

[P2.1.24]

Development of a probiotic chocolate flavoured beverage using consumer-based methodologies

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The development of innovative products is critical for the food industries as a strategy to maintain and achieve success in the market. As a consequence, the development of products that can positively contribute to health, such as functional foods, has increased in recent decades. This trend has been particularly relevant in the dairy market and consequently product differentiation is more difficult to achieve. In this sense, interest in the development of products that meet consumers' desire for tasteful and healthful products has increased. This study aimed at investigating the use of three consumer-based methodologies: Check all that apply (CATA), Projective Mapping and Polarized Sensory Positioning (PSP based on intensity scales and Triadic PSP) for the development of a new functional dairy product, non-fermented probiotic chocolate flavoured milk. Eight non-fermented probiotic chocolate flavoured milk were produced following a 2³ factorial experimental design based on four ingredients (vanilla, sugar, chocolate powder, and fat). Samples were evaluated by a total of 342 consumers, which were divided in four groups. Each group evaluated samples using a different sensory characterization method and rated their overall liking. The preferred samples were formulated with high sugar and chocolate content, revealing that sweetness and chocolate flavour perception were the main drivers of consumer liking. The results provided by consumers by the four methodologies were consistent with each other, although they differed in the ability to differentiate samples according to the formulation variables. In this regard, the CATA questions showed the highest discrimination, followed by Projective Mapping, PSP with scales and PSP triadic. Results from the present work suggest that the joint application of overall liking scales and CATA questions is an interesting methodological choice for product development, particularly when a panel of trained assessors is not available.

Keywords: Check all that apply, Projective Mapping, Polarized Sensory Positioning, Functional food