Concurrent Session 18: Fatty Acids

Does oral sensitivity to fatty acids predict consumption of fatty foods?

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Background – Emerging evidence indicates fatty acid may constitute a sixth taste modality, which operates differently to the traditional tastes of sweet, salty, sour, bitter and umami. The functional role of fat taste remains unknown, but like other tastes, individual differences in sensitivity are suspected to exist. Taste variations and sensitivities are a driver of dietary choice and may change over time. Animal models have observed inverse relations between oral fatty acid sensitivity and fat intakes, suggesting fat insensitivities may lead to excess fat consumption. High fat preferences and intakes seen in obesity suggest such a similar relation may also be apparent in humans.
Objectives – Evaluate fatty acid taste sensitivity and its relations to fat perception, diet and anthropometry.
Design – 102 healthy subjects (6 male) completed a taste screening procedure that included: 1/ triangle tests to assess their fatty acid sensitivity using 1.4mM oleic or linoleic acid in skim milk with mineral oil and guar gum, 2/ Ranking procedure to assess fat perception using custards with varying levels of canola oil (0,2,6 and 10%). Experiments were performed under red light and with nose clips to control for differences due to non-taste sensory inputs. In addition, two one-day diet diaries, food variety and food and diet questionnaires were completed by all participants. BMI was calculated from self-reported height and weight. Chi² and unpaired T-tests were used to evaluate differences between groups.
Outcomes – Participants were split into groups based on their ability to taste fat: Fat tasters n=15 (FT) and fat non-tasters n=87 (FNT). FT performed significantly better on the fat ranking task (p=0.006), and had lower energy intakes (kJ) (p=0.03), weight (-5Kg) (p=0.05) and BMI (-1kg/m²) (p=0.05) than FNT. Occurrences of overweight and obesity increased from 0% in FT to 15% in FNT (p=0.00).
Conclusion – Based on these findings, orally insensitive individuals consumed more energy, weighed more, reported higher BMI values and were more likely to be obese. These findings are similar to those reported in prior studies.

Dietary fat and an activated innate immune response are associated with reduced FEV_1

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Background – Preservation of lung health with ageing is an important health issue in the general population, as loss of lung function with ageing can lead to the development of obstructive lung disease. Inflammation is increasingly linked to loss of lung function and evidence suggests that consumption of dietary fat exacerbates inflammation. We hypothesise that a high dietary fat intake may contribute to reduced lung function in older people.
Objective – To examine the contribution of dietary fat to reduced lung function an older population.
Design – Participants, aged between 55 and 85 years, were recruited from the Hunter Community Study, a population-based cohort, during 2004 and 2005. All participants received a clinical assessment, including baseline spirometry and provided a blood sample. Diets were analysed using food frequency questionnaires. Plasma IL-6 concentrations were measured by ELISA.
Outcomes – Smoking, % energy intake from dietary fat, IL-6 and obesity were all found to be inversely associated with reduced forced expiratory volume in 1 second (FEV_1) in a linear regression model. Using backward stepwise linear regression, former smoking, % energy from dietary fat and plasma IL-6 remained as negative predictors of FEV_1.
Conclusion – An increased proportion of dietary fat is associated with reduced lung function. Dietary interventions aimed at reducing weight via fat-restricted diets may be useful in preserving lung function with ageing.
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