Sensory perception and preferences and their effect on reducing salt, sugar and fat in foods

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Salt: What have we done already?

Exposure / Adaptation

Tastant & Aroma Enhancers
- ■ = low salt soup
- ▲ = oregano soup
- ♦ = standard soup

What are we doing now?

Mucoadhesion
- Using polymers as mucoadhesives
- Measuring retention in-vitro & in vivo
- Dynamic sensory perception
- This has reduced sugar & fat application too

What could we do?

Mucoadhesion & Crossmodal Enhancement & Exposure

Dr Lisa Methven : Dept Food & Nutritional Sciences
Fat: What have we done already?

- Used plant oilseeds and oils supplementation of the bovine diet to partially replace milk SFA with MUFA
- Research findings led to a new retail milk

What are we doing now?

- Nutritional intervention & consumer studies with dairy foods with partial replacement of SFA with MUFA
- Fat perception = Mouthfeel & Aroma & TASTE
- Individuals differ in FFA thresholds AND perceived fat intensity in foods (with & without mouthfeel cues)
- High fat likers are LESS sensitive to fat TASTE

What could we do?

- Stimulate oral lipase or modify FFA levels in lower fat thickened food matrices
- Evaluate with Fat likers & dislikers
- Measure oral release of FFA
- Investigate crossmodal aroma cues
- Study reduced fat absorption due to effect of food matrix
Sugar: What have we done already?

- Intervention study on energy compensation where habitual foods were replaced with commercial low sugar equivalents vs. regular sugar alternatives (Advance online publication)
  - Significant reduction in sugar intake
  - But no change in body weight due to energy compensation
- Consumer study showed room for improvement...

- **Sweet Likers**: are easy to distinguish from dislikers
- Liker status (aqueous) effects preference in juice
- Sweetness intensity significantly lower in jelly than juice
- Sweet liker status not largely related to sweetness perception (in press)

- **Sweet taste regulates** carbohydrate metabolism
  - Sweet associated with dopamine reward & homeostatic postingestive signals (Small, D. 2015)
  - Metabolism & preference diminished when sweetness < OR > expected from carbohydrate load

What could we do?

- Manipulate sweetness of foods: viscosity / structure / tastants
- Determine Low & Optimum sucrose sweetness levels for SL & SD, match sweetness of Low samples with AS.
- Use fMRI to determine brain response
- Measure glucose metabolism