P11
The effects of vinegar powder on hepatic and renal function in healthy subjects
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Background – Vinegar has long been used as a traditional seasoning. Results from animal and human studies showed that vinegar has beneficial effects on enhancing calcium absorption, reducing blood pressure, improving blood flow velocity and blood viscosity, attenuating postprandial serum glucose and insulin resistance in healthy subjects and diabetic patients. These beneficial effects have been claimed to be caused by the acetic acid content. We hypothesized that other compound, apart from acetic acid, formed during fermentation contributes to vinegar’s beneficial effect.

Objective – To investigate the effect of vinegar powder on selected parameters in relation to hepatic and renal function in healthy subjects.

Design – Forty-six healthy volunteers aged from 20 to 31 years were recruited from Zhejiang University with the exclusion of subjects with hepatic or renal dysfunction or cardiovascular disease history. The subjects were randomly assigned into the vinegar powder group (female=14, male=10) and the control group (female=13, male=9). The study lasted 16 wks (from September to January in the next year), which just spanned from the fall to the winter. Each subject in the vinegar powder group was asked to ingest 5 vinegar powder tablets daily during the study period, and the control group took nothing.

Outcome – Vinegar powder intake was associated with the blunted seasonal decrease in serum total protein, albumin, uric acid but significantly seasonal decrease in serum direct bilirubin, total bilirubin and fasting glucose levels (P<0.05). Compared with baseline, fasting Serum glucose was significantly decreased in vinegar powder group (P<0.001).

Conclusions – Vinegar powder might be beneficial to human health in relation to improving liver function and blood antioxidative capacity, lowering blood glucose.

P12
Amylase inhibition in vitro by bioactives from fruit and vegetables is reversed by milk
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Background – Evidence for a role for plant bioactives in health has led to these compounds being included in a range of food products, including dairy products. Several studies have now shown that some bioactives may have an inhibitory effect on digestive enzymes. The question therefore arises as to whether bioactives affect digestion when added to milk.

Objective – To determine the capacity of bioactives from fruit and vegetables to inhibit digestive enzymes during simulated digestion in vitro. To measure any modulatory effect of milk on enzyme-inhibition by bioactives under ileal conditions, after simulated gastric digestion.

Design – Concentrated bioactive extracts of apple, boysenberry, carrot, grape seed and tomato were supplied by HortResearch. Preliminary trials identified pancreatin/polyphenol concentrations at which amylase inhibition could be demonstrated. These concentrations were then used to measure amylase inhibition by the extracts in the presence and absence of milk reconstituted from milk powder. Prototype milk products containing boysenberry and grape seed extracts were also tested for their impact on amylase activity against pregelatinised starch suspended in the products.

Outcomes – After in vitro digestion, apple and grape seed extracts severely inhibited pancreatic amylase activity, while boysenberry, carrot and tomato extracts had no effect. When the digestion was carried out in the presence of milk the apple and grape seed extracts had no effect on amylase activity, and the rates of starch digestion in the presence of all of the extracts plus milk were similar. Bioactives in the prototype milk products had no influence on digestion of starch in the products by pancreatin after a simulated gastric (HCl/pepsin) digestion.

Conclusions – Milk protects intestinal amylase from inhibition by apple and grape seed polyphenols.