

Role of food oral processing as a driver of pizza liking: a new insight into the design of healthy and appreciated ultra-processed food

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In the current context of food over-consumption and junk food culture, one of the major challenges of the agrifood system is to design sustainable, healthy and appreciated foods. As sensory properties and in-mouth comfort of food contribute to the liking by consumers, it seems essential to integrate oral processing and related perceptions in the design of healthier foods.

In this context, the aim of this project was to highlight the drivers and barriers of consumer liking, with a focus on oral processing perceptions, in order to promote more sustainable and healthier foods. For that, the study is focused on pizza, which is a widely-consumed ultra-processed food, offering various compositions and numerous levers for food reformulation. 16 out of 380 pizzas representative of the French market were selected from a multicriteria mapping, based on nutritional and processing scores. These 16 pizzas were evaluated by 64 participants, all consumers of pizzas. Their appreciations were evaluated in real conditions during 16 evening meals served at the university restaurant. In parallel, a sensory profile of these pizzas was performed by a trained panel. A particular focus was given to the evaluation of food oral processing, such as difficulty to cut, to masticate and to swallow, as well as pasty or sticky perceptions. A preference mapping approach was then used to relate liking with perceptions and oral processing.

Results showed that the 16 pizzas presented wide ranges of sensory, oral processing and liking properties. Drivers and barriers of liking were identified: non-sticky and homogeneous bolus at swallowing could be considered as drivers of liking, whereas the perception of sticky and pasty bolus, or difficulty to chew and swallow were observed as limits of liking. These results were then studied in regard to quality scores, based on nutrient composition, degree of processing and environmental indicators that were determined for each of pizza. The results of this study will allow making some recommendations for producers, by integrating multiple criteria to answer to consumer expectations, while taking sustainability and health criteria into account in the case of ultra-processed food.