Concurrent Session 8A: PUFA/Heart Disease

The relationship between NaCl concentration and taste perception of saltiness in bread

JS Chow, RSJ Keast
School of Exercise and Nutrition Sciences, Deakin University, Victoria, 3125

Background – Sodium (Na^+) is present in food in the form of sodium chloride (NaCl). There is strong evidence that high dietary Na^+ intakes increase the risk of developing various adverse health conditions. Many international organisations encourage Na^+ reduction in both the diet and the food supply. One of the major dietary sources of NaCl is bread, where NaCl has the essential function of imparting flavour. At present, no literature has been published examining taste interactions that may play a role in limiting the maximum saltiness perception in bread.
Objective – To determine the extent the physical structure of bread inhibits salty taste perception. Additionally, to determine whether common commercial bread additives suppress saltiness of bread.
Design – Subjects (n=14, 12 females) tasted and rated samples with varying NaCl concentrations in water (0 – 1724 mg NaCl/100 g) and bread (125 – 1550 mg NaCl/100 g) using the general Labelled Magnitude Scale. Psychophysical curves plotting NaCl concentration against NaCl intensity were constructed for water and bread. Breads of fixed NaCl concentration (1125 mg NaCl/100 g) and various common additives (sucrose, soya flour, canola oil, gluten) were also rated to assess perceived saltiness.
Outcomes – There was a significant difference between Na^+ psychophysical curves in water and bread ($P<0.05$) with the bread matrix suppressing maximum possible saltiness by 25% to 70%. Suppression of saltiness was observed after the addition of sucrose (55% decrease) or soya flour (60% decrease) during bread production compared to prototypical bread (both $P<0.05$).
Conclusions – The physical structure of bread and some common additives have a major influence on perceptual saltiness of bread. The removal of additives that suppress saltiness combined with strategies to modify the texture of bread could lead to significant reduction in dietary Na^+, whilst maintaining optimal salty taste.

A comparison of two real-time nitric oxide analysers

B Jackson[1,2], H Powell[1], L Wood[1,2] , PG Gibson[1,2]
[1]*Respiratory & Sleep Medicine, Hunter Medical Research Institute, John Hunter Hospital, NSW 2305*
[2]*School of Medicine and Public Health, University of Newcastle, NSW 2308*

Background – Airway inflammation is a key characteristic of respiratory diseases such as asthma. Measurement of airway inflammation is therefore important in studies assessing the importance of nutrition in asthma. Real-time measurement of eNO can be used to non-invasively assess airway inflammation. Various commercial analysers are available, that employ the chemiluminescent reaction between nitric oxide and ozone. The comparability of data collected using devices from different manufacturers is not well known.
Objective – This study aimed to compare eNO data collected on devices from two different manufacturers.
Design – Healthy and asthmatic individuals (n = 55) had their levels of exhaled nitric oxide measured on two eNO analysers; the EcoMedics CLD88 series (ECO MEDICS AG, Bubikonerstr. 45, CH-8635 Duernten, Switzerland) and the NiOx (Aerocrine AB, Smidesvägen 12, S-171 41 Solna, Sweden). For each individual, measurements were made no longer than 30 minutes apart. All measurements were performed according to ATS/ERS guidelines.
Outcomes – A Bland-Altman plot was performed on non-transformed data and showed good agreement between the two analysers, with a small proportional error as magnitude increased. Data were log transformed to allow for normal distribution. A paired t-test of each individual's data showed that eNO measurement using the EcoMedics analyser was significantly lower than with the NiOx device where $P<0.0001$. logEcoMed and logNiOx were highly correlated with $r = 0.981$, $P < 0.0001$. Regression equations have been defined to allow for conversion between EcoMed and NiOx measurements.
Conclusion – eNO measurements made on the EcoMedics and NiOx analysers are significantly different, but highly correlated. Consequently, a conversion factor can be used so that data collected on the different machines are comparable.