

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  $10 \pm 4.5$  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-D<sub>3</sub> (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-D<sub>3</sub> (intervention) or identical

placebo (control), plus 400IU vitamin-D<sub>3</sub> 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  $\geq 75$  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  $\geq 75$  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-D<sub>3</sub>, all children reached a serum vitamin D level  $\geq 75$  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