

Dynamic evaluation of food-related attributes and emotions during consumption of yogurt with different fat content applying TDS and TDE methods

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Introduction

Yogurt is a basic dairy fermented product, which is made from milk of varying fat content up to a maximum of 10%. The fat content affects the texture properties of yogurt, and modulates taste and flavor perception. It leads to changes in the distribution of flavour molecules within the product and serves as flavour precursor and carrier.

The objective of the present study was to determine the relationship between temporal aspects of product-associated sensory attributes and product-evoked emotions during consumption of commercially available yogurts with different fat content (0.1%, 1.0%, 3.6%, 10%).

Methods

Temporal Dominance of Sensations (TDS) was applied in order to investigate the temporal profiles of sensory descriptors. The temporal profiles of emotions were assessed by Temporal Dominance of Emotions (TDE).

47 untrained individuals evaluated 10 sensory attributes and 10 emotion terms, relevant for yogurt description, selected by check-all-that-apply (CATA) during a defined testing period of 60 seconds.

Results

TDS and TDE results showed that the perceived sensory attributes and food-evoked emotions were associated with the fat content. The fat-reduced yogurts (0.1% and 1.0%) were mainly characterised by the sensory attributes *sour*, *astringent*, *fermented flavour* (Fig. 1, 3) and emotions *surprised* and *dissatisfied* at the beginning and by *neutral* as well as *calm* towards the end of the evaluation period (Fig. 2, 4). The yogurts with higher fat content (3.6% and 10%) were associated, apart from *sourness*, with *creamy flavour* and *creamy texture* (Fig. 5, 7) as well as positive emotions like *pleasant* and *satisfied* at the start of the evaluation and similar to the fat-reduced yogurts with *neutral* and *calm* terms at the end of the testing (Fig. 6, 8).

Conclusion

Our findings showed consistency in the relationship between selected sensory attributes and emotions during yogurt consumption depending on fat contents. The products with higher fat contents with a dominantly *milky*, *buttery*, *creamy* flavour and texture evoked *pleasantness*, *enjoyment*, *satisfaction* and *satiation*. In contrary, in the fat-reduced yogurts dominated *sourness*, *fermented* flavour and a *watery*, *astringent* mouthfeel, which resulted in a rather *unsatisfied* and *surprised* emotional conditions (Fig. 9).

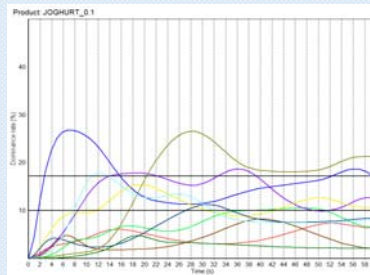


Fig. 1: TDS profile of yogurt 0.1% fat.

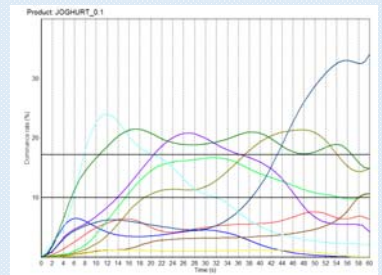


Fig. 2: TDE profile of yogurt 0.1% fat.



Fig. 3: TDS profile of yogurt 1.0% fat.

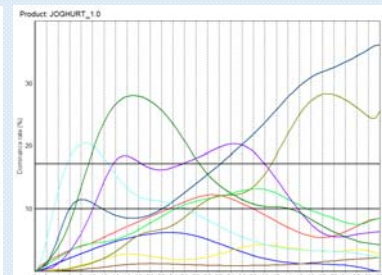


Fig. 4: TDE profile of yogurt 1.0% fat.



Fig. 5: TDS profile of yogurt 3.6% fat.

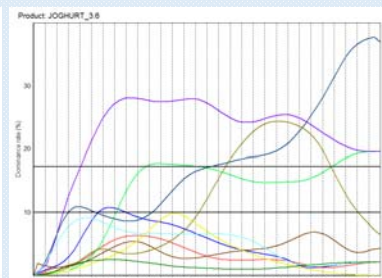


Fig. 6: TDE profile of yogurt 3.6% fat.



Fig. 7: TDS profile of yogurt 10% fat.



Fig. 8: TDE profile of yogurt 10% fat.

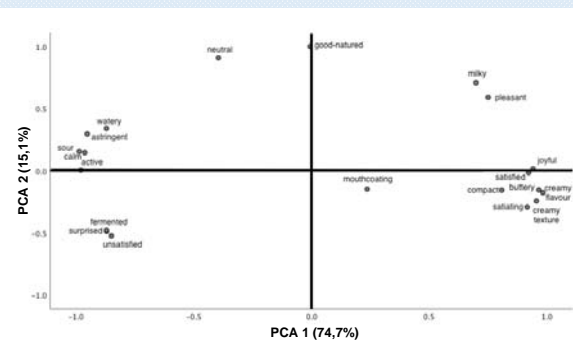


Fig. 9: PCA plot of dominance duration of sensory attributes and product-evoked emotions.

