

classified according to quartiles of DF intake.

Results: The majority of adults consumed DF (97%) and median serves consumed was 3.9/day. Half (50%) of all REO contained a DF. The REO with the most DF consumers were 'lunch' and 'dinner'; which together contributed 45% of total DF energy intake. Cakes, muffins, scones, cake-type desserts ('cakes') contributed the most DF energy (8.4%). Top contributor to DF energy for males was beer (10.9%) and for females was 'cakes' (10.1%). Pastries provided the highest DF energy contribution among lowest SES; and wine among highest SES. DF contributed 49.4% of total sugar and 42.2% of total saturated fat. The top quartile of %en from DF consumed an average of 10 ± 4.5 DF serves, had a higher prevalence of males, younger adults, low SES and higher mean waist circumference but not higher BMI.

Conclusions: A focus on decreasing consumption of the largest contributors to DF may be useful to decrease saturated fat and sugar intakes, especially during lunch and dinner and amongst the highest consumers.

Funding source(s): Nestlé Australia Ltd.

CONCURRENT SESSION 8: VITAMINS.

MUSCLE VITAMIN E AND RETAIL COLOUR OF MEAT FROM LAMBS FED LUCERNE OR GRAIN-BASED DIETS AT TWO ANTIOXIDANT LEVELS

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Background/Aims: Muscle antioxidant status and meat colour can be affected by nutritional background. This study aimed to compare the effect of 3 different diets on muscle vitamin E (vitE) concentration and the retail colour of meat given the importance of colour to consumers.

Methods: Lambs ($n = 41$) were fed for 8 weeks either a lucerne-based diet (37 mg/kg of vitE) or a grain-based control (CON; 42 mg/kg of vitE) or supranutritional vitE (SUP; 285 mg/kg of vitE) diet. Loin muscle samples were assessed for vitE and retail colour. Data was analysed using the REML and MANOVA procedures.

Results: Lambs fed the SUP diet had a higher muscle vitE concentration (5.1 mg/100 g meat; $p < 0.001$, $SED = 0.44$) compared to CON (2.5 mg) or LUC (3.4 mg). A MANOVA of the 3 dimensional colour attributes L^* , a^* and b^* found that meat from the lambs fed LUC was redder (higher a^*) and lighter (higher L^*) than meat from lambs fed CON or SUP ($p = 0.016$). After 4 days of retail display redness (a^*) of the loin for the LUC fed lambs tended to be higher ($p = 0.08$) than loin from the other groups.

Conclusions: Although the SUP group had greater muscle vitE status, the lucerne-based diet maintained retail colour of meat better than the vitE supplemented grain-based diet. It seems bioavailability of vitE or other antioxidants was greater for lambs fed the lucerne-based diet.

Funding source(s): Australian Meat Processor Corporation and Victorian Government (Department of Economic Development, Jobs, Transport and Resources; DEDJTR).

A VITAMIN D INTERVENTION IN PRESCHOOLERS WITH VIRAL-INDUCED ASTHMA: A PILOT RANDOMISED CONTROLLED TRIAL (DIVA)

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Background/Aims: Trials in school-aged children suggest vitamin D supplementation reduces asthma exacerbations. We aimed to examine whether vitamin-D₃ (100,000 IU) raises serum 25-hydroxy-vitamin D (25OHD) and ascertain the feasibility for a large-scale intervention in preschoolers.

Methods: In a 6-month, double-blind, randomised, placebo-controlled, pilot trial, children aged 1-5 years with viral-induced asthma were allocated to receive orally 100,000 IU vitamin-D₃ (intervention) or identical

placebo (control), plus 400IU vitamin-D₃ daily for six months. Serum 25OHD was measured at baseline, 10 days, 3 and 6 months. Outcomes included the group difference in 25OHD change from baseline ($\Delta 25OHD$) at 3 months (primary); the proportion of children with 25OHD ≥ 75 nmol/L at 3 months (secondary); and health event rates.

Results: Twenty-two children were randomised (intervention: 11; control: 11). At 3 months, the group difference in $\Delta 25OHD$ (7.2 nmol/L; 95%CI: -13.7, 28.1) was not significant; yet, 100% versus 54.5% (intervention versus control) had serum vitamin D ≥ 75 nmol/L. Overall, there was a significant group, time, and group*time effect on 25OHD, in favour of the intervention, with a significant group difference in $\Delta 25OHD$ at 10days (110.3 nmol/L; 95% CI: 64.0, 156.6). Group rates for oral corticosteroids were 0.82 and 1.18/child (intervention versus control; Rate Ratio = 0.68; 95%CI: 0.30, 1.62).

Conclusions: Following 100,000 IU vitamin-D₃, all children reached a serum vitamin D level ≥ 75 nmol/L, compared with half those who received placebo. Daily supplementation, sun exposure and insufficient power may explain the absence of a significant 3-month group difference in $\Delta 25OHD$. Oral corticosteroid rates suggest an effect size concordant with previous trials.

Funding source(s): Thrasher Research Fund.

SERUM 25-HYDROXYVITAMIN D CONCENTRATIONS ARE INVERSELY ASSOCIATED WITH INSULIN RESISTANCE IN ADOLESCENTS AND YOUNG ADULTS

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Background/Aims: Vitamin D receptors are strongly expressed in pancreatic beta-cells and the active form of vitamin D may protect against insulin resistance in peripheral tissues. However, the evidence associating serum 25-hydroxyvitamin D [25(OH)D] concentrations and insulin resistance is inconsistent and most observational studies have been cross-sectional in design. We examined the prospective associations between serum 25(OH)D concentrations and insulin resistance from adolescence to young adulthood.

Methods: Serum 25(OH)D concentrations and homeostatic model assessment for insulin resistance (HOMA-IR) were measured at the 17 ($n = 1015$) and 20 year ($n = 1118$) follow-ups of the West Australian Pregnancy Cohort (Raine) Study. HOMA-IR was not normally distributed, so a log transformation was applied. Hierarchical linear mixed models with maximum likelihood estimation were used to investigate associations between serum 25(OH)D concentrations and ln HOMA-IR, with consideration given to potential confounders, including sex, race, BMI, physical activity, family income, smoking and alcohol intake.

Results: In a univariate model, serum 25(OH)D concentrations were inversely associated with ln HOMA-IR (Coefficient = -0.003; 95%CI -0.005, -0.002; $p < 0.001$) and the inverse association was maintained after adjusting for BMI (Coefficient = -0.002; 95%CI -0.003, -0.001; $p < 0.001$). The model shows that a one standard deviation increase (approximately 30 nmol/L) in serum 25(OH)D concentrations associated with a 6% decrease in HOMA-IR.

Conclusions: We found that serum 25(OH)D concentrations were inversely associated with insulin resistance. Well-designed randomised controlled trials may be warranted in order to determine any potential beneficial effect of vitamin D supplementation on insulin resistance in adolescents and young adults.

Funding source(s): NHMRC.

A NOVEL MODELLING APPROACH TO DETERMINE THE EFFECT OF VOLUNTARY VITAMIN D FORTIFICATION OF BREAKFAST CEREALS

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Background/Aims: This study uses a novel modelling approach based on serum 25-hydroxyvitamin D (25OHD) to estimate the effect of voluntary