P1.089 Differences in chewing rates lead to differences in dynamic sensory perception and flavour release of composite foods

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Abstract

This study aimed to determine how different chewing rates affect temporal dynamics of flavour release and perception of composite foods. Three formulations of strawberry jams varying in viscosity and sugar content (high sugar/low pectin, high sugar/high pectin, low sugar/low pectin) were spiked with 0.4% (w/w) solution of citrus aroma compounds (Citral and Limonene). Composite foods were formed by combining the jams with two carriers (bread and cake). Dynamic perception of citrus flavour was assessed with Time-Intensity (TI) while flavour release was simultaneously quantified by in-vivo nose space analysis using Proton-transfer-reaction mass spectrometry (PTR-MS). Participants (n=9, female) evaluated a predetermined bite size of the jams alone and in combination with both carriers following a fast (80 chews/min) and a slow (40 chews/min) chewing rate, in triplicate.TI analysis showed that addition carriers affected bolus formation in different ways, leading to differences in sensory perception. Citrus aroma was perceived earlier and in a lower intensity when jams were on cake. In contrast, bread addition led to a higher maximum intensity of citrus perception that lingered for a longer time. Finally, fast chewing rates needed shorter time to reach maximum intensity compared to slow chewing rates on both carriers.

Our results demonstrated that chewing rate influenced aroma perception, thus its modulation by changing the food’s texture could be a strategy to achieve higher aroma release. We highlighted the strong effect that carrier addition has on sensory perception and the importance of performing sensory assessments of spreads in combination with carriers.

Combining dynamic sensory methods with nose space analysis by high sensitivity direct injection mass spectrometry is an optimal approach to understand the effects that texture-aroma interactions, bolus physiology and level of oral breakdown have on dynamic aroma perception and flavour release of composite foods during mastication.

Keywords

Cimposite food
in vivo nose space analysis
TI
Oral processing behaviour