

0.743) on glucose levels. Hunger increased ($p = 0.001$) while satiety decreased ($p = 0.014$) after 26h sleep deprivation. Caffeine did not moderate this effect (hunger $p = 1.000$, satiety $p = 0.484$).

Conclusions: Results suggest that sleep deprivation impairs glucose metabolism, increases hunger and reduces satiety. Chewing caffeine gum did not influence this effect.

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ADEQUACY OF AND FACTORS ASSOCIATED WITH DIETARY ZINC INTAKES IN AUSTRALIAN ADULTS

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Background/Aims: To examine adequacy of and factors associated with dietary zinc intakes in Australian adults.

Methods: Dietary data were collected via two 24-hour recalls during the 2011–13 Australian National Nutrition and Physical Activity Survey ($n = 4282$ men and $n = 4833$ non-pregnant, non-lactating women, aged ≥ 19 years). Data were analysed using the Estimated Average Requirement cut-point method in PC-SIDE to calculate the prevalence of inadequate dietary zinc intakes. Linear regression was used to identify factors associated with dietary zinc intakes accounting for the complex survey design.

Results: In men, the prevalence (SE) of inadequate zinc intakes increased with age, ranging from 39.5% (4.2%) in 19–30 year olds to 72.0% (5.1%) in ≥ 71 year olds. In women, the prevalence of inadequate zinc intakes was similar across all age groups and was 12.8% (1.3%) for all women. For both men and women, higher zinc intakes were associated with: higher household income [mean difference between lowest vs. highest decile for men (95% CI): 2.4 (1.3, 3.5) mg/d; women: 1.4 (0.5, 2.2) mg/d], higher area-level socio-economic status [mean difference between lowest vs. highest quintile for men: 1.1 (0.3, 1.8) mg/d; women: 0.8 (0.4, 1.2) mg/d], and dietary supplement use [mean difference for men: 1.1 (0.6, 1.6) mg/d; women: 0.9 (0.6, 1.2) mg/d]. Food-insecure women had lower zinc intakes compared with those who were food secure [mean difference: 1.3 (0.7, 1.9) mg/d].

Conclusions: In Australia, men, individuals from low-income households and socio-economically disadvantaged areas, and food-insecure women are vulnerable to poor dietary zinc intakes.

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BLOOD LIPIDS – SOLUBLE DIETARY FIBRES: STUDY OF BILE SALTS DIFFUSION ACROSS INTESTINAL MUCOSA USING THE USSING CHAMBER SYSTEM

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Background/Aims: The aim of this study was to investigate the effect of oat β -glucan (β G) on bile salts (BS) diffusion across the intestinal mucosa.

Methods: Pigs used as a human model were fed a control diet ($n = 6$) or a diet containing 10% oat β G ($n = 6$) for 28 d. Sections from the proximal, mid jejunum and terminal ileum were mounted into Ussing chambers. Glycocodeoxycholate (GDC) with or without addition of oat β G to the mucosal side of the chambers, was sampled from the serosal side every 20 min for 80 min. Fresh tissue samples and tissues after diffusion experiments were fixed for microscopic comparison.

Results: (1) GDC diffuses slower across the terminal ileum from pigs fed the β G diet; (2) added β G to the mucosal side reduces the diffusion of GDC across terminal ileal tissue from pigs fed the control diet but has no significant effect for tissues from the β G diet.

Conclusions: Oat β G reduces BS diffusion across porcine terminal ileal tissue, consistent with a potential mechanism underlying plasma

cholesterol reduction.

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IS ANIMAL FLESH CONSUMPTION ASSOCIATED WITH BETTER IRON STATUS AMONG ADULTS IN DEVELOPED COUNTRIES: A SYSTEMATIC REVIEW

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Background/Aims: Iron deficiency (ID) is the most prevalent nutrient deficiency within the developed world. One in five Australian women (25–50 yrs) is affected and this is concerning as ID has been shown to affect immunity, thermo-regulation, work performance and cognition. Animal flesh foods provide the richest and most bioavailable source of dietary (haem) iron, however it is unclear if a low animal flesh diet contributes to ID. The aim of this systematic review was to investigate whether a higher consumption of animal flesh foods is associated with better iron status in adults.

Methods: CINAHL, Cochrane, EMBASE and MEDLINE were searched for published studies that included adults (≥ 18 years) from developed countries and measured flesh intakes in relation to iron status indices. Included studies were assessed for methodological quality by two reviewers and results were described in narrative format.

Results: Eight experimental and 39 observational studies met the inclusion criteria. Overall, included studies varied in population and study designs and results were conflicting. Five of the seven studies that rated positively for methodological quality suggested a positive association between animal flesh intake and iron status. It remains unclear if there is an optimum quantity or frequency of flesh intake required to maintain or achieve a healthy iron status.

Conclusions: Evidence from this review shows promising results for an effect between animal flesh intake and iron status, however additional longitudinal and experimental studies are required to confirm this effect and determine optimal intakes to reduce the likelihood of ID.

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POSTPRANDIAL CHYLOMICRON METABOLISM AND SIZE DISTRIBUTION IS AFFECTED BY MEAL OIL TYPE

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Background/Aims: To investigate the effect of consumption of different edible oils on postprandial chylomicron size distribution and metabolism in healthy normolipidemic subjects.

Methods: Volunteers received in random order an isocaloric mixed meal containing 40 g of either: palm oil (PO), coconut oil (CO), or rice bran oil (RBO) on 3 occasions. Apolipoprotein (apo) B-48 concentration, a measure of chylomicron particle number, was measured at 0, 4 and 8 hours postprandially in lipoprotein fractions with Svedberg flotation rates (Sf) > 400 , Sf 20–400 and Sf < 20 . The trial was registered ACTRN 12614000352606.

Results: Preliminary data indicate that ~80% of the fasting and postprandial concentrations of apo B-48 is found in the Sf < 20 fraction following all test meals. Following consumption of the CO meal a greater proportion of the postprandial apo B-48 response (corrected for baseline levels, incremental area under the curve (IAUC)) were observed in the Sf < 20 fractions compared to other oils. However following consumption of the RBO meal a greater postprandial apo B-48 response was observed in all lipoprotein fractions compared with the CO and PO meals.

Conclusions: We observed that following consumption of all oils the majority of the chylomicrons particles were present in the small dense lipoprotein fraction (Sf < 20), however differences exist in the postprandial response following consumption of different edible oils.

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