting enzyme (ACE) inhibitory peptide had good effect on blood pressure regulation. Therefore, research to find and develop safer, effective and economical ACE inhibitors is necessary for the prevention and remedy of hypertension. Although synthetic ACE inhibitors had good effect on antihypertensive, they can cause adverse side effects. So food-derived ACE inhibitory peptides isolated from food or from enzymatic digestion of food proteins are the safe and efficient sources.

Objective – To investigate the effect of rice dreg enzymatic hydrolysates on anti-hypertension in vivo with spontaneous hypertension rats (SHR).

Design – The once-oral administration animal experiments with rice dreg hydrolysates (RDH) in different doses were conducted using 6 weeks old spontaneous hypertension rats as the test model. Twenty five spontaneous hypertension rats (SHR) were randomized into five groups according to blood-pressure level. The group A is blank control group, the group B positive control group (Captopril), the group C (1.0 mg/kg), the group D (RDH 10 mg/kg) and group E (RDH 50 mg/kg). The administration approach is to fill in stomach by mouth. The blood pressure value was observed for each group. The long term oral administration design was conducted for one month. Twenty four SHRs were randomized into 3 groups. The first group is the blank control, the second group is low dose (RDH 10 mg/kg) and the third group is high dose (RDH 20 mg/kg). In administration period, blood pressure was measured for once a week.

Outcomes – The once-oral administration animal experiments showed that the blood pressure of spontaneous hypertension rats (SHR) drop was 10.96 mmHg, 16.77 mmHg, 26.39 mmHg, 16.61 mmHg at a dosage of 1 mg/kg, 10 mg/kg, 50 mg/kg hydrolysates and 1 mg/kg Captopril, respectively, after 1h administration. The results of long term oral administration experiments showed that the blood pressure drop of SHR for 16.88 mmHg, 26.22 mmHg in 10 mg/kg and 20 mg/kg, respectively after 30 days administration. RDH not only promoted the growth of SHR, but also had no adverse effect on heart rate.

Conclusions – The present study indicated that the inhibitory peptide with rice dreg hydrolysate had anti-hypertensive effect in SHR.
**Post 29**

**Dissipation dynamics of endosulfan in green tea and oolong tea**

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**Background** - Endosulfan can prevent tea plant from being attacked by several pests, and the maximum residue limits (MRL) of endosulfan in tea is 30mg/kg, it has became one of the most widely used pesticides for tea production. However, the dissipation of endosulfan in tea has been rarely reported.

**Objective** - To investigate the dissipation behavior of endosulfan in tea and observe the difference of the dissipation of endosulfan between green tea and oolong tea.

**Design** – Field trials were conducted from 2003 to 2005 in Fuan, Fujian Province. Four treatments such as 1575, 788, 525, and 394 g/ha (a.i) of endosulfan were applied on tea garden in spring and summer. Tea shoots were pickled, green tea and oolong tea was made, and residual endosulfan in tea samples was detected at different intervals after endosulfan application. A simple, rapid analytical procedure for the quantification of endosulfan in these samples was developed using gas chromatography.

**Outcomes** – The dissipation of endosulfan in green tea and oolong tea corresponded with the first-order kinetics curve. Compared with in green tea, the residual endosulfan was much higher in oolong tea under the same condition. The average half-life of endofulfan was 1.39 d in green tea and 1.75 d in oolong tea, which was significantly different (P<0.01, n=15).

**Conclusions** – The residual endosulfan in tea was below the MRL issued by WHO/FAO after 7 days of application for all the treatments. As the half-life of endosulfan was much longer in oolong tea than in green tea, the safety interval after a pesticide application for oolong tea production should be longer.

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**Post 30**

**Time-resolved fluoroimmunoassay development for β-agonist clenbuterol hydrochloride**

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**Background** - Clebuterol hydrochloride (CLB) is a β-agonist abused in animal culture by some illegal farmers, which is very harmful to human health, but no time-resolved fluoroimmunoassay (TRFIA) for clenbuterol hydrochloride were developed.

**Objective** - To provide a rapid, selective and supersensitive TRFIA method for the β-agonist clenbuterol hydrochloride.

**Design** - An antigen-coated indirect competitive time-resolved fluoroimmunoassay based on monoclonal antibody was developed. CLB Conjugated to Ovalbumine was used as coated antigen in 96-well micro plate, anti-CLB monoclonal antibody labeled Europium (Eu³⁺) was added and incubated with standard CLB. The suitability of the assay for quantification of CLB was also studied.

**Outcomes** - The result showed that the detection limit was 0.03 ng/mL, the within-run and between-run CVs were 2.0% and 8.9%, the recoveries was 105.8%. Compounds very similar in structure to clenbuterol (salbutamol and ractopamine) exhibited cross-reactivity values in the 0.77%~0.96%.

**Conclusions** - The TRFIA method for clenbuterol chlorhydride should reasonably allow the rapid, low-cost, and sensitive determination of clenbuterol in food at levels of regulatory and practical importance.
Post 31
Application of response surface methodology to evaluation the effect of environmental factors on aflatoxin production by *Aspergillus parasiticus*

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**Background** – Most aflatoxin contamination of foodstuff were occurred during post-harvest and storage period (1). Now it is know that many environmental factors of storage including temperature and pH can influence the fungal growth and the aflatoxin production (2), but less is known about the specific regulatory effects of other environmental factors and the interaction between various environmental factors on aflatoxin production.

**Objective** – To simulate the production of aflatoxin by *A. parasiticus* in storage grain and establish a predictive model of aflatoxin yield which can be used in the control practice of aflatoxin contamination.

**Design** – The effect of pH, cultivation time and temperature on aflatoxin production by *Aspergillus parasiticus* in liquid media was studied. Modelling of aflatoxin production was carried out using response surface methodology (RSM) to obtain the maximum and minimum aflatoxin concentration (Y values) and the corresponding cultivation conditions.

**Outcomes** – The highest aflatoxin yield was obtained when *A. parasiticus* was cultured at 28°C, acidic condition (pH 4.5~5) for enough time (about 10 days), and the lowest was obtained when *A. parasiticus* was cultured at the temperature which far away from the optimal growth temperature of fungi such as 37°C or 20°C, and under alkaline pH condition (pH 8) for short period (4~5 days). RSM was very efficient and model adequacy was very satisfactory as the coefficient of determination was 0.99.

**Conclusions** – The present study indicated that storage conditions (pH, storage temperature and time) have effects on aflatoxin production in foodstuffs. The predictive model of aflatoxin production which established in this work enables us to take action with the theoretic guidance in the controlling of aflatoxin contamination of storage grain.


Post 32
The study of the effect in blood glucose and relative hormones after various compositions breakfast

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**Background** - Various diets with different calorific amounts increased hormone releasing to various extents. However, there has been no data on the interaction between the hormone concentration and the breakfast with the same energy and different nutrient compositions.

**Objective** - The effects of the change on blood glucose, triacylglycerol, cholesterol, insulin, c-peptide, glucagon and glucagon/insulin (GIH) were studied after ingestion of the breakfast with different nutrient compositions.

**Design** - Using the cross-over experiment design, 12 healthy university students (6 male, 6 female) divided into four groups. Each group ate one of the experimental breakfasts for one week, between each the experimental breakfasts with four days habitual breakfast washing period. Blood sample was taken before and after breakfast at 1h, 2h and 3.5h in five days during 7 days. The four experimental breakfasts were high fat, high carbohydrate breakfast, high protein and common breakfast.

**Outcomes** – The levels of serum insulin, c-peptide after high carbohydrate breakfast and high protein breakfast rose higher at 1h and 2h compared with high fat breakfast and common breakfast (P<0.05). The serum glucose average after high fat breakfast rose markedly at 2h and 3.5h compared with other breakfast (P<0.001). The levels of serum insulin after high protein breakfast at 3.5h were higher than that after high fat and common breakfast (P<0.05). The GIH at 3.5h after high fat breakfast were higher than that after high carbohydrate breakfast and high protein breakfast (P<0.05).

**Conclusions** - The high carbohydrate breakfast cause high blood glucose and insulin inroad, thus increase the cardiovascular danger. The high protein breakfast have high insulin inroad and the high fat breakfast have high triglyceride. The breakfast of nutrient compositions in 50/15/35 for carbohydrate, protein and fat is a more ideal breakfast meal structure mode of the people.
Post 33
Antiproliferation effects of conjugated linoleic acid on human colon adenocarcinoma cell line caco-2
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The Key Laboratory of Food Science of Ministry of Education. Sina-Germen Joint Research Institute, Nanchang University. Nanchang 330047

Background - Conjugated linoleic acid (CLA) reduced body fat reserves, and reduced atherogenesis and type II diabetes in animal experiment. It was reported that CLA have isomer-specificity, such as c10,t12 CLA has anticancer activity.

Objective - To investigate the antiproliferation effects of two isomers of CLA and their mixture on the human colon adenocarcinoma cell line Caco-2.

Design - Caco-2 were incubated in serum-free medium. The antiproliferative effects of different concentrations (0, 25, 50, 100, 200 μmol/L) of linoleic acid (LA, 96%), c9,t11-CLA (96%), t9,t11-CLA (96%) and the mixture of c9,t11-CLA and t9,t11-CLA (1:1 v/v) on Caco-2 in various action time (1d, 2d, 3d, 4d) were tested in the present study. The antiproliferative effects of four substances in the same concentration and the same action time also were compared.

Outcomes - All substances tested could inhibit the Caco-2 cell proliferation. The higher anti-proliferation activity in the four materials is the mixture of the two isomers of CLA, then is t9,t11-CLA, c9,t11-CLA, and linoleic acid respectively. The activity is also closely related to the treatment time and concentration.

Conclusions - All substances tested could inhibit the Caco-2 proliferation, and the mixture of CLA and t9,t11-CLA were stronger. The mixture of CLA induced apoptosis of caco-2, which might be an important anticancer function of CLA.

Post 34
Application of high pressure during the processing course of mayonnaise
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Background – Mayonnaise is a sort of emulsifying semisolid, high nutrition value and distinctive flavor condiment. It cannot be sterilized by heating because mayonnaise’s structure will be destroyed (1), while it is easily corruptive by microorganism at normal temperature.

Objective - Mayonnaise processed by high pressure takes on steady quality, abundant nutrition, safety, convenience and longer storage life.

Outcomes – Ensured mayonnaise’s quality as a premise, a mathematics model was made according to the restraint condition in order to determine the prescription and cost of mayonnaise, the optimization prescription of minimum cost is gotten using the function of Excel programming calculation, which could be used in practice processing of mayonnaise in the future. Mayonnaise can not be heated up to sterilize, so it is suggested that the mayonnaise would be processed at 300MPa for 5mins, the commercial germless requirement would be fit. From the near-infrared spectrum (NIRS) of mayonnaise and its components, it was discovered that the NIRS change of mayonnaise was very similar with the NIRS of yolk, and it shows that the NIRS change of mayonnaise processed high pressure is caused mostly by yolk, but we can’t get rid of the interrelation between each component.

Conclusions – The optimization prescription of mayonnaise may provide valuable reference for the application of computer in prescription design, and the biggest advantage of high pressure processing can not only sterilize at room temperature, but also get the mayonnaise with new properties.

Post 35

Comparison of ultra high pressure extraction with room temperature extraction, Soxhlet extraction, ultrasonic extraction and microwave-assisted extraction techniques for the extraction of rutin from Morus alba. L.

JR Li, J Yu, P Yu

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Background - Dried leaves of Morus alba. L. is an ancient Chinese drug. It has been widely consumed in traditional Chinese medicine for patients with diabetes mellitus. Rutin is one of the main nutrients of it. However, until now, the extraction of rutin from leaves of Morus alba. L. with UHPE has not been reported.

Objective - The aim of the present study was to develop a novel UHPE method, and to comparison of UHPE with conventional extraction techniques for the extraction of rutin from leaves of Morus alba. L.

Design - Ultra high pressure extraction (UHPE) using a UHPE apparatus (Huatai Shengmiao apparatus Co. Ltd, Tianjing ) was carried out in the following manner. Leaves of Morus alba. L. was mixed with appropriate solvents, the time and the pressure were set according to the experimental design. The suspensions following UHPE were centrifuged, put them into a 25ml volumetric flask, and reached the scale accurately with 70% (v/v) aqueous ethanol. Then it was filtered with a microporous (about 0.5 μm) membrane and then analyzed. Separations were achieved on a Hypersil ODS2 (5.0 μm 4.6×250 mm, Du pont) column and was eluted with methanol-5.0% phosphate acid at UV 358 nm at a flow rate of 0.8 ml/min. (Percentage extraction of rutin (%) = Mass of rutin/content of rutin×100%; The extraction yield of rutin (mg/g) = Mass of rutin/Mass of material).

Outcomes - The extraction yield of rutin increased with the increase of UHPE time at room temperature. UHPE time of 6 mins was optimal for reaching the best percentage extraction. In the experiment, the results indicate that the higher extraction pressure, the higher extraction yield of rutin. So increasing the UHPE pressure could increase the extraction yield of rutin. The extraction yield of rutin was reached 15.8, 20.6, 21.3, 22.8 and 24.0 mg/g, when RTE, SE, UE, MAE and UHPE techniques were used, respectively.

Conclusions - Compared with RTE, SE, UE and MAE, the UHPE procedure employed provides high extraction efficiency in short time. UHPE is an alternative extraction technique for fast extraction of rutin from the leaves of Morus alba. L.

Post 36

Determination of Formaldehyde in Squid Products by HPLC

JR Li, J L Zhu, L F Ye

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Background - Food safety, as a global problem, is generally becoming more attention in the society. The existence or artificial addition of formaldehyde is greatly focused on aquatic products. Some intrinsic content of formaldehyde existed in squid raw material and dried squid thread, produced by enzyme (1) and other way (2), according to previous studies.

Objective - In order to investigate content and analysis resource of intrinsic formaldehyde, a high performance liquid chromatographic (HPLC) method for determination of formaldehyde in squid products was developed.

Design - The measurement of formaldehyde was based on steam distillation and 2,4-dinitrophenylhydrazine derivatization, then HPLC analysis using ODS-C18 column at UV detector (355 nm). Some HPLC conditions were certain, including mobile phase, detection limit, recovery, linear relationship. And the formaldehyde content of several squid products was determined by the HPLC.

Outcomes - Mobile phase of this method was methanol: water (60:40), detection limit was 8.92 μg/L in standard liquid and 0.18 mg/kg in sample, and recovery was 83.09-103.20% (R^2=0.9996). The formaldehyde content of four kinds of squid (East Sea, Argentina, North Pacific, Dosidicus gigas) was 10.81, 19.17, 10.90, 18.82 mg/kg in flesh, and 41.75, 359.53, 110.89, 153.94 mg/kg in viscera, respectively. It was about 103.99, 52.52 mg/kg in dried squid thread (Dosidicus gigas).

Conclusions - This method, with a better speciality, accuracy and repeatability, is available to determine the formaldehyde in squid products with satisfactory results. The results indicated that the formaldehyde content in viscera and dried squid thread was higher than in flesh of squid and there are some variations in formaldehyde among the different kinds squid, which amount of Argentina squid and Dosidicus gigas squid is higher.

Post 37

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JR Li, J L Zhu, L F Ye
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Zhejiang Gongshang University, Hangzhou, China 310035

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Post 38

Induction of G2/M cell cycle arrest and apoptosis by apigenin in gastric cancer
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Background - Apigenin (4', 5, 7-trihydroxyflavone), a widely distributed plant flavonoid, was proposed as dietary anticarcinogen with high efficacy, low toxicity, and minimum side effects in many carcinomas. Although a recent study has shown that apigenin inhibits growth of human gastric cancer cells, information on its anti-tumor properties and cellular mechanism remain limited.

Objective - To investigate the effect of apigenin on cell growth, cell cycle progression and apoptosis in human gastric cancer.

Design - Human gastric cancer SGC7901 cells were exposed to apigenin at different doses and different times. MTT assay was applied to detect cell growth and proliferation. Cell cycle distribution was evaluated by flow cytometry. Apoptosis was determined by Annexin-V/PI double staining assay. Morphologic changes were studied with inverted light microscopy.

Outcomes - The growth of SGC7901 cells was significantly inhibited by Apigenin, which was confirmed by cell growth assay. Treatment with apigenin resulted in cell-cycle arrest at the G2/M phase as compared with the control (8.7%, P<0.05). The percentage of G2/M cell was 17.7% and 34.1% when the concentration of apigenin was 5 and 10μg/mL in culture medium, respectively. After incubation in 10μg/mL apigenin for 24 h, 48 h, 72 h, the G2/M population was 25.3%, 32.6%, 50.4%, respectively. Apigenin also induced apoptosis as compared with the control (4.4 %, P<0.05). The apoptotic rate was 12.1% and 47.1%, respectively, when incubated with 10 and 15μg/mL apigenin for 48h. After incubation in 10μg/mL for 24 h, the apoptotic rate was 9.3%, and it was close to 21.9% after 72 h. After exposure to 10μg/mL apigenin for 48h, cytoplasm shrinkage and nuclear condensation in SGC7901 cells was observed under inverted light microscope.

Conclusions - The present study indicated that apigenin inhibits gastric cancer effectively in vitro through inducing G2/M cell cycle arrest and apoptosis. Therefore, apigenin may be a promising chemopreventive and chemotherapeutic agent against human gastric carcinoma.
Post 39  
**Nutritive value and capacity to bind iron, copper and zinc by crackers and breads with the addition of dried shiitake (Lentinulla edodes)**  
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3Sanitary Inspection - Sanitary and Epidemiology Center for the Province WIELKOPOLSKA, Poznan, Poland  

**Background** – Mushroom shiitake (Lentinulla edodes) due to the documented (1) health benefits and a relatively high nutritive value is recommended as a supplement of daily diet. However, the recommended introduction of products with added shiitake to the diet especially as a source of minerals requires on the one hand the determination of contents of these elements and on the other hand the assessment of the capacity to bind microelements by these products.  

**Objective** – The aim of this study was to assess the chemical composition of products with the addition of dried shiitake and to estimate the capacity to bind Fe, Cu and Zn by these products under conditions of pH values similar to those found in the human alimentary tract.  

**Design** – The experimental material consisted of crackers and breads with a 10% and 20% addition of dried shiitake. Contents of protein, fat and ash were determined using standard analytical methods. Soluble and insoluble dietary fiber were assayed using Asp’s enzymatic method. Contents of minerals were analyzed by atomic absorption spectrophotometry. Sorption of Fe, Cu and Zn was estimated under *in vitro* conditions (simulated to imitate those in the alimentary tract), using buffer solutions with pH=1.8, pH=6.6, and pH=8.7 as dispersion media.  

**Outcomes** – It was found that the products were characterized by high contents of fiber, Fe, Cu, Mg and K, and low contents of Na and Ca. A low capacity to bind Fe and Cu of not more than 3% was observed in the analyzed material at pH=1.8, while high sorption values were recorded only at pH=6.6 for Cu in bread supplemented with the addition of 20% dried shiitake and crackers with a 10% addition (68% and 57%, respectively).  

**Conclusions** – Results of tests suggest that the products could be used as a food additive; however, in order to promote them as a good source of microelements it is necessary to determine the sorption capacity of dried mushrooms in *in vivo* tests.  


Post 40  
**Alteration of fatty acid composition and lipid components in oils during deep frying**  
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**Background** - Deep frying is a traditional food processing for preparing food. Lipids undergo various reactions because of heat treatment during deep-frying. Youtiao is a popular deep-fried food in China, and its nutrition value and impact on human health concern for consumers and researchers.  

**Objective** - The purpose of the present study was to evaluate the composition alteration of fatty acid and lipid in oils during deep-frying.  

**Design** - Palm oil and soybean oil were heated to 170°C, and 50g Youtiao were fried in each kind of oil, and oil was continually heated for total 8 hours everyday for 10 consecutive days. No fresh oil was replenished, and 50ml of oil sample was taken and stored in -18°C for later analysis. The fatty acid composition was determined by gas liquid chromatography and the lipid components were analyzed by latroscan TLC-FID.  

**Outcomes** - There was a decrease in unsaturated and an increase in saturated fatty acids (SFA) in both palm and soybean oils. The total SFA (myristic, palmitic and stearic acids) was increased from 46.3% to 53.5% in fried palm oil, from 13.1% to 16.4% in soy bean oil, respectively. Total unsaturated fatty acid (oleic acid and linoleic acid) was decreased from 53.7% to 46.5% in fried palm oil and from 86.9% to 83.6% in fried soybean oil, respectively. After deep frying for 10days, the percentage of polar compounds was increased from non to 18.3% in palm oil and to 7.5% in soybean oil.  

**Conclusions** – Present result indicated that soy bean oil is more stable than palm oil in relation to polar compounds and unsaturated fatty acids proportion decreasing during deep-frying same food stuff.
Post 41

Determination and monosaccharide composition analysis of polysaccharides from *Sargassum fusiforme*

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**Background** - *Sargassum fusiforme* has many activities, such as anti-virus, anti-tumor, enhance immunity, and the polysaccharide is the main active component.

**Objective** - To detect the content of polysaccharide from *Sargassum fusiforme*, to analyze the monosaccharide composition of the polysaccharides and to provide some reference for research on chemistry and pharmacology.

**Design** - UV-spectrophotometer and phenol-sulfuric method were used, the detection wavelength was 490nm. The monosaccharide composition was determined by HPCE.

**Outcomes** - The content of polysaccharide in *Sargassum fusiforme* was 53.46% and average recovery was 99.37%, RSD=2.19%. Polysaccharides from *Sargassum fusiforme* is composed of Rhamnose, Xylose, Glucose, Mannose, Arabinose, Galactose and one unknown component.

**Conclusions** - The method of phenol-sulfuric acid is simple, convenient and reliable and HPCE can be used to analyze the composition of the polysaccharides.

Post 42

**Abstraction, monosaccharide composition analysis and content detection of polysaccharides from Asparagus officinalis**

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**Background** - *Asparagus officinalis* has many activities, such as anti-virus, anti-tumor, enhance immunity, and the polysaccharide is the main active component.

**Objective** - To analyze the monosaccharide composition of the polysaccharide from *Asparagus officinalis*, to detect the content of polysaccharide.

**Design** - The monosaccharide was derived with α-naphthylamine, and separated by high-performance capillary electrophoresis in the borex buffer solution as carrier. Polysaccharides from *Asparagus officinalis* were hydrolysised into monosaccharides and electrophoresised by the same method. Phenol-sulfuric method were used for the detection of the content of polysaccharide.

**Outcomes** - The composition of polysaccharides from *Asparagus officinalis* is Xyl, Fru, Rha, Ara, Gal, each percent is 3.44%, 7.92%, 10.52%, 17.15%, 41.85%. The content of polysaccharide is 79.14%.

**Conclusions** - HPCE can be used to analyze the composition of the polysaccharides and the method of phenol-sulfuric acid is simple, convenient and reliable. The best working condition: running buffer was 75 mmol/L, pH10.5 borax solution, running voltage was 15 KV, injection pressure was 0.5Psi, injection time was 15s, column temperature was 25°C.
Post 43

Effect of Solanine on the Membrane Fluidity and Membrane Protein Level of Tumor Cells in H22 Tumor-bearing Mice

Run Title: Effect of Solanine on Cell Membrane

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Background - Solanine is found mainly in the tuber of the potato (Solanum tuberosum L.) and in the whole plant of the nightshade (Solanum nigrum Linn.) of the family Solanaceae. The whole plant of the nightshade contains many steroid alkaloids, including solamargine, solasonine, and solanine, as well as spopin and other substances. It can be used for anti-tumor purposes, with a strong inhibitory effect on tumors in animals and a clearly toxic effect on tumor cells. Its ethanol extract is capable of inhibiting the growth of breast cancer and induce apoptosis in tumor cells. The extract from the nightshade also has a strong anti-inflammatory effect because it can facilitate the formation of antibodies. The anti-tumor effect of solamargine has been reported, but there is as yet no report about any anti-tumor effect of solanine. From our past experience in both in vivo and in vitro experiments, we have found that solanine is toxic to cells, especially for the hepatocarcinomatic cell HepG2.

Objective - To study the effect of Solanine on membrane fluidity and membrane protein level of tumor cells in H22 tumor-bearing mice.

Design - The membrane fluidity of tumor cells in H22 mice was observed by DPH fluorescent probe marker assay, and the level of membrane proteins of tumor cells in H22 mice were determined by Coomassie brilliant blue.

Outcomes - The Solanine significantly decreased the membrane fluidity and membrane protein level of tumor cells in H22 mice.

Conclusions - The Solanine could decrease the membrane fluidity and the membrane protein level of tumor cells in H22 mice, which may be associate with achieving the antitumor.

Post 44

Study on the application of nervonic acid in breast milk simulated infant formula

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Background - Based on the characters of infant diet and brain growth, the difference of fat acid between breast milk and infant formulas, and the fact that most formulas do not contain nervonic acid (NA) which exists in breast milk.

Objective – To simulate breast milk and add nervonic acid into infant formula, in order to improve the brain growth and increase the intelligence level of newborns, infants and children.

Design - The article introduced the production process of nervonic acid added infant formula and functional animal test and human body test.

Outcomes – This article showed the function of nervonic Acid strengthened infant formula in improving the brain growth and increasing the intelligence level of newborns, infants and children.

Conclusions – The present study indicated that nervonic acid added infant formula maybe obviously improve the brain growth and increase the intelligence level of newborns, infants and children.

Post 45

Tea and lycopene protect against prostate cancer

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Background – Prostate cancer is the most common male cancer in developed countries and is increasing in other parts of the world. Its long latency and geographical variation suggests the possibility of prevention or postponement of onset by dietary modification.

Objective – To investigate the association between tea consumption and prostate cancer risk and the possible synergistic effect between lycopene and green tea.

Design – A case-control study was conducted in Hangzhou, China, using 130 incident patients with histologically confirmed adenocarcinoma of the prostate and 274 hospital controls. Information on dietary intakes and other factors was collected using a validated questionnaire. The effects of tea and lycopene intake were assessed using logistic regression analysis, adjusting for age, locality, education, income, body mass index, physical activity level, marital status, family prostate cancer history, total fat and energy intake.

Outcomes – Prostate cancer risk decreased with increasing green tea consumption. The odds ratio was 0.13 (95% CI: 0.06-0.29) for the highest relative to the lowest quartile of intake. The protective effect of green tea remains significant (OR 0.14, 95% CI: 0.06-0.35) after adjusting for total vegetables and fruits intakes and other confounders. Consumption of vegetables and fruits rich in lycopene was also inversely associated with the prostate cancer risk (OR 0.18, 95% CI: 0.08-0.39). Interaction analysis showed that the protective effect from tea drinking and lycopene intake was synergistic (P<0.01).

Conclusions – Habitual tea drinking and consumption of vegetables and fruits rich in lycopene were associated with reduced risk of prostate cancer in Chinese men. This is the first epidemiological study to demonstrate the jointly protective effect of tea drinking and lycopene intake.

Post 46

Nutrition status and its relationship to correlated diseases of middle-aged and aged people in urban fields in Chongqing Municipality

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Background – With continuous improvement of citizens’ life, the incidence rate of nutrition-associated diseases for the middle-aged and the old has become the highlight in the whole society. But there is no such study in new municipality Chongqing.

Objective – To investigate the nutrition status and its relationship to correlated diseases of the middle-aged and aged people in the urban fields in Chongqing Municipality so as to provide objective data for guiding them to scientific and rational diet.

Design – A total of 1801 urban working and retired public functionaries were studied in this article. Questionaire investigation, nutrition and physique measurement, clinical health examination, lab biochemistry determination and bone densitometry were performed on them.

Outcomes – (1) Study found overweight/obesity accounted for 50.5%, hyperlipemia for 36.1%, hypertension for 30.3%, hepatic adipose infiltration for 22.3%, metabolic symptom complex for 17.1%, osteoporosis for 16.1%, hyperuricemia for 12.2%, and diabetes for 11.2%, while the incidence of malnutrition was very low. (2) The incidences of hypertension, hyperlipemia, hepatic adipose infiltration, diabetes, coronary heart disease and gallstone in overweighted/obese persons were significantly or much significantly higher than those of the people with normal weight, that the incidences of hypero-triglyceride hypercholesterolemia, diabetes, hyperuricemia, coronary heart disease and hepatic adipose infiltration in the people with hypertension were significantly higher than those of the people with normal blood pressure, that the incidences of hypertension, hypero-triglyceride hypercholesterolemia, coronary heart disease and hepatic adipose infiltration in the diabetic were higher than those of the nondiabetic, and that the incidence of hepatic adipose infiltration was higher in the overweighted/obese persons and alcohol users. (3) The intake of eggs and fish per day obviously influenced the blood fat level.

Conclusions – The nutrition and health status of the middle-aged and aged people in Chongqing Municipality is not optimistic, and overnutrition is the main problem.
Post 47
Differential expression of immune genes in the spleen after foreign plasmid DNA uptaked via the gastrointestinal tract in mice

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Background- foreign DNA is defined as genetic material that derives from another organism of the same or a different species. The natural environment is heavily “contaminated” with foreign DNA. The gastrointestinal tract is the main portal of entry of foreign DNA into organisms .

Objective- To investigate the fate and consequence of foreign plasmid DNA uptaking via the gastrointestinal tract in mice.

Design- Mice were orally administered 200μg of plasmid pcDNA3 once. Gene expression of spleen was detected by highdensity oligonucleotide array and compared administered and control group. Functional cluster analysis was conducted by Gemmapp and MAPPFinder software.

Outcomes- Genes were expressed differentially including 276 upregulated genes and 447 downregulated genes. MAPPFinder results demonstrated that most upregulated expressed genes involved in immune response and nucleotide metabolism.

Conclusions- Foreign plasmid pcDNA3 could induce the process of immune response at mRNA level via the gastrointestinal tract. Foreign plasmid pcDNA3 might be recognized as “danger signal” by host innate immune system and induced global humoral and cell mediated immune response.

Post 48
Effects of water-soluble polysaccharides of wild Patrinia Villosa on immune function in ICR mice

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Background- Patrinia Villosa is a Chinese traditional herbal medicine. In the recent years, studies on clinic, pharmacology and chemical compositions of Patrinia Villosa have acquired great achievements. And some studies showed that it can improve the human immune. However, which components in it act on the roles is not clear.

Objective- To study immune regulatory activity of water-soluble polysaccharides of wild Patrinia villosa on ICR mice.

Design- Crude polysaccharides were extracted from wild Patrinia Villosa by boiled water, and precipitated by alcohol. Fifty female ICR mice (body weight: 21-24g) were randomized into five groups. And forty of them were injected with solid tumor S180, and ten of them were administrated with water as tumor control groups. And thirty of them were administrated with the Patrinia Villosa water soluble polysaccharides, the dosages are 0.75g/kg, 1.45g/kg, 3g/kg body weight. The polysaccharides were intragastrical administration one time a day for ten days. The other ten mice act as the control group. Then the biologic activities indices, including splenic lymphocyte transformation efficiency, NK activity, the concentration of interferon alpha, and the rate of peritoneal macrophage phagocytizing chicken red blood cell(CRBC) were determined.

Outcomes- The tumor S180 inhibitory ratio is -0.51%, 6.59%, 11.85%, respectively. It shows that water soluble polysaccharides of Patrinia Villosa can inhibit the growth of tumor, but no significantly difference(p<0.05). And other indices of polysaccharides groups compared with the control group show significantly difference, i.e. splenic lymphocyte transformation efficiency, NK activity, the concentration of interferon alpha, and the rate of peritoneal macrophage phagocytizing CRBC.

Conclusions- The present study indicated that the water soluble polysaccharides of wild Patrinia villosa have the function of immune regulatory.
Post 49

Clinical bone and non-bone effects of Caltrate D on Chinese

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Background – Caltrate D contains calcium carbonate and vitamin D. Caltrate D 600 and 300 have good clinical efficacy and have widely used in many clinical departments in Chinese hospitals.

Outcomes – (1) Children: 123 preschool children (3-6 yr) were divided randomly into CaD group (66 cases) (Caltrate D 300, Ca 300mg + Vit D 60 IU/d) and Control Group (57 cases) (No special treatment). After 6 months, Caltrate D 300 has positive effects on SOS of calcanea. (2) Pregnant women: 36 health pregnant women (24-31 yr) divided randomly into CaD group (12 cases) (Caltrate D 600, Ca 600mg + Vit D 125 IU/d + milkpowder 40g/d + diet), Milkpowder group (12 cases) (milkpowder 40g/d + diet) and Control Group (12 cases) (diet). From 20 weeks after pregnancy to 45±5 days after parturition, Caltrate D can increase BMD. (3) Pregnant women and Lead exposure: 73 pregnant women with high lead exposure were divided randomly into CaD group (35 cases) (Caltrate D 600, Ca 600mg + Vit D 125 IU/d) and Control Group (38 cases) (No supplementation). After 60 days, Caltrate D can prevent effectively descent of serum calcium level and increase of serum lead level, and reduce intrauterine fetal lead exposure during pregnancy. (4) Renal osteopathy patients: 32 patients with renal osteopathy (21 men, 11 women; 22-70 yr) were took Caltrate D 600(Ca 600mg + Vit D 125 IU, qd or bid) for 12 weeks. Caltrate D can improve bone pain and cutaneous pruritus in renal osteopathy patients. (5) Hypertension patients: 32 patients with hypertension) were divided randomly into CaD group (18 cases) (Caltrate D 600, Ca 600mg + Vit D 125 IU, tid), Nifedipine group (14 cases) (Nifedipine 10mg, tid) and Control Group (12 cases with normal volunteer ). After 1 month, Caltrate D 600 is beneficial to descent of blood pressure level and correction of disturbance of calcium metabolism.

Conclusions – The present studies in China indicated that Caltrate D 600 and 300 have good clinical bone and non-bone efficacy.

Post 50

Dietary carotenoids and risk of breast cancer

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Background – There has been considerable interest in the role of carotenoids in the chemoprevention of breast cancer. However, the roles of carotenoids in breast cancer etiology have been inconclusive. Although some studies have examined the relationship between the intake of lycopene, α-carotene, β-carotene, β-cryptoxanthin, and lutein/zeaxanthin and the risk of breast cancer, the results to date have been inconsistent.

Objective - To investigate whether intake of carotenoids has an inverse association with breast cancer risk.

Design - A case-control study was conducted in Hangzhou, China, in 2004-2005. Total 128 breast cancer patients and 632 controls recruited. Habitual dietary intake was measured by face-to-face interview using a validated and reliable food frequency questionnaire. The USDA nutrient composition database was used to calculate the consumption of lycopene, α-carotene, β-carotene, β-cryptoxanthin, and lutein/zeaxanthin.

Outcomes – Unconditional multivariate logistic regression analyses were used to estimate odds ratios (ORs) and 95% confidence intervals (CIs). After accounting for age, locality, education, body mass index, smoking, tea drinking, alcohol consumption, lactation, oral contraceptive use, menopausal status, energy intake, and family history of breast cancer, the dietary intake of lycopene, β-carotene, and β-cryptoxanthin was inversely associated with the risk of breast cancer. Compared with the highest versus the lowest quartile of intake, the adjusted ORs for lycopenes, β-carotene, and β-cryptoxanthin were 0.30 (95% CI 0.17-0.55), 0.38 (95% CI 0.20-0.72), and 0.41 (95% CI 0.22-0.78), respectively. The corresponding linear trends were also statistically significant. The intake of α-carotene and lutein/zeaxanthin was also inversely associated with breast cancer risk but the results were insignificant.

Conclusions - Consuming vegetables and fruits rich in carotenoids appears protective against breast cancer.
Post 51
Production monoclonal antibodies and development immunoassays to the pesticide carbofuran

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Background—Carbofuran (2,3-dihydro-2,2-dimethyl-7-benzofuranyl methylcarbamate) is a widely used systemic and contact N-methylcarbamate pesticide applied to control insect and nematode pests on a variety of agricultural crops. Carbofuran is highly toxic to humans and wildlife through the oral and nasal routes of exposure, so it is necessary to produce monoclonal antibodies (MAbs) and develop immunoassays to the pesticide carbofuran.

Objective—To produce MAbs and develop immunoassays to the pesticide carbofuran.

Design—The hapten 4-
[(2,3-dihydro-2,2-dimethyl-7-benzofuranyloxy)carbonyl]-amino]-butanoic acid (BFNB) and 6-
[(2,3-dihydro-2,2-dimethyl-7-benzofuranyloxy)carbonyl]-amino]-hexanoic acid (BFNH) of carbofuran was synthesized and Balb/c mice were immunized by the hapten-carrier (BFNB-bovine serum albumin, BFNB-BSA) conjugates. The splenocytes of immunized mice were fused with Sp2/0 cells and the cultural supernatants of hybridoma cell were screened by indirect enzyme-linked immunoabsorbent assay (ELISA) based on BFNB-ovaalbumin conjugates (BFNB-OVA). Purified MAbs was got from ascites fluids deposited by octanoic acid and ammonia sulfate. The affinity and the specificity of MAbs were characterized by ELISA or indirect competitive ELISA. Based on the MAbs in combination with an heterologous hapten BFNH, coupled either to horseradish peroxidase or to ovalbumin, four format ELISA was developed for the quantification of carbofuran.

Outcomes—As a result, a hybridoma cell line (5D3) secreting anti-carbofuran McAb had been established. The titre of culture medium and ascites were up to 1 × 10^3 and 1 × 10^6 respectively and the subtype of the MAbs was IgG1. The affinity contant of the MAbs was about 2.54 × 10^9L/mol, with a IC_{50} value of 1.9ng/mL and the detection limit of 0.01ng/mL. Cross-reactivity studies showed that the McAb was quiet specific for carbofuran since, of the four analogous compounds, all they were hardly recognized (4.59 × 10^{-4} % for 2,3-Dihydro-2,2-dimethyl-7-benzofuranol and less than 3.0 × 10^{-4} % for others). Optimized immunoassays (Format II ) displayed better sensitivity characteristics, with an IC_{50} value around 18.9ng/mL and a limit of detection around 0.138ng/mL, the least time-consuming 1h and only had three step.

Conclusions—Therefore, the prepared MAbs had very high affinity and specificity and it could be used to develop ELISA for rapid detemination of carbofuran.

Post 52
The development and the applied research of compound amino acids extracted from silkworm chrysalis

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Background—Silkworm chrysalis abound in our nation, the annual production of it reaches 120,000 tons, from which can extract 40,000 tons natural compound amino acid. It is precious nutritional resources.

Objective—Natural compound amino acid, which extracted from silkworm chrysalis, can be used as raw material to research and manufacture health care food, nutritional medicine and cosmetics.

Design—After degrease, acid hydrolysis, decolorization, ion exchange, thin film concentration, spray drying, Silkworm chrysalis was made into the natural compound amino acid, which content is above 40%.

Outcomes—Natural compound amino acid has the obvious nutrition function to the human body, can promote the wound of surgical operation to heal, can protect the liver by falling the enzyme action, and can enhance the human body immunity function. So it may be taken as nutritional health foods for the low proteinemia and the hypo-healthy crowd.

Conclusions—Natural compound amino acid contains 18 amino acids necessitated for human growth and metabolism, its component is comprehensive and allocated proportion is reasonable, conforms to amino acid pattern which FAO/WHO had ruled, and the essential amino acids content is above 40%. It is an ideal natural l nitrogen source.
Post 53

The research of extraction of silkworm faeces on nutritional anemia
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Background - The annual production of silkworm faeces in china reaches 400,000 tons, which can be extracted 1,000 ton iron chlorophyllin sodium. It is extremely rich nutritional resources.

Objective - Iron chlorophyllin sodium that made by Chlorophyll extracted from silkworm faeces, can be used as raw material to make into health care food and medicine on iron deficiency anemia.

Design - Chlorophyll extracted from silkworm faeces, after the saponification, cast off magnesium, iron replace and ferrous complex, was finally made into Iron chlorophyllin sodium. The analysis of phytochemistry showed that its structure is extremely similar to the human body hemoglobin, may participate in the hemoglobin synthesis and promote haematogenesis, and have ideal therapeutic efficacy on worldwide common iron deficiency anemia.

Outcomes - Clinical studies for 2,776 cases anemia patients showed, the cure rate reached above 90%, and had no obvious poisonous side reaction.

Conclusions - China is well-known to the world for breeding silkworms. Extract iron chlorophyllin sodium from by-production of silkworm to prevent and cure worldwide common disease—iron deficiency anemia. It is a creative project that adjust measures to local conditions and turn dumping into treasure.

Post 54

Anti-aging Effect of Bighead Carp Protein Hydrolysates
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Background- Reactive oxygen species (ROS) and free radicals play an important role in aging process (1). It was reported that hydrolysates derived from bighead carp protein (HBHC) were active in scavenging hydroxyl radical (•OH) and superoxide anion radical (O2•-), as well as quenching the stable free radical DPPH• (2), which suggested that HBHC may have anti-aging effect.

Objective- To observe the anti-aging effect of HBHC.

Design- The anti-aging effect was observed through the life-span experiment of drosophila and was evaluated by antioxidant indexes of D-galactose (D-gal) induced senile mice. The mean day and maximum day of drosophila with HBHC addition were compared to that of control. The senile mice were induced by celiac injection of D-gal for six wks and experiment groups received the HBHC of different dosage (3 g/kg, 1.5 g/kg and 0.5 g/kg) by intragastric administration. The contents of malonadehide (MDA), the activities of superoxide dimutase (SOD), glutathione peroxidase (GSH-Px), monoamine oxidase-B (MAO-B) in liver, brain and blood serum and the activities of Ca2+-Mg2+-ATPase and Na+-K+-ATPase in myocardial mitochondria were determined.

Outcomes- The addition of HBHC in feedstuff could increase the mean day and maximum day of drosophila. Compared with the D-gal induced senile group, the contents of liver and brain MDA and the activities of brain MAO-B in mice, which received the HBHC (3 g/kg and 1.5 g/kg) by intragastric administration, were significantly decreased (P<0.01) while the activities of anti-oxidative enzyme were increased. Meanwhile, activities of Ca2+-Mg2+-ATPase and Na+-K+-ATPase in myocardial mitochondria were increased (P<0.01).

Conclusions- This result indicated that HBHC had the anti-aging effect for D-gal induced senile mice.

Post 55

Validation of a Mathematic Model for Discriminating the Yin-Yang Nature of Fruits

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Background – In traditional Chinese medicine, all foods have been studied in terms of their health functions, and their health-related attributes are defined as Yin and Yang, or four natures: cold, cool, warm and hot. Cold and cool belong to Yin, while warm and hot belong to Yang according to how the food interacts with health. The theory has become a ubiquitous guideline for food and health in China for centuries, contributing successfully to the general wellbeing of Chinese nation. In our efforts to elucidate its biochemical mechanism behind the theory, we identified that the mineral contents, especially copper, iron and magnesium, are correlated to the Yin and Yang nature of fruits by mathematical analysis of data of chemical compositions of 25 fruits with prominent Yin-Yang attributes. A mathematic model for discriminating the Yin Yang nature of fruits was established. The equation is \( Y = -10.19173X_8 - 1.42593X_5 + 0.14975X_4 \), and its discriminate interval is (-0.6423171, 0.5275019), in which \( X_8 \), \( X_5 \), and \( X_4 \) represent the contents of copper, iron and magnesium; if the value was between its discriminate interval, it meant that the fruit belonged to the Yang group; if not, the fruit belonged to the Yin group.

Objective – To validate the mathematic model for discriminating the fruits by animal test.

Design – 120 WistarII female rats were randomized into one of five diet groups. All diets contained 4 ml solution. In diet A, pure water was used, whereas it was replaced by hot and cold TCM solution in diet B and C, respectively; and diet D and E used the hot and cold mineral solution formulations, respectively. The hot and cold mineral formulations were prepared according to the mathematical model. During 21 days modeling, anus temperature and consumption of drinking water of rats were determined. On day 21, the tongue phenomenon of rats was examined, which is a practice in traditional Chinese medicine to diagnose Yin-yang symptoms, and their tissues and blood were collected to determine the serum contents of noradrenaline(NE), 5-HT(thrombocytin) and thyrotrophic hormone (TSH).

Outcomes – The average consumption of drinking water of the diet B and D group were both more than the diet A group’s, while the diet C and E group’s were both less. The results of rat tongue images examination indicate that diet B group and D group shared a very similar tongue image pattern, while that of diet C group was similar as diet E group. Elevated serum contents of NE and TSH were recorded in diet B group and D group, in comparison with those of diet A group, while the diet C and E group’s demonstrated lower values. The average contents of 5-HT of diet B and D group were both lower than the diet A group’s, while those of diet C and E groups were higher. In all the tests, the diet D group which was administered with the hot mineral solution, demonstrated the same trend as diet B group which was administered with hot TCM tonic, while diet E group was similar to diet D.

Conclusions – The mathematic model of discriminating the fruits in fruits was confirmed by animal test, which indicates that the nature of the fruits could be discriminated by the contents of copper, iron and magnesium.

Post 56

Vitro and vivo antioxidant activities of daylily flowers and the involvement of phenolic compounds

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Background – Daylily flowers (Hemerocallis fulva Linn.) have been used as vegetable and medicine herb for thousands of years in eastern Asia. However data of the antioxidant properties of daylily flowers in vitro and vivo is very limited.

Objective – To investigate the antioxidant properties of water and ethanol extracts from daylily flowers both in vitro and vivo, and to analyze the main phenolic compounds involved in contributing the antioxidant activities.

Design – Four kinds of daylily flower extracts (Hemerocallis fulva Linn.) including ethanol extraction from freeze-dried flowers (EF), ethanol extraction from hot air-dried flowers (EH), water extraction from freeze-dried flowers (WF) and water extraction from hot air-dried flowers (WH) were prepared and their antioxidant properties were evaluated in terms of total antioxidant activity, reducing capacity, metal chelating activity. The phenolic compounds in the extracts were identified by HPLC. Superoxide dismutase (SOD) and malondialdehyde (MDA) levels in serum and liver were analysed in SPF Kunming strain mice after 60 consecutive days feeding with EF.

Outcomes – All four extracts from daylily flowers exhibited strong antioxidant activity. EF had the strongest antioxidant activity with the highest content of phenolic compounds. Rutin, (+)-catechin, and gallic acid were identified in the extracts by HPLC and highly correlated with the antioxidant activities. Daylily flower extract significantly increased SOD activity and reduced MDA formation in mice blood and liver (P<0.05 relative to control).

Conclusions – The present study indicated that daylily flowers owned strong antioxidant capability. Ethanol was more efficiency to extract antioxidants than water, and freeze-drying preserved higher activities than air-drying. EF significantly reduced the lipid peroxidation and enhanced the activity of antioxidant enzyme in blood and liver of mice.
Post 57

Study on Antioxidant and Antiallery of Plants extract
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Background – The incidence of allergy diseases is becoming higher and higher, during allergic reactions, excessive free radical oxidize, destroy mast cell and basophile was considered to be one of the major causes. Sanguisorba officinalis; Ramulus Cinnamomi; Gynuva bicolor dc. are chief components of China tradition antiphlogistic prescription, but till now, the research of these plants on Antioxidant and activity was not deep. It is very important to find the relationship between antioxidant and antiallery, this will help to know the reaction mechanism of antiallery, provide a theoretic basis for seeking functionality plant.

Objective – (1) to investigate antioxidant and antiallergy effects of Sanguisorba officinalis, Ramulus Cinnamommi; Gynuva bicolor dc (2) To find the relationship between antioxidant and antiallery

Design - (1) extract preparation: As to Ramulus Cinnamomi; Gynuva bicolor dc, adopted 70% ethanol circumfluence extraction, then extracted with chloroform, acetic ether, n-butyl alcohol respectively, got different components; As to Sanguisorba officinalis, extracted with 60% ethanol, then separated according to different polarity by extraction. (2) antiallery activity test: Assay of hyaluronidase activity observe antiallery activity of the extract. (3) antioxidant test: pyrogallol autoxidation examine the superoxide anion free radical (·O₂⁻), 10-Phenanthroline-Fe²⁺ oxidative Assay of Hydroxyl free radical(·OH) by H₂O₂/Fe²⁺ and Assay of hydrogen peroxide(H₂O₂) scavenging action observe antioxidant effect of the extract.

Outcomes – the inhibition ratio on hyaluronidase of the samples S-H40% and R-H10% purified with HP-20 was 77%, 67% respectively, the antioxidant ability of S-H40% was similar to procyanidins(PRO), the scavenging ratio on ·OH and H₂O₂ was higher than catechin, Vc, the antioxidant ability of R-H10% was also better, but as to the extract of Gynuva bicolor dc, it was bad in the inhibition ratio on hyaluronidase and free radical. During separation process, the inhibition ratio on hyaluronidase was improved gradually, the scavenging ratio on free radical was also improved progressively( the scavenging ratio on H₂O₂ of Ramulus Cinnamomi was an except)

Conclusions – From this test, there is positive relativity between antioxidant effects and antiallery effects. In addition, Sanguisorba officinalis, Ramulus Cinnamomi are new antiallery plant resource. be worthy of developing

Post 58

The Relationship between Blood Lead Level and Fresh Blood Quick Native Immune Reaction on Cancer Cells
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Object The aim of study is evaluating the significance of blood level, as an indicator for environmental lead, and fresh blood quick native immune reaction on cancer cells as an effect indicator, to determinate the correlation between the content of blood lead and quick native immune reaction on cancer.

Methods The 60 children from area to exposure environmental lead were recruited into the study using cancer cells adding in fresh anti-coagulate blood to incubation at 37°C for 30 minutes and study of blood lead level using graphite stove atom absorption spectrophotometer, with blood lead level of 0.48μmol/L as a cut off value.

Result The result revealed the level of fresh blood quick native immune reaction on cancer cells was a significant difference between groups of high and low blood lead levels. There was correlation in the level of blood and fresh blood quick native immune reaction on cancer cells.

Conclusions The result suggested that the high blood lead level may be regarded as a adverse effects on children’s immune function especially on TRR.TLR percentage when exposed environmental lead.
Post 59

Protective Effect of Exogenous Nucleotides under Lipopolysaccharide (LPS) Immunostimulation on Mice and its Mechanism

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Background- Recent findings suggest that exogenous nucleotides can influence immune response and cell function in many ways.

Objective-To study the effects that exogenous nucleotides protect body from inflammatory and oxidative injury and its mechanism under lipopolysaccharide (LPS) immunostimulation on mice.

Design-Forty healthy Kunming mice, (16±2) days old, were randomly divided into five groups: Control group, nucleotides (NT) groups (4h, 18h), nucleotides free (NF) groups (4h, 18h). Control group and NF groups were fed with nucleotides free diet. NT groups were fed with nucleotide-supplemented diet (0.25% nucleotides). On the 15th day, mice were lavaged with physiological saline (control) or LPS and were killed 4 or 18 h later. Serum was collected, liver, small intestine, peritoneal macrophage were sampled in germfree station. In addition, the difference of gene expression concerned inflammation was compared.

Outcomes- Hepatic Na+K+-ATPase, intestinal superoxide dismutase(SOD), serum total anti-oxidize ability, peritoneal macrophage-produced interleukin 10 (IL-10) were increased, and intestinal maleicdialdehyde (MDA), serum alanine aminotransferase (ALT), intestinal myeloperoxidase (MPO), peritoneal macrophage-produced interleukin 1(IL-1) were decreased with nucleotides supplement. However, exogenous nucleotides can decrease the gene expression in inflammatory cytokine and MAPK, NF-κB, STAT signal pathway and increase anti-inflammatory cytokine expression.

Conclusions- Exogenous nucleotides can help to maintain oxidation anti-oxidation and inflammation anti-inflammation balance, protect mice from injury under LPS immunostimulation.

Post 60

Studies on the antioxidant activities of aplysin in aging mice

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Background - Aplysin, a kind of terpinoid, had been isolated from the red alge Laurencia tristicha. We investigated the antioxidant activities of various dosages of aplysin in mice.

Objective – To investigate the antioxidant activities of various dosages of aplysin in mice.

Design – 60 kunming mice were randomly divided into 6 groups. Except for the blank group, all the mice in the other 5 groups were injected with D-galactose at the dose of 400mg / kg bw to the abdominal cavity to induce the oxidant damage model. Each of the supplement groups was given aplysin (20,40,80 mg/Kg bw), VitE(40mg/Kg bw) respectively, while the blank group was given saline and the model control group was given towen-80. DNA oxidized damage was analyzed by SCGE. The content of O6-MeG was measured by P/ACE. Levels of SOD, MDA, and GSH-Px activities in plasma were measured with test kits.

Outcomes – There was a significant decreasing tendency of the oxidative DNA damage on peripheral lymphocytes in the aplysin 40 mg/Kg bw, 80 mg/Kg bw and VitE(40mg/Kg bw) supplement group by 10μmol/L H2O2 compared with blank group. The levels of O6-MeG in plasma in the aplysin 40mg/Kg, 80mg/Kg supplement group and VitE (40mg/Kg) were significantly lower than the blank group (P<0.05). Plasma SOD and GSH-Px activities in the aplysin 40mg/Kg, 80mg/Kg and VitE (40mg/Kg) supplement groups were higher than the blank group (P<0.05). The levels of MDA in every supplement groups were significantly lower than the blank group (P<0.05).

Conclusions – The study indicated that aplysin could enhance anti-oxidantive activities, such as strength the activities of anti-oxidative enzyme SOD and GSH-Px, and lower the level of MDA. Aplysin could also decrease DNA damage effectively in the oxidant damage mice.

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**Anticancer activities and immunologic function of Aplysin**

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**Background** – Aplysin, a kind of terpinoid, had been isolated from the red alge Laurencia tristicha. We investigate the anticancer and immunologic activities of aplysin in Sarcon180 (S180).

**Objective** – To investigate the anticancer and immunologic activities of aplysin in Sarcon180 (S180).

**Design** – Aplysin’s reliability was estimated by Horn assay. 60 kunming mice were randomly divided into 6 groups. Except the blank group, all the mice were vaccinated with S180 sarcom cells. Three groups of them were given aplysin (25, 50, 100 mg/Kg wt). The other two groups of them were cytoxan positive group and the model control group (stomach perfusion with towen-80). The trial lasted for 30 days. The model control group was given towen-80. Tumor inhibition ratio, index of thymus and spleen, MTT of spleen lymph cell, IgA, IgG, IgM, were detected by standard methods.

**Outcomes** – Aplysin showed low toxicity. The average tumor weights of three aplysin groups were 1.037–0.769 g, significantly lower than that of the model control group 1.576 g (P<0.05). The tumor inhibition ratios of the aplysin groups were 34.2–51.2%. The index of thymus in 100 mg/Kg wt aplysin supplement group and the index of spleen in 50 mg/Kg wt aplysin supplement group were obviously higher than model control group (P<0.05). The index of thymus and spleen of the cytoxan positive group were obviously lower than blank group (P<0.05).

The levels of IgA, IgG and IgM in aplysin groups were higher than model control group (P<0.05). Concentrations of IgA, IgG and IgM in plasma of the model control group and the cytoxan positive group were obviously lower than that of the blank group (P<0.05).

**Conclusions** – Aplysin was safety to be taken orally. It showed obviously anticancer activities and immunologic functions.

Post 62

**Polyunsaturated Fatty Acid Content in Thai common Vegetables**

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**Background** – Thailand has a substantial variety of vegetables, including aquicolous, terricolous and edible algae. However, there has been no data available on polyunsaturated fatty acid content in Thai common vegetables.

**Objective** – The aim of the present study was to investigate the content of lipid and fatty acid in Thai common vegetables.

**Designs** – Total lipid content and polyunsaturated fatty acid (PUFA) composition and concentration in 17 Thai common vegetables including six species of aquicolous, two algae and nine terricolous were analyzed. The lipids were extracted by methanol – chloroform (2/1, v/v) containing 10mg/L of butylatedhydroxytoluene (BHT) and 0.1 mg/mL of tricosanoic acid (23:0) as internal standard. Fatty acid was analyzed by using gas chromatographic, and identified by comparison the standard mixtures.

**Outcomes** – The total PUFA was abundant found in the samples, ranged from 38.5% in Wan to 67.7% in Krached. Kwinin had the highest total PUFA concentration of 612.6mg/100g, and Tao num had the lowest of 8.5mg/100g. Palmitic acid, linoleic acid and linolenic acid (18:3n-3) were the main fatty acids, with the composition ranged from 12.7% in Krached to 29.3% in Koon, 5% in Koon to 52.3% in Krached, 12.6% in Tao num to 45% in Bon, respectively. 20:5n-3 was present in only three vegetables, Sao Bao (5.0mg/100g), Bung Jeen (6.3mg/100g), and Pum (31.3mg/100g). The ranges of n-6/n-3 ratio in algae, aquicolous and terricolous samples were 0.6–0.8, 0.3–6.3, 0.8–2.0, respectively.

**Conclusions** – The present results showed that Thai common vegetables are potential sources of PUFA, vegetables supplementation may contribute to human health.
Post 63

Research on the extracting technology of high purity and low modified phosvitin
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Background – Phosvitin (PV) is a protein which has highest degree of phosphorylation in well-known proteins with excellent antioxidant activity, heat stability and emulsifying properties. It was not only used in the food processing, but also used as medicine ingredients in clinical application, such as treating the myocarditis and the coronary heart diseases etc.

Objective – To design an extracting process of high purity and low modified PV, to lay a foundation for the preparation technology of phosphopeptide (PPP) that have widely clinical application value.

Design – The extraction conditions of PV were investigated, which indicated that a higher extracting rate can be obtained by feasible the volumes of water, the volumes of organic solvents and ratio of organic solvents.

Outcomes – L16 (4^4) orthogonal experiment was used to optimize the extraction of PV, the optimum technological parameters were found. Firstly the mixed proteins were deposited and wiped off by 10% (NH4)2SO4, secondly, the interest protein was deposited according to the use of saturated solution of (NH4)2SO4, finally, the purpose of separation and purification was reached. When the gelatin material was Sephadex G-25, the column was chromatogram pillar (the diameter was 1.6cm, the length was 70cm), the flow velocity was 2mL/min, the washing solution was distilled water, the desalting effect was better. It is hopeful to explore a new technical way to produce batches of PV, and also lay a foundation for further study on obtaining PPP through hydrolyzing PV.

Conclusions – The extraction conditions of PV is hopeful to explore a new technical way to produce batches of PV, and also lay a foundation for further study on obtaining PPP through hydrolyzing PV.

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Determination of Procyanidins in sorghum Episperm by ESI-MS and Its Anti-oxidant Activities in vitro
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Background – Procyanidins was a series of activity polyphenolic compounds existing extensively in the plant. Due to excellent biological and pharmacologic activities it possessed, researches on procyanidins have attracted more and more attention in the domain of functional food, clinical medicine and cosmetic in recent years, the research indicated the oligomer procyanidins had better pharmacological activities. The overseas research reported that thought the main procyanidins were high polymers in sorghum seeds (1), no other domestic research on procyanidins in Sorghum seeds was reported.

Objective – To determine content of procyanidins in sorghum seeds from various areas in China, and identify components of procyanidins in sorghum seeds and explore its anti-oxidant activity in vitro,

Design - ESI-MS (Electrospray Ionization Mass Spectrometry) was applied in procyanidins component identification, and colorimetric method was employed to estimate anti-oxidant activity of procyanidins in vitro.

Outcomes – Results showed that Sorghum episperms of various regions contain various content of procyanidins (1.24%~8.42%), among which sorghum from Anhui Province possesses the highest procyanidins content. procyanidins in sorghum episperm from Heilongjiang Province is oligomer with degree of polymerization less than pentamer; it exhibited great inhibition on RBC auto-oxidation (P <0.01), RBC hemolysis (P <0.01), lipid peroxidation of rat liver homogenate (P <0.01) and rat liver mitochondria swelling (a: P <0.01, b: P <0.05).

Conclusions – All the results implied that procyanidins in sorghum episperm from Heilongjiang Province is oligomer procyanidins with high anti-oxidant activity and great foreground in application and exploitation.

Post 65

**Study on alleviating physical fatigue function of mare’s milk**

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**Background** – Horse is known as a kind of fatigue-tolerant animals. It can prolong rapid run. According to Chinese medicine theory (Category as compared): the mare’s of milk should contain anti-fatigue nutrients and have the health effect of anti-fatigue.

**Objective** – To study on alleviating physical fatigue function of fresh Mare’s milk.

**Design** – The chemical methods were used to analyze the anti-fatigue nutrients content in Mare’s milk. The mice were randomly divided into 4 groups: three of which were experimental groups feeding with Mare’s milk at doses of 21, 42, 84 ml/(kg·d), and the rest was control group. After 35 days, Load swimming time and lasting time of climbing pole for mice were measured. After 40 days, blood lactic acid, blood lactate dehydrogenises activity, and liver glycogen were measured.

**Outcomes** – 1. Mare’s milk contains lactose 7.83%; protein 2.82%, branch- chain amino acid 20.2mg/100ml, taurine 13.27mg/100ml; Mare’s milk contains some mineral and Vitamins (Vitamin C 33.53mg/100ml). 2. It showed that there were significant differences in the Load swimming time between the high dose and control groups after 35 days’ administration (P < 0.05). 3. Three Mare’s milk groups showed significant decrease of lasting time of climbing pole for mice after 35 days’ administration (P < 0.01). 4. Three Mare’s milk groups showed a decrease of blood lactic acid in swimming mice after 40 days’ administration (P < 0.01). 5. The medium and high dose groups showed an increase of the blood lactate dehydrogenises activity in swimming mice after 40 days’ administration (P < 0.01). 6. Hepatic glycogen significantly increased between the high dose and control group after 40 days’ administration (P < 0.01).

**Conclusions** – The Mare’s milk contains some of the anti-fatigue nutrients, lactose, taurine, vitamin C, a higher content. The Mare’s milk has the alleviating physical fatigue function.

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**Correlation study of trace element between maternal blood and umbilical cord blood of neonates in Zhejiang, China**

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**Background**: Trace elements such as zinc, iron, lead and copper have important influences on the health of pregnant women and the growing fetus. However, there was no data indicating the correlation of trace elements between maternal blood and umbilical cord blood of neonates.

**Objective**: Estimation of trace element including lead, zinc, copper, iron, calcium, and magnesium in the maternal blood and cord blood of neonates was study the correlation of trace elements between the neonates and their mothers.

**Design**: A total of 220 women delivering at two children and women hospitals in Zhejiang province were recruited after written informed consent and 218 maternal blood samples, 215 cord samples, and 201 cord: maternal paired samples were collected. The estimation of lead was carried out with graphite furnace atomic absorption spectroscopy (GFAAS) and the estimation of zinc, copper, iron, calcium and magnesium was carried out with flame atomic absorption spectroscopy (FAAS) respectively.

**Outcomes**: The mean blood lead and serum zinc, copper, iron, calcium, magnesium levels in the maternal blood and cord blood of neonates was study the correlation of trace elements between the neonates and their mothers. Lead level in cord blood was not different from that in the corresponding maternal blood. There were significant correlations between cord blood level of lead, zinc, copper, calcium, magnesium and those in the corresponding maternal blood. But no significant correlation was found in the level of iron between the maternal and cord blood.

**Conclusions**: Trace element levels in cord blood are significantly different from those in maternal blood, but with a close correlation. So the balance of trace element in pregnancy should be paid much attention because it has influence not only on the health of pregnant women but also the health of neonates.
Post 67

A rapid method to measure tocopherols on radical-scavenging activity in soybean oil and virgin olive oil

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Background – Polyunsaturated fatty acids in edible oils are easily oxidized by enzymatic action or non-enzymatic autoxidation during preparation, preservation, and cooking. The oxidation of edible oil is of great economic concern to the food industry, because it leads to the development of various off-flavors and off-odors, rendering the foods less acceptable, decreasing in nutritional quality, and developing certain potentially toxic oxidation products. Tocopherol is one of the most important compounds retarding the progress of oil and lipid oxidation. It is necessary to elucidate antioxidative activity of tocopherol in vegetable by an easy way.

Objective – To investigate the tocopherol on the antioxidant activity in soybean oil and olive oil.

Design – The antioxidant activity of tocopherols (α, β, γ and δ) is measured with scavenging-activity (RSA) of free radical 1,1-diphenyl-2-picrylhydrazyl (DPPH·) by spectrophotometer. Tocopherol and total phenol content in soybean and virgin olive oil were determined by HPLC and Folin test, respectively

Outcomes – Among the four kinds tocopherol, the RSA of γ- and δ-tocopherol was similar with IC50 0.38 mM and 0.35 mM respectively. Tocopherol compounds contribute the RSA of soybean oil. RSA of virgin olive oil were from phenol compound as well as tocopherol.

Conclusions – Our study showed that RSA is an easy and rapid method to determine the RSA of oil concerning antioxidant ability of oil. The type and content of tocopherol concerned RSA of soybean and virgin olive oil, which concerned the stability and nutrition quality of vegetable oil.


Post 68

Effect of procedure parameters on the antioxidant property of olive leaf extracts

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Background – Our previous studies have shown that the potential antioxidative stability of olive oil has been attributed to its phenolic and tocopherol compounds (1,2). However, there has been no data on the different of procedure parameters on the antioxidant property and antioxidative compounds of olive leaves.

Objective – To investigate the procedure parameters, including drying, extracting and solvent on the antioxidant activity and antioxidant compounds in olive leaves.

Design – The effect of pH on the antioxidant ability of the extract solvent was evaluated. The antioxidants from olive leaves investigated by extracting (mechanical stirring or ultrasonic) and drying parameters (oven, freeze, microwave and steam). The radical-scavenging activity of 1,1-diphenyl-2-picrylhydrazyl (DPPH·) and phenolic content (measured with the Folin test) are applied as indications to evaluate the antioxidant activity and antioxidant compound.

Outcomes – The highest antioxidant activity (44030.7 μmol Trolox eq./100g) was observed for the olive leaf extract, obtained by ultrasonic-assisted extraction with 80% (v/v) methanol adjusted to pH 4 and by freeze-drying. The yield of antioxidant compounds was also highest (3795.3 mg gallic acid eq./100g). The antioxidant activity of the extract was significantly affected by the drying method, while the phenolic content was similar. The antioxidative compounds from olive leaf were effectively extracted by ultrasonic-assisted treatment, and the antioxidative activity was to a great extent remained when the acidified solvent was used.

Conclusions – Our present study confirmed that the antioxidative properties of the extract from olive leaves were largely dependent upon the procedure applied and the choice of extraction solvent.

Post 69

Purification and bioactivity verification of angiogenesis inhibitor extracted from Dasyatis akajei cartilage

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Background - In the early eighties, shark cartilage has been revealed to contain a protein, an angiogenesis inhibitor that significantly inhibits the development of blood vessels that nourish solid tumors, thereby restraining tumor growth (1). Since then, it has generated intense interest in both public and medical circles.

Objective - Study in detail the method of purification and characterization of the crude extract, and identify the bioactivity of angiogenesis inhibitor factors derived from the Dasyatis akajei cartilage.

Design - By the means of guanidine hydrochloride distilling, refrigeration, centrifugation, dialysis, refrigeration desiccation etc methods, the active substances of molecular weight 3k~300k are obtained from the Dasyatis akajei cartilage. The bioactivity of the products obtained is identified by the model of inhibiting the formation of the blood vessels of the chorioallantoic membrane of chicken embryo. Quantitative analysis of angiogenesis inhibitor with the ratio between the vascular area and the CAM area (VA/CAM) is carried by computer image analysis system (CIAS).

Outcomes - The active substances of molecular weight 3k~300k are obtained from the Dasyatis akajei cartilage. The results of bioactivity identification of Angiogenesis Inhibitor indicate that VA/CAM index of the active substances group is lower than that of the control group and the large area of blood vessels in active substances group has heavy loss of color, vascular structure blurred with broken branches, accompanied by the decreased density of vessels. In control group, the leaflike vascular net is clear and grew radiatively.

Conclusions - Dasyatis akajei cartilages contain the inhibitors of angiogenesis and inhibit neovascularization so they have theraptutic value to those diseases with pathological angiogenesis.


Post 70

Effect of Sarcandra Glabra Extract on Anti-tumor

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Background – Sarcandra glabra is the arid herb of Sarcandra glabra (Thunb.) Nakai, Chloranthaceae family (1), which has been planted for long time in China. It is bitter and pungent in taste, neutral in nature, which has efficacy on relieving fever and cooling blood, promoting blood flow and removing ecchymoses, dispelling wind-evil and dredging collaterals etc. It can be used in swelling and pain in gorse as health-food. Research on pharmaco-experiment indicated that it can inhibit tumor, antibiosis within broad-spectrum, inhibit immunification, anti-fatigue, prolonging life, relieving pain, etc (2).

Objective – To investigate the effect on anti-tumor activity of Sarcandra glabra extract (SGE, 0.25% volatile oil).

Design – (1) Vitro anti-tumor experiment: Effects of SGE on the proliferation of human gastric cancer cell SGC-7901 was assessed by MTT. (2) Vivo anti-tumor experiment: S180 tumor mice model and H22 tumor mice model were established from Kunming mice. Anti-tumor experiment were carried out, and the effect of SGE on index such as tumor inhibition rate, thymus exponent and spleen exponent.

Outcomes – (2) The inhibition ratio of SGE (0.43mg/ml, 1.075mg/ml, 2.15mg/ml SGE-containing medium) on proliferation of human gastric cancer cell SGC-7901 was 32.59%, 48.84%, 88.09%, respectively. (2) SGE (18.35mg/kg, 36.70mg/kg) has anti-tumor effect in H22-mouse, and the inhibition ratio was 20.25%, 36.42%, respectively; they also have anti-tumor effect in S180-mouse which inhibition rate were 25.71%, 43.00%. The inhibition of tumor growth by 5-FU would enhanced when administering together with SGE. Inhibition rate of 5mg/kg or 10mg/kg 5-FU in combination with 18.35mg/kg SGE was 35.30%, 59.50%. However, in the groups of using 5mg/kg or 10mg/kg 5-FU alone, the inhibition rate was only 0.8%, 32.58%, respectively.

Conclusions - SGE have the significant effect on anti-tumor.

Post 71

Association between serum CRP concentrations with dietary intake in healthy and dyslipsidemic patients

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Background—C-reactive protein (CRP) is an acute phase reactant. Raised serum CRP concentrations have been reported in subjects with atherosclerosis (1). The immune-modulating effects of dietary fat and antioxidants have been investigated and demonstrated previously, but their effects on CRP concentrations are controversy.

Objective—To determine whether dietary intake is associated with serum CRP concentrations in healthy subjects and dyslipidaemic patients.

Design—Patients (n=238) were recruited from lipid clinics hospital, Guilford, UK. Healthy subjects (n=188) were recruited from university and hospital employees. All subjects were measured for height, waist and hip circumference (in centimeters) and weighed (in kilograms) using a stand-on Bio Impedance Analyzer. A validated food frequency questionnaire was used to estimate the dietary intake.

Outcomes—Dyslipemic patients had higher serum CRP [1.25(0.42-3.26)] than control subjects [0.50(0.17-1.42)]. In the dyslipidaemic patient group showed that approximately 4% of the variation in serum CRP could be explained by dietary cholesterol intake (P=0.015, 2.8%), and dietary vitamin c intake (P>0.05, 1.2%). Within the subgroup with metabolic syndrome, 1.5% of the variation could be explained by dietary mono unsaturated fat (P>0.05). In healthy subjects, no relationship between dietary intake and serum CRP concentrations was found.

Conclusion—The present study indicated that serum CRP concentrations are increased in patients with classical coronary risk factors. It is may be related to a heightened state of immunoaactivation associated with these risk factors. No significant association was found between dietary intake and serum CRP in healthy subjects. However, there was a week relationship between dietary intake and CRP in dyslipidaemic patients.


Post 72

The enzyme system for calorimetrically detecting pesticides residue

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Background—At present, traditional methods such as liquid and gas chromatography have been widely used to detect pesticide residues in food. However, these methods demand skilful technicians and long-time pretreatment. Obviously, the simple, rapid and cheap methods are essential for determining the pollutants. Most of rapid detecting adopts electrochemical methods. Their applications in real samples are limited because of interference from electro-active species, ions and turbidity of samples. Calorimetric method is a good alternative for it. But the heat produced by biochemical reaction is too little to determine.

Objective—Optimizing enzyme system, and realizing calorimetric detection of pesticide residues magnify the reaction heat.

Design—The two enzymes are chosen in this system. One is B-esterase that is inhibited by pesticide; the other is polyphenoloxidase, which could catalyze the oxidation of phenolic compounds, the product of B-esterase catalytic reaction. When the pesticide puts into the system, the speed of this enzyme-linked reaction will decrease together. So compared with the reaction of B-esterase used alone, the change of biochemical reaction heat in the same concentration of pesticide is magnified. Then the Micro DSCIII is used to confirm the magnification and detect the pesticide calorimetrically.

Outcomes—The two enzymes are chicken liver esterase and mushroom polyphenoloxidase. This enzyme-linked reaction can magnify the change of biochemical reaction heat in the same concentration of pesticide 3-10 times. With the enzyme system, 1mg/LDDVP can be detected by Micro DSCIII.

Conclusions—The reaction of chicken liver esterase catalyzes the hydrolysis of α-naphthyl acetate produces α-naphthol. The oxidation α-naphthol of is catalyzed by polyphenoloxidase to produce o-quinone. The enzyme-linked reaction heat is magnified, which is proved by Micro DSIII.

Effects of sepia on hemapoiecsis in $\gamma^{60}$Co irradiated mice
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Background – Sepia is mainly composed by melanin and protein-polysaccharide compound. The physical activity of anti-tumor and promoting immunity has been widely researched. However, little information on the hematopoietic function of sepia was reported.

Objective – To investigate the effects of sepia on hematopoietic function in hemapoiecsis impaired model mice induced by $\gamma^{60}$Co irradiation.

Design – Female ICR mice of 22±2g were randomized into five groups: normal control, model control, low dose, mid dose and high dose. Hematopoietic system impaired model mice were induced by $\gamma^{60}$Co irradiating with the lethal dose of 8.0 Gy and then were given normal salt (NS) or sepia of different dosage, respectively. The number of Bone marrow nucleated cells (BMNC), colony-forming units in spleen (CFU-S), colony-forming units of granulocyte and monocyte (CFU-GM), peripheral blood pictures and SOD activity in serum were measured by hematopoietic progenitor cells culture in vitro and experimental hematology technique, respectively.

Outcomes – Compared with model control group, in different dosage of sepia groups, the decrease of BMNC ($P<0.05$, $P<0.01$), CFU-S ($P<0.05$, $P<0.01$), CFU-GM ($P<0.01$) and peripheral WBC ($P<0.01$) in $\gamma^{60}$Co irradiated model mice were resisted effectively, moreover, the restoration of those indices mentioned above and the SOD activity in serum in model mice were promoted significantly ($P<0.05$, $P<0.01$). However, sepia had no significant effect on peripheral RBC, PLT and Hb.

Conclusions – Sepia has significant effects on granulopoiesis. The mechanism may be related to enhancing antioxidant level in mice, regulating immunological function, alleviating the bone marrow hematopoietic microenvironment and hematopoietic cells injury by irradiation and inducing many sorts of cellular factors, which in turn promote the multiplication and differentiation of CFU-S and CFU-GM.

Inhibitory effects of vegetable and fruit ferment liquid on tumor growth in Hepatoma-22 inoculation model
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Background – Fruits and vegetables contain a multitude of compounds that have potential cancer preventive activity. However, the effects of vegetables and fruits ferment liquid (VFFL) on antitumor are not so clear.

Objective – To study the antitumor effects of vegetables and fruits ferment liquid (VFFL) in H22-bearing mice.

Design – Hepatoma-22 inoculation model was used for 30d. The mice were randomly divided into five groups, including control group and VFFL groups with 16.7ml/kg, 33.3ml/kg and 66.6ml/kg. Flow cytometry was performed to determine the apoptosis and cell cycle. In addition, a survival study was performed using another H22-bearing model.

Outcomes – The tumor volume in VFFL 16.7, 33.3 and 66.6ml/kg groups showed significant decrease compared with control group and the tumor inhibition rates in VFFL16.6, 33.3 and 66.6ml/kg groups were 25.7%, 35.0% and 49.1% respectively. The apoptotic rates in three VFFL groups were 20.5%, 24.0% and 15.8% respectively and apoptotic body was observed. VFFL caused the cell cycle arrest in the S-phase, increased in the G0-G1 phase. The survival time of H22 mice in VFFL 66.6ml/kg group significantly postponed compared with control group ($P<0.05$), and VFFL 16.7 and 33.3ml/kg groups also showed the action to prolong the tumour-bearing longevity.

Conclusions – The study indicate that VFFL had antitumor effect by inducing apoptosis and prolonging life in H22 tumor-bearing mice.

Post 75

Development of polyclonal antiserum based enzyme-linked immunosorbent assay for the analysis of insecticide imidacloprid

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Background – Imidacloprid is a new kind of nicotinamide pesticide with low toxicity, high activity. However, it was reported that imidacloprid was high toxic for silkworm, bee and shrimp (1). In the resent "Positive List" System from Japan, imidacloprid residue is limited at 0.02 ppm, which had affected Chinese export trade with Japan.

Objective - To develop an enzyme-linked immunosorbent assay (ELISA) to imidacloprid.

Design - Haptens IMMP, IMMB and IMEB were synthesized by combining imidacloprid with mercaptopropionic acid, methyl-3-mercaptopropionate and ethyl-4-bromobutyrate respectively. One immunogen IMMP-BSA and three coating antigens IMMP-OVA, IMMB-OVA, IMEB-OVA were obtained by coupling the hapten with bovine serum albumin (BSA) or ovalbumin (OVA). The productions were identified by thin layer chromatography (TLC), ultraviolet spectrum (UV) and mass spectroscopy (MS). Balb/c mice were immunized with IMMP-BSA to produce antiserum, which was characterized by idELISA. ELISA based on the antiserum was developed and conditions of analysis were optimized.

Outcomes - The best coating antigen was IMMP-OVA; concentration of coating antigen (IMMP-OVA) was 2 μg/mL; binding ratio of coating antigen was 14:1; time of competitive reaction was 1 hour; pH of reacted condition was 7.5; titer of antiserum was 2.0×10^5, IC50 value was 995.4ng/mL; the limit of quantification (LOD) was 30ng/mL; IC50 value increases with concentrations of methanol and acetone increasing but decreases with acetonitrile increasing, little change was observed in up to 5% of organic solvent; no significant changes of IC50 value were observed at the tested range of ionic strength; the cross reaction ratios with IMMP, IMMB and IMEB were 48%, 21%, 0.83%.

Conclusions - The antiserum for imidacloprid with high specificity was obtained and ELISA to imidacloprid had been developed. And it was useful for the preparation of monoclonal antibody for imidacloprid.


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Study on microencapsulated powder lecithin technics and stability of product

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Background - Used yolk lecithin as raw material, high purity powder lecithin appears white or yellowish. Powder was the necessary raw material of some other high grade lecithin products. Compared with other powder oil products, producing the microencapsulated powder lecithin could conceal bad smells, be helpful to improve the stability and ameliorate the quality of products.

Objective - Researched on the operation technics and optimum parameters, thus obtained the steady microencapsulated powder lecithin product which was convenient for storing, process and transportation.

Design - Many influencing factors such as the wall material, the ratio of wall material weight, the weight percentage of core material and solid concentration were investigated in the microencapsulated powder lecithin process. Then the homogenous pressure, air inlet temperature and air outlet temperature in the microencapsulated powder lecithin process were examined. The stability of product was evaluated on the basis of these experimental conditions.

Outcomes - All the usable experiments suggested that the gum arabic, maltodextrin, saccharose ester were employed to be the wall material of the microencapsulated powder lecithin. The wall material weight ratio(gum arabic/maltodextrin) was very important to the embedding ratio of the microencapsulated powder lecithin. By way of orthogonal design, the optimum conditions for the microencapsulated powder lecithin were as follows: shearing temperature 40℃, shearing time 3min, the weight percentage of wall material 24%, wall material weight ratio 1:10, solid concentration 25% (W/V). The optimum parameters of the microencapsulated powder lecithin process were as follows: the air inlet temperature 160℃, air outlet temperature 91℃, aspirator 80%. By means of Scanning Electron Microscopy the microstructure of the granules were between 10μm ~20μm and water percentage was 1.85%. The accelerating conserved experiment of the microencapsulated powder lecithin indicated that the microencapsulated powder lecithin was steady.

Conclusions - It could improve the quality and stability of the product and then obtain high purity microencapsulated powder lecithin through choosing gum arabic/maltodextrin as the wall material.

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Antioxidant components and their activities in fermented seeds of Pangium edule Reinw. and their changes during cooking process.

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**Background** – Recently there is an increasing interest in scientific research on spices because of their strong antioxidant properties, which play important roles as health-protection factor (1). Fermented seed of the tropical tree Pangium edule, which is called kluwak in Indonesian, is a peculiar Indonesian spice and has been widely used in many of Indonesian traditional cuisines (2). However, there are relatively little information about the activities of antioxidant components in kluwak and their changing during cooking process.

**Objective** – To evaluate the activities of antioxidant components in kluwak and their changes during cooking process.

**Design** – Kluwak was purchased in Indonesian traditional market and boiled at 100 °C for 0-120 minutes. The cooked and uncooked kluwak were then freeze-dried and stored at -40 °C until analysis. The freeze-dried samples were then extracted with hexane to separate the oil and non-oil fractions of kluwak. Both fractions were then subjected to HPLC and GC to measure the ascorbic acid, vitamin E, fatty acid and to identify the phenolic components present in kluwak. The total polyphenol content was determined by Folin-Ciocalteu method. Furthermore, the ability of kluwak to scavenge free radicals was determined by measuring the DPPH radical-scavenging method. The ability of kluwak to scavenge free radicals was determined by measuring the DPPH radical-scavenging activity.

**Outcomes** – Kluwak has a high radical-scavenging activity and this activity increased significantly during cooking process. Simple polyphenols seem to be the major phenolic compounds in non-oil fraction of kluwak and their amount increased significantly during cooking process. Ascorbic acid is not detected in all samples. In the oil fraction, γ-tocotrienol is the major antioxidant compound. The major fatty acids were oleic and linoleic acids and the fatty acid composition did not change during cooking process.

**Conclusions** – These results indicate that kluwak can be a daily potential antioxidant source for preventing atherosclerosis, aging, cancer, and other life threatening diseases and cooking process can increase their radical-scavenging activities.

Effect of different extracting methods on quality of Chrysanthemum Morifolium Ramat. infusion

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Background - The flower of Chrysanthemum Morifolium Ramat. (CM) has been widely used as a healthy food and folk medicine in China. Its anti-oxidation, vasoactive effects and anti-ischemia/reperfusion injury action have been proved in animal models and clinic. Although many companies have been made CM drinks, there has been no study on the extracting methods on quality of CM infusion.

Objective - Find out the best extracting method to get the best quality of infusion.

Design - In order to investigate the effect of different extracting methods on the quality of CM infusion for ready-to-drink CM production, experiment were designed with various experimental conditions by response surface design, such as CM extracting (CME) temperature, CME time, liquid/solid ratio before CME. The solid extraction yield, color differences and the main flavonoids of luteolin-7-O-β-D-glucoside and luteolin were evaluated. The solid extraction yield was analyzed by standard methods and the infusion color difference analysis was carried out using a TC P II G automatic color difference mater. The main flavonoids were analyzed by HPLC. The chromatographic conditions were as follows: the HPLC system consisted of shmadze LC-2010A with a four pumps gradient system (shmadze Co.Ltd., Japan), a shmadze CLC-ODS column 0.15m×6.0μ (shmadze Co.Ltd., Japan ).The flow-rate of the mobile phase was 1ml/min.The column temperature was 28℃ and sensitivity was 0.01aufs. The mobile phase composition used was: (A): acetonitrile/acetic acid/water (3:0.5:96.5,v); (B): acetonitrile/acetic acid/water (30:0.5:69.5,v). The solvent composition started at 70% (v) solvent A and 30% (v) solvent B. The solvent B was by linear gradient during first 45min, then 100% (v) solvent B were held until 55min.

Outcomes- Compared with each experimental condition, the results showed that CM extracting (CME) temperature was most important factor in CM extraction. The solid extraction yield, color differences, and the main flavonoids of luteolin-7-O-β-D-glucoside and luteolin were significant different within the change of CME temperature (P<0.05). The solid extraction yield, luteolin-7-O-β-D-glucoside and yellowness were significant different within the change of CME time (P<0.05). When the liquid/solid ratio increased, the infusion became more light and less yellow (P<0.05).

Conclusions - The present study indicated that experimental conditions of CM extracting (CME) temperature, CME time and liquid/solid ratio were the most important factors which had the effect on quality of CM infusion. The best condition were the CME temperature of 90~100℃, the CME time of 20~30min and liquid/solid ratio between 20:1~40:1.
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The Antifatigue effects of salidroside on mice

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Background – Rhodiola rosea is widely distributed at mountainous regions throughout Europe and Asia and has been categorized as a plant adaptogen. Salidroside is thought to be one of the most critical plant constituents needed for its therapeutic activity. Its claimed benefits include anticancer, antioxygen and anti-aging. But the effect of salidroside on antifatigue and its dose-effect relation haven’t been reported by now.

Objective – To investigate the antifatigue effects of salidroside on mice.

Design – 160 normal male ICR mice were randomized into 5 groups equally based on body weight: low, medium, medium-high, high dose salidroside intervention groups and control group. The control group was given distilled water and the four intervention groups were given different doses of salidroside (60, 180, 360, 720 mg/kg) respectively for 15 d continuously. Through mouse swimming tests, the content of blood lactate, serum urea nitrogen, muscle and liver glycogen, blood glucose and burden swimming time were measured.

Outcomes – Different doses of salidroside especially medium one can significantly lengthen the burden swimming time and increase muscle and liver glycogen and prevent the decline of blood glucose after long time swimming, while reduce lactate content of blood of postexercise significantly compared with control group.

Conclusions – It’s showed that salidroside has significant antifatigue effect on mice and has its optimum dose.

Post 80

Study on rice noodles nutrition

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Background - The staple food nutrition strengthen is paid more and more attention day by day, The south area of China takes rice noodles as staple food, and Guangxi is one of the representative area. But at present, there are few researches on the rice noodles nutrition.

Objective - To investigate and evaluate rice noodles nutritive value. Aiming at its deficient nutritive elements, we carried on the nutrition strengthening.

Design - According to the stipulate standard, we added the nutrition, which are obviously inadequate, directly into the rice thick liquid. Some of the nutrition enhanced rice noodles were measured in reference to the rice noodle quality appraisal system as follows. While the others depended on the sense organ evaluates.

If the rice noodle sense organ evaluates wanted to get a “good” mark, it should satisfy the guidelines as follows:

<table>
<thead>
<tr>
<th>Survey project</th>
<th>Tension stress (g.mm²)</th>
<th>Tensile deformation</th>
<th>Shear stress (g.mm²)</th>
<th>Shear deformation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Scope</td>
<td>2, 7</td>
<td>0.35</td>
<td>30,70</td>
<td>&gt;0.82</td>
</tr>
</tbody>
</table>

Outcomes –The rice noodle contains the nutrition ingredient: water (>65%), carbohydrate (>21%), fat (<1%), protein (<6%), vitaminB₁, calcium and so on. Amino acids only get a 38.4 score. Energy is seriously inadequate (<138Kcal). According to this situation, we add Vitamin B² and other nutrition to the rice noodles. After the enhancement, nutrition was increased. Flexibility was enhanced. Maintain moisture performance was increased. But it tasted a little tart. The color was changed from white into orange, and the original rice fragrance was covered with vitamin drugs fragrance.

Conclusions –The results indicate that rice noodles are content with carbohydrate, but the protein, fat, vitamins, amino acids, minerals are far more below the DRIs level. It is urgently awaits to be strengthened. When we added nutrition to the rice noodles, we found the rice noodles flavor; texture and physical nature have been obvious changed.
Post 81

Research of the chemical components of Fagopyrum esculentum Moench

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Background-Buckwheat, which is named Fagopyrum esculentum Moench in botany, belongs to Fagopyrum esculentum Polygonaceae. At present, buckwheat is widely learned as a natural hygienical foodstuff. But the further basic study of buckwheat is fundamentally needed.

Object-To study the chemical components about the overground sections of buckwheat from Kulunqi Mongolia as experimental material. The buckwheat was harvested when it was blooms exactly.

Design-The primitive experiment of buckwheat’s chemic component: By using folium and paper chromatography, we analyzed the components of the buckwheat caudex and leaf; the study of the chemical components of buckwheat’s caudexes and leaves: we take the buckwheat as the raw material, withdraws different flavonoids after the ethyl alcohol pick-up, the concentration, the column chromatographic analysis and the heavy crystallization purification separation. And we appraised their structures according to their physicochemical qualities and MS.

Outcomes-The components of the buckwheat caudex and leaf including flavonoids glucide, protein, aminophenol, alkaloid, tannins, anthraquinones, hydroxybenzene, organic acid, glycosides, saponins, coumarin and terpenoids. And the seed of buckwheat includes glucides, organic acid, hydroxybenzene, aminophenol, protein, glycosides, saponins, alkaloid, coumarin, terpenoids and tannins. And we separated three different flavonoids from the buckwheat’s caudexes and leaves.

Conclusions-The study indicated that buckwheat except includes affluent protein, amino acid, many kinds of mineral substance and Vitamin, but also includes the special ingredient —flavonoid. It is one kind of extremely good natural green health foods. And by this experimental method, the obtaining rate of flavonoid is high. This method is simple and feasible.

Post 82

The renal protective effects of Hsian-tsao extracts in diabetic rats

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Abstract In order to investigate the renal protective effects of water extracts from Hsian-tsao(Mesona procumbens Hemsl) in diabetic rats, 30 Sprague-Dawley female rats were divided into three groups at random. 10 for normal group, 10 for diabetic group by injecting 60mg/kg streptozotocin intraperitoneally and 10 for Hsian-tsao group by intragastric administration of Hsian-tsao in addition to streptozotocin intraperitoneally administration. The weight, blood sugar, blood creatinine, blood uria nitrogen and urine sugar were measured before and after model induction in the three groups. We study the alteration of thrombospondin-I (TSP-1) expressions in the kidney by immunohistochemistry. Kidney ultrastructure changes were also analyzed by using transmission electron microscopy. The data of weight, blood sugar, blood creatinine, blood uria nitrogen and urine sugar indicated no significant difference among the three groups before animal model induction. Four weeks after the induction of diabetes, the differences were distinct. Electron microscopy also revealed disruption of the foot processes of the podocytes and other damages in diabetic group. There were fewer damages in Hsian-tsao group when compared with the diabetic group. A significant increase of TSP-1 expression was observed in the diabetic rats’ kidney in both the diabetic group and Hsian-tsao group, but TSP-1 expression was relatively lower in Hsian-tsao group than in diabetic group. Our results showed that Hsian-tsao treatment in the diabetes rats effectively prevented the pathological alteration in the kidney and decreases the TSP-1 expression, thus suggests a protective effect of Hsian-tsao on the kidneys of the diabetes rats. The renal protective effects of Hsian-tsao in diabetic rats further implied its potential as an anti-diabetes agent.
Post 83

Effect of antioxidant capacity on the blood lipid metabolism of rats fed with high fat diet: Relationship of atherosclerotic index and LPL activity with total antioxidant capacity

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Background - It has been known that increased intracellular generation of reactive oxygen species plays an important role in atherosclerosis. However, little is known about relation of atherosclerotic index and lipoprotein lipase (LPL) activity with total antioxidant capacity.

Objective - To explore the effect of the antioxidant capacity on the blood lipid metabolism and LPL activity of rats fed with high fat diet (HFD). Furthermore, the relationship of atherosclerotic index (AI) and LPL activity with total antioxidant capacity (TAC) was studied.

Design - The 32 SD rats were randomly divided into 4 groups. The control group was fed with ordinary diet. The other three experimental groups were fed with HFD, HFD +0.1% lipoic acid (LA), HFD +0.1% N-acetylcysteine (NAC) respectively. After 4 weeks, the serum level of triglycerides (TG), total-cholesterol (TC), LDL-cholesterol (LDL-C), HDL-cholesterol (HDL-C) and the activity of LPL were examined. In order to evaluate the antioxidant status of the rats, TAC and superoxide dismutase (SOD) activity and (malondialdehyde) MDA level were measured. In addition, the atherosclerotic index (AI) of the 4 groups was compared.

Outcomes - HFD induced abnormal increase in lipid peroxidation and serum TC, TG, LDL-C and a decreased HDL-C concentration. Decreased activity of LPL, accompanied by a depressed antioxidants defense system were observed in HFD fed rats. These changes were partially restored in the NAC and LA treated groups. There was a negative correlation between AI and TAC ($r = -0.9690, p < 0.05$). Additionally, significantly positive correlation between LPL activity and TAC was found ($r = 0.9785, p < 0.05$).

Conclusions - Oxidative injury and lipid abnormalities were induced by a HFD diet. Administration of LA or NAC can improve the antioxidant capacity and the activity of LPL and reduce the blood lipid significantly. Antioxidant capacity is correlated with AI and LPL activity.

Post 84

Application of response surface methodology to evaluation the effect of environmental factors on aflatoxin production by Aspergillus parasiticus

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Background - Most aflatoxin contamination of foodstuff were occurred during post-harvest and storage period (1). Now it is known that many environmental factors of storage including temperature and pH can influence the fungal growth and the aflatoxin production (2), but less is known about the specific regulatory effects of other environmental factors and the interaction between various environmental factors on aflatoxin production.

Objective - To simulate the production of aflatoxin by A. parasiticus in storage grain and establish a predictive model of aflatoxin yield which can be used in the control practice of aflatoxin contamination.

Design - The effect of pH, cultivation time and temperature on aflatoxin production by Aspergillus parasiticus in liquid media was studied. Modelling of aflatoxin production was carried out using response surface methodology (RSM) to obtain the maximum and minimum aflatoxin concentration (Y values) and the corresponding cultivation conditions.

Outcomes - The highest aflatoxin yield was obtained when A. parasiticus was cultured at 28°C, acidic condition (pH 4.5~5) for enough time (about 10 days), and the lowest was obtained when A. parasiticus was cultured at the temperature which far away from the optimal growth temperature of fungi such as 37°C or 20°C, and under alkaline pH condition (pH 8) for short period (4–5 days). RSM was very efficient and model adequacy was very satisfactory as the coefficient of determination was 0.99.

Conclusions - The present study indicated that storage conditions (pH, storage temperature and time) have effects on aflatoxin production in foodstuffs. The predictive model of aflatoxin production which established in this work enables us to take action with the theoretic guidance in the controlling of aflatoxin contamination of storage grain.

Post 85
Effect of heating on antioxidants in vegetables during cooking process of Miso soup
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Background – Antioxidants in foods have received considerable attention for their role in human health. Vegetables contain a wide variety of antioxidants such as ascorbic acid and phenolic compounds including flavonoids and phenolic acids (1). The consumption of vegetables is associated with a reduced risk of life-style related diseases such as cancer and atherosclerosis. Miso, Japanese fermented soybean paste, is known as a rich source of isoflavone and decrease the mortality of stomach cancer. Miso soup is a traditional Japanese cuisine, which is cooked by using many kinds of vegetables and Miso.

Objective – To evaluate the effects of heating on antioxidants in several vegetables during cooking process of Miso soup.

Design – Vegetables (carrot, Japanese radish, onion, taro and burdock) were cut into small pieces and heated in pot with or without Miso for 20 min. The vegetables and cooking water were then freeze-dried and stored at -40°C until analysis. The freeze-dried samples were extracted with 90% methanol. 1,1-Diphenyl-2-picrylhydrazyl (DPPH) radical-scavenging activity was used to evaluate the antioxidant activity. Ascorbic acid and total phenol contents were determined by dinitrophenyl hydrazine-HPLC and Folin-Ciocalteu methods, respectively.

Outcomes – The highest antioxidant activity and total phenol content was found in burdock. The content of ascorbic acid was the highest in Japanese radish. Ascorbic acid content decreased in all vegetables after heating with or without Miso. However, the antioxidant activity and total phenol content of Japanese radish and carrot increased after heating. A part of antioxidants were released into cooking water after heating. Miso also had antioxidant activity and phenolic compounds, therefore, higher antioxidant activity and total phenol content were found in Miso soup.

Conclusions – These results suggest that the cooking of Miso soup is a good way for intake the antioxidants from vegetable and Miso to prevent life-style related diseases such as cancer and atherosclerosis.


Post 86
Determinants of plasma homocysteine and carotid intima-media thickness in Japanese
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Background – Although hyperhomocysteinemia is considered to be a key risk factor for atherosclerosis, especially in Western countries, its role in the Asian population is still controversial.

Objective – Evaluate the determinants of homocysteine and carotid intima-media thickness, a clinical marker for the detection of atherosclerosis, in Japanese.

Design – In 289 Japanese adults (age 37-86 yrs), we screened plasma total homocysteine by high performance liquid chromatography and evaluated maximum carotid intima-media thickness by ultrasound. Other blood chemistry values were also measured.

Outcomes – Total homocysteine levels were higher in men than in women and increased with aging. In multiple regression analysis adjusted for age and sex, only serum creatinine was a powerful determinant of homocysteine (β=3.3, p<0.01). Maximum carotid intima-media thickness was higher in men than in women and increased with aging. When adjusted for age and sex, systolic blood pressure was independently correlated with maximum carotid intima-media thickness (β=0.001, p<0.01).

Conclusions – Although sample size was limited, our results suggested that in addition to age and sex, serum creatinine and systolic blood pressure are independent determinants of homocysteine and carotid intima-media thickness, respectively.
Post 87
The study on the PFH intervention of the abilities of learning and memory in vascular dementia rats
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Objectives: To study the intervening effects of PFH (The Polypeptide From Haliotidae) on the ability of learning and memory (ALM) in vascular dementia (VD) rats, and to detect the mechanism underlying PFH effects on the disease of vascular dementia.

Methods: PFH extract was firstly prepared from Haliotis diversicolor aquatilis Reeve which normally lived in deep ocean. Three dosages of PFH were used on three different groups of VD rat. 60 days after, the ALM were tested based on Y-maze test, and the hemoglobin and red corpuscle were investigated as well.

Results: In a certain dosage range, the more PFH can function the more increase of Y-maze test scores and the number of both red blood cell and hemoglobin.

Conclusion: PFH has the role on improving the ALM and the levels of red blood cell and hemoglobin for the VD rats.

Post 88
Characteristics of micro-particles and residue of wheat bran and sugarcane bagasse after fermentation by human colon micro-biota
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Background – Some dietary fibers protect against, while others have no effect or even promote colon cancer. Among the dietary fibers, wheat bran was consistently reported to protect against colon cancer. However, the mechanism should be elucidated.

Objective – To investigate the characteristics of micro-particles released from wheat bran and sugarcane bagasse after fermentation by human colon micro-biota.

Design – The micro-particles and residues were prepared by fermenting wheat bran or sugarcane bagasse using human colon microflora. The shape, size distribution and zeta potential of released micro-particles were studied by atomic force microscopy, laser light scattering, and electrokinetic measurements respectively.

Outcomes – The results showed that micro-particles released from fermentation were significantly different from wheat bran than those from sugarcane bagasse. Wheat bran particles were spherical in shape and occurred in three areas, 1~4 nm, 237nm and ≥ 10000nm. The zeta potential of wheat bran particles was −20.01mv. Sugarcane bagasse particles were in irregular shape and had a mean size of 454 nm. The sugarcane bagasse particles had a much lower negative charge density, with a zeta potential of −3.96mv. The structures of fermented and dried residues of wheat bran were more porous than those of sugarcane bagasse. Additionally, fermented residues of wheat bran were more friable than those of sugarcane bagasse. The binding capacity of wheat bran increased significantly after fermentation.

Conclusions – Specific fermentation characteristics of various dietary fibers may be the key in roles for their effectiveness in colon cancer prevention.
Post 89

The levels of lycopene, alpha tocopherol and a marker of oxidative stress in healthy northeastern Thai elderly

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Background – Oxidative stress is one of the major contributors of several diseases. An imbalance between oxidative stress and antioxidant capacity has been proposed to play an important role in the development and progression of chronic diseases (1).

Objectives – The present study was carried out to investigate correlation between the serum antioxidant and a marker of oxidative stress in the healthy elderly Thais.

Design – The 207 healthy elderly people aged 60-91 years old (72 males and 135 females), who live in Khon Kaen province, Thailand were included in the study. Serum lycopene and alpha tocopherol levels were assayed by high performance liquid chromatographic analysis (HPLC). Malondialdehyde (MDA), a lipid peroxidation product, was measured as a marker of oxidative stress. Subjects were interviewed by questionnaires about smoking habit. Results were reported as mean (95% CI), and statistical analysis was obtained using sample t-test. A value of P < 0.05 was considered statistically significant.

Outcomes – Serum lycopene and alpha tocopherol levels in elderly people were 0.274 μM (95% CI = 0.239 - 0.310) and 22.109 μM (95% CI = 20.993 - 23.224), respectively. Males had significant lower serum lycopene and alpha tocopherol than females (P < 0.001). Of 72 males, 31.94% are current smokers, whereas 1.4% of 135 females are current smokers. Current smokers (n = 25) had significantly lower serum lycopene (0.175 ± 0.11 μM) than current nonsmokers (n = 182) (0.289 ± 0.27 μM) (P = 0.039) and had non significant lower alpha tocopherol levels (P = 0.210). Moreover, the current smokers had higher oxidative stress defined by MDA level than the current nonsmokers, median 1.456 vs. 1.207 μM, P = 0.046.

Conclusions – This study showed serum level of lycopene and alpha tocopherol in Thai elderly. Serum lycopene and alpha tocopherol were lower in males than females and lower in smokers than in non smokers. Oxidative stress marker was also higher in smokers regardless of gender. Lycopene and alpha tocopherol may be used to scavenge free radicals in the cigarette smoking group.


Post 90

Effect of natural honey on weight loss in overweight and obesity subject

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Background: It has been previously reported that natural honey decreasing coronary heart diseases.

Objective- We aimed to evaluate the effect of consumption of natural honey compared with glucose on weight loss and lipid profile among healthy individuals with BMI≥25.

Design- Over weight and obese healthy subjects (n=65) were randomly divided into two groups: case subjects (n=38) and control subjects (n=17). Case and control subjects intake 70 gram of natural honey solution or glucose solution respectively for 30 days. None of subjects have not been taken any medication during study. In each trial, Body Mass Index (BMI), waist hip ratio, fat weight percentage, body fat and lipid profile were measured before and after consumption solution containing honey or glucose.

Outcomes- Significant decrease in weight (P<0.001), BMI (P<0.001) and fat weight (P<0.02) were observed in subjects taking in natural honey. Also natural honey consumption decreased the level of LDL-C (5.49%, P>0.05), total cholesterol (2.62 %, P>0.05) and triglycerides (10.81 %, P>0.05) and increased HDL-C level (2.41%, P>0.05). Although in control group, weight (0.46%), BMI (0.36%), body weight (0.83%) and fat weight (2.99%) increased after consumption solution containing glucose but these differences were not statistically significant.

Conclusion: Significant decrease in adiposity in individual who took honey might affect decreasing the risk factor of ischemic heart disease. Changes in lipid profile were also observed which might be related to weight loss or anti-inflammatory effects of honey. Natural honey can recommend in overweight and obese subjects with and without coronary heart disease.
Effect of growth hormone and enteral nutrition on protein metabolism in patients after operations

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Background – Studies showed that the Growth Hormone were able to enhance the anabolism, such as the synthesis of proteins. The present study investigated the effect of growth hormone (GH) and hypo-calorie enteral nutrition (EN) on protein metabolism in patients after cardiac operations (1).

Objective – To investigate the effect of growth hormone (GH) and hypo-calorie enteral nutrition (EN) on protein metabolism in patients after cardiac operations.

Design – 36 patients after cardiac operations were randomly divided into two groups. The study group were treated with GH and EN, while the control group received EN only. The treatment was maintained from the 1st to the 7th day postoperatively. The levels of serum albumin (A), transferrin (TF), prealbumin (PA) and retinol binding protein (RBP) were determined the day right preoperative and the 1st, 4th and 8th day postoperative. while nitrogen balance (NB) were detected on the 1st, 2nd, 3rd, 5th and 7th day postoperative.

Outcomes – No significant differences were found in the levels of preoperative plasma A, TF, PA and RBP between the two groups., the level of plasma A, TF, PA and RBP significantly decreased in both groups On the 1st postoperative day compared with the day right postoperative in both groups, and the level of RBP was significantly higher in the study group than in the control group. There were significant differences in the levels of TF, PA and RBP on the 4th and 8th postoperative day, the level of plasma A on the 8th postoperative day, and NB on the 1st to 7th postoperative day between the two groups.

Conclusions – The supplement of GH associated with EN can elevate levels of plasma A, TF, PA, RBP, allayed negative NB, and thus improve nutrition status.


Effect of partial parenteral nutrition on levels of serum proteins in patients with hepatic cirrhosis

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Background - Liver is the most important organ on synthesizing proteins. Decline of the ability to synthesize proteins and malnutrition commonly exist in the patients with chronic hepatopathy (1). Dysfunction of liver and malnutrition in patients with hepatic cirrhosis may lead to low level of serum proteins.

Objective - To study the effects of partial parenteral nutrition (PPN) on improvement of malnutrition and function of liver, we detected the levels of several serum proteins in patients with hepatic cirrhosis after PPN.

Methods - 19 patients with hepatic cirrhosis (including 5 cases companied with liver cancer) were randomly divided into two groups, control group basing on daily diet, test group treated with PPN on the base of daily diet. The levels of serum proteins including albumin (A), transferring (TF), prealbumin (PA), retinol binding protein (RBP) were detected before and after PPN.

Outcomes - The levels of TF and PA in patients with hepatic cirrhosis increased significantly compared to that of control group.

Conclusions - PPN could correct malnutrition and improve the ability of synthesizing proteins of liver in patients with hepatic cirrhosis.

Post 93

Eight years’ home nutrition support for a child with total small bowel resection

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Background - Short bowel syndrome leads to significant morbidity and is potentially lethal, especially when intestinal loss is extensive and when the patient is very young (1). The development of home nutrition support (HNS) brought the successful survival of a child with total small bowel resection for 8 years.

Objective - To study the metabolic changes and complications of a child with total small bowel resection on long term home nutrition support.

Methods - Clinical data were summarized on a child with total small bowel plus right colon resection receiving home nutrition support for eight years.

Outcomes - The patient liver function remains almost normal during the eight years. Catheter related sepsis rate was very low. Several complications occurred during the eight years, including anemia. Home nutrition support could bring a child to gain weight and height, and allowed him normal school life.

Conclusions - Long-term home nutrition support child could suffer many metabolic abnormalities and complications. Catheter related sepsis and occlusion should be prevented. The home nutrition support formula should be adjusted according to the patient’s condition.


Post 94

The prospective study of foremilk exposure to low levels lead and infants on early development

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Objectives – To study the effects on the early development exposed to low levels of lead in foremilk exposure as a marker of lead.

Design – 128 neonates were selected and their foremilk lead level was determined by Atomic Absorption Spectrometer. We used this prospective study to assess the effects of the foremilk lead level and infants on the early development. The infants on the early development were evaluated with the Bayley Scales at 3 months of age. The infants were classified into two exposure groups of greater than or equal to 0.24μmol/L at a high lead group and less than 0.24μmol/L at a low lead group.

Outcome – the mental development index (MDI) and psychomotor development index (PDI) were inversely related with foremilk lead level. The infants with foremilk lead level above ≥ 0.24μmol/L tended to have lower MDI and PDI compared with those whose foremilk lead level was above ≤ 0.24μmol/L. There was significantly difference of MDI and PDI between high and low foremilk lead level. The multi linear regression analysis revealed that contribution of maternal age, calcium, supplement, diet nutrient, composition During pregnancy and severe environmental pollution in their residential area were still statistically significant after adjusting other confounding factors. The calcium supply during pregnancy was protective factor for foremilk lead exposure.

Conclusions – the foremilk lead levels ≥ 0.24μmol/L could still have harmful effects on the development of infants at 3 months of age.
Post 95

**Oligosaccharides balance during the manufacturing flow of soybean sheet**

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**Background**–Soybeans oligosaccharides have been credited with many health-promoting functions, as was shown in many clinic researches (1). The effect of processing on the content of oligosaccharides was studied in many researches (2). However, no such data is available in soybean sheet research.

**Objective**–To formulate a model of oligosaccharides balance during soybean sheet processing.

**Design**–Soybean sheet was prepared as usually described. Oligosaccharides extraction was done as follows. Soybean was ground to powder, defatted with hexane and extracted at 70°C in ethanol. The soaked water was first precipitated with plumbum acetate solution, then with oxalic acid solution, and adjusted to pH 7. Ethanol was added to raw soymilk after centrifugation, and left overnight at 4°C and then centrifuged. The soybean sheet was treated like soybean powder. The sweet slurry was first diluted and adjusted to pH 9 and centrifuged. Adjusted to pH 4.5 and centrifuged. HPLC method was used to analyze oligosaccharides.

**Outcomes**–Oligosaccharides losses (g/kg initial soybean) in soaking water, in first filtrating stage, in second filtrating stage and in sheet formation stage were 0.68, 10.3, 8.15 and 47.22 respectively, representing 0.74, 11.21, 8.87 and 51.39% (w/w) of the total oligosaccharides in soybeans. Oligosaccharides recovery in soybean sheet was 27.92%.

**Conclusions**–Losses of oligosaccharides were mainly at sheet formation stage, and most oligosaccharides were left in sweet slurry. Analysis of loss profile offered possible ways to improve technology for production of oligosaccharides enriched soy-sheets.


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Post 96

**Nutrients intake and calcium supplement on the pregnancy outcome in pregnant women**

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**Background**–Nutritional management in pregnant women and newborn infants are very important. Neither data on nutrition status of pregnant women in Wenzhou district, Zhejiang province nor data about effect of calcium supplement on pregnancy outcome has been reported.

**Objective**–The aim of the present study was to investigate the diet of pregnant women in Wenzhou and the effect of calcium supplement on pregnancy outcome and infant.

**Design**–In 2000 and 2002, diet investigation were conducted in first pregnancy women (≥16 week pregnancy) in Wenzhou. Daily nutrients intakes were calculated and compared with the data from the Chinese RNIs in pregnant women and Zhejiang Urban part of third version national nutrition survey (TVNNS). Calcium nutrition intervention was conducted in 21-28 years old healthy pregnant women with first pregnancy as follows: Control group (n=16) without calcium supplement; Group I (n=14) and group II (n=13) with 600 mg calcium supplements daily during 20±2W pregnancy to childbirth; group III (n=15) with 600 mg calcium supplements daily during 32±2W pregnancy to childbirth. Group II was supplied with additional 60-80 calcium-enriched milk powder (calcium content 180-270mg) daily. Similar amount of daily energy and nutrients were given in four groups. Weight gain of pregnant women, length of gestation, gestation complication, body weight and stature of newborn infant were determined.

**Outcomes**–Compared with the data from TVNNS and RNIs, daily intake of fat, calcium, retinol, vitamin E and soy protein, plant fat and energy from fat were significantly lower in Wenzhou pregnant women. Calcium supplement led to a significant increase in body weight.

**Conclusions**–Daily intake of calcium, retinol, vitamin E and soy protein need to be increased and calcium supplement may necessary for some pregnant women in Wenzhou.
Post 97
Relationship between gastroparesis and postprandial blood sugar in type 2 diabetics
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Background - Diabetes Mellitus is a common chronic disease in China. It has become a serious public health problem because of its highly morbidity and mortality. Since the first description of gastroparesis diabeticorum by Kassander, several epidemiologic studies estimate that about 30%-50% of type 2 diabetics have diabetic gastroparesis. It is manifested by not only dyspeptic symptoms, but also by high postprandial blood sugars due to delayed gastric emptying. This study analyzed the relationship between diabetic gastroparesis and postprandial blood glucose.

Objective - To investigate the relationship between diabetic gastroparesis and postprandial blood sugars.

Design - 61 type 2 diabetics and 20 healthy volunteers underwent single photo emission computer tomograph (SPECT) to evaluate the half time of gastric emptying both liquid and solids (T₁/₂); The fasting blood sugar, 1, 2 and 3 hours of postprandial blood sugar and serum insulin were measured. Gastrin, motilin and glucagon were also evaluated.

Outcomes – The peak time for the highest level of glycemia in patients with gastroparesis occurred of 3-hours after meals (211±27mg/ml). The mean blood sugar 3-hs after meal in the control group was 137±21mg/ml. There was significant difference between two groups for 3 and 4 hour of postprandial blood sugar (p<0.005). The plasma fasting and postprandial motilin were 146.06±86.02 pg/ml and 138.45±97.93 pg/ml for the normal gastric emptying group. The plasma fasting and postprandial motilin were 346.97±160.44 pg/ml and 346.34±145.61 pg/ml for the gastroparesis group. There was a significant difference between the two groups (p<0.001).

Conclusions – Diabetic gastroparesis can occur as a chronic complication of diabetes. Hyperglycemia secondary to delayed gastric emptying was observed 3 hours after meal which was easily ignored by physicians.

Post 98
Effects of enteral nutrition on serum and liver tissue TGF-β1 content in rats with obstructive jaundice
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Backgrounds - Obstructive jaundice (OJ) may results in hepatic fibrosis, even portal hypertension. One of the important factors which promote liver damage are endotoxemia in OJ. Enteral nutrition contributes to the improvement of gut barrier and reduces endotoxemia, but OJ frequently alters liver function. It is known that transforming growth factor (TGF-β1) is an important factor of liver fibrosis and hepatic cell growth inhibiting factor.

Objective - To evaluate the effects of enteral nutrition on serum TGF-β1 and liver value in immature rats with obstructive jaundice (OJ).

Design – Forty immature male Wistar rats were randomly divided into normal control group (I), sham operation group (II), OJ group (III), OJ+Nutrison group (IV). In OJ+Nutrison group, nutritional formulae were given to the rats for seven days. Total calorie was 610kJ/(kg,d) and nitrogen amount was 1.0g/(kg,d). Hepatic morphological findings was observed by microscopy. The TGF-β1 content in serum and liver tissue in rats was detected by ELISA.

Outcome – The liver morphologic changes in group IV are lighter than that in group III. Serum TGF-β1 level in group III and IV increased as compared with group I and II. Liver tissue TGF-β1 concentration in OJ group III (253.2±201.6ng/g) increased significantly with comparison to group I (158.5±150.7), II (121.3±46.3), and IV (143.2±121.7).

Conclusions – Enteral nutrition improves hepatic morphology, decrease the process of liver fibrosis by reducing liver tissue TGF-β1 content in immature rats with OJ.
Post 99
Effect of xanthine and xanthine oxidase on proliferation and oxidative stress in intestinal epithelial cell of newborn rat in vitro, and the protective ability of GSH
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Background – Recent findings suggest that oxidative injury of intestinal epithelium are involved in inflammatory bowel disease, and appropriate antioxidant of epithelial cells may modulate intestinal renox status.

Objective – To investigate effects of three doses of xanthine/xanthine oxidase (X/XO) on intestinal oxidative stress, as well as the protective effects of glutathione (GSH) against cells injury and its importance for the resistance to oxidative stress in cultured intestinal epithelial cells (IECs) of newborn rat in vitro.

Design – IECs were exposed to different enzyme activities of XO (10, 40, 70 U/l) and concentrations of X(10µmol/l), also IECs were incubated with X/XO and GSH (1.5µmol/ml) for 24h. Oxidative damage was determined by assessing cell viability, DNA damage and lipid peroxidation as indicated by malondialdehyde (MDA) production. Level of antioxidant enzymes such as, superoxide dismutase (SOD), catalase (CAT) and total antioxidant capacity (TAC) were determined in IECs.

Outcomes– The proliferation of IECs was not significantly inhibited at, low concentration of XO (10U/l) in contrast, the activity of SOD was slightly increased. The stress induced by X/XO significantly inhibited cell proliferation, deceased antioxidation enzyme activities and induced lipid peroxidation and DNA damage with the increase of XO concentration in vitro. After addition of GSH, it also was found that GSH remarkably enhanced TARP value, but failed to affect the SOD and CAT activity corresponding 10U/l X/XO alone-treated.

Conclusions – IECs exposed to X/XO could induced its oxidative stress and injury. GSH play a critical role against cellular damage induced by X/XO. Low grade oxidative stress might selectively stimulated the synthesis of antioxidant enzyme. Furthermore, it was demonstrated that culture IECs is capable of enduring the effect of lower oxidative stress in vitro.

Post 100
Effect of L-carnitine and (or) L-acetylcarnitine for nutrition treatment in Male Infertility: A Systematic Review
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Background – In clinical practice, L-carnitine and (or) L-acetylcarnitine has been used as male infertility. However, effect of assessment for L-carnitine and (or) L-acetylcarnitine must be based on Systematic clinical evidence.

Objective - To evaluate the effectiveness of L-carnitine (LC) and L-acetylcarnitine (LAC) on the semen kinetic parameters such as sperm concentration, total motility, forward motility and atypical cells of infertile men.

Design - We searched Medline (1950-2006), EMBase (1966-2005), Cochrane Central Register of Controlled Trails (The Cochrane Library2006 Issue 2,) and Chinese Biomedicine Database (1978-2006), China National Knowledge Internet (1994-2006). The quality of included studies such as randomization, blinding, and allocation concealment was evaluated and meta-analysis was performed using Revman4. 2. 8software.

Outcomes– Eight randomized controlled trails (RCTs) were included. There was no significant difference on the sperm parameters of patients treated with LC or LAC alone from those with combined therapy. Compared to those after placebo treatment, LC and (or ) LAC therapy led to a improvement with statistical significance on pregnancy rate (OR=5.05, 95%CI (2.38, 10.72), P<0.0001), sperm total motility (WMD=8.9, 95%CI (2.74, 15.07), P=0.005) , sperm forward motility (WMD=11.83, 95%CI (0.49, 23.16), P=0.04), atypical sperm cell (WMD=-5.72, 95%CI (-7.99, -3.56), P<0.00001). However, there was no significant difference on the sperm concentration (WMD=5.40, 95%CI (-2.78, 13.57), P=0.2) and semen volume (WMD=0.28, 95%CI (-0.02, 0.58), P=0.07).

Conclusions - According to basic researches present available, it shows that the administration of LC and (or) LAC may be effective in increasing sperm kinetic features in infertile patients. However, the exact effect of LC (LAC ) being used for specific indication in male infertility needs to be confirmed by further large randomized control trials.
A study of Thiamin levels in Thai children with acute diarrhea

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Background – Acute diarrheal infection caused by virus or bacteria is a common disease in young children. By observation, some diarrheal Thai children who had metabolic acidosis with wide anion gap cannot be recovered by rehydration and bicarbonate treatment, but can be resolved by thiamin supplementation. From this reason, thiamin deficiency was suspected to be one possible factor in these children because it can impair the pyruvate dehydrogenase function. As a result, an accumulation of pyruvate occurs and leads to the continuous production of lactate. Thus, the diarrheal children with wide anion gap and high lactate level (≥ 2 mM) (1) are suspected to have thiamin deficiency.

Objective – To determine thiamin status in red blood cells of acute diarrheal children with wide anion gap compared to those with normal anion gap on the first day of admission at Srinagarind hospital, Khon Kaen, Thailand.

Design – Acute diarrheal children (n = 14; age range 2 m - 6 yr) were divided into two groups according to type of anion gap; group 1 (21.4%) with normal anion gap (5.5 ± 5.2 mM) and group 2 (78.6%) with wide anion gap (21.2 ± 5.2 mM). Blood samples were taken on day 1 of admission for thiamin assay by erythrocyte transketolase (ETK) assay. Lactate level was also determined.

Outcomes – The 66.67% of patients in group 1 had normal lactate level (1.5 ± 0.8 mM) and 33.33% had high lactate level (2.2 mmol/L). None of them had thiamin deficiency (TPP effect < 20%). High lactate level (3.5 ± 1.4 mM) was found 54.55% in group 2. Thiamin deficiency (TPP effect > 20%) was found in 18.18% in group 2 (9.09% with high lactate and 9.09% in low lactate group)

Conclusions – In acute diarrhea children with normal anion gap acidosis, thiamin deficiency was not noted. In contrast, thiamin deficiency is not uncommon in patients with wild anion gap regardless of lactic acidosis. Larger scale of study is warranted.

Background – *Carica papaya* L. was an expensive and famous fruit, produced in tropical and semitropical zones, it was a kind of perennial evergreen plants. It mainly distributed in Guangdong, Guangxi, Hainan, Yunnan, Fujian, Taiwanese Sichuan etc. province area in China. It contained papain with highly activity. With its functional characteristics of being full-natural, nontoxic, harmless and safe, papain was widely used in the realm of food, medical and health etc. Hence, getting into the research of thorough delicacy for the papain, in order to make use of papain and provide theories, which was very necessary.

Objective – To investigate the dynamics of papain.

Design – Extracting the papain from *Carica papaya* L., then adopting cellulose ball’s derivation as vectors containing NH$_2$, fixing the papain with glutaraldehyde, the action its irreversible used as the substrate with 2,2'-dipyndyl disulphide were studied in the thesis.

Outcomes – The Km values and the rate of appearing reaction were changed with diameter of ball’s cellulose used as vectors in the immobilization of papain. Its Km value was lower than that of native enzyme and near to the free enzyme. However, the rate of appearing reaction trended to low with increasing the diameter and changed with the ionic strength. The autodigestion of papain was markable and new enzyme with high ability of autodigesting to casein used as the substrate was appeared while it was autodigesting. The characterization of new enzyme digesting the article substrate were complete differed from the pro-enzyme. The new enzyme was appeared at the 41$^{st}$ amino acid from papain. The reaction of 2, 2'-dipyndyl disulphide used as irreversible inactivation to papain was noncomplex and still remained a part of the proteolytic activity. That were $K_{d0}$ equal to 0.6×10$^{-8}$M$^{-1}$S$^{-1}$; $k_{d0}$ equal to 0.13×10$^{-8}$M$^{-1}$S$^{-1}$.

Conclusion – According to the studies on the autodigestion, irreversible inactivation and immobilization papain, the results indicated that the property of papain was so safe that could be applied in all kinds of domains. But its purificational technology was still needed to improve deeply, which would extend further to the need of papain and develop foreground amplitude.

Meanwhile, besides papain, the rude powder also contained chymopapain. The study also set forth:

Main factors of chymopapain to inact in nature weren’t the autodigestion and a little. Inaction of proteolytic abilities at room temperature were due to the changing of essential-SH in the react center and transferring the chymopapain’s structure.

The reactions of irreversible inactivation of chymopapain with 2, 2'-dipyndyl disulphide were noncomplex and still remained a part of proteolytic activity. That were $K_{d0}$ equal to 1.24×10$^{-8}$M$^{-1}$S$^{-1}$; $k_{d0}$ equal to 0.24×10$^{-8}$M$^{-1}$S$^{-1}$.

So, the chymopapain which could make cream cheese and treat intervertebral disk prolapsus disease, was a very valuable composition. In addition, Papaya peptidase and lysozyme also had important use. Extracting above various enzyme respectively to take into application was particularly on the medical science(contain a vet) which was a urgent issue to study and exploit.
Post 103

Maternal alcohol intake: does it affect breastfeeding duration?

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Background – Exclusive breastfeeding for six months, with continued breastfeeding until two years of age together with complementary foods, is recommended to optimise infant health and development (1-2). Drinking during pregnancy can have detrimental effects on infant development in utero however there is limited research on the effects on breastfeeding outcomes.

Objective – This study investigated the association between maternal alcohol consumption and the duration of lactation.

Design – A 12 month longitudinal study conducted in two public maternity hospitals in Perth, Australia between mid-September 2002 and mid-July 2003. While in hospital, participating mothers completed a self-administered baseline questionnaire. Follow up telephone interviews were conducted at 4, 10, 16, 22, 32, 40 and 52 weeks. Data collected included socio-demographic, biomedical, hospital-related and psychosocial factors associated with the duration of breastfeeding.

Outcomes – Drinking alcohol throughout the 12 month follow-up period was more common in women who were Caucasian, had a family income of more than $25 000/year, who had attended antenatal classes and had consumed alcohol prior to and during their pregnancy. Drinking alcohol during pregnancy was positively associated with breastfeeding duration for longer than six months at the univariate level. However this was not significant when adjusted for factors more strongly associated with breastfeeding duration.

Conclusion – From this research it appears that consuming alcohol throughout the maternal period is a practice of higher income mothers of Caucasian origin. It is not uncommon for women with these sociodemographics to regularly drink on a social basis as afforded by their lifestyle and income. Despite this, drinking during pregnancy and lactation should be discouraged in all women to promote the health of the infant and support positive lactational outcomes.


Post 104

Studies on the content of total flavones and antioxidant capacity in celery

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Background – Celery is a vegetable and it could be used as medicine. However, there is no data on the chemical constituents and health effect, especially for determination of the flavones and the antioxidant capacity.

Objective – The aim of the present study was to determinate the content of the flavones and the antioxidant capacity in roots, stem, and leaves of celery.

Design – The flavones from roots, stem, and leaves of celery were extracted by ultrasonic extractor with 95% ethanol and determined by spectrophotometry with rutin as standard sample. The antioxidation effects of roots, stem, and leaves in celery were determined by the chemiluminescence system of the pyrogallol-carbonate buffer solution-luminol and flow-injection technology, the optimal conditions were investigated by examining the influence of various factors.

Results – The contents of flavones in the root s, stem and leaves of celery were 36.38 mg.g-1, 20.65mg.g-1, and 230.04mg.g-1. The recoveries were 101.5%, 104.6 % and 102.1%. RSD were 2.80 %, 2.60 % and 1.53 % respectively. The IC50 of antioxidant capacity of roots, stem, and leaves in celery were 7.476 mg/mL, 6.051 mg/mL and 2.263 mg/mL respectively.

Conclusions – The results showed that the flavones in roots, stem and leaves of celery were abundant and could effectively restrain the chemiluminescence of luminol induced by super oxygen anion free radical, and the strength of the chemiluminescence presented the descending trend when the concentration of flavones in roots, stem and leaves of celery increased.
Post 105  
Effects of Modified Citrus Pectin on Serum Lipids and the level of leptin in obese rats  
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Background and Objective- Modified citrus pectin (MCP) is a complex polysaccharide obtained from the peel and pulp of citrus fruits. Some clinical applications of MCP have proved that it can enhance immunomodulation and have effects on cancer cells. However, there has been no controlled research to date to prove the effect of MCP in regulating lipid level. We therefore studied the effects of MCP on overall lipid metabolism, including the levels of leptin, in obese rats.

Design - Seventy-five normal SD rats (weight was between 180g and 200g) were divided into five groups: normal control group (normal rats 0 mg/kg.d), model control group (obese rats 0 mg/kg.d), low dose group (100mg/kg.d), moderate dose group (400mg/kg.d), and high dose group (800mg/kg.d). The 60 rats in the later four groups were made into obese rats using the standard method. The animal’s body weight, blood cholesterol, LDL, HDL, serum lipid, and Leptin levels were measured. The animals’ liver, pancreas, kidney pathology was examined at the third and sixth week.

Outcomes - After fed with MCP, The level of TC, TG, and the weight of the MCP dosed rats were decreased in all animal groups. Also, the ratio of the liver weight to the body weight in the middle and high dose groups were significantly lower comparing with model control group. The level of LDL of all animal groups was lower, but had no statistically significant difference comparing to the model group. There were no significant changes of activities of leptin in the dose groups relative to the model control group. The morphology of the liver cells showed no difference among the dosed and control animals.

Conclusions - The study demonstrated that MCP decreased body weight, serum lipid and blood cholesterol levels in the experimental animals. The mechanism of MCP’s strong regulation function in lipid metabolism will be investigated further.

Post 106  
Polyunsaturated fatty acids in varieties of cowpea in Thailand  
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Background – Cowpea (Vigna Unguiculata (L.) Walp) is an important grain legume and has been used widely for human and animal as a plant protein rich source. However there has not been much published data on fatty acid composition of cowpea.

Objective – The aim of the present study was to investigate the polyunsaturated fatty content of cowpea grown in Thailand.

Design – Ten varieties of cowpea: KKU 35, KKU 25, MSU 1, KKU 264B, STU1, Ubon, KKU305, KUCH7, KKU264R, MSU2 were determined lipid content and fatty acid composition. The lipids were extracted by chloroform-methanol (2:1, v/v). Total lipid content was measured by gravimetric method, fatty acids were analysed by gas liquid chromatograph.

Outcomes – Total lipid content of the analyzed cowpea ranged from 2.6 of STU1 to 3.5% (g/100g) of KKU264R. The ranges of saturated fatty acid (SFA), monounsaturated fatty acid (MUFA) and polyunsaturated fatty acid (PUFA) were 31-34%, 6-12% and 57-62% (total fatty acid), respectively. The predominant PUFA were 18:2n-6 ranging between 30 and 36%, and 18:3n-3 ranging between 19 and 23% respectively. While the predominant SFA was 16:0 ranging between 24 and 27% and main MUFA was 18:1 ranging between 5 and 11%.

Conclusions – The present results indicated that cowpea could be a good source for PUFA. Fatty acid composition of cowpeas varied among different varities.
Post 107

Effect of storage conditions on antiglycation and antioxidation capacities in Mulberry tea

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Background – Mulberry (Morus alba Lin.) has been reported to have antioxidation and antiglycation activities. Mulberry leaf has been produced as tea and consumed for over the last decade. However there is no information on the quality of mulberry tea during storage especially in Thailand.

Objective – The aim of this study was to investigate the antioxidation and antiglycation in Thai mulberry tea as well as sensory properties during four week storage in different conditions.

Design – Mulberry tea was made from mulberry leaf number 1-3 using optimal method from previous work and divided into two groups; (1) kept in polyethylene (PE) bag and (2) kept in aluminum foil (AF) bag, both groups were kept at room temperature for four weeks. The analyses were conducted as follows; the protein glycation inhibitory activity of aqueous extracts from eleven mulberry tissues of Burirum variety was evaluated in vitro using the model system of bovine serum albumin (BSA) and D-fructose. Antioxidative activity was determined using 2,2-diphenyl-2-picrylhydrazyl (DPPH) free radical scavenging assays. Total phenolic compound was also measured using Folin-Ciocalteus. Sensory properties of tea were also investigated by trained panels, at once after being made, and four week-storage compared with freshly made tea.

Outcomes – The glycation inhibitory and antioxidative activity were stepwise significantly decreased during four week storage. Glycation inhibition (%) was significantly decreased from 65% to 48 % in group1 and to 50% in group 2. Similarly, free radical scavenging (%) was significantly decreased from 83% to 42% and to 59% in group 1 and group 2, respectively. The results indicated that tea kept in PE had greater decrease compared with that kept in AF. In addition, tea kept in AF also showed brighter colour and better sensory properties. Total phenolic compound content was decreased from 636 to 246 in group 1 and to 276 (mg / g gallic acid equivalents) in group 2.

Conclusions – The storage conditions and time significantly resulted in decrease of antiglycation and antioxidative potency of mulberry tea. This study also suggests that mulberry tea kept in AF bag could provide better quality and sensory properties compared with that kept in PE bag.

Post 108

Composition of lipids and fatty acids of Bullacta exarata

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Background – Bullacta exarata or ni luo (in Chinese), is a sea shell which has long been consumed in China. However, there has been no data on composition of lipids and fatty acids in ni luo.

Objective – The aim of the present study was to investigate the composition of lipids and fatty acids in canned ni luo in brine.

Designs – Six canned ni luo in brine were obtained from the same batch commercial production, and kept at room temperature until analysis. The lipids were extracted by chloroform-methanol (2:1, v/v) containing 10mg/L of butylatedhydroxytoluene (BHT) and 0.2 mg/mL of tricosanoic acid (23:0) as internal standard. Lipids were separated by Iatroscan TLC/FID, fatty acids was analyzed by standard method.

Outcomes – Total lipid content was 0.94 ± 0.17% (wt basis). Four lipid components were classified in ni luo oil, namely cholesterol ester (CE), triacylglycerol (TAG), phospholipids (PL) and sterol. The most predominant lipids were TAG (34.6±5.6%) followed by CE (32.6±6.5%) and PL (29.1± 1.9%) respectively while sterol was found to be the least (3.7±0.8). The results showed that the composition of total fatty acids of ni luo oil consisted of about 32% of saturated fatty acid (SFA), 29% of monounsaturated fatty acid (MUFA) and 39% of polyunsaturated fatty acid (PUFA). The most predominant fatty acid was found to be 20:5n-3 (25% of total fatty acids or 600 mg/100g).

Conclusions – The present results indicated that ni luo had high amount of omega-3 fatty acid especially 20:5n-3 but no 22:6n-3 was detected.
Post 109

A Study on Hypolipid and Hypoglycemic Mechanism of Tea Polysaccharides in Obese Rats and Alloxan Diabetic Mice

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Background – Polysaccharides are very important higher molecular chemical products. They are existed in the cell membrane of animal cell, and cell wall of plant and microbion cells. Tea Polysaccharides from tea have many biological functions, such as antiradioreaction, anticoagulation, reducing blood glucose and blood lipid and improving human immunity. However there is no date on hypolipid and hypoglucose mechanism of TPS in obese rats and alloxan diabetic mice.

Objective – To investigate the lipid Metabolism and Hypoglycemic Mechanism of Tea Polysaccharides in Obese Rats and Alloxan Diabetic Mice.

Design – 1. The Obese Rat model was induced by high fat diet, and male SD rat were randomly allocated into control group and model group, which were been given normal diet and high fat diet respectively for 4 weeks. The obese rats were divided randomly into 3 groups which were administrated orally with TPS with 100mg/Kg, 200mg/Kg in treated groups, and water with 2 ml in control group per day for 60 days respectively. TC, HDL-C, LDL-C, LCAT were detected. 2. After administrated TPS for 4 weeks, ICR mice were injected alloxan and observed the blood glucose and the Activity of SOD, GSH-Px and MDA in liver. 3. The diabetic mice induced by alloxan were fed TPS for 6 weeks, and observed the blood glucose and the Activity of glucokinase in liver.

Outcomes – 1. In the obese rats treated with TPS, the level of serum TC, LDL-C were reduced, the level of serum HDL-C, HDL2-C, HDL3-C, and the Activity of LACT were induced. 2. The level of blood glucose in the mice treated with TPS previously did not increase obviously, and the Activity of SOD, GSH-Px and the content of MDA decrease. 3. The Activity of glucokinase was higher than those without TPS.

Conclusions – TPS has remarkable hypolipid and hypoglycemic effects on Obese Rats and diabetic mice, and enhances the Activity of LACT, SOD, GSH-Px and glucokinase.

Post 110

Expression of Apisim in cDNA from Apis cerana cerana in Escherichia coli

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Background – Apisimin belongs to honeybee major royal jelly proteins (MRJPs) secreted by nurse bees which has been broadly used as a health promoting substance. As a defensin, the peptide maybe participate in defense mechanisms of honeybee against microbial pathogens. However, the gene has not been expressed through gene engineering.

Objective – To express the gene encoding Apisimin from Chinese honeybee (Apis cerana cerana) in E. coli

Design – The clones of Apisimin gene were chosen through searching EST Data from a library of worker heads of Chinese honeybee. The coding region of the matured peptide was sequenced and analyzed homology with CLUSTAL1.8 software, then was sub-cloned into the expression vector pGEX-4T-2. The recombinant vector was transformed into E. coli BL21 (DE3) for expression. The expression product was analyzed with SDS-PAGE and western blot.

Outcomes – Ninety-six clones containing Apisimin gene were identified from the ESTs data. The total length of the cDNA was 379 bp including an open-reading frame (ORF) of 237 nt. The ORF was potential to encode a 78 amino acid residue precursor. The gene of Chinese honeybee shared 100% and 95% homologies with European honeybee (A. mellifera) and Indian honeybee (A. cerana indica) in nucleotide level, respectively. The GST-apisimin fusion protein expressed in pGEX-4T-2 was about 31 kDa and accumulated up to about 22.1% of the total bacterial proteins. The fusion protein purified through affinity chromatography was cross reactive with GST antiserum.

Conclusions – The present study indicated that Apisimin has been expressed in E. coli successfully.
Studies on antioxidant activity of several Chinese bayberry (Myrica rubra) juice

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Background – Chinese bayberry (myrica rubra) is one famous fruit in China, which is grows in the regions from 970E to 1220E longitude, and from 180N to 330N latitude (1). ZheJiang province is the biggest bayberry growing area in china, and BiQi, DongKui, WanDao, DingAo, and LinHaiZaoDaMei are five cultivares in ZheJiang province. Some studies showed that Chinese bayberry had good antioxidant activity, and the assay also showed that the antioxidant activity may attributed to higher anthocyanins, flavonoids and total phenols content. However, the research towards at the five cultivars bayberry juice is un-reported.

Objective – To evaluate the total antioxidant activity of the five cultivars named BiQi, DongKui, WanDao, DingAo, and LinHaiZaoDaMei, investigate the relation between the antioxidant ability and total Phenol, total flavone, and total anthocyanin content.

Design – All five Chinese bayberry cultivars were processed as following: washed by water, crushed by family-use breaker, centrifugated at 4000rpm, and then filtered by 0.45μm filtration membrane and The juices were stored in refrigerator at -20℃ for analysis. Total phenol, total flavone, and total anthocyanin content were determined by Folin-Ciocalteu colorimetric, pH-differential Spectrophotometry. Total antioxidant activity were evaluated by β-carotene/ linoleic acid, FRAP, and TEAC methods(DPPH•, ABTS•+). The result of β-carotene bleaching assay was expressed by BHT equivalents, FRAP and TEAC were expressed by Trolox equivalents. All the dates are measured 5 times and express in average.

Outcomes – The total phenolic content of five raw cultivar juices is from 895.6±4.86 to 452.61±1.53ppm by Folin-Ciocalteu method calculated as gallic acid, the total flavone content is from 45.4±0.8 to 16.4±0.5ppm by Al(NO3)3-NaNO2 colorimetric method calculated as rutin, and the total anthocyanin is from 108.9± 4.7 to 69.2 ±2.3ppm by pH-differential spectrophotometry calculated as cyanidin-3-O-glucoside equivalents. The total antioxidant activities(TAA) of five bayberry juices showed all five cultivars had good free radical- Scavenging ability. BiQi cultivar showed highest antioxidant activity, had 6.6±0.25mM Trolox equivalent antioxidant capacity (TEAC) and 79±2.3ppm BHT equivalent antioxidant capacity (β-carotene/ linoleic acid), and Dongkui cultivar showed the lowest antioxidant ability which maybe be attributed to the lowest total phenolic content, total flavone content and anthocyanin.

Conclusions – All five Chinese bayberry cultivars showed good antioxidant activity, Dongkui showed lowest antioxidant ability which had lowest total phenolic content, total flavone content and anthocyanin, the assay also demonstrated that the total phenolic content was correlated with it antioxidant ability.

Lipid and Fatty Acid Content in Thai Vegetable and Fruit Seeds

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Background- Thailand has a large number of natural resource and wide range of diversity. However, there has been no data on polyunsaturated fatty acid composition on vegetable and fruit seeds.

Objective- The purpose of this study was to determine the lipid content and polyunsaturated fatty acid (PUFA) composition and concentration in Thai vegetable and fruit seeds.

Designs- Eighteen seeds were collected from local region, Mahasarakham, Thailand. Lipids were extracted by chloroform- methanol (2:1, v/v) containing 10 mg/L of BHT, total lipid content was measured by gravimetric method, and fatty acid ester derivatives for chromatographic analysis were according to the prior report.

Outcomes- In the present study, lipid content of seeds ranged from 0.9g/100g in Star-goose berry to 47.1g/100g in Bengal Almond. There were large amounts of total PUFA present in seed samples, ranged from 22.8% in Leb meaw to 79.7% in Guava 18:2n-6 was the most predominant PUFA in all samples, ranged from 12.9 in Durian to 79.7 in Guava, except for Star-goose berry which had the highest amount of 18:3n-3 (38.6%) whereas oleic acid was the main fatty acid in Leb meaw (50.6%), Wood apple (37.6%) and Manila Tamarind (35.7%).

Conclusion- The present results indicated that some seeds were potential sources of linoleic acid and oleic acid. The data obtained could also contribute to the Thai food composition database to provide information for further research and to the general public.
A novel method for measuring dissolution kinetics of Pulverized konjac Flour

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Background-The biological activity of soluble fiber is largely, but not exclusively, dependent on its capacity to increase the viscosity of digesta in the stomach and small intestine. The results of in vitro investigation will facilitate our understanding of the behavior of konjac flour in the gut lumen and also provide useful information about the types, dozes and mode of administration of konjac flour that should be used to optimize its therapeutic effects. However, there has been no precise and rapid method for measuring hydration and dissolution kinetics of pulverized konjac flour.

Objective-To develop a rapid and reproducible method for measuring hydration and dissolution kinetics of pulverized konjac flour from Amorphophallus albus using RVA-3D+ Rapid Visco Analyzer (RVA; Newport Scientific Pty Ltd., Australia).

Design-To determine the suitable test time and concentration of pulverized konjac flour, Weigh 0.125g, 0.250g, 0.375g and 0.500g pulverized konjac flour into RVA’s special aluminum canister and add 25.00mL distilled water while shaking the mixture, then quickly use RVA to test the viscosity changing curves (dissolution curves), respectively. The test conditions were set as: test temperature of 30°C ± 1°C, the stirring speed of 160r/min (at constant shear rate), time duration was 16min or 60min. The curve parameters are analyzed by TCW (Thermocline for Windows, Version1.2). To investigate the effect of sodium chloride, sugar and maltodextrin on the dissolution kinetics of pulverized konjac flour, disperse 0.250g pulverized konjac flour into 25.00mL distilled water and into different concentrations of sodium chloride, sucrose, maltodextrin aqueous solutions in RVA’s canister, then quickly test in the same setup, respectively. To quantify the dissolution kinetics, the viscosity data reading from the dissolution curves were fitted to a logistic procedure, a slightly modified model compared to the one used by To KM, et al. (1994) and Wang Q, Ellis PR & Ross-Murphy SB (2002).

Outcomes-The results showed that RVA was a rapid and reproducible method for measuring the dissolution kinetics of the pulverized konjac flour. For rapid determination of hydration rate of the konjac flour, the suitable concentration of konjac flour, the suitable test temperature, stirring speed, test time were set up as 1.0%, 30°C ±1°C, 160r/min and 16 minutes, respectively. An empirical logistic model for describing the dissolution kinetics of pulverized konjac flour was also established and found to be reliable for predictive purposes:

$$\eta = \frac{\eta_{\text{max}}}{1 + \exp(-a-bt)}$$

The rate constant (b) and the time reach to the half of maximum viscosity ($t_{0.5}$) can be used as indicating parameters for the dissolution processes. It has been successfully differentiated of pulverized konjac flour dispersed in distilled water and in different concentrations of sodium chloride, sucrose, maltodextrin aqueous solutions by application of these two parameters.

Conclusions-Rapid Visco Analyzer (RVA) has been found a precise and rapid technique for determining the dissolution kinetics of pulverized konjac flour. It is promising to be used successfully to study the dissolution kinetics of other soluble fibers. The technique described here allows accurate quantification of hydration rate of soluble fibers, and is also a solution to the two difficult Experimental problems in measuring hydrocolloid dissolution kinetics: random formation of lumps and lumps stick to the stirrer.
Post 114  
**Effect of Molecule Modification of Lutein and Zeaxanthin for Inhibitory Tumor Cell Proliferation Activity**  
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**Background** – It is said that lutein and zeaxanthin may protect people against age-related macular degeneration, cataract, cancer and cardiovascular diseases, but no data have been published on the effect of comparing the characteristics of carotenoid fatty acid esters with their free forms.  
**Objective** – This work was aimed to investigate the relationship between lutein and zeaxanthin structure and their anti-tumor effects.  
**Design** – Zeaxanthin and lutein were purified from corn protein residues, and their structures were modified by mono- and di-acetylation of their ionone ring hydroxyl groups. The structures of the modified products were characterized by means of UV-Visible Absorption Spectroscopy, HPLC-Mass Spectroscopy and 'H-NMR spectroscopy. The tumor inhibitory effects of mono- and di-acetylated zeaxanthin and lutein were compared with those of natural zeaxanthin and lutein by MTT assay using human mouth epithelial cancer KB line as model cells(P<0.05).  
**Outcomes** – Zeaxanthin and lutein demonstrated lower anti-tumor-proliferation activities after mono- and di-acetylation of their ionone ring hydroxyl groups.  
**Conclusions** – The hydroxyl groups in zeaxanthin and lutein molecules made significant contribution to their anti-tumor-proliferation activity.

Post 115  
**The effect of Yikeyuan® Zengguling capsules on Increasing Bone Density Function in Rats**  
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**Background** – It is well known that calcium and vitamin D can increase the bone mineral content and density for the young animals and soy isoflavones and *eucommia ulmoides* also had a role in improving bone health for the old animals. However, more studies need to be carried out on calcium and vitamin and plus extracts from Chinese traditional medicine on the bone health.  
**Objective** – To investigate the effect of the extracts from soy isoflavones, pearl powder and *eucommia ulmoides* and vitamin D on increasing bone density function in rats.  
**Design** – Sixty weaning male four wks old Wistar rats (70-80g) were fed on a basal diet for one week, and then they were randomized into one of six diet groups, that is group one as a control group fed with a low-calcium diet (795mg Ca/kg diet) and the other five groups were fed on a low-calcium diet and supplemented with Yikeyuan® Zengguling capsules at 15.0mg, 45.0mg or 90.0mg/100g body weight or carbonate calcium at 9.0mg or 54.0mg/100g body weight for three months, respectively.  
**Outcomes** – All groups given with Yikeyuan® Zengguling capsules and carbonate calcium had significantly higher in body weight, bone mineral content and density and calcium content in femur than those of the control group. However, there was no markedly difference on the mentioned indicators, and also no significant difference on the Ca apparent absorption and retention between Yikeyuan® Zengguling capsules and carbonate calcium at the same Ca level.  
**Conclusions** – The present study indicated that Yikeyuan® Zengguling capsules could have a beneficial role in increasing bone density function in rats.
Post 116
Identification and application of phage mimotope peptide which bind to the monoclonal antibody anti-deoxynivalenol
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Background – Mycotoxin deoxynivalenol (DON) is a kind of trichothecenes, produced by Fusarium spp.. Deoxynivalenol is a common contaminant of some cereals, usually occurs in temperate climates in years that are particularly wet at the time of harvest, and causes feed refusal, emesis, immunosuppressive or immunostimulatory, teratological, cytotoxic, reproductive toxicity. Enzyme-linked immunosorbent assays (ELISA) employing polyclonal or monoclonal antibodies is by far the most widely used serological test for the detection of mycotoxins because of its simplicity, rapid, adaptability and sensitivity, but the DON in the ELISA kit is toxic to manufacturers and users.

Objective – To select phage-displayed mimotope peptides that mimic the binding of deoxynivalenol (DON) to monoclonal antibodies (McAb) anti-DON, and using the DON mimotope peptide in stead of toxic DON artificial antigen establish Enzyme-linked immunosorbent assays (ELISA) for detecting deoxynivalenol in food products.

Design and Outcomes – Phage clones were obtaining by panning from Ph.D.-7 Phage Display Peptide Library, producing phage that bound specifically to monoclonal antibody 12D1 anti-DON. The amino acid sequence of the binding peptide was CMRPWLQ. A phage indirect competitive enzyme-linked immunosorbent assay (named phage-ELISA) was established by using the mimotope phage in stead of DON artificial antigen for assaying deoxynivalenol concentration in corn and wheat. The linear range of the phage-ELISA was between 20ng/mL and 400ng/mL, and the DON concentration in wheat and corn samples detected by phage-ELISA were consistent with the results by the gas chromatography and RIDASCREEN®FAST DON kit from r-Biopharm Company.

Conclusions – The results show that the phage mimotope peptide of deoxynivalenol are effective substitutes for deoxynivalenol to establish ELISA procedures for detecting deoxynivalenol in wheat and corn, the phage-ELISA would contribute significantly to enhancing the safety and diminishing the costs of deoxynivalenol assays.

Post 117
The effect of Yikeyuan® Shilihuang capsules on Alleviating Eye Fatigue Function in Human
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Background – It has been reported that there was a decreasing trend in the visual acuity of school children due to the increase in school work and competition for entering a higher school and decrease in after-school activities.

Objective - In order to study the effect of the product from anthocyanidinis extract, pearl powder, taurine, lactate zinc and vitamin A on alleviating eye fatigue function.

Design – one hundred and twenty young people with aged 17-23 years, who had sensitive to suffer from asthenopia, were selected and randomly divided into two groups, group one was given with Yikeyuan® Shilihuang capsules two capsule/d which contained anthocyanidinis extract, pearl powder, taurine, lactate zinc and vitamin A and the group two was given with a placebo as control for one month.

Outcomes – The subjects in the supplemented group had a significant improvement in the distant vision, duration of photopic vision and the score of clinical symptoms compared with the basal data. There were significant differences between the supplemented and control groups after the study. All indicators related to the clinical safety assessment were no evident change at the basal and final levels for the supplemented and control groups.

Conclusions – The present data showed that Yikeyuan® Shilihuang capsules contained anthocyanidinis extract, pearl powder, taurine, lactate zinc and vitamin A could have a role in alleviating the eye fatigue function in human.
**Post 118**

**Effect of diacylglycerol enriched oil on biomarkers of type 2 diabetes mellitus patients**

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**Background** – Intervention studies from both human and animals showed that diacylglycerol (DAG) enriched oil reduce both fasting and postprandial levels of triacylglycerols (TAG), and reduce body fat. We believe DAG will have a beneficial effect on type 2 (diabetes mellitus) DM patients. However, there is no clinical trial with large sample size in type 2 DM patients.

**Objective** – To investigate the effect of DAG on risk factors and parameters of type 2 DM and cardiovascular disease (CVD) in type 2 DM patients.

**Design** – On hundred and twenty-seven type 2 DM patients, aged 40 to 65 were recruited in Hangzhou. Test oils DAG oil, TAG oil and control TAG oil were provided by Kao Corporation. All subjects consumed control TAG oil for 14 days, and then the subjects were randomly divided into DAG and TAG groups (25g/day/head) for 120 days. Subject completed a 7-days food record. Blood and urine samples were collected at day 0, 60 and 120. Risk factors of type 2 DM and CVD and biochemical parameters in blood and urine were measured at day 0, 60 and 120 by standard methods.

**Outcomes** – There were 112 subjects completed the study (DAG, n= 60, F=36, M=24, age 54.1±6.7; TAG, n=52, F=29, M=23, age 53.9±6.0). DAG oil significantly lowered body weight, BMI, waist, Homeostasis Model Assessment – Insulin Resistance (HOMA-IR) and serum levels of insulin compared with TAG oil.

**Conclusions** – The results from the present study indicated that both oils are safe in relation to parameters of liver and kidney functions. DAG oil has an equivalent bioavailability as TAG oil in relation to provide essential fatty acids. DAG oil has a beneficial effect in relation to waist, HOMA-IR, blood levels of insulin, glucose and leptin, as well as body weight, BMI, SBP and DBP.

**Post 119**

**Mechanisms behind the protecting effects of sodium ferulate on the kidneys in diabetic rats**

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**Background** - Nonenzymatic glycation and oxygen free radical injury are important reasons leading to the impairment of kidney in diabetes mellitus. Nonenzymatic glycation and oxidation are two factors which could interrelate and interact in the development of diabetic nephropathy (DN). Sodium ferulate (SF) is the main component of szechwan lovge rhizome and chinese angelica, which have the abilities to dilate blood vessel, inhibit platelet aggregation, dredge microcirculation, inhibit inflammatory reaction, inhibit oxidation and clear oxygen free radicals. Our previous study showed that SF can decrease 24h urine protein, postpone the increase of blood creatinin in DN patients. Diabetic rat models induced with streptozotocin (STZ) were treated with SF in this study. The inhibition effects of SF on the nonenzymatic glycation and oxidation in the kidneys of the diabetic rats were investigated.

**Objective** - To investigate mechanisms behind the protecting effects of SF on the kidneys in diabetic rats.

**Design** – Wistar rats were randomly divided into normal control group, diabetic control group and SF-treated diabetic group. Every group included 8 rats. The diabetic rat models were induced by injected STZ intraperitoneally. The rats in the SF-treated diabetic group were treated with SF (110mg/kg) by gavage per day. The rats in the diabetic control group and the normal control group were treated with same volum of normal saline by gavage. After treatment of 8 weeks, the renal weight/body weight (RW/BW), clearance rate of creatinine (Ccr), 24h urine protein and advanced glycation end products (AGEs) in renal cortex were measured. Malondialdehyde (MDA), fructosamine (FMN) and antioxidase activities in serum and renal cortex were also measured. Renal pathologic changes were also observed.

**Outcomes** – The levels of Ccr, 24h urine protein, FMN and AGEs in renal cortex, FMN in serum, and RW/BW in the diabetic control group were significantly higher than those in the normal control group(P<0.01). In the diabetic control group, there were higher levels of MDA and lower activities of superoxide dismutase (SOD) and catalase (CAT) in the serum and the renal cortex than those in the normal control group(P<0.01). Except for FMN in the renal cortex, compared with diabetic control group, the abnormalities were significantly ameliorated in the SF-treated diabetic group. The renal pathologic changes were significant in the diabetic control group, which were significantly ameliorated in the SF-treated diabetic group.

**Conclusions** – SF can protect antioxidase activities, clear oxygen free radicals and inhibit the deposit of AGEs in kindey, which might be the mechanisms behind the protecting effects of SF on the kindey in diabetic rats.
Preparation of selenium accumulation in *Ganoderma lucidum* for a new functional food resource

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**Background** – Selenium is an essential trace element for physiologic function of human (1). Organic selenium is preferred for less acute toxicity than inorganic selenium. It is significant for bioconversion of inorganic selenium to organic selenium because the source of organic selenium is limited.

**Objective** – To investigate bioconversion of inorganic selenium by *Ganoderma lucidum* submerged cultivation and prepare selenium accumulating in *Ganoderma lucidum* for a new functional food resource.

**Design** – *Ganoderma lucidum* was inoculated and incubated on PDA slants containing 100 ppm sodium selenite at 28 °C for 10 days, then stored at 4 °C. *Ganoderma lucidum* was inoculated and incubated in a 250 mL flask containing 50 mL preculture medium at 28 °C for eight days with shaking at 150r.min⁻¹. It was then inoculated at 10% (v/v) into 50 mL culture medium in 250 mL flask and cultivated at 28 °C for five days at 200r.min⁻¹. An orthogonal experiment was implemented for optimization of culture medium in order to improve bioconversion ability of inorganic selenium. Selenium accumulation in *Ganoderma lucidum* mycelia was prepared by centrifugation and dried at 60 °C for 24 h. The selenium content of *Ganoderma lucidum* mycelia was determined by atomic absorption spectrophotometry.

**Results** – *Ganoderma lucidum* had tolerance of low concentration of sodium selenite. Acclimatization of *Ganoderma lucidum* could shorten cultivation period. The optimized culture medium was obtained and the components were peeled potato 100 g/L, lactose 30 g/L, yeast extract 10 g/L, peptone 5 g/L, KH₂PO₄ 2 g/L, MgSO₄·7H₂O 3 g/L, vitamin B1 0.05 g/L, sodium selenite 0.1 g/L. The recovery of selenium was up to 56.32% under optimized culture medium and selenium accumulation in *Ganoderma lucidum* mycelia was obtained.

**Conclusions** – The present study indicated that *Ganoderma lucidum* had relatively strong capacity for bioconversion of inorganic selenium to organic selenium. Selenium accumulation in *Ganoderma lucidum* mycelia has provided a new functional food resource.


Modulation of the intestinal microflora in rats by *Lactobacillus plantarum ST-III*

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**Background**- The balance of intestinal flora can be modulated by *Lactobacillus sp*. Administration of *Lactobacillus sp.* can alleviate intestinal inflammation, normalize increased intestinal permeability, and enhance the intestine immunologic barrier function. It has been reported that a new strain of *Lactobacillus—Lactobacillus plantarum ST-III*, has an excellent cholesterol-reducing ability in vivo and in vitro. However, there is no data on effect of ST-III on the intestinal microflora and β-glucuronidase activity.

**Objective**- The aim of the present study was to investigate the modulation effect of *Lactobacillus plantarum ST-III* on the intestinal microflora in rats.

**Design**- Four different dosages, i.e. 0, 10⁷, 10⁸ and 10⁹ cfu/ml of ST-III contained in skim milk, were respectively administered to four group rats once a day. After administration of ST-III for fifteen days, the number of five genera bacteria in rat feces in different groups were counted, and their β-glucuronidase activities were analyzed.

**Outcomes**- A 10⁸ cfu/ml or 10⁹ cfu/ml of ST-III contained in skim milk evidently promote the growth of healthful bacteria, e.g. *Lactobacillus sp.* (P<0.01), but inhibit the growth of harmful bacteria, such as *Enterobacter* and *Clostridium perfringens* (P<0.05). Furthermore, the diets can significantly decrease the β-glucuronidase activity, which has been reported closely related to colon cancer. The modulation effect can be kept for three to five days after the administration stopped.

**Conclusions**- Administration of *Lactobacillus plantarum ST-III* can obviously modulate the intestinal microflora and reduce the β-glucuronidase activity of rats.
Post 122

The investigation of iodine concentration in salt, water, green tea and some vegetables in Hangzhou

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Background- Human iodine intake is closely related to the concentration of the environmental iodine distribution (1). In recent years argument has always existed whether the amount of iodine intake in China is enough and which has an impact or not on the incidence rate of thyroid disease.

Objective- We aim to describe the environment iodine concentration in salt, water, some crops and soil along Hangzhou coast in the China foreland. It will be helpful for us to judge whether this area is insufficient in iodine and universal iodized salt is necessary or not.

Design- We collected iodized salt samples, drinking water samples (tap water in the towns, and well water or spring water in the villages), water samples (rivers) and soil samples from tea field, fresh green tea samples and fresh vegetables samples through randomly sampling in June, 2005. Salt, water, soil iodine and crops iodine was detected by arsenic–cerium redox method. Statistical analysis was expressed as x ± s by Windows SPSS 13.0.

Outcomes- (1) The iodine concentration in salt was 27.90 ± 4.33 mg/kg (n=108). (2) The iodine content and mean iodine content of tap water, well or spring water were 4.30 ± 2.43 μg/L (n=34), 23.59 ± 27.74 μg/L (n=19) respectively. (3) Green tea iodine in Hangzhou was 208.12 ± 48.46 μg/kg (n=15), around the tea field river water iodine was 10.42 ± 11.75 μg/L (n=15) and soil iodine was 1.15 ± 0.67 mg/kg(n=15). (4) Fresh vegetables iodine were below: green soy bean 50.52 ± 19.70 μg/kg, kidney bean 29.64 ± 12.45 μg/kg, carob 25.53 ± 7.44 μg/kg, cabbage 39.45 ± 25.96 μg/kg.

Conclusions- Iodine concentration in salt accords with national policy of adding iodine in salt. Foreland has more iodine in water than mountain area. The data reflected that water and soil iodine in foreland area was not high, some crops (such as green tea and vegetables) iodine concentrations were quite low, which suggests universal iodized salt should be necessary.


Post 123

Study on the isolation and purification technology of monomeric alkaloids from seeds of Sophora alopecuroides L.

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Background – Sophora alopecuroides L. is widespread naturally in the northwest China. The seeds contain high level of active alkaloids ingredients. The alkaloids have been used in treatment of viral hepatitis, cancer, asthma etc (1). However the production technology of the high quality monomeric alkaloids has not been well developed.

Objective – To investigate the isolation and purification technology of monomeric alkaloids from seeds of Sophora alopecuroides L.

Design – After the ultrafiltration and decoloration of the acidic water extract of seeds of Sophora alopecuroides L., alkaloids were further extracted by chloroform at pH 10.5. The chloroform extract was then loaded on silica gel column using chloroform-methanol-ammonia water (5/0.4/0.1, V/V/V) as mobile phase at flow rate 1 bed volume per hour and three peaks were obtained. Compounds corresponding to the peak 1 and peak 2 were crystallized and recrystallized in acetone and crystal A and crystal B are gained. Compounds corresponding to the peak 3 were re-loaded on another silica gel column using acetone-methanol(10/1, V/V) as mobile phase at flow rate 1 bed volume per hour, and other three peaks were observed. Compounds corresponding to the peak 4 were crystallized and recrystallized in petroleum and crystal C is obtained.

Outcomes – Crystal (A)(oxymatrine), (B)(oxysophocarpine), and (C)(sophoridine) were qualitatively and quantitatively analyzed by HPLC-MS, IR, melting point measurement, and thin layer chromatography techniques. Their molecular structures were determined and their purities was over 99% (Wt%), 99%, and 95.8% respectively.

Conclusions – This study is significant of the comprehensive utilization of Sophora alopecuroides L. and production natural alkaloids.

### Post 124

**Effects of corosolic acid on carbohydrate metabolism and differentiation of 3T3-L1 adipocytes**

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**Background** – Recent studies showed that carbohydrate and fat metabolism play a crucial role in type 2 diabetes (1). Corosolic acid (2α-hydroxyursolic acid) is a triterpenes acid compound which derivated from many herbs such as *Eriobotrya japonica*, *Lagerstroemia speciosa* and so on. Although corosolic acid has been implicated to have hypoglycemic effect (2), however, there has been no data on the effect of corosolic acid on carbohydrate and fat metabolism in cell levels.

**Objective** – To observe the effects of pure corosolic acid extracted from *Eriobotrya japonica* on carbohydrate metabolism and differentiation of 3T3-L1 adipocytes.

**Design** – 3T3-L1 cells were seeded in 24-well tissue culture plates at a density of 6.0×10⁵/mL in 10% FBS-DMEM. After the cells reached the confluent state, they were treated with 10% FBS-DMEM containing 2.5×10⁻⁷ M DEX, 5×10⁻⁴ M IBMX, and 10μg/mL insulin with/without different concentrations of corosolic acid (15μmol/L, 30μmol/L, and 45μmol/L). After 40h, the media were replaced with 10% FBS-DMEM with 5μg/mL insulin. After 24h, the media and cells were collected for measure. 3H-glucose uptaking rate in adipocytes treated by corosolic acid was detected. Adipocytes treated by corosolic acid in differentiation were stained by oil red O and analyzed by spectrophotography quantitatively. The expression of PPAR-γ and C/EBP-α mRNA relating to differentiation of adipocytes was detected by reverse transcription PCR.

**Outcome** – 3H-glucose uptaking rate in different concentrations of corosolic acid (15μmol/L, 30μmol/L, and 45μmol/L) group were increased to 108.1%, 112.2%, 118.6%, respectively, compared to control group (without corosolic acid) (P<0.01). Corosolic acid suppressed the differentiation of 3T3-L1 pre-adipocytes and down-regulated the expression of PPAR-γ and C/EBP-α mRNA (P<0.01, vs control group).

**Conclusion** – Corosolic acid promotes the 3H-glucose uptaking, suppresses the differentiation and down-regulates the expression of PPAR-γ and C/EBP-α mRNA in 3T3-L1 adipocytes.


### Post 125

**Research on Extraction and Purification of Lutein from *Brassic oleraced var. acephala* DC**

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**Background** – Lutein is classified as free state and esterified state. Lutein of free state can be absorbed by human body. Lots of Lutein in free state exists in *Brassic oleracea var. acephala* DC, but until now extracting purified Lutein from it has not been reported.

**Objective** – To discuss the methods and conditions of extracting purified Lutein from *Brassic oleracea var. acephala* DC.

**Design** – Collected leaves of *Brassic oleracea Var. acephala* DC. are frozen to dry in vacuum and smashed into suitable size. Under the circumstances of 40Hz ultrasonic wave and no ultrasonic wave, the powder of the smashed leaves is soaked and saponified in THF and KOH-C₂H₅OH solvent. After that, crystals of Lutein are got through extraction, isolation and vacuum drying under indoor temperature. Relevant best parameters are defined through monofactor experiment and tangential designing experiment in the above technological process. The crystals are measured through spectrum analysis.

**Outcomes** – Under the circumstances of 40Hz ultrasonic wave and 30°C, soaked in THF(10:1,sample) and saponified through 10% KOH-C₂H₅OH(6.5:1,sample) for 20 minutes, extracted once, isolated three times and dried in vacuum under indoor temperature, smashed leaf powder of *Brassic cleraca* Var. acephala DC. turn out Lutein crystals. The extracting rate reaches 3289.42µg/100g (Lutein:sample). Through recrystallization, Lutein crystal of purity 88.13% in free state was got.

**Conclusions** – Lutein crystals will be gained from the leaf powder of *Brassic oleracea Var. acephala* DC through soaking, saponifying, extracting, isolating and drying in vacuum.
Post 126

Studies on the separation and purification technology of tea theanine
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Background – L-theanine is a kind of characteristic non-protein amino acid mainly found in green tea (Camellia sinensis). It has the special physiological and pharmaceutical functions(1). However the technology of producing theanine of high purity from the raffinate produced in processing tea polyphenols in industry was not studied and reported.

Objective – To investigate the technology of isolation and purification of theanine from tea water extract from which the tea polyphenols had been removed.

Design – The tea water extract was firstly ultrafiltrated under the optimum conditions: using the polysulfone membrane with the molecular weight cut-off (MWCO) of 6KD at the pressure 0.09Mpa, the temperature 35°C, and the tea water extract volume concentration ratio 4.5. And then the solution penetrating through the membrane was decoloured by big bore diameter resin D301-G. After this stage the ion-exchange chromatography with 001×7 resin as the adsorption medium was adopted to absorb L-theanine under the optimum conditions: pH 3.4, concentration of L-theanine 3.0 mg·mL⁻¹ and the flow-rate 1.7 bed volume per hour. The crude theanine with 58% purity was obtained from the 001×7 resin through desorption with ammonia water at pH 11.3. The crude theanine was purified on cellulose column chromatography using n-butanol/acetic acid/water (4/1/5,V/V) as mobile phase and finally crystallized in ethanol.

Outcomes – The total recovery of theanine was 54.3% and the purity of theanine was 95.1%.

Conclusions – This study could give some scientific message for the comprehensive utilization of tea and find out a new method to produce natural theanine.


Post 127

Antimicrobial effect of Chitooligosaccharides Produced by Chitosanase from Pseudomonas CUY8

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Background – Chitooligosaccharides are not only water-soluble but also possess versatile properties such as antitumor activity, immuno-enhancing effects, enhancement of protective effects against infection with some pathogens in mice, antifunggal activity. Chitooligosaccharides produced through enzymatic hydrolysis of β-1, 4-glycosidic bonds of chitosan have been applied to medicament, foodstuff and cosmetic industry. However, there has been no data on antimicrobial effect of chitooligosaccharides produced by chitosanase from Pseudomonas sp. compared with chitosan and chitosanase.

Objective – To investigate antimicrobial effect of chitooligosaccharides produced by chitosanase from Pseudomonas CUY8 compared with chitosan and chitosanase.

Design – Chitooligosaccharides were prepared by hydrolysis of colloidal chitosan by chitosanase from Pseudomonas CUY8. Antimicrobial activity of chitooligosaccharides, chitosan and chitosanase was examined against various bacteria and fungi including four bacteria and six fungi. Minimum inhibitory concentration (MIC) was tested by two-fold serial broth dilution. MIC was defined as the lowest concentration of the tested sample at which the cell growth was not visible with naked eyes or microscopy.

Outcomes – Chitooligosaccharides, chitosan and chitosanase had differently antimicrobial effects. Antimicrobial effects of both chitooligosaccharides and chitosanase were higher than that of chitosan, and minimum inhibitory concentration of chitooligosaccharides against bacteria and fungi were less than 0.12% and 0.15%, respectively. Antimicrobial effect of chitooligosaccharides increased with increase of degree of deacetylation, but decreased with increase of average of degree of polymerization.

Conclusions – The present study indicated that antimicrobial effect of chitooligosaccharides was similar to chitosanase’s, and antimicrobial effects of chitooligosaccharides produced by chitosanase from Pseudomonas CUY8 depend on their concentrations, degree of deacetylation and polymerization.
Post 128

**Study on Extraction of total flavonoids from vaccinium uliginosum L**

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**Background** – Vaccinium uliginosum L contains many bioactive substances such as total flavonoids, which can be clinically applied to improve eyesight, anti-aging, strengthen the heart function and also be helpful to cancer treatment. At present, the high pulses electric field (HPEF) is mainly used in the field of cold sterilization, but rarely reported in extracting total flavonoids.

**Objective** – A new extracting technology of total flavonoids extraction from vaccinium uliginosum L was studied.

**Design** – According to the investigation of three factors in traditional internal Reflux Method, V.uliginosum L was adopted as a experimental stuff, combination design of orthogonal quadratic regression equation was adopted to obtain the optimal processing parameters and the highest extraction rate, which was contrast analysis index. Then the effect of the HPEF to the extraction rate of the flavonoids was analyzed, the analysis factors included electric field intensity, pulse numbers, treating time and ethanol concentration and so on. Meanwhile, the L₁₆ (₄⁴) orthodoxy design was adopted to screen out the optimal HPEF technological parameters and the highest extraction rate. Finally, the two methods were compared to obtain the optimal process which was very helpful to extract total flavonoids.

**Outcomes** – When the temperature was 80 °C, the ratio of the solid and solution was 1:50, ethanol concentration was 80%, the time was 25min, the yield of total flavonoids in traditional internal Reflux Method was 62.0%. On the condition of 50kV/cm electric field intensity, 30 pulse numbers, 50% ethanol concentration, the yield of total flavonoids in HPEF was 51.4%. The extracting rate of extract total flavonoids from vaccinium uliginosum L by HPEF is slightly smaller than by internal Reflux Method.

**Conclusions** – HPEF is a non-thermal processing on total flavonoids from vaccinium uliginosum L, which has low temperature and save time, economize on energy and can protect thermosensitive active ingredients etc. advantages.

Post 129

**Synergistic effects of Lactobacillus rhamnosus GG and bovine colostrums on the immunological function of mouse in vivo and in vitro**

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**Background** – *Lactobacillus rhamnosus* GG (LGG) is as an importance probiotics in human bodies, reinforcing the mucosal barrier mechanism against microorganism infections and promoting serum and intestinal immune responses to pathogens. Bovine colostrums have been proved to improve the health of human or animal bodies by passive immunization. However, there are no data on studying the synergistic effect of lactic acid bacteria and bovine colostrums on the immune system of humans or animals.

**Objective** – To investigate synergistic effects of LGG and colostrums on the immunity of mice in vivo and in vitro.

**Design** – Fifty immne-compromised Kunming mice caused by cyclophosphamide were used. In experiment I ten of them were sacrificed and their spleen cells were prepared in sterile Hanks solution and adjusted to 5×10⁵ cells/ml in RPMI-1640 medium. One ml spleen cell suspension were mixed with 50 μl of 3, 10, 50 kD substances from the overnight culture of LGG in each cell of 24-well plate and incubated at 30°C for 72 h. The reduction of 3-(4,5-dimethylthiazol-2-yl)-2,5-diphenyltetrazolium bromide (MTT) was determined. In experiment II 40 of those mice were randomized into four groups and fed with diet A (LGG 5×10⁷ CFU/kg), B (bovine colostrums 0.5 g/kg), C (combination of diet A and B) and D (sterile saline) once a day for 4 weeks, respectively. On 29th day thymus and spleen index, lymphocyte transformation ratio and the phagocytosis ratio of peritoneal macrophages to chicken erythrocytes were tested.

**Outcomes** – In vitro multiplication of lymphocyte test with MTT showed that 3, 10, 50 kD substances from the overnight culture of LGG significantly increased the growth of lymphocyte by 1.63, 1.53 and 1.34-fold, respectively. Compared with diet D, in the diet A, B and C groups the phagocytosis ratio of macrophages increased by 1.63, 1.54 and 2.3-fold, respectively, and the lymphocyte transformation ratio by 1.78, 2.08 and 2.35-fold, respectively.

**Conclusions** – LGG and bovine colostrums can enhance the functions of immune system supported by lymphocytes and peritoneal macrophages either in vivo or in vitro.
Post 130

Optimization of Hydrolyze Conditions on Making ACEIP (Angiotensin Converting Enzyme Inhibitory Peptides) by Silkworm Pupae Protein

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**Background** – Angiotensin—converting Enzyme Inhibitory Peptide (ACEIP) come from food protein are the floorboard of polypeptides that can drop blood pressure of human bodies[1], it can rivalrousness combine with the two activity functional sections, and restrain the activity of ACE[2]. However, there has been no report on the inhibitory bioactivity of peptides hydrolyzed from silkworm pupae protein.

**Objective** – To determin whether the peptides hydrolyzed from silkworm pupae protein with the inhibitory bioactivity on ACE by the method of HPLC and then optimized the hydrolyze conditions.

**Design** – This study took silkworm pupae protein powder as material, the hydrolyzed short peptides composite system by using pepsin, neutrase, acid protease, flavourzyme, alcalase, trypsin and optimized hydrolyze conditions on the silkworm pupae powder.

**Outcomes** – The peptides hydrolyzed by pepsin, neutrase, acid protease, flavourzyme, alcalase, trypsin have different inhibitory bioactivity on ACE, and the highest inhibitory bioactivity on ACE was the peptides hydrolyzed by pepsin, the same amount peptides compared with captopril, the inhibitory rate is 84.9%.

**Conclusions** – The result showed that the composite peptides have inhibitory bioactivity on ACE by controlling the hydrolyze conditions, and this study gave a groundwork for lucubrating silkworm pupae to make pure ACEIP.


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Post 131

Beef fresh-keeping with soluble polylactic acid treatment

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**Background** – Soluble polylactic acid (SPLA) is an antiseptic. It is edible and nontoxic. However, there has been no information or application in beef fresh-keeping.

**Objective** – To evaluate the efficacies of SPLA in a carcass washing system on removal of fecal bacteria contamination.

**Design** – Low molecular weight, soluble polylactic acid (SPLA) was used as a washing solution to decontaminating the surface of beef. When beef contaminated with fecal was sprayed using a pilot scale sprayer, pressure, exposure time, nozzle type and oscillation speed were most important parameters in reductions of microorganisms. SPLA could reduce the contamination compared with water. The microbial numbers were reduced by 4 log10 (cfu).

**Outcomes** – Under the tested parameters, the combination of the pressure at 2 070 kPa, the exposure time at 15 seconds, the oscillation at 70 cycles/min, and nozzle 5010 was the optimal processing condition to reduce microorganism on the surface of beef.

**Conclusions** – The results indicates that SPLA is an effective microbial decontaminant in beef processing industry.

Post 132

Effect of dietary conjugated linoleic acids on culture of large yellow croaker (Pseudosciaena crocea)

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Background – The 10trans, 12cis-conjugated linoleic acid (10t,12c-CLA) from plant seed oils may contribute to the health benefit of obesity. However, there has been no application data in the area of cultured large yellow croaker (Pseudosciaena crocea).

Objective - To investigate the effect of formula feeds containing CLA to culture large yellow croaker. It will be useful for breeding low fat large yellow croaker with good texture.

Design - Cultured large yellow croaker was used as the test materials and 27 fish was allotted to three treatment, and nine fish per treatment for 60d. The test was carried in two aquaculture farms. The diets with different lipid sources were as follows: (1) formula feed pellet containing 0% CLA(control); (2) formula feed pellet containing 2% CLA(diet A); (2) formula feed pellet containing 4% CLA(diet B).

Outcomes – Average daily gain and feed conversion ratio were improved with dietary CLA (P<0.05). Lean mass was increased with increasing dietary CLA (P<0.01).

Conclusions – The present study indicated that dietary CLA modulated grease into muscle tissue, and also improved texture for cultured large yellow croaker.


Post 133

Effects of Pine Pollen on the Gut Microecology of Rats under Chronic Stresses

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Background – It was necessary for body’s health and well fettle to keep the balance of gut microecology, especially to astronaut in special condition and nerves. Many researches reported that pine pollen has various functions, including intestines function. However, there has been no data on the effect to gut microecology of pine pollen.

Objective – To observe the effects of pine pollen on the gut microecology of rats under chronic stresses.

Design – The rat animal model of chronic stress was adopt. The rats were randomly suffered from three stress factors i.e. the forced swimming and the constraint with head-down-tilt. The duration of chronic stress was about seven weeks. Some representative genera of gut flora in feces were analyzed by selective culture media and the content of certain stress hormones were tested by ELISA.

Outcomes – Under the condition of chronic stress, the amount of probiotic bifidobacteria was markedly reduced and enterobacteria and enterococci were increased correspondingly in the control rat’s feces. It indicated that there was a dysbiosis in the gut microbiota of the control rats during experimental period. But the amount of bifidobacteria was not reduced notably in the rats which were fed the forage supplemented 5% pine pollen.

Conclusions – The chronic stress factors adopt in the experiment can result in the dysbiosis of the gut microecology in rat and the pine pollen can protect the rat from dysbiosis.
Post 134  
**Development of a lateral-flow assay for rapid screening of clenbuterol**  
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**Background** – Clenbuterol has been utilized, although illegally, to promote animal growth, as it substantially increases the muscular mass, while at the same time decreasing fat accumulation. Various intoxications have been described as being due to the ingestion of liver and meat containing clenbuterol residues in a lot of countries (1,2).

**Objective** – To develop a lateral-flow assay that could provide visual evidence of the presence of clenbuterol in pig urine rapidly.

**Design** – Colloidal gold was prepared and conjugated with a kind of high-affinity anti-clenbuterol monoclonal antibody. The colloidal gold probe was applied to glass-fiber membrane and completely dried at 35°C. Clenbuterol–BSA and goat anti-mouse antibody were applied to the nitrocellulose membrane to the test and control lines, respectively, and dried at 35°C. The nitrocellulose membrane, absorption pad, glass fiber membrane and pretreated sample pad were assembled as the strip, and then, samples were tested on these strips.

**Outcomes** – Analysis was complete in less than 10 min. Detection limit was 3 ppb of clenbuterol. It was verified by GC-MS that the test result of clenbuterol rapid detection strip has no false negative and the false positive was lower than 5%.

**Conclusions** – Immunochromatographic strip has great applied value in food safety field because it possesses benefits of sensitivity, stability, reproducibility, easy of use and low cost.


Post 135  
**Prevention of garlic diet on development of fatty liver in experimental rats**  
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**Background** - Recently studies showed that in vitro Cholesterol synthesis was suppressed by alkyl cysteinein liver cells of rat; in vivo, as luminal absorption of cholesterol were inhibited by steroid saponin, the level of the low density lipoprotein was decreased in the blood of hyperlipidemic animal model. So it is speculated that the development of fatty liver might be inhibited by taking garlic diet containing many organosulfur compounds and steroid saponins

**Objective** - To study the prevention of garlic on the development of fatty liver

**Design** - Fatty liver models were induced by chronically feeding with high fat diet containing 10% lard in rats and confirmed by HE dyeing. In addition to the rats of model group, we had other two groups with male and female sub-group in each one — the rats of control group that were fed regularly and the rats of garlic groups that were fed different doses – 1%, 3%, 5%, 7% of garlic mash, high fat diet and water with 1% garlic juice. 30 days later, the level of triglyceride (TG) and total cholesterol (TC) of liver for different diet groups rats of both genders were analyzed and compared.

**Outcomes** – (1) Compared with control group, the levels of TG and TC of liver in model group were significantly increased (P<0.05). There were significant difference between male and female rats in the contents of two targets (P<0.05) and females were more susceptible to the high fat diet. (2) Compared with model group, the levels of TG and TC in garlic groups were decreased with different extent, for female, TG and TC were significantly decreased for dose 3%, 5%, 7%, and 5% , 7% , respectively; while for male, 5% and 7% garlic mash were effective to reduction of TG, and only 7% were effective to reduction of TC. (3) There were significant correlation between dose of garlic mash and reduction of TC (male: R²=0.9742, female: R²=0.9655).

**Conclusions** - Garlic diet had effect on inhibiting the increases of TG and TC of liver in model rats and inhibition was different for male and female rats, and female rats were more sensitive to high fat diet and garlic diet.
Post 136  
Effects of rape pollen extract on lipid profile in hyperlipidemic rats  
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Background - As the precursor of n-3 fatty acids, alpha-linolenic acid (ALA) is associated with cardioprotective effect (1), and inversely related to the prevalence ratio of cardiovascular heart disease (2). ALA is thought to be an alternative source of n-3 polyunsaturated fatty acids (PUFAs), but whether ALA would be similar to those of EPA and DHA on reducing blood lipids have little demonstrated.

Objective - The study aimed to evaluate the effects on lipid profiles in hyperlipidemic rats of rape pollen extract enriched with ALA using supercritical carbon dioxide extraction (SCE).

Design - The experimental hyperlipidemic rats were established by providing with high fat diets, randomized into six groups, assigned to three doses of pollen extract, lovastatin, basic diet or fat diet. After four weeks of intragastric administration, the rats were executed, lipid levels of serum and hepatic tissue were detected and metabolic enzyme of lipid such as LCAT and HMG-CoA reductase were measured. The components of fatty acids of hepatic tissue were also determined.

Outcomes - Total cholesterol and triacylglycerol levels in serum were significantly lower in pollen extract groups and medicinal control (MC) group than in high fatty control (HFC) group. Hepatic total cholesterol levels were decreased in rats fed pollen extract and lovastatin. A higher concentration of HDL-Cholesterol and apoAI in hepatic tissue were observed after intake of pollen extract compared to the HFC group (P<0.05). LCAT activity in serum of pollen extract groups was significantly higher than HFC group and HMG-CoA reductase showed decreasing tendency in groups of pollen extract. DHA levels were significantly increased in pollen extract groups compared with HFC group.

Conclusions - The contents of DHA in hepatic tissue in pollen extract groups were found higher than HFC group. Rape pollen extract enriched with alpha-linolenic acid is likely to be a novel agent capable of promoting a favorable lipid profile in hepatic tissue and serum.

Post 137  
The quality comparing of treated kiwi fruit flake after freeze-drying and warm air drying  
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Background – Kiwi fruit is known for its nutritional value, especially its high Vitamin C content. However, it must be harvest and stored extremely soon for its putrescible trend.

Objective – To investigate the effects of industrial parameters on the quality of treated kiwi fruit flake in systems of vacuum freeze-drying and warm air drying.

Design – Kiwi fruit is chosen as model fruit. Influence of warm air drying and vacuum freeze drying on kiwi fruit flake is analyzed. The drying rate, rehydration ratio and vitamin C content of products are employed as the comparing parameters for the two drying methods. Groups are determined for its thickness, drying rate and whether the warm wind is considered in warm air drying experiment. While in the freeze-drying experiment the thicknesses of the kiwi fruit, the cooling rate and the temperature of the primary drying process are taken as the parameters of grouping. Vitamin C content is determined by UV-colorimetry using 2,6-dichlorophenolindophenol sodium salt hydrate.

Outcomes – A mathematic model for the relation between the influent parameters and the quality of final treated goods are built. And the the ideal industrial parameters of the treat process to get the promising kiwi fruit product are calculated out.

Conclusions – The vacuum freeze drying is relatively suitable because of the physiochemical nature of the product during vacuum freeze drying is superior to warm air drying.
Post 138

Do Australian women drink during pregnancy and the period of lactation?

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Background – Drinking alcohol throughout the period of lactation can negatively impact on lactation performance and the mental development of the infant. However there has been no data on alcohol consumption during breastfeeding in Australia.

Objective – This study explores the drinking patterns of pregnant, lactating and other Australian women of child-bearing age.

Design – Using the 1995 (1) and 2001 (2) National Health Survey Confidentialised Unit Record Files, alcohol intake of Australian women was determined. Subgroups of lactating women from both surveys were extracted together with pregnant women and women of child bearing age (18-44 years).

Outcomes – The majority of all women from both surveys reported not consuming alcohol during the reference week. Following this the next most common drink intake by all pregnant and lactating women from both surveys was two standard drinks. A small proportion of lactating mothers from the 1995 NHS and 2001 NHS were drinking at ‘risky’ levels, as determined by National Health and Medical Research Council Australian Alcohol Guidelines (3).

Conclusion – The majority of Australian women are abstaining from consuming alcohol or drinking at low levels during pregnancy and lactation. There is however a small proportion of both pregnant and lactating women whose level of alcohol consumption exceeds Australian recommendations for drinking during pregnancy and lactation. This analysis reflects a trend in increasing alcohol consumption at a vulnerable time of infant growth and development and a need for improved antenatal, and maternal and child health programs that address this significant public health issue.


Post 139

Effects of Sea Buckthorn Procyanidins on Healing of Acetic Acid-induced lesions in the Rat Stomach

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Background – Sea buckthorn (Hippophae rhamnoides L.) has a long history of application (more than 1000 years) in Tibetan and Mongolian medicines in the treatment of various diseases. The sea buckthorn procyanidins (SBPC) has been demonstrated rich procyanidins, which have been reported to possess a variety of physiological activities, especially antioxidant; however, there is almost no literature available on the effect of procyanidins extracted from sea buckthorn bark on healing of gastric ulcer.

Objective – The aim of study was to investigate the effect of SBPC on healing of acetic acid-induced lesions in the rat stomach and its possible mechanism.

Design – Partial characterisation of SBPC was performed by reverse phase high-performance liquid chromatography/mass spectrometry (HPLC/MS). Injecting acetic acid into the subserosa of stomach was used as the experimental model of chronic gastric ulcer. 96 Wistar male rats (SPF) were assigned into 6 groups at random 3 days after laparotomy. Rats were orally administrated with SBPC/ranitididine/water with different dose. After treatment 7d and 14d, rats were sacrificed respectively. Ulcer index (UI) was measured; the level of epidermal growth factor (EGF) in plasma was determined; the expression of epidermal growth factor receptor (EGFR) and proliferating cell nuclear antigen (PCNA) around ulcer was detected by immunohistochemical method.

Outcomes – Compared with the control, the UI of SBPC group was significantly lower (P < 0.01), the level of EGF in the plasma of SBPC group increased significantly (P < 0.01), meanwhile the expression of EGFR and PCNA around ulcer in high-dose SBPC stomach were enhanced (P < 0.05).

Conclusions – SBPC can promote the expression of EGFR in gastric epithelium mucosae and increase the level of EGFR in plasma, which might be one the possible mechanisms that SBPC make ulcer heal up.
Post 140
Technological study of extracting high purity PC lecithin from egg yolk by high pulsed electric fields
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Background - Phosphatidylcholine(PC) was an important physiological in the lecithin, which could strengthen the body energy, metabolize, immunity and avoid cardiovascular cerebrovascular disease, fatty liver, alcohol liver, etc. It was widely used in pharmacy industry and health protection. Now the technology of extracting soybean phospholipid which contains 20% PC was relatively perfect, however the technology of extracting egg yolk lecithin which contains 70% PC was almost none.

Objective – Researched on the method which the high pulsed electric fields (HPEF) combined solvent extraction. Used yolk powder as raw material, the high content egg yolk lecithin was obtained through the method

Design - The PC content in the lecithin was the study objective. Many influence factors for PC enrichment in the lecithin such as the ethanol concentration, ethanol volume, extract temperature and extract time were analyzed. On the based of these experiment, the optimum parameters in the extraction of lecithin were chosen. In this condition, the solvent extraction liquid was operated by HPEF. Many effective factors for PC enrichment in the lecithin such as the electric intensity, treating time and pulsed numbers were analyzed. The optimum parameters were filtrated by L4(2^3) orthogonal experiment. The HPEF-extraction liquid was operated by chromatography.

Outcomes – A group of suitable operation conditions of ethanol extraction were finally settle down, in which, ethanol concentration was 95%, and the ethanol volume was 12mL/g yolk, extract time was 60min, extract temperature was 60°C. Based on L4(2^3) orthogonal experiment, 70% PC content in the rough lecithin was obtained by using these conditions: the electric intensity was 2.0kv/cm and pulsed numbers was 50, treating time was 50min. The HPEF-extraction liquid was operated by chromatography and the PC content of extract was increased to 95%. The collect ratio was increased to 90%.

Conclusions – Used yolk powder as raw material, high content egg yolk lecithin was obtained by the HPEF-extraction liquid method and the PC content of extract was increased to 90%.


Post 141
Effect of Gingerols on Anti-fatigue
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Background – Ginger has been widely used as a spice food and traditional medicine in china for thousand years. Some researches have been confirmed that ginger extract had the anti-fatigue effect. However, its bioactive components and mechanism for its anti-fatigue effect have not been reported.

Objective —To study the effect of gingerol on the anti-fatigue, which is the active component of ginger.

Design – The mice were treated orally with gingerol for 6 weeks. The loading forced swim duration, glycogen content in liver and muscle, lactic acid in blood, the content of urea nitrogen in serum were tested to observe the anti-fatigue effect of gingerols.

Outcomes – Compared with the control group, gingerols prolonged significantly the time of mice swimming (P<0.05); gingerols also increased significantly the glycogen content in liver and muscle and the clearance rate of lactic acid in blood (P<0.05); however, gingerols obviously decreased the urea nitrogen in serum after swimming (P<0.05). There was no distinct difference (P>0.05) for the level of lactic acid in blood after mice swimming although the level was lower than the control group.

Conclusions – Gingerols could have the effect of anti-fatigue. The mechanism is concerning to the gingerols increasing the muscle and liver glycogen storage, which results in the enhancement of the muscle oxygen metabolism ability when it’s in fierce activities, the acceleration weary elimination as well as the enhancement the physiological load of exercise adaptiveness.
The antiatherogenic effect of lycopene in hyperhomocysteinemic rats

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Background – Hyperhomocysteinemia (HHcy) is a strong and independent risk factor for atherosclerosis and thrombotic diseases (1). HHcy in rats promote the expression of inflammatory agents responsible for atherogenesis (2). Lycopene as a very potent antioxidant, has antiatherogenic effects and preventive and therapeutic effects on cardiovascular diseases. However, there has been no data on the interactions between lycopene and homocysteine, and their effects on atherogenesis.

Objective – To investigate the effect of lycopene on the vascular endothelial function and the expression of inflammatory agents in hyperhomocysteinemic rats.

Design – Fifty male Sprague-Dawley rats weighed 145-155 g were on a commercial rat chow diet for seven days, and then were randomized into five groups: normal control group (NC) fed with AOAC diet and four HHcy groups fed with AOAC diet plus 3% L-methionine. Four HHcy groups were daily supplemented with 0 (HC), 10 mg/kg (HL1), 15 mg/kg (HL2), 20 mg/kg (HL3) lycopene respectively by intragastric administration for 12 weeks. At the end of experiment, their blood and abdominal aortas were collected after etherization. Serum levels of Hcy were determined by HPLC, nitric oxide (NO) and nitric oxide synthase (NOS) by chromatometry, endothelin-1 (ET-1), vascular cell adhesion molecule-1 (VCAM-1), monocyte chemoattractant protein-1 (MCP-1) and interleukin-8 (IL-8) by ELISA. The pathology assay of abdominal aortas was analyzed by HE and oil stain.

Outcomes – Moderate hyperhomocysteinemia was induced in HHcy group rats. Serum level of NO was lower and ET-1 was higher in HC rats than in NC, NL2 and NL3 rats (P<0.01). There was no difference of serum NOS level in five groups. There was breakage and deposition of lipochondria on aortic tunica intima in HC and HL1 rats, which was not found in HL2 and HL3 rats. Serum levels of VCAM-1, MCP-1, IL-8 were higher in HC rats than in NC, NL1, NL2 and NL3 rats (P<0.01).

Conclusions – The present study indicated that lycopene exerts an antiatherogenic effect in hyperhomocysteinemic rats by inhibiting the expression of inflammatory agents in vascular endothelium.

Effects of modified citrus pectin on blood glucose in mice with diabetes mellitus

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Background and Objective – Most dietary fibers, however, have only digestive tract-local immune action. Modified citrus pectin (MCP), a soluble, low molecular, edible fiber, has been reported to interfere with tumor metastasis and other anticancer functions. But we find little report about decreasing blood sugar level of diabetes mellitus. To study the effects of modified citrus pectin on blood glucose in mice with diabetes mellitus.

Design – 300 ICR mice (25.12 ± 1.27 g) were divided into 5 groups randomly. These mice were all female. The control group (group A) was fed on normal diet. Group A had 30 mice. The other 270 mice were injected in 2% alloxan and fed on normal diet. Choose the value of blood glucose between 15-30 mmol/L as the model sample. After the formation of diabetes model, these 88 mice were divided into 4 groups according to their value of blood glucose and body weight. Group A and B were i.g. distilled water, group C, D and E were i.g. 800 mg·kg⁻¹·d⁻¹ MCP, 1600 mg·kg⁻¹·d⁻¹ MCP and 2400 mg·kg⁻¹·d⁻¹ MCP respectively. The duration was 6 weeks. The effects of MCP on metabolism of glucose and pancreas of these mice were observed.

Outcomes – 1. Compared group A with the other four groups respectively, the difference was significant (P<0.001). It showed that the diabetes model was successful. 2. I.g. MCP for 6 W, compared group A with the other four groups respectively, the difference was significant; compared group B with group C and D respectively, the difference was significant. It showed that MCP had the effect of decreasing fasting blood glucose. 3. Effects on pancreas tissue: the pancreas of group A mice were normal, and group B were damaged at different level. The majority pancreas of group C, D and E were normal, but the quantity of pancreas was less than group A.

Conclusions – MCP can decrease the blood glucose and improve the condition of pancreas of these mice with diabetes mellitus. It may be related with its improved physical and chemical property, lower molecular weight, higher solubility, and modified structure.
Study on the Effects of D—Glucosamine Hydrochloride on Lymphocytes of Mouse in vitro
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Background – D—Glucosamine Hydrochloride(GAH) is a kind of derivative of Chitosan. Many studies was on its treatment of osteoarthrosis. However there has been no data on its effects on lymphocyte proliferation and cell-cycle distribution.

Objective – To investigate the effects of D—Glucosamine Hydrochloride(GAH) on the mouse lymphocyte proliferation stimulated by ConA or without the stimulation of ConA in vitro, explore the effects of GHA on cell-cycle distribution of mouse lymphocytes in vitro.

Design – The effects of GAH on lymphocytes proliferation of mouse in vitro were observed by MTT. PI staining and Flow cytometry were used to detect the cell-cycle distribution of mouse lymphocytes after stimulated by GHA in vitro. Related software was used to analyze the GHA effects on cell-cycle distribution of mouse lymphocyte.

Outcomes – When the concentration of GHA are 200 mg/L, 100 mg/L, 20 mg/L in substrate has the function to promote lymphocyte proliferation of mouse stimulated by ConA. GHA (200 mg/L, 100 mg/L, 20 mg/L) also stimulate lymphocyte proliferation of mouse without ConA. GHA (100 mg/L, 20 mg/L) changes the cell-cycle distribution of mouse lymphocytes and increase the proportion of S-phase cells.

Conclusions – This study showed that D—Glucosamine Hydrochloride has the function to stimulate lymphocyte proliferation of mouse. D—Glucosamine Hydrochloride is a kind of perfect immune stimulator.

Post 145
Anti-hepatotoxic and anti-oxidant effects of Actinidia delicioda root extracts
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Background – The ethanol extract of Actinidia deliciosa (A. Chev.) C. F. Ling et A. R. Ferguson root (EE6) have been proven to possess anticancer properties in vitro and in vivo. However, few studies have been reported on the effect of EE6 on liver damage caused by hepatotoxins and antioxidant effects in rat liver.

Objective – The infection of EE6 on carbon tetrachloride (CCl4)-induced hepatotoxicity and the antioxidant activity were investigated.

Design – The experimental liver injury model was established by carbon tetrachloride, levels of alanine aminotransferase (ALT), aspartate aminotransferase (AST) in serum, lipid peroxidation (MDA) and glutathione (GSH) were assayed by biochemical method. The in vitro antioxidant activity was also studied using ferric thiocyanate (FTC) and thiobarbituric acid (TBA) methods.

Outcomes – Of three different extracts (water, ethanol and chloroform extract), the hepatoprotective activity of EE6 was higher than that of two other extracts (P < 0.05). When the EE6 at a dose of 120 mg/ kg treatment in the CCl4-induced rat, the activities of ALT and AST decreased 65.67 % and 84.53 % in serum, respectively, the MDA decreased 52.26 % and GSH increased 55.83 % in the rats liver homogenate, as compared with that of the CCl4 control rats. The hepatoprotective effect of EE6 was also supported by histopathological observations. EE6 showed antioxidant effects in FTC and TBA methods.

Conclusions – The EE6 is an efficient hepatoprotective and antioxidant agent against CCl4-induced liver injury.
Post 146

Effects of three different cooking methods on omega-3 polyunsaturated fatty acid contents of Australian Bass Strait scallops

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Background – Seafoods are rich sources of omega-3 polyunsaturated fatty acids (n-3 PUFA), mainly eicosapentaenoic acid (EPA) and docosahexaenoic acid (DHA). These fatty acids have health benefits and have been reported to reduce the risk of coronary heart diseases, lower blood pressure and plasma triacylglycerol levels, as well as a range of other disorder (1). Dietary consumption of n-3 PUFA in Australia is below recommendations. Understanding the effects of different cooking process on n-3 PUFA content could improve the intake of these beneficial fatty acids.

Objective – To investigate the differences of n-3 PUFA contents of scallops processed by three commonly used cooking methods.

Design – Five to six scallops processed by each method were examined. Cooking methods were steaming, pan-fried, and battered and deep-fried in vegetable oil. The total lipid was extracted with chloroform/methanol (2:1 v/v) containing butylated hydroxytoluene. The fatty acid methyl esters (FAMES) were prepared by saponification using KOH, followed by transesterification in BF₃ in methanol. The FAMES were separated by capillary gas liquid chromatography for analysis. One-way ANOVA and Scheffe’s multiple comparisons were performed to determine differences in individual fatty acid level between different cooking methods.

Outcomes – Fried scallops (including pan fried and deep-fried) had significantly higher concentrations of PUFA, saturated fatty acids (SFA), and monounsaturated fatty acids (MUFA) than steamed samples. The highest contents of total n-3 PUFA and two main fatty acids, EPA and DHA were found in pan-fried scallops. Steamed scallops showed significantly higher n-3/n-6 PUFA ratio than fried samples.

Conclusion – n-3 PUFA content of scallops is significantly affected by the cooking process and this may be attributed to several factors such as water loss and addition of cooking oil in the process.


Post 147

Hypoglycemic effect of aqueous extract from Momordica Charantia L. Var. abbreviata Ser. fruit in alloxan-induced diabetic rats

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Background – Synthetic oral hypoglycemic agents can produce serious side effects and toxicity. Therefore, herbal drugs are widely prescribed to treat diabetes mellitus because of their effectiveness, limited side effects and relatively low cost. It has been reported that tea made from Momordica Charantia L. Var. abbreviata Ser. (MCV) fruit has antidiabetic effect on diabetic patients. However, there are few literatures on the hypoglycemic effect of aqueous extract from MCV fruit.

Objective – To investigate the hypoglycemic effect of an aqueous extract from MCV fruit in normal and alloxan-induced diabetic rats.

Design – The aqueous extract was administrated at different doses (250, 500 and 750 mg/kg body weight) to both the normal and alloxan-induced rats after an overnight fast. A comparison was made between the action of aqueous extract from MCV fruit and a common antidiabetic drug - glibenclamide (100 mg/kg body weight).

Outcomes – The results showed that a single dose administration of aqueous extract from MCV fruit produce significant hypoglycemic effect in diabetic rats. A maximum fall of 45.28% was observed after 4 h with oral administration of aqueous extract at a dose of 500 mg/kg. At the same dose, there was a significant improvement in glucose tolerance of 38.39% in diabetic rats in oral glucose tolerance test (OGTT). Treatment of alloxan-induced rats for 15 days with aqueous extract at a dose of 500 mg/kg produced 59.88% fall in fasting blood glucose level as well as effectively suppressed the weight loss in diabetic rats.

Conclusions – The results demonstrated that the aqueous extract from MCV fruit was effective in preventing diabetes mellitus.
Post 148
Influence of fetus exposure to low levels lead on the neuro-behavioral development of neonates
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Objective – To study the effects on the neuro-behavioral development of neonates exposed to low levels of lead in fetus.
Design – 128 neonates were selected and their umbilical blood lead was determined by Atomic Absorption Spectrometer. The neurobehavioral-cognitive performance of neonates was evaluated by Neonatal Behavioral Neurological Assessment (NBNA).
Outcomes – NBNA score in neonates with blood lead levels greater than or equal to 0.24 μmol/L were markedly lower than those with less than 0.24 μmol/L, and the difference was highly significant. The umbilical blood lead level of 128 neonates were 0.172±0.13 μmol/L, that of male was 0.171±0.12 μmol/L, that of female was 0.169±0.15 mol/L. There was no significantly difference (t=0.65, P=0.54). The score of neuro-behavioral development of neonates of high lead group was markedly lower than that of low lead group. There was highly significantly difference. The score of erect of high lead group in neonates was markedly lower than that of low lead group. The time of head erect of high lead group was markedly short that of low lead group. There was highly significantly difference.
Conclusions – Blood levels of lead less than 0.48 μmol/L could still have harmful effects on the development of children.
Key words – Lead Fetal blood, child development.

Post 149
Composition of major flavanone glycosides and antioxidant capacity of Huyou (citrus changshan-huyou)
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Background – Citrus fruits have many healthful properties due to the naturally occurring antioxidants in them, especially vitamin C and flavonoids (1). However, there are few literature data of composition of flavanone glycosides (FGs) and antioxidant capacity of Citrus changshan-huyou Huyou, which is widely planted and consumed in south china.
Objective – To obtain the changes in content of four FGs, L-ascorbic acid equivalent antioxidant capacity (AEAC) of methanol extracts of Huyou during maturity.
Design – Content of L-ascorbic acid and four FGs namely: narirutin, naringin, hesperidin and neohesperidin were measured by HPLC. Total penolics and total flavonoids of methanol extracts of Huyou were determined. Also total antioxidant capacity of Huyou was performed using AEAC of DPPH-, ABTS⁺⁺, reducing power and ferric reducing antioxidant power (FRAP) assay.
Outcomes – Content of all FGs declined greatly with maturity both in peel and flesh. Huyou peel was a potential source of FGs for its high content. In addition, peel of Huyou can be used to extract neohesperidin and naringin, especially in early growing season. The total phenolics content decreased with maturity, and the content of total phenolics in peel was significantly higher than that in flesh, which made Huyou peel a possible source of dietary phenolics. Phenolic compounds may pay more contributions to total antioxidant capacity of Huyou than L-ascorbic acid by comparing the AEAC and L-ascorbic acid content of it. And the correlations among total phenolics, total flavonoids, DPPH-, ABTS⁺⁺, reducing power, FRAP assay and total FGs were rather high.
Conclusions – The high antioxidant potential of Huyou made it desirable for dietary prevention of cardiovascular and other diseases.
Post 150

The protective effects of folic acid, VitB₆, VitB₁₂ to rat aortic endothelial cells injured by DL-homocysteine

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Objective To investigate the cross protective effects of folic acid, VitB₆, VitB₁₂ to rat aortic endothelial cells injury by DL-homocysteine.

Design Rat aortic endothelial cells were cultured in vitro, investigate the cross effects of folic acid, VitB₆, VitB₁₂ according to orthogonal design L₂₇ (3⁷) by MTT. According to the results of orthogonal design, compare the activity of SOD, GSH-PX, NOS and the contents of MDA, NO in the medium.

Outcomes The results of orthogonal design indicate that, the inhibition of DL-homocystine to rat aortic endothelial cells (RAEC) could be relieved by folic acid, VitB₁₂ excluding VitB₆. The interaction exists between folic acid and VitB₁₂, VitB₆ and VitB₁₂. The inhibition of Hcy to the enzymes (SOD, GSH-PX, NOS) could be relieved by three vitamin projects. Folic acid, VitB₁₂, VitB₆ could inhibit the reduction of NO and decrease the production of MDA.

Conclusion Folic acid, VitB₆, VitB₁₂ were added together may be an excellent strategy for RAEC injury by DL-homocysteine.

Post 151

The method of inducing the type 2 diabetes mellitus model with SD rats

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Background: There are over 90 percents of the Diabetes mellitus patients belong to type 2 Diabetes mellitus, it is necessary to study some mechanisms about type 2 Diabetes mellitus. How to build up a stable rat-model of type 2 diabetes mellitus successfully is very important. SD rats can be obtained very easily, if it can be induced well, it will be a great help for the researchers who want to engage in doing the study about type 2 diabetes mellitus.

Objective: To investigate the method of inducing the type 2 diabetes mellitus model with SD (SpragueDawley) rats.

Design: We selected 30 male SD rats and then divided them into 3 groups randomly. Those were group 1, group 2 and group 3, group 3 was used as the control group, and the two other groups were used as the model groups. In this study, the control group was fed with the normal animal feeds, while the model groups were fed with the special diets for six weeks to induce insulin resistance. Six weeks later, the rats of the two model groups were induced to be type 2 diabetes mellitus by injecting STZ (streptozocin) through different ways. We measured the FBG, ISI(insulin sensitivity index),and the level of the FIns (fasting blood insulin) on different time to judge the achievement ratio of the two ways of inducing model and their stability.

Outcomes: After feeding with special feeds for six weeks, most rats of the two model groups showed up the hyperinsulism, and the difference of FBG of the three groups was nonsensical (P=0.257), the difference about blood-fat like cholesterin, triglyceride was significant. After injecting STZ, two weeks later, both of the difference of FBG and FIns between the two model groups and the control group was significant.(P1<0.001, P₂ <0.001). We measured FBG every week., on the fourth weekend we killed all of the rats and the level of FBG, ISI and FIns were assayed .The difference of those indexes between the model group and the control group were significant.(P<0.05).

Conclusions: Using the special feeds to feed the SD rats for six weeks can induce them to have the state of IR (insulin resistance),then injecting STZ(30mg/Kg) from abdominal cavity or vein can make them to develop to type 2 diabetes mellitus.
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Effect of Laurencia terpenoid extract supplementation on DNA oxidation and alkylation damage in mice

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Background – Laurencia terpenoid extract (LET) had been extracted from the red alge Laurencia tristicha. We investigate the effects of Laurencia terpenoid extract (LET) supplementation on DNA oxidation and alkylation damages.

Objective – To investigate the effects of Laurencia terpenoid extract (LET) supplementation on DNA oxidation and alkylation damages.

Design – The total content of terpenoids in the LET was detected by HPLC and its median lethal dose (LD50) was estimated by Horn assay. The antioxidant activities of LET were detected in mice. 40 kunming mice were randomly divided into 4 groups, and each of them were given the LET (0, 25, 50, 100 mg/kg bw) respectively by stomach-perfusion for 60 days. Food and water were free to supply for the mice. The samples of blood were taken for measurements. The spontaneous or oxidized DNA damages of peripheral lymphocytes induced by H2O2 were analyzed by SCGE. O6-Methy-guanine (O6-MeG) was measured by high performance capillary zone electrophoresis.

Outcomes – The concentration of total terpenoids in the LET was proved to be 63.29%. The LET showed low toxicity with its LD50 more than 3160mg/kg. There was no significantly difference in intrinsic among 4 groups (P>0.05) DNA damage. The oxidative DNA damage in the 50 mg/Kg bw supplement group are 285.5AU with the oxidation of 10μmol/L H2O2, significantly lower than the model group 332.1AU (P<0.05). The contents of O6-MeG in plasma in the 50mg/Kg bw and 100mg/Kg bw supplement group were 1.50, 1.88 μmol/L, significantly lower than that of the blank group, which was 2.89μmol/L (P<0.05).

Conclusions – The LET rich in terpenoids and safety to be taken orally. It could improve antioxidative and decrease DNA damage effectively.

Post 153

The relationship between the microbial growth heat and the initial microorganism counts in food

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Background - At present, the traditional measurement for microorganisms such as plate counting is complicated and time-consuming. It is necessary to hunt a rapid, simple and substitutable method. Since microorganisms will generate heat accompanying with their growth, the microorganisms in food should be counted rapidly by determining the growth heat.

Objective - Researching the “growth thermograms” of microorganisms in food, obtain the relationship between growth heat and the initial microorganisms’ counts and decide the optimal determining time that is enough to get the distinguishable signals.

Design – The growth heat is determined by micro-DSCIII (setaran, France) which is a two-channel system including the sample and reference simultaneously in a thermostat cylinder. By recording the change of heat evolved during the microbial cultivation, the “growth thermograms” can be obtained. At the same time, in order to establish the relationship between the microbial growth heat and the initial microorganism counts in foods, the traditional assay is applied to the same sample.

Outcomes - The perfect thermogram curves reflect the relationship between the part thermal effects (Q) and the initial number of microbial cells (No). And based on it, determining the amount of microorganisms in foods only takes 2-8hr.

Conclusion - In our experiments, a sound reproduction is observed under the same condition. So this method can be used to test microorganisms more rapidly than the traditional method, which should be one of the reliable testing methods for foods.

Post 154
Identification of aroma active compounds in Jinchen orange juice using headspace solid phase microextraction and gas chromatography-olfactometry
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Background - Aroma is one of the most important quality attributes of food. Orange juice is the most popular fruit juice owing to its uniquely delicate aroma and nutritional properties. Jinchen is a native citrus cultivar of C.sinensis grown in the Yangzi river region of China. However, the aroma components of Jinchen orange juice have not been identified before.

Objective - The aim of the present study is to identify the aroma active compounds of SPME extracts using GC-O. The compounds which directly effect on the overall aroma quality of orange juice obtained from Jinchen can be found.

Design - Fresh Jinchen orange were obtained from the Songzi, Hubei province of China. The extracted juice was kept at -18°C before analysis. The volatile compounds were extracted by headspace solid phase microextraction (HS-SPME) using DVB/CAR/PDMS fiber for 40min at 40°C and identified by GC-MS. GC-O analysis was performed to determine the aroma activity compounds.

Outcome - There were 53 volatile components detected in orange juice, of which 20 were aroma active. The major contributors to orange juice aroma activity were ethyl butanoate, decanal, geranyl acetate, β-caryophyllene, valencene.

Conclusion – The present study indicated that HS-SPME is a good technology for detecting volatile compounds and GC-O is an important tool to evaluate the aroma impact compounds in Jinchen orange juice. The percent of all the aroma activity compounds was less than 10% of the total volatiles.

Post 155
In vitro antioxidant activity and chemical components of Semen Plantaginis extracts
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Background – Semen Plantaginis is a kind of traditional medicinal plants as anti-inflammatory and analgesic agent in the world. However, there has been no report on antioxidant activity of Semen Plantaginis extracts.

Objective – To research the antioxidant activity and chemical components of Semen Plantaginis extracts.

Design – The antioxidant activity of ether extract and 50%(V/V) ethanol extract was evaluated by two in vitro systems, viz. DPPH radical scavenging activity and pyrogallol autooxidation methods(1). The components of ether extract were determined by GC-MS analysis. Column chromatogram was used to get chemical monomers from ethanol extract.

Outcomes – The scavenging effect on DPPH radical of ethanol extract was slightly higher than its restraining effect on pyrogallol autooxidation. The scavenging effect on DPPH radical of ethanol extract was lower than BHT and ascorbic acid, but approximate at high usage (≥five mg/mL). At the same time, its restraining effect on pyrogallol autooxidation was lower than ascorbic acid but higher than BHT. But to ether extract, the effects in two systems have slight difference. The effects of ether extract in the two systems were existed but lowest. It is found that two main components of ether extracts, (Z, Z)-9,12-octadecadienoic acid (79.22%, the highest content) and n-hexadecanoic acid (13.63%, second), are both fatty acids. A main caffeoyl phenylethanoid glycoside was isolated from ethanol extract and identified as verbascoside.

Conclusions – The tested dose of ethanol extract indicated comparatively significant antioxidant activities that stronger than ether extract. Trace volatile components were found from ether extract. Verbascoside is an important substance in Semen Plantaginis.

Post 156

Studies on antitumor activity of Polysaccharide from Branchiostoma belcheri

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Background – Polysaccharide was isolated from Branchiostoma belcheri with protein enzyme hydrolysis and alcohol precipitation. We investigate its antitumor activity.

Objective – To investigate Polysaccharide from Branchiostoma belcheri (PBB) antitumor activity.

Design – The 50 kunming mice were randomly divided into 5 groups. Except the blank group, all the mice were vaccinated with S180 sarcom cells. Three groups of them were given PBB (25, 50, 100 mg/Kg wt). The other two groups of them were cytoxan positive group. (cytoxan 50 mg/kg bw injected to the abdomen) and the model control group (stomach perfusion with saline), while control group with 10 kunming mice was stomach perfused with saline only. The trial lasted for 30 days. Tumor inhibition ratio, index of thymus and spleen, IgA, IgG, IgM, were detected by standard methods. DNA oxidized damage was analyzed by SCGE. O6-MeG was measured by P/ACE. The contents of SOD, MDA, and GSH-Px in plasma were detected with the test kits.

Outcomes – The average tumor weights of PBB groups were significantly lower than model control group (P<0.05). The tumor inhibition ratios of the PBB groups were 39.1%-53.4%. The index of thymus and spleen in 100 mg/Kg wt PBB supplement groups were obviously higher than model control group (P<0.05). The multiplication of Lymphocytes in 50 and 100 mg/Kg wt PBB groups significantly increased compared to model control group (P=0.05). The levels of IgA, IgG and IgM of the PBB groups were higher than model control group (P<0.05). Concentrations of IgA, IgG and IgM of the model control group and the cytoxan positive group were obviously lower than blank group (P<0.05). The oxidative DNA damage in the PBB 50 and 100 mg/Kg bw were significantly lower than model group (P<0.05). The contents of SOD and GSH-Px in the PBB 50 and 100mg/Kg bw supplement groups were higher than model group (p<0.05).

Conclusions – PBB was safe to be taken orally. It had the ability to strengthen the immune system and had antioxidant activities.


Post 157

Effect of Ginsenoside Rg1 on the hepatic free radical metabolism and serum CK, LDH activity in exercise-fatigue mice

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Background – Panax ginseng is one of the most popular natural tonics that have been used in traditional Chinese Medicine. Ginseng saponin, the main active substance of Panax ginseng, has more than 30 types. Among them ginsenoside Rg1 exhibited anti-fatigue effect that has been indicated in a lot of literatures. However, there has been no data on the free radical metabolism and CK, LDH of exercise fatigue mice treated orally with ginsenoside Rg1.

Objective – To investigate the effect of different doses ginsenoside Rg1 on the hepatic free radical metabolism and serum CK, LDH activity in exercise fatigue mice.

Design – Sixty mice were randomly divided into six groups according weight. One is swimming control group which was orally given normal sodium and other five were experimental groups which were orally given a dose of ginsenoside Rg1: 5, 10, 20, 40, 80 mg/kg of body weight for 14 d. At the 14th day, after the last treatment 30 minutes loaded swimming was performed for 90 minutes with a weight corresponding to 2% body weight attached to the tail and then rested for 60 minutes. The malondialdehyde (MDA) and superoxide dismutase (SOD) in liver and creatine kinase (CK), lactate dehydrogenase (LDH) in serum were tested after loaded swimming.

Outcomes – Compared with swimming control group, the MDA of five different doses groups had a trend of decrease. Whereas, the SOD and SOD/MDA ratio increased significantly (P<0.05). The serum CK, LDH of 20 and 80 mg/kg doses groups were lower than the swimming group (P<0.05).

Conclusions – Ginsenoside Rg1 could promote the activity of hepatic SOD and the ratio of SOD/MDA and improve the resistance to lipid peroxidation but the dose and effect didn’t have correlation.
Post 158  

Nutrient composition of *Myrica rubra* (Myricaceae) seed kernels  
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**Background** - During the process of *Myrica rubra* fruit juice and wine, the *Myrica rubra* seeds as the industrial wastes are discarded without further exploited. The nutritional value of the *Myrica rubra* seed kernels is unknown.

**Objective** - To report the nutrient composition of the *Myrica rubra* seed kernels.

**Design** - The selected chemical composition of *Myrica rubra* seed kernels was determined. The content of moisture, crude protein, crude fat, ash, and crude fibre in kernels was determined using the standard methods of analyses. Fatty acid composition of oils of the kernels was determined using gas chromatography. The physical and chemical characterizations of the oils were analyzed. Colour and the state of the oils at room temperature were noted by visual inspection. The acid, iodine, and peroxide values were determined by standard methods. The component of amino acids was determined by automatic amino acid analyzer. Chemical score of amino acids was calculated using the FAO/WHO reference pattern. The minerals, Mg, Fe, Cu, Mn and Zn, were determined by atomic absorption spectrophotometry. Na, Ca and K were determined using flame photometry.

**Outcomes** - The seeds were rich in oil and proteins. Most of their oils were made up of non-saturated fatty acids, with linoleic and oleic acids as the major acids. The oils showed the state to be liquid at room temperature (25±1°C) and the colour to be pale-yellow. Acid value, iodine number and peroxide value of the oils were approximative to other common edible oils. The seeds were rich in amino acids, including eight essential amino acids. The seeds contained considerable amounts of K, Mg, Mn and Ca.

**Conclusions** - The results may offer a scientific basis for use of the seeds. It can be inferred that the seeds are good sources of crude fat, crude protein and minerals. The oil extracts exhibited good physicochemical properties and could be useful as edible oils.

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Post 159  

Isolation of polyphenol compounds from Singo pear residue and their biological activities  
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**Background** – The pear waste from pear-processing has not been well used. Since polyphenolic compounds mainly exist in the peel and core part of fruit, it would be worthwhile to investigate the nature of these polyphenolic compounds from pear waste.

**Objective** – The purposes of this study were to isolate polyphenolic compounds from Singo pear and determine their biological activities.

**Design** – Pear residue was extracted with 60% acetone. After isolation with Sephadex LH-20, MCI-gel CHP-20 and Bondapak C18 column chromatography, monitoring by TLC and HPLC, four polyphenolic compounds were obtained in total, and their biological activities were determined.

**Outcomes** – The relative inhibition of compound A, B, C, D against DPPH was 42.2%, 45.6%, 70.7% and 72.1% respectively. All these four compounds showed inhibition activities toward angiotensin converting enzyme (ACE). Compound D completely inhibited ACE at 500ppm, while compound C completely inhibited ACE at 1000ppm. All compounds showed low inhibition effect on xanthine oxidase (XO), and exhibited 100% inhibition at 1000ppm. Polyphenolic compounds isolated from pear waste showed only moderate inhibition effect on tyrosinase, compounds S and C showed about 43% inhibition rate at 1000ppm, while compounds A and B had no inhibitory effect.

**Conclusions** – Polyphenol compounds from Singo pear residue showed high biological activities, further research should be done so that pear waste from pear-processing could been well used.
Post 160

Immunomodulatory activity of aqueous crude extract of *Actinidia macrosperma*

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**Background** – *Actinidia. macrosperma* (AM), a kind of kiwi, is reputed to treat various cancers, especially cancer of the lung and digestive system in the folk of China. Nevertheless, no detailed study has been done about its chemistry and biological activity so far.

**Objective** – To investigate the immunomodulatory properties of *A. macrosperma* in vitro on S180-bearing mice.

**Design** – Young adult (20 ± 2 g) ICR mice inoculated with S180 cells were randomized into six groups (n=10): S180-bearing control group, normal control group, positive control group (Gingseng Radix Rubra 2000 mg/kg) and 50, 100, 250 mg/kg AM treatment groups. GRR and AM extract were administrated p.o. for 12 days once daily. Normal control and S180-bearing control groups received the same volume of normal saline. Thirteen days later, all animals were executed and their bodies and tumors' weights were obtained. Moreover, their humoral, cellular and nonspecific immune functions were also determined by the assay of quantitative hemolysis of sheep red blood cells, lymphocyte proliferation, NK cell cytotoxicity and phagocytic activity of macrophage with standard methods, respectively.

**Outcomes** – The animals treated with AM extract had no significant inhibit on tumor with a inhibit rate of 1.5%–14.8% (P>0.05), but showed lower tumor growth in a dose-dependant manner compared with S180 control group (dose at 250 mg/kg is the best). Whereas, AM extract showed stimulatory effect on overall immune functions. It appeared 100 mg/kg was the optimum dose, which was either close to or stronger than the positive control of GRR 2000 mg/kg, and significantly higher than S180 control (P<0.001–0.01).

**Conclusions** – It has suggested that AM-induced anti-tumour effects are at least partially indirect and are associated with modulation of immune functions. And 100 mg/kg dose seems to be pharmacologically effective dose in mouse as far as immunomodulatory effects are concerned. The result supports the traditional use of this plant in China and contributes to the direction of developing safer strategies for cancer treatment.

Post 161

Effect of Conjugated linoleic acids on fatty acid composition in kidney, liver, heart and brain in atherosclerotic rats

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**Background** – The research indicated Conjugated linoleic acid (CLA) could reduce the fats and prevent the atherosclerosis in animals, and impact lipid metabolism. At present, the reports on the effects of CLA on fatty acid composition in tissues are relatively scarce.

**Objective** - The aim of this study was to investigate the effect of CLA on fatty acids metabolism by determining the changes of fatty acids compositions of different tissues in atherosclerotic aged rats.

**Design** - Atherosclerotic Rats were randomly divided into three different doses of CLA groups and control group. After 28 days, Lipids in kidney, heart, liver and brain were methylated and determined by GC.

**Outcomes** - The most important changes in the fatty acids were observed: (1) Compared to control, the contents of 20:4n-6 in liver, kidney and heart tissues was significantly increased in rats fed CLA. The contents of 22:5n-3(DPA) and 22:6n-3(DHA) in liver, kidney and brain tissues were significantly increased in rats fed CLA. The contents of 18:2n-6 and 18:3n-3 in liver and heart tissues were significantly decreased in rats fed CLA. (2) The contents of total PUFA were found to increase in liver and kidney of rats fed CLA, so were the concentration of total n-3 PUFA in brain, liver and kidney of rats fed CLA, while the content of total n-6 PUFA and the ratio of n-6/n-3 were found to decrease in all tissues of rats fed CLA. Further more, CLA had the highest effect on the content and ratio of fatty acids in heart tissues and the lowest effect in brain tissues.

**Conclusions** - CLA was effective in improving the fatty acid composition in tissues of atherosclerotic rats.
Post 162

Study on the immune function of edible fungus polysaccharides compounds

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Background – Almost all of the current immune research studies utilizing fungus polysaccharides have been performed using only individual component. Only a few studies have applied mixtures of proprietary compounds.

Objective – The main objective of this study was to evaluate mice’s immune effects of mixture polysaccharides (ratio 1:0.5:0.5) extracted from *Lentinus edodes*, *Ganoderma lucidium* and *Grifola frondosa*.

Design – Kuming mice weighted 20±2g (10 animals/group) were treated during 30 consecutive days with polysaccharides compounds added to basal diet at three concentrations: 0.17, 0.33 and 1.00g/kg body weight. Then determination of NK cells’ activities, ratio thymus/body and spleen/bod, macrophage’s activities, hemolysis, DTH by standard methods.

Outcomes – polysaccharides compounds could increase thymus and NK cells activities \((P<0.01)\), both the ability of macrophages to phagocyte latex particles and spreading the activity of macrophages \((P<0.05)\). On the whole the concentrations of 0.33 and 1.00g/kg body weight yield the best results. The results of hemolytic test and delayed hypersensitivity indicate there is no remarkable difference between control groups \((P<0.05)\).

Conclusions – The results indicated polysaccharides compounds could enhance the cell immune of the mice.

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Application of perioperative immunonutrition for gastrointestinal system surgery: a meta-analysis of randomized controlled trials

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Background – Gastrointestinal system cancer and operation lead to malnutrition and low immunity function. Infectious complication is not infrequent and Immunonutrition may be a good choice to decrease infection rate in patients underwent gastrointestinal operation. But new sufficient evidence is absent.

Objective – This study assessed clinical and economics validity of immunonutrition and effect on immunity function in patients with gastrointestinal system cancer after gastrectomy, pancreatico-duodenectomy and colectomy. They were fed with perioperative diet supplemented immunonutrition, including two or more of glutamine, arginine, n-3 fatty acids, ribonucleic acids, comparing standard diet.

Design – A meta-analysis of all relevant clinical randomized controlled trials (RCTs) was performed. Trials were identified from electronic databases: Cochrane Library, MEDLINE, EMBASE and ISI web of knowledge (SCI). It was undertaken in April 2006. Language was restricted to English. Literature references were checked by computer and hand at the same time. RCTs were extracted and evaluated by two reviewers independently according Cochrane handbook 4.2.2. Statistical analysis was performed by RevMan4.2 software from Cochrane Collaboration. A \(P\) value of <0.05 was considered statistically significant.

Outcomes – Thirteen RCTs involving 1269 patients were included. Although the combined results showed that immunonutrition had no significant effect on mortality \((OR =0.76, 95\% CI [0.26, 2.21], P = 0.61)\), It had positive effect on postoperative infectious complication \((11\) trials, \(OR =0.37, 95\% CI [0.27, 0.51], P<0.00001)\), the length of hospital stay \((8\) trials, \(WMD =-3.74, 95\% CI [-4.24, -3.23], P<0.00001)\). It had effect on immunity to increase total lymphocytes\(3\) trials, \(WMD =-0.40, 95\% CI [0.21, 0.59], P = 0.00001)\), CD4 levels \((3\) trials, \(WMD =10.67, 95\% CI [8.59,12.74], P<0.00001)\), IgG levels \((2\) trials, \(WMD =-0.97, 95\% CI [0.46,1.67], P =0.0005)\), decrease CRP levels\(3\) trials, \(WMD =-2.32, 95\% CI [-3.32, -1.27], P<0.00001)\), IL6 levels\(5\) trials, \(WMD =-60.25, 95\% CI [-68.82, -51.67], P<0.00001). There were no serious side effects and one trial found low hospital cost.

Conclusions – Immunonutrition is effective to reduce the postoperative infectious rate and length of hospital stay through increase humoral and cell immunity of postoperative patients. Further study is required in critical patients or children with gastrointestinal operation.
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Effect of interactions of proteins with catchins and caffeine on the haze formation of tea infusion model

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Background – Ready-to-drink tea, enriched with high concentration catchins and their derivatives which were believed as active components responsible for beneficial effects, has become popular worldwide in recent years. It is known as one of the most vigorous economic enhancing fields of the tea industry. There were three main technical obstacles in ready-to-drink tea processing and developing, ie flavor deterioration induced by high-temperature autoclaving, colour browning of green tea drink and haze forming at low temperature. Many breakthroughs were made in flavor –keeping with the molecular embedding techniques, and in colour –controlling with addition of antioxidants. The control of haze forming and creaming down was partially achieved by applying low temperature extraction and filtration with micropore membrane. However, it still remains to be investigated.

Objective – To investigate the effect of interactions between soluble proteins with catchins, caffeine and nucleic acid on the haze forming of tea infusion model.

Design – According the surface response design with five factors and 32 treatments, tea infusion model was obtained by mixing the soluble proteins, catchins, caffeine, DNA and RNA together at pH 5.9, and its volume was adjusted to 1 ml. The mixture solution was incubated at 90°C for 30 min, and stored at 4°C overnight. The transmittance of the solution was measured at 480 nm by UV visible spectrometer (HP co., USA). Data analysis was carried out with SAS 8.01 (SAS Institute Inc. Cary, NC, USA)

Outcomes - The results showed that the infusion transmittance was mainly subjected to the concentration of protein and catchins and their ratio, ie transmittance value was restrained below 5% when the concentration of catchins and protein was 450 - 1100 μg/ml and 22.5 - 60.0 μg/ml, and their ratio ranged from 7.5 to 50. Haze would develop furthermore when the caffeine was added into such solution. Interaction between caffeine and nucleic acid was also found in the solution without protein and catchins, but which would not lead to haze forming. The results also showed the interactions of caffeine-protein and caffeine-catchins would not stimulate the formation of tea cream.

Conclusions – The present study indicated that haze forming in tea infusion mainly was caused by interaction of proteins with catchins during high temperature processing. It suggested that we can obtain the clear and bright ready-drink tea by removing soluble proteins from tea infusion or adjusting the ratio of catchins/proteins and making them mismatch.

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Application of principal component analysis to chemical and physical estimation of tea quality

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Background- Tea quality mainly depends on the components and colour of the tea infusions (1,2). However, there are hundreds of chemical components which are confirmed to be related to tea quality and it is difficult to estimate tea quality by analyzing all the chemical components. It is necessary to extract important factors for establishing mathematical models to evaluate the tea quality.

Objective- To extract variables that account as much variation in the chemical and physical indicators detected as possible by principal component analysis (PAC) to establish mathematic models for estimating quality of teas.

Design _ Total quality score (TQS) of 17 black teas, 29 green teas, 17 jasmine scented teas and seven pu-erh teas collected from major estates in China were given by a tea tasting panel consisting of six persons. Concentrations of catechins, amino acids, caffeine, theaflavins were analyzed by high performance liquid chromatograph (HPLC). Volatiles were detected by GC and color difference indicators were detected by color difference meter.

Outcomes - Parameters extracted by PCA could be classified into three groups. Group one was taste-relating components including compounds containing nitrogen element and catechins. Group two was volatile compounds and group three infusion color indicators. Linear regressions of TQS of the various tested teas upon the extracted variables were statistically significant.

Conclusions- PAC can extract a few components which account for most of the variation in a large number of chemical and physical parameters detected from the tea samples and simplify the analysis process. The regressive models obtained from the extracted components will be interesting in estimating tea quality and designing quality estimation equipment.

Effects of enteral nutrition on gut integrity in rats with obstructive jaundice

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Background – Obstructive jaundice (OJ) often associates with malnutrition and gut barrier dysfunction. Total parenteral nutrition may lead to decrease of tight junction between intestinal epithelial cells, while in OJ, intestinal blood flow and intestinal absorptive function of nutrients decreases.

Objective – To investigate the protective effects of enteral nutrition on gut integrity in immature rats with obstructive jaundice.

Design – Forty growing male Wistar rats were randomly divided into control group (control); sham operation group (sham); OJ group (OJ) and OJ+Nutrison group (OJ+N). OJ group had standard chow, in OJ+N group, nutritional formulae were given to the rats for seven days. Total calorie was 610kJ/(kg.d) and nitrogen amount was 1.0g/(kg.d). After seven days of creation of OJ model, electron microscopy examination were performed on ileal mucosa samples.

Outcomes – Ileum mucosa villi integrity exists in control and sham groups compared with OJ group. Significant short, loose, deletion of intestinal mucosal villi were observed in OJ group compared with control and sham group, and oral administration of Nutrison ameliorates the above findings. Ultrastructural abnormalities in OJ rats were obvious in the mucosa of the terminal ileum. Electron microscopy revealed edematous change associated with disruption of desmosomes, and the formation of lateral spaces between enterocytes.

Conclusions – These data provide evidence of physical disruption of intestinal mucosa and support the hypothesis of gut barrier dysfunction in obstructive jaundice. Enteral nutrition can improve gut integrity in immature rats with obstructive jaundice.

Bile salt deconjugation and cholesterol removal from media by Lactobacillus plantarum ST-III

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Background – Elevated serum cholesterol in human is generally a risk factor correlated with the development of coronary heart disease. It has been reported that certain lactic acid bacteria (LAB) have the potential to aid in the control of serum cholesterol levels (1). However, there is little data on the interaction between the initial pH of broth, heat treatment of cells and cholesterol removal from media.

Objective – To determine the interaction between the initial pH of broth, heat treatment of cells and cholesterol removal from media.

Design – The MRS-THIO broth contained sodium taurocholate and cholesterol (100 ug/mL) previously adjusted to the different levels of pH. The cultures of L. plantarum ST-III were assayed for cholic acid and cholesterol. One of the cells was autoclaved for preparing heat-killed cells and the other was not. The heat-killed cells were suspended in MRS-THIO broth contained sodium taurocholate and cholesterol (100 ug/mL) previously adjusted at pH 6.8 and 0.05M phosphate buffer (pH 6.8) contained sodium taurocholate and cholesterol (100 ug/mL), respectively. The amount of cholesterol was assayed.

Outcomes – The initial pH of broth had affected on bile salt deconjugation and cholesterol removal from media (P<0.05). The ability to remove cholesterol was also observed in the heat-killed cells of L. plantarum ST-III. However, the amount of cholesterol was removed by the cells during growth was significantly higher than that was removed by the heat-killed cells (P<0.05).

Conclusions – These data provide evidence of physical disruption of intestinal mucosa and support the hypothesis of gut barrier dysfunction in obstructive jaundice. Enteral nutrition can improve gut integrity in immature rats with obstructive jaundice.

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**Does the intake of carotenoids prevent ovarian cancer?**

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**Background** – There has been considerable interest in the role of carotenoids in the chemoprevention of cancer. However, only a few studies have examined the relationship between the intake of the most common carotenoids and the ovarian cancer risk. The results so far have been inconclusive.

**Objective** – To investigate whether the intake of carotenoids is inversely associated with the ovarian cancer risk.

**Design** – A case-control study was conducted in Hangzhou, China, in 1999-2000. A total of 254 ovarian cancer patients and 652 controls were recruited. Habitual dietary intake was measured by face-to-face interview using a validated and reliable food frequency questionnaire. The USDA nutrient composition database was used to calculate the consumption of \(\alpha\)-carotene, \(\beta\)-carotene, \(\beta\)-cryptoxanthin, lutein/zeaxanthin, and lycopene.

**Outcomes** – After accounting for age, locality, education, body mass index, smoking, tea drinking, parity, oral contraceptive use, menopausal status, physical activity, energy intake and family history of ovarian cancer, the dietary intakes of \(\alpha\)-carotene, \(\beta\)-carotene, \(\beta\)-cryptoxanthin, and lutein/zeaxanthin, but not lycopenes, were inversely associated with the ovarian cancer risk. When comparing the highest versus the lowest quartile of intake, the adjusted odds ratios for \(\alpha\)-carotene, \(\beta\)-carotene, \(\beta\)-cryptoxanthin, and lutein/zeaxanthin were, respectively, 0.43 (95% CI 0.27-0.69), 0.59 (95% CI 0.38-0.93), 0.58 (95% CI 0.37-0.91), and 0.50 (95% CI 0.31-0.81). The corresponding linear trends were also statistically significant except for \(\beta\)-carotene.

**Conclusions** – Consuming vegetables and fruits rich in carotenoids appears to be protective against ovarian cancer.

**Post 169**

**Research on the controllable enzyme disassemble conditions of high F value oligopeptide from egg white**

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**Background** – In clinical application, the high F value oligopeptide from egg white can not only be applied to the patients who used to be tortured by high metabolism or on negative nitrogen conditions but also be helpful to the therapy of the hepatocirrhosis patients, of whom the amino acid of the blood plasma is in a abnormal condition. Meanwhile, it can reduce disassembling rate of the body proteins, promote the creation of sugar, the secretion of the growth hormone and speed up the oxidation of the body fats.

**Objective** – Research on the controllable enzyme disassemble conditions of high F value oligopeptide from egg white

**Design** – Based on the degree of hydrolysis (DH), varying hydrolyzing degrees of Alkaline Protease 2709, Bacillus subtilis Alkaline Protease and other four kinds of endonuclease were analyzed, the orthogonal design of \(L_9(3^4)\) was applied to screen out the optimal hydrolysis conditions of alkaline protease. According to a study on flavor proteases and pawpaw protease affecting the degree of enzymatic hydrolysis of egg white, the orthogonal design of \(L_9(3^4)\) was employed to ascertain the optimal conditions feasible for hydrolyzing enzyme, the factors were pH value, hydrolyzing temperature, time, [E]/[S] etc.

**Outcomes** – A orthogonal design of \(L_9(3^4)\) was adopted to draw a conclusion suitable for the hydrolysis of alkaline protease as follows: pH 11, temperature was 45°C, [E]/[S] was 1.2%, five hours. The optimal conditions for hydrolyzing compound enzyme were as follows: pH was 7.5, temperature was 60°C, [E]/[S] was 1.8%, five hours.

**Conclusions** – Hydrolyzing enzyme in the process of preparing high F Oligo-peptide could lay a foundation for a further research on the production processing with the properties of low cost, high yield, industrialization in preparing high F Value oligopeptide.
Studies on the effect of storage on polyphenols, VC and color of cloudy apple juice

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Background – Compared with clear apple juice, cloudy apple juice contains more polyphenols, pectin and protein, so the stability of color for cloudy apple juice must be affected by more factors and was more complicated. However, a lot of studies were focused on the clarified apple juice or modeled systems, and there was a few studies which focused on the effect of storage on polyphenols, VC and color of cloudy apple juice(1).

Objective – The objective of the present work was to investigate the change of color, VC, HMF and phenolics of cloudy apple juice during its storage period of 120 days, so as to find the factors which influence color and color stability of cloudy apple juice.

Design – Cloudy apple juice was produced by steam heating during crushing and then the same batch juices (adding VC or not) were stored for 120 days at 4℃, 22℃ and 40℃. The content of polyphenols, HMF, VC in juice and the color of juice were studied by HPLC and other analysis techniques during the storage period of juice. The formation of new particles was assayed by scan electronic microscopy.

Outcomes – Non-enzymatic browning during the storage of cloudy apple juice was caused by the oxidation and polymerization of polyphenols and could be avoided by adding 0.006%VC (W/V) to juice or by storing juice at lower temperature. The addition of VC could inhibit the oxidation and polymerization of phenolics and less new particles could formed. The degree of non-enzymatic browning and the loss of tannin, epicatechin, chlorogenic acid and VC of juice increased as the belonged time and increased temperature of storage. The color changing of juice was acute at the initial period of storage and then obtuse.

Conclusions – The changing of juice color was caused mainly by the oxidation and polymerization of polyphenols.

1: Ilhwan, k; & hyoung, S. L, Evaluation of polyphosphate for the control of nonenzymatic browning in apple juice, Foods and Biotechnology, 1997;6 (4) 309-313

Research on antioxidation functions of Casein non-phosphopeptides

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Background – Casein phosphopeptides (CPP) possess the function of mineral carriers. Commercial methods of producing CPP exist. Casein non-phosphopeptides (CNPP) are the product accompanying CPP production and in the supernatant issuing from the precipitation of CPP. CNPP contains many active peptides (1).

Objective – To investigate the antioxidation of CNPP in vitro and in vivo.

Design – Five outside models of antioxidation (reductive, antioxidative, hydroxyl radicals scavenging activities, superoxide scavenging activities and protecting red cellular) were used to investigate the effect of CNPP on antioxidation. Then fifty mice were divided into two groups: control group (CG, 10 mice) and model of aging group (40 mice). The animal model of aging was established by treating Kunming mice with D-Dal. The model of aging group was divided into four groups: low dose group (MG1), medium dose group (MG2), high dose group (MG3) and model control group (MCG). MG1, MG2, MG3 were supplemented with 100, 500 and 1000 mg/kg·d CNPP, CG and MCG were supplement with 0.25ml normal saline respectively by gavage one time a day. At the same time, MCG was treated with D-Dal continually. Blood was drown from the trail. The content of maloldiadehycle (MDA) and the activity of superoxide dismutase (SOD) in serum, and the activity of glutathione peroxidase (GSH-Px) in whole blood were determined.

Outcome – CNPP had the properties of reduction, and antioxidation in linoleic acid system very well. They had the functions of hydroxyl radicals and superoxide anion radicals scavenging activities, and significantly inhibiting haemolytic occurring. CNPP reduced the content of MDA in serum (P<0.01), increased the activity of GSH-Px in whole blood (P<0.01) and the activity of SOD in serum (P<0.01) significantly after sub-urgent aging mice administrating CNPP. The effects increased with the doses.

Conclusion – The result showed that CNPP have marked antioxidation effects in vitro and in vivo, and the effects were increased with the doses.

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The mechanism of 3-methoxy puerarin on decreasing the cerebral ischemia-reperfusion injury in rats

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Background – Our former study showed that 3-methoxy puerarin extracted from wild puerarin could decrease cerebral ischemia-reperfusion injury in rats. But we don’t know how 3-methoxy puerarin improve the injury, and don’t know the mechanism of interaction between them.

Objective – To explore the mechanisms behind the protecting effects of 3-methoxy puerarin on cerebral ischemia-reperfusion injury in rats.

Design – 30 male SD rats were randomly divided into three groups: the group of pseudo-operation (normal control group, NC group), the group of cerebral ischemia-reperfusion injury (CIRI group), and the group of cerebral ischemia-reperfusion injury treated with 3-methoxy puerarin (3-MP group). The model of cerebral ischemia-reperfusion injury were made by the method of four-vessel occlusion. Before made the model of cerebral ischemia-reperfusion injury, the rats in the 3-MP group were treated with 3-methoxy puerarin (100mg/kg) by gavage two times per day for seven days. The rats in the NC group and CIRI group were treated with the same volume of normal saline by gavage per day. Before an hour of operation, the rats in the three groups were additionally given 3-methoxy puerarin or normal saline by gavage one time. The level of prostacyclin (PGI2) in cerebral tissue, the activity of plasma tissue-type plasminogen activator (t-PA) and plasminogen activator inhibitor (PAI) were measured. The expression of endothelin-1(ET-1) mRNA in cerebral tissue were measured with the method of in situ hybridization. Cerebral tissue pathologic changes were also observed.

Outcomes – The levels of PGI2 in cerebral tissue and the activity of plasma t-PA in 3-MP group were significantly higher than those in CIRI group (P<0.01). The activity of plasma PAI and the expression of ET-1 mRNA in cerebral tissue in 3-MP group were significantly lower than those in CIRI group (P<0.01). The cerebral tissue pathologic changes were significant in CIRI group, which were significantly ameliorated in the 3-MP group.

Conclusions – In the rats of cerebral ischemia-reperfusion injury, 3-methoxy puerarin can increase the level of PGI2 in cerebral tissue and the activity of plasma t-PA, inhibit the activity of plasma PAI and the expression of ET-1 mRNA in cerebral tissue, which might be the mechanisms behind the protecting effects of 3-methoxy puerarin on the cerebral ischemia-reperfusion injury in rats.

Post 173
Studies on the Rabbit Monoclonal Antibody for β-Adrenergic agonist Ractopamine detection

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A rabbit monoclonal antibody(RabMab) was generated toward the β-Adrenergic agonist Ractopamine. Bovine serum albumin (BSA) and ovalbumin (OVA) were utilized as carrier proteins, and also Ractopamine-glutarate- BSA was utilized as the antigen. The antibody was generated from the WHB dark eye rabbit that was regarded as a good kind of the antibody generation animals. With the purpose of generating hybridoma cells B, lymphocytes from immune rabbit and 240E myeloma cells were fused together. The selected antibody, which was produced from Supernatant of clone B5-4-4 that was used for the development of an immunoassay, was specific for ractopamine with an IC50 of 5.08ng/ml. The linear range of the inhibition rate vs. log ractopamine competition curve generated in PBST was 0.1~500ng/ml. β-adrenergic agonists which had similar structures to ractopamine such as clenbuterol hydrochloride, isoxsuprine, epinephrine, norepinephrine, isoprenaline and dopamine showed no cross-reactivity. In conclusion, a highly specific RabMab to ractopamine hydrochloride was developed and it could be used in screening assays of indirect competitive ELISA.
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Production technology of one fatty acid balanced cooking oil
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Background – Cooking oil is the main source of diet fat and essential fatty acid. Fatty acid composition is associated with chronic diseases such as cardiovascular disease, diabetes, cancer etc. However, there is no ideal single vegetable oil which can provide balanced fatty acids.

Objective – To develop a fatty acid balanced cooking oil based on recommendation of dietary fatty acid intake.

Design – To mix rap seed oil, soybean oil, sunflower oil and peanut oil etc. with different ratio to match the target fatty acid composition: saturated fatty acid (SFA) 12%, monounsaturated fatty acid (MUFA) 44%, polyunsaturated fatty acid (PUFA) 44% (in which n-6 PUFA was 36.6%, n-3 PUFA was 7.4%), i.e. SFA: MUFA: PUFA is 0.27: 1: 1. The fatty acid was analyzed with gas chromatography (GC).

Outcomes – The optimum range of each vegetable oil is as the followings: Rap seed oil 20~65%, corn oil or sunflower oil or peanut oil or safflower or their random combination can be used in 15~71%,soybean oil or flax seed oil or their random combination can be 2~42%, for sesame oil, it can be used in 0~5% (1). The final fatty acid composition is matched with recommendation by the Chinese Nutrition Society: SFA: MUFA: PUFA=0.27:1:1, in which the ratio of n-6 PUFA: n-3 PUFA=5:1.

Conclusions – Mix different vegetable oil with certain ratio will produce ideal cooking oil with a better fatty acid profile, which may have a healthy benefit in relation to prevent cardiovascular disease.


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Effects of calcium pyruvate on anaerobic training ability of male wrestlers
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Background – There is an altercation about effects of pyruvate on anaerobic exercise ability (1), but there is a statistically significant improvement of heart activity (2). However, there has been no data on the interaction between pyruvate and male wrestlers in anaerobic exercise ability and the recovery of heart rate after activity.

Objective – To investigate the interaction between pyruvate and male wrestlers in anaerobic exercise ability and the recovery of heart rate after activities.

Design – 40 male wrestlers of Tianjin Pysical Education and Sports Science are randomly divided into four groups and supplemented calcium pyruvate of 0, 25, 50, 75 (mg·kg⁻¹·s⁻¹) respectively, two times per days for four weeks(calcium pyruvate is made by Shanghai Taiyangshen High Technology Ltd. Co.). Placebo group are supplemented 25mg·kg⁻¹·s⁻¹ glucose (25mg·kg⁻¹·s⁻¹ glucose is not affected on blood glucose, blood lipids, insulin level), two times per days for four weeks. During the four weeks, it is a cycle of general training and the food is general and regular. Anaerobic training ability and the recovery after activities are measured at begin of experiment and at the end of the experiment.

Outcomes – The present study indicates that there is a statistically significant improvement in speeding up the recovery of heart rate in 3 min after doing anaerobic training and there is no statistical change in anaerobic exercise ability in male wrestlers.

Conclusions –The results suggest that calcium pyruvate can decrease body weight, fat pad in male wrestlers.
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**Effect of calcium pyruvate supplementation on plasma lipid level in wrestlers**

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**Background** - The effect of the three-carbon compound pyruvate on plasma lipid concentrations were evaluated in hyperlipidemic patients (1,2). However, there has been no data on the effect of calcium pyruvate supplementation on plasma lipid level in wrestlers. Because the incidence of hyperlipidemia of athletes was high (3), the effects of calcium pyruvate on plasma lipid concentrations are of interest.

**Objective** - To investigate the effects of oral supplement of calcium pyruvate of normal diet on plasma lipid level in wrestlers for eight weeks.

**Design** - Twenty two male wrestlers were randomly divided into two groups and given calcium pyruvate and placebo (polyglucose) 6g per day(two times a day) respectively for eight weeks. Control two groups keep the same life style and training style. Plasma lipid were measured before and after supplementation. Plasma lipid profiles include TC,TG,LDL-c,HDL-c and LDL-c/HDL-c.

**Outcomes** - At the end of the experiment, TC and LDL-c significantly decreased \((P < 0.05)\) compared with pre-experiment in each group. But there is no significant difference in the change of TC and LDL-c between the two groups. The change of TG, HDL-c and LDL-c/HDL-c in calcium pyruvate group is not significantly different from that in placebo group.

**Conclusions** - Oral supplement of calcium pyruvate has no significant effect on plasma lipid level in wrestlers for eight weeks.


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**Post 177**

**Effects of soybean isoflavone dosage and exercise on bone metabolism in ovariectomized rats**

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**Background** – We reported that the combined treatment of soybean isoflavone dosage and resistance exercise have more beneficial effects by acting rather independently than their separate trials on the prevention of ovx-induced bone loss (1). But their mechanisms are not clear.

**Objective** – This study was designed to determine whether combined treatments with soybean isoflavone dosage and moderate exercise would exhibit synergistically effects on bone metabolism following the onset of menopause.

**Design** – Fifty 12 wk-old female Wistar rats were assigned to five groups. All rats were fed a normal diet ad libitum. Daily soybean isoflavone dosage was 50 mg/kg body weight. The vehicle was given in Sham, OVX-Cont and OVX-EXE groups. The drugs were all oral administered using a stomach tube. Exercising rats were trained on an uphill treadmill at 20 m/min for 1h/day, 5days/week. The experimental duration consisted of the adaptation periods of 2 weeks and treatment periods of 8 weeks.

**Outcomes** – The results showed that the uterus relative weights in OVX-EXE, OVX-IF and OVX-IF-EXE groups were all lower than those in Sham, they were higher than that in the OVX group. Serum alkaline phosphates (AKP) activitie of OVX was significantly increased as compared to that of Sham (\(p < 0.01\)). OVX-IF and OVX-IF-EXE respectively decreased the Serum alkaline phosphates activities, as compared to that of OVX (\(p < 0.01\)). The STRACP value of OVX was significantly increased as compared to that of Sham (\(p < 0.05\)). OVX-IF decreased the STRACP as compared to that of OVX (\(p < 0.05\)).

**Conclusions** – These results suggest soybean isoflavone and resistance exercise both can restrain ovx-induced bone loss in. But their mechanisms maybe different.

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**Extraction and identification hypoglycemic components from the leaves of *Eriobotrta japonica***

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**Background** – Recent studies showed that the leaves of *Eriobotrta japonica* have many pharmacological effects and the major activity components were triterpenes acid (1). However, there has been no data on the hypoglycemic components from leaves of *Eriobotrta japonica*.

**Objective** – To research the hypoglycemic components from leaves of *Eriobotrta japonica*.

**Design** – 3H-glucose uptaking in 3T3-L1 adipocytes treated by extract was used to observe the hypoglycemic effects of different part from the leaves of *Eriobotrta japonica*.

**Outcomes** – Five fraction from raw materials of *Eriobotrta japonica* leaves were tested on hypoglycemic effects with 3T3-L1 cells. The results indicated that n-hexane extracts (HE) of *Eriobotrta japonica* leaves showed stronger hypoglycemic effects. The HE were separated into five fractions by thin-layer chromatography (TLC). Fraction III (Rf=0.42) possessed remarkable hypoglycemic activities. Fraction III was further purified again with TLC. The stronger hypoglycemic activity was found in subfraction IIIa (Rf=0.58). On the basis of UV-vis spectral, NMR and MS data, the hypoglycemic components was identified as corosolic acid.

**Conclusions** – Corosolic acid appeared to be responsible for the hypoglycemic activity in the leaves of *Eriobotrta japonica*.


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**Effects of corosolic acid on carbohydrate metabolism and differentiation of 3T3-L1 adipocytes**

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**Background** – Recent studies showed that carbohydrate and fat metabolism play crucial role in type 2 diabetes (1). Although corosolic acid has been implicated to have hypoglycemic effect (2). However, there has been no data on the effect of corosolic acid on carbohydrate and fat metabolism in cell levels.

**Objective** – To observe the effects of corosolic acid on carbohydrate metabolism and differentiation of 3T3-L1 adipocytes.

**Design** – 3H-glucose uptake rate in adipocytes treated by corosolic acid was detected. Adipocytes treated by corosolic acid in differentiation were stained by oil red O and analyzed by spectrophotography quantitatively. The expression of PPAR-γ and C/EBP-α mRNA relating to differentiation of adipocytes was detected by reverse transcription PCR.

**Outcomes** – 3H-glucose uptake rate in the corosolic acid group was 118.6%, higher than that in the blank control group (P<0.01). corosolic acid suppressed the differentiation of 3T3-L1 pre-adipocytes and down-regulated the expression of PPAR-γ and C/EBP-α mRNA ( P<0.01, vs control group).

**Conclusions** – Corosolic acid promotes the 3H-glucose uptake, suppresses the differentiation and down-regulates the expression of PPAR-γ and C/EBP-α mRNA in 3T3-L1 adipocytes.


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**Effect of polysaccharide of *cassiae* seeds on intestinal microflora of piglets**

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**Background** – There is no data on effect of polysaccharide from *Cassiae Seeds* (PC) on intestinal microflora.

**Objective** – To investigate the effect of polysaccharide from *Cassiae Seeds* (PC) on intestinal microflora such as *ecoli*09 and *lactobacillus* in vitro and in vivo.

**Design** – Experimental one: The influence of PC on *ecoli*09 and *lactobacillus* in vitro investigated by traditional plate count method; Three series of different concentration of Cassiae’s polysaccharides were diluted by TBS culture liquid according to doubling dilution method. Each series was inoculated *ecoli*09, *lactobacillus* and cecum content individually, cultured for 48h, The number of *ecoli*09 or/and *lactobacillus* was counted by plate count method.

Experimental two: Thirty six-line crossbred (Duroc×Landrace×Yorkshine), weaned at 21 days of age with average initial body weight of 6.5±0.52kg, were randomly allotted to three diet treatments, control, 0.4% PSSA (low level) and 0.8% PSSA (high level) for two weeks. A segment of retum, cecum and colon were collected from each piglet of each treatment, The number of *ecoli*09 and *lactobacillus* was counted by plate count method, and microflora in cecum mucous and in cecum content was surveyed by denaturing Gradient Gel Electrophoresis (DGGE) analysis of 16S ribosomal RNA.

**Outcomes** – In experimental one, compared to the control, the number of *lactobacillus* was increased in vitro when the concentration of PC in the culture was higher than 0.05%, up to the largest at 0.8%; Compared to the control, there was no difference in the number of *coliform* in all different concentration of PC when only inoculated *ecoli*09, but the number of *lactobacillus* was increased and the number of *coliform* was decreased at same time, at which the concentration of PC was higher than 0.05% when inoculated the Fecal of piglet. In experimental two, the low and high level of PC could increase the number of *lactobacillus* and decrease the number of *coliforms*. Compared with control, the microflora strip of PCR-DGGE was increased in two groups of PC, up to significantly (P<0.05) in the high level of PC.

**Conclusions** – The polysaccharides of *Cassiae seeds* could improve the prebiotics of animal intestinal microflora.

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**Study on the antioxidant activity of tea flowers (*Camellia sinensis*)**

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**Background** – It has been proved that to remove tea flower from tea plants (*Camellia sinensis*) is benefit for harvesting good quality fresh tea leaves. A view that tea flowers and leaves should be treated equally has proposed from an economic point (1). Therefore, to study the function of tea flower is more and more important for utilizing the main compounds in tea flower. Now, much more attention was paid on the relationship between the antioxidant activity and human health. However, there were few studies reported on the antioxidant activity of tea flower (*Camellia sinensis*).

**Objective** – Extracts of tea flower with ethanol or distilled water were separated by chloroform, ethyl acetate and n-butanol, then to determine the antioxidant activities of all extracts for scavenging effect on 2,2-diphenyl-1-picrylhydrazyl (DPPH) radical and hydroxyl radical.

**Design** – The dried and powdered tea flower was infused with distilled water or 70% ethanol respectively, the extracts was further separated by chloroform, ethyl acetate and n-butanol, successively and then to test the scavenging activities of DPPH and hydroxyl free radicals. Main chemical compounds in the different extracts were analyzed.

**Outcomes** – Ethyl acetate fraction of ethanol-extracted tea flower (EEA) exhibited the highest quenching activity to hydroxyl radicals, the next is Ethanol-extracted tea flower (EE), and their SC50 were 11.6 g/ml and 19.7 g/ml respectively; followed by residue fraction of water-extracted tea flower (WER) and so on. The higher activities for scavenging DPPH were shown by EE and EEA. When the concentration of each tea flower sample was less than 1 mg/ml, they had scarcely any DPPH scavenging activities. The content of flavone was relative higher in EE and EEA.

**Conclusions** – Tea flower possesses potent antioxidant activity, which might be due to the content of polyphenols contained.

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The effect of anthelminthic treatment on helminth infection and anaemia among the female workers of the Ayesha Abed Foundation in Bangladesh

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Background: Generally rural people are at greater risk of getting infected by worm infestation. Albendazol drug is famous for treating worm-infestation in world wide. The treatment was tested on the female workers of Ayesha Abed Foundation (AAF), a craft centre of BRAC in rural Bangladesh.

Objective: To test the impact of anthelmintic treatment on Hb concentration at different doses in different time schedules.

Design: It was a single blind placebo control trial tested on 620 female workers of AAF for 24 weeks. Female were randomly allocated into 5 groups. Group 1 was assigned to have single dose at baseline, 12 and 24 weeks; Group 2 received double doses for the same time schedule of Group 1; Group 3 was with single dose at baseline and 24 weeks; Group 4 was with double doses for the same time schedule of Group 3 and Group 5 was with Placebo at baseline, 12 and 24 weeks.

Results: Mean Hb concentration (measured by Hemocue) of the workers was 125 g/L at baseline, with no group difference. After 12 weeks of treatment, Hb concentration increased significantly (p=0.000) to 134 g/L (mean Hb concentration) in both groups 1 and 2 but in case of placebo, there was no significant difference of Hb concentration. Ascaris count was significantly decreased in Group 1 and 2. At the end of intervention (at 24 weeks) mean Hb concentration significantly decreased to 121 g/L, compare to baseline level in all groups. As a result of these changes in Hb concentration, anaemia prevalence (Hb < 120 g/L) decreased from 29% to 9% from baseline to 12 weeks in groups 1 and 2 but increased to 43% at 24 weeks, although worm infestation, especially Ascaris, became almost nil in these groups except in placebo.

Conclusions: Treatment with Albendazol for 12 weeks even in single dose is enough to control infestation, which can raise Hb level and reduce anaemia significantly. However, this situation was not being sustainable after 24 weeks, even after receiving a second dose (single or double) at 12 weeks. Dietary supplementation is possibly needed to sustain the effect of deworming on anaemia control.

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Study of the Ultrasonic Extracting Technique of Morus Leaf Flavonoids

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Background – Morus Leaf is the dry leaf of Morus alba L. It is not only the drug but also the food, having the important medicinal properties and nutritive value. It contains many effective compounds such as alkaloids, flavonoids, polysaccharide, carotene and amino acids. Flavonoids are the important part which possessed the function of lowering the blood glucose level and blood pressure, preventing from arterosclerosis, fighting against senium and resisting oxidation, etc. There are abundant resources of Morus Leaf in China. If we can use Morus Leaf flavonoids to explore the health products and drugs, it will be beneficial to human being.

Objective – To study the ultrasonic extracting technique of Morus Leaf flavonoids.

Design – The orthogonal design L9 (3⁴) was used to explore influential factors in the ultrasonic extracting process such as ethanol concentration, ethanol volume, extracting time and extracting times. The content of total flavoinds of Morus leaf was used as the assessments and determined by UV/Vis spectrometer.

Outcomes – The results showed that optimum conditions were: 40:1 of 50% ethanol to douse the dried Morus Leaf for 3h and ultrasonic treatment lasted for 30 minutes for three times.

Conclusions – The technique of ultrasonic extracting of Morus Leaf flavonoids is scientific and reasonable.
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Separation and Purification of IgY by Ultrafiltration/DEAE Ion-Exchange Chromatogram

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Objective – IgY (Egg Yolk Immunoglobulin, IgY) of egg yolk was separated and purified by technology of plate-type membrane ultrafiltration and DEAE ion-exchange chromatogram.

Methods – The egg yolk liquor was pretreated by dilution separation Firstly, and then IgY was separated by ultrafiltration using plate-type membrane module. Moreover, many factors affecting ultrafiltration were researched, and optimality is achieved at 0.12MPa, 30℃, pH5.200 with 100kDa(MWCO).

Results – 91.89% IgY is recovered, and its purity reached 86.13%.

Conclusions – The purity of antibody is enhanced by DEAE ion-exchange chromatogram.

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Studies on Physico-chemical Characterization of Anti-HBV-IgY from Hen Egg Yolk

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Objective – To explore the production of anti-HBV antibody from hen egg yolk and this antibody's characteristic effect.

Methods – The stabilities of anti-HBV-IgY against heating, acid and alkali, pepsin, trysin, repeated freezing and then fusion treatments were researched by enzyme-linked immunosorbent assay (ELISA) technology.

Results – Anti-HBV-IgY was fairly heat-stable and it’s instability when temperature is above 75 degree. It had a certain degree of acid-alkali resisting at pH4 to pH10. Anti-HBV-IgY was fairly ristant to pepsin at pH4 or higher. It was very susceptible to trypsin and entirely lost its antigen-binding activity when treated with trypsin for 2h. IgY had a characteristic to resist repeated freezing and fusion treatments, IgY almost retained its antigen-binding activity when it had treated for 6 times.

Conclusions – The anti-HBV antibody that have been produced has stable activity.

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Effect of storage on cloud stabilization of cloudy apple juice

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Background - when the haze formation and factors which effected the formation of haze in the system were investigated, a lot of studies were focused on the clarified apple juice or modeled systems (1). However, there has been no dater on the cloud stability of cloudy apple juice during its storage.

Objective - To investigate the cloud stability of particles in cloudy apple juice during its storage.

Design - 120 days storage experiment of cloudy apple juice at 4℃, 22℃ and 40℃ was conducted. The cloud stability of juices during storage was studied by optical microscope, electron microscope and size distribution analysis of particles combined with polyphenols component analysis by HPLC.

Outcomes - At the beginning of storage, the turbidity of juice decreased quickly because particles of larger size in juices congregated and sedimented and since the larger particles at the upper of bottle were less and less, the sedimenting speed of particles decreased. The loss of total phenolics, epicatechin, chlogenic acid and tannin became more along with increased temperature and prolonged storage time. The speed of degradation of polyphenols was quick during initial period of storage and then slowed down.. The addition of Vc to juices could inhibit the oxidation and polymerization of phenolics to avoid the formation of insoluble new small particles, and reduced the change of turbidity of juices during the storage.

Conclusions - The present study indicated a movement model of particles in cloudy apple juice during storage and that adding VC to cloudy apple juice could improve the cloud stability of particles in juice during storage.

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Sucrose consumption in under-graduated Thai students

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Background – Highly added sugar diet has been associated with various health problems such as dental caries, dyslipidemia, obesity and poor quality of life. Unfortunately, sugar consumption, especially sucrose, has been increased continuously worldwide.

Objective – The purpose of the present study was to examine sugar sources in Thai diets and amount of sucrose consumed in under-graduated students at KKU, Thailand.

Design – This study was carried out in under-graduated Thai students at Khon Kean University, Thailand, between the year 2004-2005. A complete 3-day record of items and amounts of sweet consumption was taken from 202 individuals of 38 male and 164 female students. Each item referred in the record was determined sucrose content by enzymatic method. Mean intakes of sucrose was calculated from the sucrose content.

Outcomes – The results showed that there were 337 items of sweets which can be divided into five groups; candy (15%), bakery (24%), soft drink (28%), snack (13%), and traditional Thai sweet (20%). Averaged sucrose consumption was 66 g/d (4-182). This amount was accounted for 13.2% of total daily energy intake or 17 tea spoons of sucrose per day. The major source of sucrose consumption was soft drinks, which was consumed 118 g/d averagely or 60% of daily sugar consumption. Among five groups, the lowest sucrose consumption was from bakery. Additionally, sucrose consumption was not statistically significant difference among groups of low, medium, and high body mass index.

Conclusions – Intake of added sugar in under-graduated students was higher than a recommendation of World Health Organization. Present data could be used in a health promotion campaign to reduce sugar consumption in under-graduated students.

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Vitamin A status of the minority ethnic group of Karen hill tribe children aged 1-6 years in Northern Thailand

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Background – VAD is the most common cause of childhood blindness in the developing world. It is estimated that by giving adequate vitamin A, in vitamin A deficient populations, child mortality from measles can be reduced by 50%, and mortality from diarrheal disease by 40%. Overall mortality in children 6-59 months of age can be reduced by 23%. This paper reported results from a study of vitamin A status and malnutrition of the minority ethnic group of Karen hill tribe children aged 1-6 years in the north of Thailand.

Design – All children aged 1-6 years (N = 158; 83 boys, 75 girls) from the three Karen villages (Mae Hae Tai, Mae Yot, Mae Raek) of Mae Chaem district in the north of Thailand were studied. The Karen is the largest mountain ethnic minority (“hill tribe”) group in Thailand. All children were examined by a qualified medical doctor and were assessed for their vitamin A intakes using 24 hours dietary recall. Thai food composition table from Ministry of Health, Thailand were used as references. The results were compared with the Thai Recommended Dietary Allowances. Children aged 1-3 years and 4-6 years were separately analysed due to the differences in Thai Recommended Dietary Allowances between the two age groups. A whole blood of 300 μL was obtained by “fingerstick” for determination of serum vitamin A. Community or village’s vitamin A status was assessed by using Simplified Dietary Assessment (SDA) method and Helen Keller International (HKI) food frequency method. Descriptive statistics were used to analyse the data.

Outcomes – All families of the study boys and girls had income lower than the Thailand poverty line (US $ 1,000/year). On average, 63% of children from Mae Hae Tai village, 1.5% of children from Mae Yot village and none of children from Mae Raek village had serum vitamin A <0.7 μmol/L which indicated vitamin A deficiency. All boys and only Girls from Mae Raek village consumed vitamin A more than the Thai RDA but Girls from Mae Hae Tai village and Mae Yot village consumed vitamin A less than the Thai RDA. Both boys and girls from Mae Raek village and also girls from Mae Yot village consumed vitamin A more than the Thai RDA. Using SDA and HKI methods to assess vitamin A status of the villages to see whether vitamin A deficiency is a village's nutritional problem, it was found that all children from the three villages were at risk of vitamin A deficiency.

Conclusions – In order to improve vitamin A status of the Karen children in Mae Chaem district, recommendations were made as follow: (1) increased use of fat and oil, particularly in areas with high risk of vitamin A deficiency; (2) more general work with Karen communities on how children’s diets might be improved in a culturally acceptable manner, so as to bring vitamin A consumption closer to recommended allowance level.
Post 189
Changes of chemical constituents during withering and its relation to quality of persimmon leaf tea

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Background-- Persimmon (Diospyros kaki L. f.) is grown commercially in many countries, such as China, Japan, North Korea, South Korea and Italy. China is the largest country of persimmon production. There are many kinds of bioactive constituents and medicinal functions in persimmon leaf. In recent years, the development and utilization of persimmon leaf has been brought to attention by international researchers such as South Korea, Japan and China (1). Persimmon leaf tea is the main processing product of persimmon leaf (2). Traditional persimmon leaf tea usually imitates the processing technology of green tea, which was subjected to the following processing procedures, including fixing, rolling, wrapping, drying and package after fresh persimmon leaf harvesting and selecting. However, the traditional persimmon leaf tea is difficult to be accepted for consumer and strictly limits marketing due to its obvious grass odor.

Objective-- To further develop and utilize plentiful resource of persimmon leaf in China, and eliminate or reduce obvious grass odor for improving quality of persimmon leaf tea.

Design-- The innovation in processing technology for persimmon leaf tea is adding withering procedure before fixing procedure in processing technology of traditional persimmon leaf tea. Leaf of ‘Anxi’ persimmon (Diospyros kaki L. f. cv. Anxi), the chief and famous cultivar in South China, was used. After having been harvested, the fresh persimmon leaf was subjected to spreading with thickness 3 cm and withering at ambient temperature (26~30℃) for 3 hours, 6 hours and 9 hours. The persimmon leaf was turned over one time per hour during withering. Changes of chemical constituents during withering and its relation to quality of persimmon leaf tea were investigated.

Outcomes-- Withering can obviously reduce grass odor, improve taste and aroma of soup, and enhance quality of persimmon leaf tea. Contents of soluble sugar, dissociative amino acid and water extraction increased, but contents of bioactive components such as flavonoids, polyphenol and vitamin C decreased during persimmon leaf withering.

Conclusions-- Thus, we should control the withering time which could obtain the aim of ameliorating aroma and flavor, but not obvious decrease the contents of active components in persimmon leaf tea. In this experiment, the optimum withering time of persimmon leaf was 6 hours. We produced a new type of persimmon leaf health tea which color, aromas, flavour and shape were all perfect.

Post 190
Differentiation of Lactobacillus spp. isolated from Chinese sourdoughs by AFLP and classical methods

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Background - In China, sourdough is a starting material from which Chinese steamed bread are produced. It has contributed to the staple diets of Chinese people since ancient time. However, little attention has been paid to the microecology, especially LAB in Chinese sourdoughs up to now.

Objective - To investigate the LAB microecology in Chinese sourdoughs by AFLP and classically microbiological methods.

Design - LAB strains were isolated from Chinese traditional sourdoughs. Twenty strains were randomly selected from the isolates that were characterized as Lactobacillus for further study, and identified to species level according to Bergey’s Manual of Systematic Bacteriology. Then the 20 strains were classified by AFLP. Similarities among the strains were determined by the Jaccard coefficient. The dendrograms were drawn by using the similarity matrix of Jaccard coefficient and the unweighted pair group method algorithm (UPGMA). The relationship between the phenotypic and genotypic similarity of LABs were compared.

Outcomes - 20 strains were divided into five clusters with AFLP profiles using similarity coefficient 0.60 (Jaccard coefficient) as a cut-off point, while three bio-clusters were formed with a numerical taxonomy classification based on phenotypic features, at a similarity level of 0.80 (Jaccard coefficient) and an average linkage algorithm (UPGMA) of clustering. A good correlation was observed between two methods.

Conclusions - The present study suggested that AFLP is a useful taxonomic tool for typing of LAB, and the combination of the two methods may lead to obtain an improved understanding of the relationship between the phenotype and genotype of the Lactobacillus spp. from the sourdough.
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Serum level of fat-soluble vitamins among urban children in Zhejiang Province

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Background - Fat soluble vitamins are essential to health, especially for children, and each one has its one very important function in the body. On the other hand, Fat soluble vitamins are micronutrients not synthesised by the human body and should be provided by the nutrition. However, There is insufficient evidence in the literature concerning the nutritional status of vitamin A, D and E.

Objective - To understand the serum level and influencing factors of fat-soluble vitamins among urban children in Zhejiang Province.

Design - To establish one multiwavelength RP-HPLC method with gradient elution controlled by program for simultaneous determination of the fat-soluble vitamins in serum, and measure samples which had randomly sampled in children from Hangzhou, Huzhou and Zhoushan.

Outcomes - A good linearity was obtained in serum sample with correlation coefficient of more than 0.993. The recovery of extraction was over 55%, the recovery of method ranged from 92.9% to 102.4%, the RSD for the within-day and between-day were less than 6.0%. The method was validated and applied to serum in a total of 274 subjects. The mean contents found were 9.02±2.36, 0.53±0.10 and 0.23±0.16µg/ml for vitamin E, vitamin A, and beta-carotene, respectively. Among them, 0.73% of subjects was vitamin E deficiency, and 14.96% was low. The ratio of Sub-clinical of vitamin A deficiency was 8.03%. Beta-carotene under normal limits was 14.23%. The detectable rate and mean of 25-hydroxyvitamin D3 was 75.55% and 18.51±7.64ng·ml⁻¹, and 51.10% and 20.83±10.67ng/ml with vitamin D3. The ratio under normal limits of 25-hydroxyvitamin D3 and vitamin D3 was 49.27% and 85.04% respectively. The nutritional status of fat-soluble vitamins was not significant difference in sex, but the average serum concentration of beta-carotene and detectable rate of 25-hydroxyvitamin D3 and vitamin D3 were significant difference in age. The mean of vitamin E, vitamin A, and beta-carotene were significant difference from Hangzhou, Huzhou and Zhoushan. The detectable rate and mean of 25-hydroxyvitamin D3 and vitamin D3 from Zhoushan was highest, Huzhou was lowest and was significant difference compared with Hangzhou and Zhoushan.

Conclusions - The nutritional status of vitamin E, vitamin A, and beta-carotene among urban children was good as a whole, but 25-hydroxyvitamin D3 and vitamin D3 was poor. Regional and age factors had effect on it.

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Cell surface proteins determined the efficiency of peyer’s patch macrophages ingestion of Lactobacillus plantarum Lp6

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Background - Some lactic acid bacteria (LAB) could modulate the functions of gut peyer’s patch macrophages, a type of important antigen presenting cells in gastrointestinal tract. Ingestion of LAB by peyer’s patch macrophages might be important for probiotic effect of LAB.

Objective - In the present study, we aimed to explore the factors that influence the ingestion of LAB by the macrophages.

Design - Cell surface Hydrophobicity of ten LAB strains were studied by Microbial Adhesion To Hexadecane test (MATH) assay. Zeta potentials were determined with a Zetasizer. Association of the bacteria with macrophage was studied with macrophage monolayers on coverslips. Influence of LAB on macrophages’ phagocytic capacity was studied by natural red uptake assay in vitro. The macrophages ingestion of Lactobacillus plantarum Lp6 was also studied after the bacteria were treated with protease K.

Outcomes - The hydrophobicities of LAB studied strains did not differ with each other greatly. Cell zeta potentials of the LAB showed significant variance. No significantly correlation was found between cell surface hydrophobicity and ability of the bacteria associating with the macrophages. Lactobacillus plantarum Lp6 showed the most ability of binding the macrophages. This ability was lost after the bacteria were treated with protease K. Lactobacillus plantarum Lp6 would enhance phagocytic capacity of peyer’s patch macrophage significantly and the ability decreased after protease K treatment.

Conclusions - Cell surface hydrophobicity might not be the key factor determine the association of LAB with peyer’s patch macrophages. The net property of hydrophobicity plus zeta potential might be more important. Cell surface proteins might mediate binding of some LAB strains to the macrophages such as Lactobacillus plantarum.
Post 193
Synergistic effects of Lactobacillus rhamnosus GG and bovine colostrums on the immunological function of mouse in vivo and in vitro
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Background – Lactobacillus rhamnosus GG (LGG) is known as an important probiotics in human bodies, reinforcing the mucosal barrier mechanism against microorganism infections and promoting serum and intestinal immune responses to pathogens. Bovine colostrums have been proved to improve the health of human or animal bodies by passive immunization. However, there are no data on studying the synergistic effect of lactic acid bacteria and bovine colostrums on the immune system of mice or humans.

Objective – To investigate synergistic effects of LGG and colostrums on the immunity of mice in vivo and in vitro.

Design – Fifty immune-compromised Kunming mice induced by cyclophosphamide were used. In experiment I ten of them were sacrificed and their spleen cells were prepared in sterile Hanks solution and adjusted to 5×10⁵ cells/ml in RPMI-1640 medium. One ml of spleen cell suspension was mixed with 50 ml of 3, 10, 50 kD substances from the overnight culture of LGG in each cell of 24-well plate and incubated at 30°C for 72 h. The reduction of 3-(4,5-dimethylthiazol-2yl)-2-5-diphenyltetrazolium bromide (MTT) was determined. In experiment II 40 of those mice were randomized into four groups and fed with diet A (LGG 5×10⁷ CFU/kg), B (bovine colostrums 0.5 g/kg), C (combination of diet A and B) and D (sterile saline) once a day for 4 weeks, respectively. On 29th day thymus and spleen index, lymphocyte transformation ratio and the phagocytosis ratio of peritoneal macrophages to chicken erythrocytes were tested.

Outcomes – In vitro multiplication of lymphocyte test with MTT showed that 3, 10, 50 kD substances from the overnight culture of LGG significantly increased the growth of lymphocyte by 1.63, 1.53 and 1.34-fold, respectively. Compared with diet D, in the diet A, B and C groups the phagocytosis ratio of macrophages increased by 1.63, 1.54 and 2.3-fold, respectively, and the lymphocyte transformation ratio by 1.78, 2.08 and 2.35-fold, respectively.

Conclusions – LGG and bovine colostrums can enhance the functions of immune system supported by lymphocytes and peritoneal macrophages either in vivo or in vitro.

Post 194
Synergistic anti-digestion effect of Lactobacillus rhamnosus and bovine colostrums in simulated gastrointestinal tract (in vitro)
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Background – Developing formula of probiotics, prebiotics and synbiotics is an attracting field to prevent the gastrointestinal (GI) diseases. There are a lot of success separate studies on bovine colostrums and probiotics. However, few studies were focused on synbiotics combined bovine colostrums with lactic acid bacteria.

Objective – To investigate the synergistic anti-digestion effect of Lactobacillus rhamnosus ZDY114 and anti-Helicobacter pylori (HP) bovine colostrums in simulated GI tract (in vitro).

Design – In two series experiments powder of microecological additives consisting of L. rhamnosus ZDY114 and anti-HP bovine colostrums, L. rhamnosus ZDY114 and purified anti-HP IgG (25 mg) was used as test samples, respectively. In series I, test samples were dissolved and mixed with 0.1 M NaAc buffer (pH 2.0-5.0) (w/v, 1:10) and divided into two parts, one part added with pepsin (w/v, 1:100) was used as test group, another part as control group. Samples were incubated in a water bath at 37°C for 0-3 h, aliquot of 100 ml was drawn out once every 30 min to determine viable cells, titre of anti-HP IgG and residual IgG content. In series II, test samples were mixed with 0.05 M Tris-HCl buffer (pH 8.0) and divided into two parts, one part added with trypsin (w/v, 1:100) was used as test group, another part as control group. Samples were incubated in a water bath at 37°C for 0-6 h, aliquot of 100 ml was drawn out once every 1 h to determine the same parameters as mentioned in Series I.

Outcomes – Either L. rhamnosus or purified IgG from immune colostrums was much sensitive in simulated gastric environment and slight sensitive in simulated intestinal tract. The IgGs in non-purified immune colostrums presented stronger resistance against gastrointestinal digestion than purified IgGs. Moreover, the combination of L. rhamnosus ZDY114 and immune colostrums strengthened their anti-digestion ability in simulated GI tract.

Conclusions – L. rhamnosus ZDY114 and anti-HP bovine colostrums had synergistic anti-digestion effect in simulated gastrointestinal tract (in vitro).
The effect of excess iodine caused by supplying iodine during gestation on brain development of filial rats

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Background – Iodine efficiency of pregnant women can cause mental retardation of foetus (1). However, there has been no data on the excess iodine during gestation and mental retardation.

Objective – To observe the effect of excess iodine caused by supplying iodine during different gestation on development and intelligence of filial rats.

Design – Fertilized rats were divided into three groups, 40% iodide oil was injected into two high iodine group’s stomach through mouth according to 1ml/kgbw at d0 and d7 respectively. At the same time, edible bean oil was injected into control group and used the same way. In order to observe the change of relative brain weight and behaviour change in dark room electric stroke test, and measure the pyramidal cell density with HE histochemistry, the T₃, T₄ of serum and nitric oxide (NO) content etc.

Outcomes – 1. The relative brain weight of each group were diminished gradually, there was significant difference in first group and control group at PN35. Before PN21, relative brain weight of the first group was higher than control group, but after that, the result was in reverse. The change of pyramidal cell density was the same. 2. The brain tissue protein, brain NOS activation and NO content had significant difference with the control group, and escape latency was shorter. 3. The second group hadn’t significant difference with control group (P<0.05).

Conclusions – Excess iodine caused by supplying iodine during gestation can restrain the filial generation’s brain development; and has some risk to the filial generation’s brain development.


Antioxidative activity of hen egg ovalbumin hydrolysates

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Background - Recent studies have shown that some enzymatic products from food proteins exhibited antioxidative activities. Ovalbumin is a major source of dietary nutrients for human beings, however there is no data on antioxidative activities of ovalbumin hydrolysates.

Objective - The aim of the present study was to evaluate the antioxidative activity of the hydrolysates of ovalbumin.

Design - The antioxidative activities of the enzymatic extracts were evaluated using three different methodologies scavenging assays such as superoxide anion, hydroxyl radical, and inhibitory oxidation of linoleic acid in vitro. 180 healthy Kunming male mice were selected and divided into 6 groups randomly, one as control group (NC), the other five groups were aged mice group induced by D-galactose (D-gal), ovalbumin group (Ova), low dose of hydrolysates group (L), medium dose of hydrolysates group (M), high dose of hydrolysates group (H), each group with two repeats. The mice were supplemented with 0.25ml normal saline for NC, and other groups administrated with 150 mg/kg D-gal for 30-d. After that, NC and D-gal groups were administrated with 0.25 mL/d distilled water, and Ova, L, M, H groups were supplemented 10mg/ml ovalbumin, 4, 10 and 16 mg/ml by 0.25 ml/d respectively. 40-d Later, all mice were euthanatized, and the activities of SOD, GSH-Px, CAT, T-AOC and the level of MDA were determined.

Outcomes – The hydrolysates had a distinctly inhibitory action to superoxide anion (O₂⁻) made by alkaline pyrogallic acid, HO• produced by Fenton reaction, the oxidation of linoleic acid in linoleic acid autoxidation system, and presented a positive correlation. The inhibition capacity of hydrolysates against O₂⁻ and HO• were more than 45% and 56% respectively at the concentration 5 mg/mL. And the hydrolysates could significantly (P < 0.01) prevented the activities of SOD, GSH-Px, CAT and T-AOC against reducing and all three concentrations could significantly (P < 0.01) decrease the MDA contents in the serum and liver of aged mice induced by G-gal. The antioxidative activity of high concentration was similar to that of control group.
Post 197

Effect of deficiency and the over-intake of vitamin C on lipid peroxidation and DNA damage of guinea pigs
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Background – Vitamin C is an antioxidant nutrient and is essential to human life. However, there were still controversial reports about the effects of different dose of vitamin C on lipid peroxidation and DNA damage.

Objective – To investigate the effect of deficiency and the overintake of vitamin C on lipid peroxidation, the erythrocyte membrane fluidity and DNA oxidative and alkylating damages in guinea pigs.

Design – Thirty-six healthy young guinea pigs were on a common rat diet for one week, and then they were randomized into 4 groups. Each group of rats were daily given different dosage of VC which was 0 (deficient group), 7.5, 125 and 250 mg/kg respectively for 20 days. Urine and whole blood were collected at the end of the trial. Serum MDA were examined by Kits. Erythrocyte membrane fluidity was detected by fluorescence polarization method. DNA damage was analyzed by SCGE and O6-MeG was analyzed by high performance capillary zone electrophoresis.

Outcomes – The level of serum MDA was lower and the erythrocyte membrane fluidity was higher in the groups daily supplemented with 7.5, 125, 250mg/kg ascorbic acid than the deficient group, while the differences were not found between three supplemented groups (p>0.05). Moreover, the intrinsic DNA damage among 4 groups did not show significant differences (p>0.05), but the oxidative DNA damage induced by 10 µmol/L H2O2 was much more in VC deficient (127.3AU) and the high dose of 125 mg/kg (121.0AU ), and 250 mg/kg (133.0AU) groups than that in 7.5mg/kg group (72.6AU) (p<0.05). DNA damage induced by 25 and 50µmol/L H2O2 revealed no significant differences. The level of urine O6-MeG in the 7.5mg/kg group was lower than that in deficient group (P<0.05), but there was no significant difference between the deficient group and the 125 mg/kg and 250mg/kg groups.

Conclusions – The study indicated that vitamin C deficiency can increase lipid peroxidation and decrease erythrocyte membrane fluidity and it also enhances the DNA oxidative and alkylating damages. Supplementing 7.5 mg/kg VC can effectively depress lipid peroxidation, increase erythrocyte membrane fluidity and decrease oxidative DNA damage induced by lower H2O2 and alkylating damage. 125 and 250mg/kg VC did not show more protective activity.

Post 198

The Effect of pulsed electric fields on the protein-based food: egg white
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Background – Pulsed Electric Fields (PEF) is an emerging non-thermal food-preservation technology (1) . However, There has little data about the application of PEF on protein-based food.

Objective – To observe the protein constituents’ protection against microbe inactivation and the change of functional properties, the trypsin inhibitor activity, the content of SH-groups and surface hydrophobicity of egg white in PEF processing.

Design – E.coli was inoculated in egg white solutions which were in different concentration (0,5%,20%,40% v/v) but in the same pH (7.6) and electric conductivity (5200µs/cm). The inactivation effect of PEF was evaluated at E (electric intensity)=30kV/cm and different treatment time, the functional properties(foaming capacity, foaming stability, emulsifying capacity and emulsifying stability), the trypsin inhibitor activity, the content of SH-groups and surface hydrophobicity of egg white were determined before and after PEF treatment.

Outcomes – The protein constituents played an important role in protecting against microbe inactivation in PEF treatment. As the concentration of egg white increasing, the inaction effect of PEF dropped (P<0.05), the activity of trpsin inhibitor in egg white decreased 90% for a treatment time of 830µs at 30kV/cm and the content of SH-groups and surface hydrophobicity of egg white increased in a small degree when the treatment time beyond 830µs.

Conclusions – The present study indicated that the protein constituents could protected against microbe inactivation in PEF treatment, and the functional properties the content of SH-groups and surface hydrophobicity had almost no change, but the activity of trypsin inhibitor in egg white dropped a great extent.

Post 199

Antioxidant and Antimicrobial Activity of the Essential Oil of Leaves from Eucalyptus grandis × Eucalyptus urophylla

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Background — E. grandis × E. urophylla the dominant species of Eucalyptus plantation growing in south of China, their leaves are not yet used commercially. However, to best of our knowledge, there is no previous report on the chemical composition of the essential oil and its biological activity for the same species growing in China. Objective The antimicrobial and antioxidant activities of the essential oil of leaves from E. grandis × E. urophylla were investigated.

Design — The essential oil were obtained through hydro-distillation and analyzed by gas chromatography/mass spectrometry. The minimum inhibitory concentration (MIC) of the essential oil against the tested microorganisms was determined by agar dilution method. The samples were also subjected to screening for their possible antioxidant activity by using 1,1-diphenyl-2-picrylhydrazyl (DPPH·) assay (IC50=9.24 mg·mL-1).

Outcomes — 50 compounds representing 95.58% of the oil were identified, the major components being 1, 8-cineole (31.03%), α-pinene (15.63%), α-terpineol (10.28%), α-terpinyl acetate (7.38%), borneol (6.17%). The MICs of oil were 5 mL·L⁻¹ for 3 mildews and 2 yeasts, and 10~20 mL·L⁻¹ for 3 bacteria, respectively. Free radical scavenging activity of E. grandis × E. urophylla oil was superior to that of E. globulus oil, but little less effective than that of tea tree oil.

Conclusions — Both antioxidant and antimicrobial activities of E. grandis × E. urophylla oil were much stronger than that of E. golbulus oil, and little less effective than the tea tree oil. The observed biological activities showed that the oil has a good potential for use in food industry and pharmacy.

Post 200

Identifying differently expressed genes from Monascus by suppression subtractive hybridization method

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Background - The filamentous fungus Monascus has been applied in the food industry for thousands of years in China. It was discovered that Monascus produces several second metabolites (1), including red pigments for food colorant, inhibitors of cholesterol synthesis such as monacolin K, and citrinin. However citrinin is a mycotoxin, which has nephrotoxic properties against mammalian systems compromise the use of red pigments as natural colorants for food technology.

Objective - To screen key genes from citrinin biosynthetic pathway in species of Monascus by constructing cDNA subtractive library.

Design - A cDNA subtractive library of Monascus was constructed by suppression subtractive hybridization method. The library only contains the differently expressing cDNAs between Monascus producing citrinin and not producing citrinin. All of clones obtained were sequenced and analyzed with BLAST software. The full-length cDNA of P5 gene was obtained with 5'-RACE method and the intron was confirmed by comparing between genomic DNA sequence and cDNA sequence.

Outcomes - The subtractive library had 283 white clones and more than 95% of the white clones had 250-750bp inserts. Differential expressed genes obtained relate with polyketide biosynthesis pathway, including short chain dehydrogenase, methytransferase, polyketide synthase, MFS monocarboxylate transporter, enoyl-CoA hydratase/isomerase family protein, ketol-acid reductoisomerase gene etc. P5 protein is highly homologous with many fungal manganese superoxide dismutase.

Conclusions - SSH is reliable strategy for screening novel genes related with second metabolites biosynthesis. Seven associated genes obtained relate with polyketide biosynthesis pathway, and identified new gene can be cloned for their full length for further study of their functions.

Post 201  
**Determination of aflatoxin M1 contamination in UHT milk by ELISA**  
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**Background** – Aflatoxins are actually toxic, immunosuppressive, mutagenic, teratogenic and carcinogenic compounds to animals and humans, and contamination of feed and food is a current problem. When ruminants eat food stuffs containing aflatoxin B1 and B2, these toxins are metabolized and excreted as aflatoxin M1 and M2 in milk. AFM1 appears in milk 12-24 h after ingestion of the first AFB1 contaminated ration.

**Objective** – The aim of the present study was to determine natural occurrence and level of aflatoxin M1 contamination of UHT milk produced and consumed in Mashhad province in Iran by ELISA which is rapid and sensitive.

**Design** - In this study 62 samples of UHT milk produced in Mashhad, Iran randomly in seasons of spring and summer (28) and fall and winter (34) were collected and were analyzed for the presence of aflatoxin M1.

**Outcomes** – Results showed that 100 percent of UHT milk samples were contaminated. The mean contamination levels were among 22-389 ng/l. Obtained results showed that 80.6 percent of samples had a level of aflatoxin M1 above the European countries standard (50 ng/l). Statistical evaluation showed that were significant difference between collected samples in the fall and winter with spring and summer (P<0.05). The mean contamination levels in warm seasons were 116 ng/l and cold seasons were 154 ng/l.

**Conclusions** – It was therefore concluded that, high occurrence of AFM1 in UHT milk samples were considered possible hazards for human health. According to the results obtained in this study, prevention of feed contamination with aflatoxin B1 was suggested.

Post 202  
**Determination of Brucella spp. in traditional white cheese in MASHHAD, IRAN and its public health significance**  
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**Background** – Because of high nutritional value of milk products in human nutrition, safety of these products are very important. Production of cheese and dairy products from Brucella spp. contaminated raw milk, as a threat for transmission of brucellosis to human.

**Objective** – The purpose of this study was to determine of Brucella spp. contamination in the traditional white cheese used in Mashhad, Iran.

**Design** – In this study, a total 150 samples of traditional white cheese were collected from different districts of Mashhad province in Iran. Brucella spp. contaminations were examined in four months.

**Outcomes** – Out of 150 samples, 3 (2%) were found to be positive on culture. Out of 3 positive samples, 2 (1.33%) were determined as *Brucella abortus* and 1 samples (0.66%) as *Brucella mellitensis*.

**Conclusions** – In conclusion, the result of this study have established traditional white cheese produced in Iran as a public health threat in view of its potential risk of brucellosis.
Post 203

Diet quality of the young: impact of fast foods
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Introduction – Fast foods are becoming an integral part of the lifestyle of the younger population. Excessive consumption of fast foods, which are nutritionally imbalanced may adversely affect health during periods of growth when nutrient needs are high.

Objectives – To study the fast food consumption and diet quality of the ‘young’ (WHO) who comprise a large proportion of the clientele visiting fast food outlets.

Design – Dietary patterns and fast food intake of 120 ‘young’ subjects, drawn from the clientele of fast food outlets were studied using structured questionnaires. Chi-square and Pearsons correlations were used to determine the significance of results.

Outcomes – Dietary patterns indicated 65% of the subjects missing meals and 62% not carrying packed food to school/college. The frequency of eating at the school/college canteen was ‘daily’ for more than 50%. The frequency of ‘eating out’ at times other than school/college hours was reported to be ‘2-3 times a week’ by 35.8%. Pizzas, burgers, ice creams, soft drinks, french fries, sandwiches and patties were most commonly consumed exhibiting a trend of snacks replacing normal meals. Socialising, taste, easy availability and convenience were the main reasons for preferring fast foods. While only 16% were ‘low fast food eaters’, 63% were ‘moderate’ and 21% ‘high fast food eaters’ (energy intake from fast foods being <10%, 10-30% and ≥30% of the total day’s intake). A high energy intake from fast foods was associated with a high total daily energy intake. Diet quality was assessed for adequacy of intake for seven essential nutrients on the basis of Nutrient Adequacy Ratios (NARs). For each nutrient, grade points of 1, 2 and 3 were given for NAR values of <0.66, 0.66 - <1, and >1 respectively. The consolidated score for seven nutrients ranging from 7-21 was found to be ‘poor/fair’ (7-11/12-16) for 94% of the subjects, reflecting an inadequate intake of essential nutrients.

Conclusions – The increasing trend in fast food consumption contributes to a high energy but a low intake of essential nutrients enhancing the vulnerability to degenerative diseases.

Post 204

Immobilization of Bifidobacterium Strains in Freeze-Dried-Gelatinized-Tapioca Starch Beads and Theirs Survival in Freeze-Drying and Simulated Gastrointestinal conditions
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Background – Bifidobacteria are emerging as possibly one of the most important bacteria group of the human gastrointestinal tract, which inhabit in the colon. Bifidobacterium is a strict anaerobic bacterium that intolerant to high acidity. Therefore, Bifidobacterium generally has a limited capability to grow in the fermented milk products. Many technologies have been used to protect and improve viability of Bifidobacterium, especially immobilization and coating.

Objective – This research is aimed to increase the survival of Bifidobacterium longum, Bifidobacterium bifidum and Bifidobacterium infantis in freeze-drying system and in the simulated gastrointestinal system of human.

Design – The viability of immobilized B. longum, B. bifidum and B. infantis in freeze-dried-gelatinized tapioca starch beads (FDTB) obtained from slow freezing (-20°C for 24 h, SF) or quick freezing (-176°C for 5-10 min, QF) and stored in freeze-drying system and in simulated gastrointestinal fluids without enzyme at 37°C for 310 min were investigated.

Outcome – The maximum immobilization quantities of B. longum, B. bifidum, and B. infantis in SF-FDTB were 9.4, 9.6, and 8.9 log CFU per bead, respectively. Freeze-drying reduced the viable counts of the immobilized bifidobacteria for about 1 log-cycle. The viable counts of B. longum, B. bifidum, and B. infantis were ca 3.0±0.2, 2.8±0.4, and 3.5±0.2 log CFU/mL, respectively after exposed to simulated gastrointestinal fluids. Whereas the viable counts of immobilized B. longum, B. bifidum, and B. infantis in SF-FDTB were 5.0±0.1, 3.0-5.1±0.5, and 5.1±0.1 log CFU/mL, respectively after exposed to simulated gastrointestinal fluids.

Conclusion – Immobilization of B. longum, B. bifidum, and B. infantis in the SF-FDTB could protect the tested bifidobacteria effectively from the severe conditions of simulated gastrointestinal fluids.
Post 205

Determination of aflatoxin M1 in breast milk and aflatoxin B1 in common foods

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Background – Breast milk is a complex fluid, rich in nutrients and in non-nutritional bioactive components. The composition and volume of human milk progressively change with the onset and duration of lactation and can be influenced by maternal nutritional factors.

Objective – In order to study contaminants in breast milk, exposure of infants to aflatoxin M1 and of lactating mothers to aflatoxin B1, were studied.

Design – Using aflatoxin M1 in breast milk as a biomarker, one hundred breast milk samples were gathered from local hospitals in Jeddah city, Saudi Arabia and measured with an ELIZA technique.

Outcomes – The result showed an average of 47.70 ± 15.03 (mean ± standard deviation) g/l. The range was 67.67 ng/l with minimum 6.18 and maximum 73.85 ng/l, respectively. To look for possible source of aflatoxin contamination, selected food items such as nuts, grains and seeds were analyzed for contamination with aflatoxin B1 and measured with an ELIZA technique.

Conclusions – It is seems that the contamination of breast milk with aflatoxin M1 was within the permissible level. All items contain aflatoxin B1, but none was higher than the permissible level, which is in accordance to the regulation of Quality Control Laboratory, that any food items in the market should not exceed 20 ppb aflatoxin B1. It is recommended to repeat this study at least every five years to monitor aflatoxin M1 and B1.

Post 206

A comparison of food frequency patterns in Japanese and Australian middle aged men

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Background – Australia and Japan have among the longest healthy life expectancies in the world. In both countries the greatest burden of disability, morbidity and mortality is due to chronic disease, which is commonly related to lifestyle, diet and environmental influences.

Objective – To identify similarities and differences in food frequency patterns of Japanese and Australian middle-aged men, and assess the extent to which the diet of middle-aged Japanese men has become westernised.

Design – The sample consisted of 188 Japanese middle-aged men and 203 Australian middled-aged men age between 40 and 60 years. A 123 item food frequency questionnaire was used to calculate yearly food frequency consumption.

Outcome – The ten most frequently consumed items for the Japanese group in decreasing order of importance were: rice, coffee, green tea, bread, miso soup, milk, beer, eggs, tofu and cabbage. For Australians the order was: bread, coffee, milk, black tea, cereals, tomatoes, potatoes, beer, green lettuce and carrots. The single most frequently consumed food item in Japan is rice which corresponds to bread in the Australian diet. Green tea is the third most prominent item consumed which may have significant health benefits. Miso soup and tofu are also major items in the Japanese diet. The major areas of similarity lie in the consumption of coffee, bread, milk and beer. Historically the classic Japanese meal is a piece of grilled fish, a bowl of rice, simmered vegetables, a serving of miso soup, sliced fruit for dessert and a cup of hot green tea. While Japanese cooking, has adopted some western cooking techniques and ingredients, the basic ingredients and meal outlines appear to remain consistent with traditional Japanese patterns.

Conclusion – In terms of the food frequency, the modern Japanese diet is substantially different from the Australian diet. Despite trends towards westernisation in many aspects of Japanese life, evidence suggests that the current Japanese diet still follows traditional Japanese rather than western patterns.
Post 207

Female mice show an indifference-preference-avoidance response to the artificial sweetener acesulfame-K
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Background – An awareness of the potential species differences in preference testing for artificial sweeteners is critical for the taste and nutritional research communities (1). Acesulfame-K is a high-intensity (150-200 times sweeter than sucrose) and noncaloric sweetener that has been used in food, beverage, oral hygiene, and pharmaceutical products in about 90 countries.

Objective – To explore the preference for acesulfame-K in adult female ICR mice.

Design – Twelve ICR female mice (Animal central, Zhejiang Academy of Medical Science, China), with an initial weight of 41.8 to 46.3 g, were individually housed and placed on a 12-h light-dark schedule (lights on at 7:00 AM). Mice received ad libitum standard laboratory chow and filtered tap water. A standard 24-hour 2 bottle test was used to compare a wide range of acesulfame-K concentrations with water. All mice were received 1 bottle containing water and the other bottle containing 1 concentration of acesulfame-K. The range of concentration tested was 0.01 to 379 mmol/L with each concentration increasing by half-log steps. Each acesulfame-K concentration was prepared with filtered tap water and tested for 48 hours. The bottles were switched every 24 hours to control for possible side preference.

Outcomes – The mice did not prefer acesulfame-K to water at low concentrations (0.01-0.28 mmol/L), then showed the strong preference to water at medium concentrations (0.88-87.66 mmol/L) and avoided acesulfame-K at high concentrations (120-379 mmol/L).

Conclusions – These results suggested that male mice do prefer acesulfame-K at medium concentrations and showed an indifference-preference-avoidance response for increasing concentrations of the artificial sweetener acesulfame-K.


Post 208

Preparation of coenzyme Q10-loaded nanoliposomes and bioavailability assessment by Caco-2 human intestinal cell model
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Background – Coenzyme Q10, used as a dietary supplement, is essential for cell respiration and electron transfer, helping to control the production of energy in the heart cells. However, the absorption of coenzyme Q10 from the gastrointestinal tract is limited due to its higher molecular weight and poor water solubility.

Objective – To develop and characterize coenzyme Q10-loaded nanoliposomes and to assess their bioavailability by Caco-2 human intestinal cell model.

Design – The ethanol injection and sonication method was employed to prepare nanoliposomes containing coenzyme Q10. The stability of nanoliposomes was judged by release of encapsulated coenzyme Q10 and size change during storage or after incubation with simulated gastric and intestinal juices in vitro. Nanoliposomes were examined for their effect to accelerate permeability of coenzyme Q10 across Caco-2 cell monolayers, and damage to the intestinal epithelial cells. The cell viability was assessed using methylthiazolydi-phenyl-tetrazolumbromide (MTT) colorimetry and the monolayer integrity was assessed by trans epithelial electrical resistance (TEER). The determination of coenzyme Q10 was performed by HPLC.

Outcomes – Optimized formulation of coenzyme Q10-loaded nanoliposomes was egg yolk phospholipid/coenzyme Q10/cholesterol/Tween 80 (2.5:1.2:0.4:1.8, w/w). The average particle size was about 68 nm. The encapsulation efficiency was greater than 95% with retention rate higher than 90% and particle size change lower than 10% after storage at 4 °C for 90 days. Nanoliposomes retained significantly higher amounts of encapsulated coenzyme Q10 under all physiological conditions studied. Nevertheless, the average particle size increased doubly in the presence of bile salt. Nanoliposomes had little cytotoxic and the apparent permeability of coenzyme Q10 across Caco-2 cell monolayers was increased as the result of incorporating into nanoliposomes.

Conclusions – These results suggested the potential use of nanoliposomes to provide an efficient way of improving oral absorption of lipophilic nutraceutical coenzyme Q10.
Effects of bactericides and modified atmosphere packaging on shelf life of Chinese shrimp

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Background – The captive Chinese shrimp decomposes easily though it is rich in nutrition with delicate flavor. The breakdown is caused by autolytic enzymes in body and putrefactive bacteria. Bactericides and modified atmosphere packaging (MAP) were reported to preserve aquatic products such as lobster[1], grass carp[2], bladefish[3] etc. However, there has been no data on shelf life of Chinese shrimp after treated with bactericides and modified atmosphere packaging.

Objective – To investigate the hygienical, organoleptic changes and shelf life of Chinese shrimp after treated with a kind of compound bactericide and modified atmosphere packaging.

Design – Whole or decapitated shrimps were soaked in clear water, ozonated water and compound bactericide solution respectively for 10 minutes. After draining, one hundred gram of treated shrimp was put in to each dish. The dishes were placed in the nylon/polyethylene plastics bags and flushed with air, modified atmosphere with V(CO₂):V(O₂):V(N₂)=4:3:3, or pure carbon dioxide and sealed completely, and then kept in refrigeration at 1-2°C.

Aerobic plate counts (APC), total volatile base nitrogen (TVB-N) and organoleptic evaluation overall acceptable score (OA score) of shrimps during storage were investigated according to national standard methods. The hygienic, physical and organoleptic indexes were determined in a certain extent during storage. The experiment was done in triplicates.

Outcomes – APC of MAP-shrimp treated with compound bactericides was close to that of unacceptable shrimp 10⁷ cfu/g on the 13th day of storage, while those of ozon e solution and water treatments exceed 10⁷ cfu/g on the 9th day. APC of MAP-shrimp treated with V(CO₂): V(O₂): V(N₂) = 4:3:3 and 100%CO₂ after soaking with compound bactericides reached near 10⁷ cfu/g on the 13th day of storage, while that of air treatment exceed 10⁷ cfu/g on the 13th day. TVB-N value of MAP-shrimp treated with compound bactericides was slightly higher than the threshold value 30 mg/100g of unacceptable shrimp on the 17th day, while those of ozone solution and water treatments increased to or surpassed the threshold value on the 9th day. TVB-N value of MAP-shrimp treated with V(CO₂): V(O₂): V(N₂) = 4:3:3 and 100%CO₂ after soaking with compound bactericides were significantly lower than that of air treatment on the 17th day (P≤0.01), with a value of 33.6 mg/100g and 42-47.6 mg/100g respectively. The time when the lowest OA scores of MAP whole and decapitated shrimp treated with compound bactericides appeared was the 17th and 21th day respectively, and both were delayed for 8 days compared with the 9th day for whole shrimp and the 13th day in decapitated one in the ozone solution and water treatments. The time when the lowest OA score of whole and decapitated shrimp treated with V(CO₂): V(O₂): V(N₂) = 4:3:3 and 100%CO₂ after soaking with compound bactericides appeared was the 17th and 21th day respectively, and both were postponed for 4 days compared with the 13th day for whole shrimp and 17th day for decapitated one in the air treatment.

Conclusions – The compound bactericide and modified atmosphere packaging can delay the decomposition of Chinese shrimp.

References:
Post 210

**Study on phosphorylated modification of soybean protein isolate and its functional properties**

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**Background** – Soybean protein isolate (SPI) has better nutrition properties and better functional properties, but the application of SPI in food procession are restricted by the outside circumstance. Whereas phosphorylated modification of SPI can broaden field of application. However there has been limited products of SPI which are widely used in many fields.

**Objective** – To improve the functional properties and nutritional properties of soybean protein isolate and to manufacture albumen powder with functional properties specially.

**Design** – Prepare 6% SPI suspension with distilled water, control pH at about 8.0, add 3%~9% the Sodium tripolyphosphate (STP), control the temperature at 25℃~45℃, agitate suspension at moderate speed about 3~4 hours. When the reaction finished, agitate suspension for 30 min in order to adjust pH to 4.0, centrifugal separation 15 min with 4000 rpm, redissolve the precipitation at pH 7.0, spray dried and get modified SPI.

**Outcomes** – The changes of functional properties of SPI are determined in different degree of phosphorylation modification. The higher phosphorylation of SPI, the better single functional properties. The degree of phosphorylation is 38.07 µg/100g for 4 hours. The condition of reaction is that temperature is 45℃, pH 8.0, concentration of STP and SPI is 3% and 6% respectively. At the same time the solubility, emulsifying capacity, water holding capacity and viscosity except foaming ability are improved after phosphorylation, A kind of modified SPI’s emulsifying capacity is 100%. The reaction between STP and SPI is phosphoramadation of lysine residues.

**Conclusions** – The present study indicated that phosphorylated modification of SPI can produce the albumen powder with functional properties specially.

Post 211

**Health education adjust the Lisu nationality children's nutritional status improvement**

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**Objective** – Launch nourishment health education to Yunnan Lisu nationality children of school age, Establishing the valid pattern interposing of poverty countryside.

**Methods** – Choose two conditional likelihood elementary schools, One is the comparison institution, Another in the school that the educational institution, Carry on the nourishment health education of half a year, then evaluated the nutritional l status and asked nourishment that the paper before and after our experiments.

**Outcomes** – Compared with the control students, the situation that the intervention students’ nutrient intake and food composition have improved. Nourishment physical level of the health possess the specified degree to lift. The nutritional knowledge, attitude and behavior of school-child get great improvement.

**Conclusions** – Nourishment health education adjust living the nourishment state of in poverty area children of school age, Improve such nourishment knowledge level, Change the harmful diet is very useful, The research supplied specified theory and the practice foundation that launch the nourishment health education and improve the countryside children’s nutritional status.
Post 212

Production of Dietary Fiber Powder from Mandarin orange (*Citrus reticulata* Blanco) Juice Industry By-Product

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**Background** - By-products from a Mandarin orange (*Citrus reticulata* Blanco) juice industry can cause problems in terms of solid waste management and environmental. However, these materials are rich in dietary fiber and are available in large quantities. This indicated their potential as a source of dietary fiber for food applications.

**Objectives** - This study was concentrated in investigation of an appropriate processing factors (wet-milled particle sizes, ratio of materials to solvents and number of cycles of the materials to be washed with either water or ethanol, and dry-milled particle size) for extracting the fiber from the materials and characteristics of the obtained dietary fiber powders.

**Outcomes** - The results showed that the suitable processing conditions were using a wet-milled particle size of 10 mm to facilitate the removal of undesirable components, followed by washing with water for 2 cycles with the ratio of 1:3 (w/v) and soaking in ethanol for 2 cycles with a ratio of 1:3 (v/v). The washing and soaking processes would remove sugar, lipid and some pigments from the raw materials. The obtained dietary fiber powder contained high amounts of dietary fibers both soluble and insoluble dietary fibers (17.06 % and 56.27 % dry matter, respectively). The powder had a relatively high water and oil holding capacities (13.36 g water/g fiber and 2.01 g oil/g fiber, respectively) and a light brown color. The chemical characteristics of the powder showed that it contained low contents of sugar, protein, and lipid (2.20 %, 5.78 %, and 0.62 % dry matter, respectively).

**Conclusions** - From these results, it could be suggested that using a suitable processing conditions to extract the by-product of an orange juice industry could produce dietary fiber powder of good properties which had a high potential application as a food ingredient.

Post 213

Development of texturised ostrich meat yor (Thai sausage) by high pressure technique as health food

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**Background** - Yor is a traditional Thai sausage usually made with mixing of pork and other ingredients to enhance flavor. Since ostrich meat is a well-known healthy red meat for low cholesterol and sodium content but high in polyunsaturated ω-3 fatty acid and high pressure process would modify this meat protein differently from those heat treated product which has more elastic smooth and glossy texture.

**Objective** - Ostrich meat yor, a new category of Thai sausage, was developed by high pressure technique to create a new texturised and healthy product.

**Design** – Mixtures of raw ostrich meat yor were hermetically sealed in laminated bags and pressurised at 300-700 MPa with temperature of 40–60 °C for 40 and 60 min. in a high pressure rig. The treated products were analysed for texture and viscoelastic behaviour by Texture analyser. The design of this experiment was Factorial in CRD.

**Outcomes** - In this investigation high pressure of 300-700 MPa, temperature of 40 and 60°C and holding time of 40 and 60 min. regime were used to process the meat yor. Results of Texture Profile Analysis showed that hardness of every treated samples increased with increasing severity of treatment regimes, moreover pressure played a main effect on cohesiveness, adhesiveness, and springiness of the products. Relaxation test were performed to assess the viscoelastic behaviors, it was found that relaxation time and equilibrium stress increased with increasing pressure, temperature, and time regimes.

**Conclusions** – High pressure technique could be used to modify protein of ostrich meat yor to achieve a new texturised product for health food. The optimal condition of this process was pressure of 700 MPa, temperature of 40°C and holding time of 40 min.
Post 214

Effects of Ultrasonic on Extractability and quality of Tea Liquor
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In order to develop efficient extraction method for preparing tea liquors for ready-to-drink tea and instant tea production, experiments were designed with high temperature extraction, low temperature extraction and ultrasound extraction in the tests. The results showed that with rising of extracting temperature, the extracted solids yield increased, the color of infusion turned to yellow and lightness of infusion decreased, and chemical composition content raised. Ultrasound and lower temperature extractions gave better tea infusion color than that of high temperature extraction, but the of extracted yield of low temperature extraction was low. High temperature extraction and ultrasound extraction could increase chemical concentration of tea extracts, but high temperature extraction was harmful to sensory quality of tea infusion. So ultrasound extraction is beneficial to tea infusion extraction.

Post 215

The modern hospital nourishment section building design concern order
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The nourishment section that building design and modern big hospitals mutually match is from now on in some years of development trend. But the nourishment dining room is the nourishment section the second pharmacy, the important subsidiary meal operation. The author emphasizes and uses to develop the taste, a decade of building design does not become outdated, and beauty, modern, practical nourishment section. Combine to elaborate the modern hospital nourishment section in details the second pharmacy- The concern of the good building design layout of" patient's dining room" order, for the clinical professional personnel of the hospital of the aftertime better open the exhibition clinical nourishment treatment, research, teaching work to lay the solid foundation.

Post 216

Influence of fetus exposure to low levels lead on the neuro-behavioral development of neonates
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Objective – To study the effects on the neuro-behavioral development of neonates exposed to low levels of lead in fetus.
Design – 128 neonates were selected and their umbilical blood lead was determined by Atomic Absorption Spectrometer. The neurobehavioral-cognitive performance of neonates was evaluated by Neonatal Behavioral Neurological Assessment〔NBNA〕.
Outcomes – NBNA score in neonates with blood lead levels greater than or equal to 0.24μmol/L were markedly lower than those with less than 0.24μmol/L, and the difference was highly significant. The umbilical blood lead level of 128 neonates were 0.17±0.13 µmol/L, that of male was 0.171±0.12 µmol/L, that of female was 0.169±0.15mol/L. There was no significantly difference (t=0.65, P=0.54). The score of neuro-behavioral development of neonates of high lead group was markedly lower than that of low lead group. There was highly significantly difference. The score of erect of high lead group in neonates was markedly lower than that of low lead group. The time of head erect of high lead group was markedly short that of low lead group. There was highly significantly difference.
Conclusions – Blood levels of lead less than 0.48μmol/L could still have harmful effects on the development of children.
Post 217

Effect of different preparation methods on physicochemical properties of salidroside-containing liposomes

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**Background** - *Rhodiola sachalinensis A. Bor* has been studied as it is a popular Chinese traditional medicine since recent decades. The major bioactive component in Rhodiola species is salidroside, which has been shown to possess the functions such as resisting anoxia, fatigue and microwave radiation. But the functional foods containing salidroside presently developed have some drawbacks to their uses, such as rise and fall of blood drug concentration, low bioavailability and frequently taking medicine.

**Objective** - To encapsulate salidroside in liposomes using lecithin and cholesterol as lipid components and to evaluate the physicochemical stability of liposomes prepared by different methods.

**Design** - Liposomes containing salidroside were prepared by different methods: thin layer evaporation, ultrasound method, reverse phase evaporation, melting method and freezing-thawing techniques. The effect of different preparation methods and salidroside concentration on particle size, zeta-potential and encapsulating efficiency of the liposomes were investigated. Furthermore, the storage stability of liposomal systems was determined at 30 and 40 °C during one month period. The leakage characteristics of salidroside from liposomes were investigated.

**Outcomes** – The encapsulating efficiency of liposomes prepared by different methods varied in the order: freezing-thawing method > thin film evaporation > ultrasound method > reverse phase evaporation = melting method. Salidroside concentration had significant effect on mean diameter and zeta-potential of liposomes, but not encapsulating efficiency. Liposomal systems prepared by ultrasound and melting method displayed better dispersivity. Determination of leakage of salidroside from different liposomes revealed that melting method had the lowest leakage after one month of storage at 30 and 40 °C, almost 10% and 15%, respectively. Instability was exaggerated in the systems with a rise in the temperature. In all case, a straight-line leakage behavior was found. This revealed the leakage of salidroside is a process of diffusion from the membrane of liposomes.

**Conclusions** - Liposomes containing salidroside inside the lipid bilayer were obtained. Liposomes prepared by melting method and reverse phase evaporation can show the better performance in term of encapsulating efficiency and physicochemical stability. Additional work is needed to verify the vitro release and in vivo bioavailability of salidroside liposomes in different conditions.

Post 218

Relationship among region of distributing fatness and degree of economy

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**Objective** - Study of the relationship among the region of distributing fatness and the degree of the economy.


**Results** - The level of consume is not relative to BMI - body mass index less than 0.5.

**Conclusion** - The fatness of teens and the development of finance is not relative.
Post 219
Development and application of HPLC gradient optimization method in ginseng component analysis
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Background-Although HPLC elute solvent gradient condition method has been developed (1), more accurate predicting and simulating HPLC optimization method still needs to be developed for the separation of complicated traditional Chinese medicines.

Objective- To develop an HPLC gradient optimization method for the analysis of active components in ginseng and establishing chromatogram fingerprint of ginseng.

Design- Five linear gradients experiments of ginseng extract were carried out. HPLC retention equation parameter a and c of peaks were determined using complex sample analysis software system (CSASS) which was designed and developed by the authors. Pre-optimized gradient conditions was investigated using moved overlapping separation ranging map (OSRM) technology. Manual intervened optimization gradient condition was developed and simulated by CSASS. Optimization gradient condition was validated by experiments and used to obtain HPLC fingerprints of ginseng materials.

Outcomes- An optimized HPLC gradient method for the component analysis of ginseng extract in short time and effective separation was established. Seventeen ginseng materials were analyzed and their fingerprints were compared to each other using vectorial angle method.

Conclusions - The optimized HPLC gradient method could be used to obtain fingerprints of ginseng materials. The fingerprint similarity of P. quinquefolium is 40%-50% to that of P. ginseng.


Post 220
Assay of estrogenic effect of secoisolariciresinol and its inhibitory effect on MCF-7 in vitro
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Background – Secoisolariciresinol diglucoside (SDG) is the most abundant lignan-type phytoestrogen in the flaxseed. Due to its potential anticarcinogenic, estrogenic and antiestrogenic activities and antioxidant effect, SDG has been attracting more and more attention.

Objective – The objective of this study was to assay the estrogenic activity of secoisolariciresinol (SECO) by determination of its estrogen receptor (ER) competitive binding ability and also its ability to induce estrogen-dependent MCF-7 cell growth at several different concentrations.

Design – Thiazolyl blue (MTT) assay and flow cytometry were applied to detect the proliferation suppressing rate of MCF-7 cell and the change and apoptosis rate of cell cycle phases. Change of sub-cytoarchitecture induced and differentiated by SECO was observed by electron microscope.

Outcomes – SECO purified from acid hydrolysates of SDG showed no competitive binding ability as the control, but SECO played a visible suppressing role in MCF-7 cell proliferation, and had dose-dependent character. By flow cytometry analysis, we found cells increased in G1 phase, decreased in S phase and increased correspondingly in G2/M phase. Cell cavitation and chromatin agglutination were also observed.

Conclusions – Results suggested a non-ER-related signaling pathway was involved. Besides, secoisolariciresinol can be used as a source of phytoestrogens with a certain level of estrogenic activity.
Post 221

Antihyperglycemic Effects of Prunella vulgaris Extract in Streptozotocin-induced Diabetic Mice

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Background – *Prunella vulgaris* is a popular traditional Chinese food which is usually used in beverage and soap. However, there has been no data on the interaction between *Prunella vulgaris* and diabetes mellitus.

Objective – This study is to examine the hypoglycemic effects of *Prunella vulgaris* in streptozotocin (STZ)-induced diabetic ICR mice for the first time.

Design – The dried *Prunella vulgaris* spicas were extracted with 70% ethanol for three times. ICR mice were used as normal control animals and glibenclamide as a positive drug control. The effects of *Prunella vulgaris* on basal blood glucose, exogenous insulin sensitivity and plasma insulin levels were tested.

Outcomes – *Prunella vulgaris* produced a hypoglycemic effect in normal mice at 30 min after oral glucose challenge. The additive administration of its dose (50 mg kg\(^{-1}\) day\(^{-1}\)) and glibenclamide produced a greater fall in blood glucose between 90 min and 180 min compared to glibenclamide or *Prunella vulgaris* alone. *Prunella vulgaris* (100 mg kg\(^{-1}\) day\(^{-1}\)) suppressed the basal blood glucose level between 90 min and 180 min on glucose tolerance test. The additive administration of the same dose and glibenclamide significantly decreased blood glucose at 30 min in STZ mice. However, *Prunella vulgaris* did not enhance nor prolong the hypoglycemic affects of injected insulin in normal and STZ mice. Plasma insulin levels increased in normal mice after treatment with glibenclamide; the dose (50 mg kg\(^{-1}\) day\(^{-1}\)) of *Prunella vulgaris* had the same effect in STZ mice.

Conclusions – The current results indicate that *Prunella vulgaris* has hypoglycemic effects of stimulating endogenous insulin secretion to improve blood glucose level in normal and STZ mice. *Prunella vulgaris* seems to modulate blood glucose in a two-way approach compared to the results of glucose tolerance test and insulin sensitivity test.

Post 222

Potential hypoglycemic effects of *Platycodon grandiflorum* A. DC on obese diabetic ICR mice

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Background – *Platycodon grandiflorum* A. DC (PG) is a folk food in Asian countries. It is used for treatment of various ailments, excluding diabetes mellitus and obesity, though.

Objective – The hypoglycemic effects of the ethanol extract of the PG were evaluated on obese streptozotocin-induced diabetic ICR mice for the first time.

Design – Diabetes was induced using 90 mg/mL of streptozotocin. The obese diabetic ICR mice were randomly divided into four groups——one control and the other three treatment groups. The control group received water, and the treatment ones received, by gavage, the extract with either 150, 300 mg/kg of PG daily or 2.5 mg/kg of glibenclamide for a 4-week period.

Outcomes – At 300 mg/kg, the extract significantly showed at least 27.1% and 29.9% reduction in blood glucose level respectively, while glibenclamide had 36.8% reduction in that compared to untreated obese diabetic control ICR mice. Similarly, the weight gains were 6.6% and 4.9% respectively, and were comparable to the normal ICR mice, whereas, untreated diabetic ICR mice lost 14.1% body weight. Still with the same dose, there were 38.5% and 28.5% \((p < 0.01)\) significant decreases in food consumption and 49.7% and 34.0% \((p < 0.01)\) decreases in water intake by obese diabetic ICR mice treated with the respective plant extracts. The glibenclamide-treated ICR mice showed 26.4% and 45.8% decrease in food and water intake compared to an increase for diabetic control obese ICR mice, 38.0% and 289.8% respectively at the end of the fourth week of experimentation.

Conclusions – These results showed that the plant can reverse hyperglycemia, polyphagia and polydipsia provoked by streptozotocin, and thus, they have anti-diabetic properties.
Post 223

Impact Of Economic Reform On Poverty, Health And Nutrition In India
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Background – Economic liberalization initiated by India in 1991 have evoked considerable debate and controversy, especially regarding its social implications. Evidence from Africa suggests that these reform affected food security resulting in increased in malnutrition and Infant Mortality Rate.

Objective – The aim of present study is to analyze the trend in poverty in India in post reform period as compared to the pre-reform period and to see impact on development, health and nutritional status of the Indian community

Design – The study is mostly based on secondary data and resources of information available in official documents supplemented by study finding and modeling. Time series analysis of all India data, cross section analysis of inter-state data for two point of time covering pre and post reform period has been attempted. Modeling is to see the impact of post reform if balanced growth has taken place.

Outcomes – After the initiation of economic reform in 1991 there is a gradual decline in average poverty but it remains painfully high. The ratio of rural to urban poverty incidence is gradually rising. Urban poverty in both the pre and post reform period declined by 1.92 and 1.41 % annually whereas in rural it declined 3.32% in pre reform and increased 1.41% annually in post reform period. Benefit incidence analysis indicate that public spending on education, health, nutrition and others are not effectively reaching the poor eg. more than 76% of wealthiest whereas less than 70% of poorest rural households take advantage of the subsidized prices for food under PDS scheme. The IMR is one of the most sensitive health indicator. During pre and post reform period the rate of decline was 3.0 and 1.2 in total; 3.3 and 1.3 in rural, and, 1.2 and 1.0 in urban per 1000 live birth per annum respectively. Similar picture has been observed in other health indicators esp. related with nutrition. Modeling revealed that a balanced growth process at the same rate would have doubled the rate of poverty reduction.

Conclusion – Evidences reveals that imbalance growth process resulted in sluggish poverty reduction in the country and thus its social impact could not be achieved as it should have been. There is need to reexamine its approach to reduce the poverty (such as pro-poor, agricultural oriented, quality of governance) so as to achieve the millennium development goals.

Post 224

Nutritional Status of the Patients During Hospitalization, Tehran, Iran
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Background – Undernutrition has strong clinical and economic effects that are reflected by an increased morbidity and mortality rate, with prolonged hospital stay at substantial extra cost of health care (1).

Objective – Assessing nutritional status of the patients on admission, its changes during hospitalization and medical staff concern on this issue in Shariati educational hospital, Tehran, Iran.

Design – One hundred fifty six randomly selected patients from nine different wards were assessed. Body mass index (BMI) and body composition were measured on admission and discharge. A questionnaire was also filled out to evaluate general physical, psychological and living status of the patients. Medical records were checked for nutritional consultation, nutritional support and nutritionally related laboratory factors (TLC and serum albumin). Frequency and paired t-test were used to analyze data.

Outcomes – Undernutrition (BMI < 18.5) was present in 5.7% of the patients on admission and sever undernutrition (BMI < 16) existed in 0.6%. When discharged, 11% of patients were undernourished and prevalence of severe undernutrition increased into 1.3%. Body weight and BMI of all the patients during hospitalization decreased significantly (P<0.001). Body composition analysis showed a significant reduction in body protein mass (P<0.001). Body water percentile decreased and body fat percentile increased but not significantly. Only one patient was supported with parenteral nutrition and one with enteral nutrition. Nutrition consultation order was present in 1.9%, TLC in 10.8% and serum albumin in 7% of the medical records.

Conclusions – Undernutrition increases in patients during hospitalization and one of the main reasons is the low level of medical staff, especially physician awareness about the importance of nutritional cares. Education is the key to stress the importance of nutrition education among health care professionals.

Post 225

A study on increasing the anti-oxidative ability of conjugated linoleic acid (CLA) by microencapsulating reaction

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The experiment studied the effect of different reaction conditions such as the ratio of gelatin to Arabic gum as compound well material, the PH value of polymer and the entering wind temperature ofSpying on microencapsulating reaction. The results showed that the optimum reaction conditions were following: the ratio of gelatin and Arabic gum ratio was 1.3:1, the PH value was 4.0 and the temperature was 200℃. High quality microencapsulated conjugated linoleic acid with higher microencapsulation ration of 92.41% and lower surface oil of 3.42% were made under the optimum reaction conditions. The anti-oxidative ability of the product was better than original oil.

Post 226

Apple seed protein

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Recently, people pay more attention to plant protein because of no cholesterol. through our study, We find that there is about of 50g protein in 100g apple seed pip, and the protein consists of 18 amino acids, and 6 is the essential amino acids. ShaanXi is a major province for apple processing. Every year about 13,000 ton apple of seed are produced, but it resuls in waste and pollution. Now the protein and oil in apple seed are being evaluated for nutritional usage.

Post 227

Effect of the simulated gastric juice on inulin hydrolysis

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Background – Inulins are an important substance in human dietary. Inulins refer to a group of naturally- occurring fructose-containing oligosaccharides and belong to a class of carbohydrates known as fructans. Inulin has being become an important and popular healthy component because it is known as a kind of prebiotics. Since the inulin is compost of beta-2,1-glycoside bonds, it does not be digested by the enzymes in the alimentary canal (including the gastric, pancreatic and intestinal juices). It has been shown that the inulin are resistant to digestion or hydrolysis in the the upper gastrointestinal tract (1). We have not been clearly known why the inulins have the strong prebiotic effect.

Objective – To investigate the inulin hydrolysis at the simulated gastric juice so that it could benefit to understand the effect or behavior of inulin in the gastrointestinal tract.

Design – 10% Inulin solution was prepared. The pH of the simulated gastric juice were controlled by hydrogen chloride. The 30 to 120 min lasting hydrolysis was conducted at a temperature ranging between 36 and 37.0℃, at pH equalling 1 and 2. The hydrolyzed rate were detected by the 3,5-dinitrosalicyclic acid assay for reducing sugar.

Outcomes – At the simulated gastric juice, the degrees of hydrolysis (DHs) for inulin were 53%,78% and 82% at pH 1 and 37℃ for 0.5,1 and 2 hour, respectively. And DHs were 51%,71% and 81% at pH 1 and 36℃ for 0.5,1 and 2 hour;39%,47% and 55% in the simulated gastric juice at pH 2 and 37℃ for 0.5,1 and 2 hour; 35%,42% and 52% at pH 2 and 36℃ for 0.5,1 and 2 hour, respectively.

Conclusions – The present study indicated that inulin could be hydrolyzed partially in the simulated gastric juice. The hydrolyzed products would be more easily used by the probiotics.

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