Concurrent Session 5: Functional Foods II

Small intestinal digestion of dietary FODMAPs and effects on luminal water content
JS Barrett, RB Gearry, PM Irving, JG Muir, ML Haines, PR Gibson
Departments of Medicine & Gastroenterology, Box Hill Hospital, Box Hill, Victoria 3128

Background – FODMAPs (Fermentable Oligo-, Di-, Mono-saccharides And Polyols) are a newly described group of poorly absorbed, short-chain carbohydrates and include; fructose, lactose, fructans, galactooligosaccharides and sugar alcohols. Fructans (eg. inulin) are prebiotic with putative health benefits. Our research group has provided recent evidence that FODMAPs may exacerbate symptoms in irritable bowel syndrome (IBS). Malabsorbed FODMAPs are rapidly fermented and are osmotically active, leading to luminal distension of the distal small bowel and proximal colon, a stimulus for IBS symptoms. However, the proposed mechanism(s) by which FODMAPs exert their effects are untested.

Objectives – To determine the digestive and absorptive capacity of FODMAPs in the human small intestine and define their effect on the volume and nature of ileal effluent

Design - 12 patients with an ileostomy, but no clinical evidence of small intestinal disease undertook two 4-day dietary periods, comprising diets differing only in FODMAP content (high vs low), with at least 14 days washout between. All food was provided. The ileal effluent was collected during waking hours (14 h) on the last day of each diet. The FODMAP content of the diet and effluent was measured by enzymatic and HPLC methods.

Outcomes – The high FODMAP diet significantly increased total output weight by 19% ($P=0.01$). This additional weight was contributed by greater water volume ($P=0.01$) and dry weight ($P=0.03$), demonstrating the poor absorption and osmotic activity of FODMAPs.

Conclusions – Data support the hypothetical mechanism of action of FODMAPs. A high FODMAP diet is recommended for the general population considering the known benefits of fermentation including prebiotic effects, laxation and short chain fatty acid production. However, a reduction of dietary FODMAPs is suggested for managing IBS symptoms.

Vitamin D₃ fortified milk improves nutritional status in Australian aged care residents
J Grieger, CA Nowson
School of Exercise and Nutrition Sciences, Deakin University, Burwood, VIC 3125

Background – Nutrient status could be improved through use of nutritional supplements or consumption of nutritionally enhanced foods. While low intakes of calcium, folate and vitamin D frequently occur in Australian aged care residents, it is not known if fortified foods can improve nutritional status in this population.

Objective – To determine whether consumption of milk fortified with calcium, vitamin D and folate for six months improves nutritional status in a group of Australian aged care residents

Design – One hundred and seven subjects (61% female) with a mean (SD) age of 79.9 (10.1) years, completed the study. Fortified milk containing (per 100 mL) calcium 190 mg, cholecalciferol vitamin D 5 µg and folate 75 µg, was provided for use in tea, coffee, milk drinks and with cereals. Fasting blood samples, measurement of body weight, muscle strength, mobility and bone quality were performed at baseline and six months and assessment of dietary intake and milk intake was performed throughout the study.

Outcomes – The median milk consumption over the study period was 160 mL/d (range, 0-989 mL/d). Serum 25(OH)D increased from 30 ± 2 (mean ± SEM) to 45 ± 2 nmol/L ($P<0.001$) and folate from 19 ± 15 to 21 ± 13 nmol/L ($P<0.001$). Consumption of fortified milk ≥ 150 mL/d (n = 56) raised serum 25(OH)D into the adequate range, 45 (19) nmol/L, and PTH was 23% lower in this group ($P<0.05$). No effect on bone quality, muscle strength or mobility was observed.

Conclusions – Supplementation of fortified milk can be a useful strategy to improve nutritional status, and may be useful adjunct to other strategies required to improve nutritional status in this group. Larger a longer term studies, are needed to assess the impact of fortified foods on risk of falls and/or fracture and quality of life.