



Identifying the sensory qualities of foods and beverages that are pleasurable for consumers requires understanding the physical, chemical and cognitive bases of perception to find sensory solutions for foods that impart pleasure and enjoyment.

Pleasure During Consumption

Focus On: Refreshment

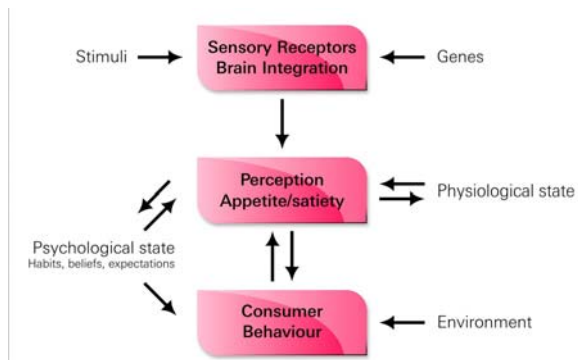
Chemistry/Flavour Science

Nestlé studies the link between food consumption at the molecular level and the perception produced by the food. Scientists work to identify the active components responsible for the sensory properties of foods, especially aroma and taste, to establish associations between chemical composition and perception.

Sensory Science

Nestlé uses sensory science to measure and understand the effects of foods' appearance, flavour and texture, and to quantify the impact of interactions between senses on perception to develop products that fulfill consumers' needs. processes are vital for maintaining everyday function. However, since bones serve as a reservoir for calcium, a dietary deficiency can be detrimental to bones.

Fig 1: Factors affecting food choice and perception



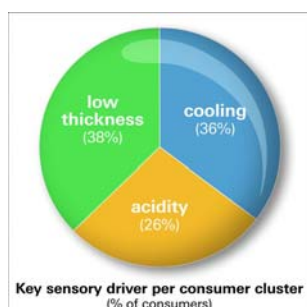
NRC Research Initiatives

NRC scientists conducted a study to identify the ultimate sensory characteristics that define in-mouth refreshment for consumers. Nestlé researchers performed a study with consumers to better understand the key sensory qualities driving refreshment.

Study subjects, 160 consumers, were given a set of tasting samples with varied flavourings (peach and mint), cooling properties, texture and acidity, and were asked to rate the overall refreshment capabilities of each. Additionally, a panel of sensory experts evaluated the sensory properties of the same samples to determine the contribution of sensory characteristics to the refreshing scores denoted by consumers.

A majority of consumers agreed that the sweetest-tasting samples were the least refreshing, while the most-refreshing samples were associated with the sensory characteristics of a high cold/mint feeling, intense sourness and low viscosity.

Fig 2: Key sensory qualities driving in-mouth refreshment for consumers



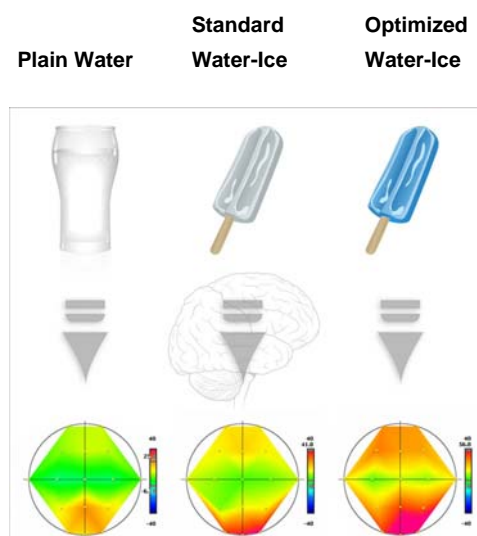
Additionally, NRC scientists assessed the physiologic markers of refreshment using saliva analysis and EEG (electroencephalography). An optimized water-ice recipe based on the sensory characteristics of refreshing was compared to water and standard water-ice.

Brain activity was monitored while participants performed a cognitive task of rapid visual information processing. EEG was recorded before and after consumption of the product.

On the basis of previous published work, it is hypothesized that theta and alpha waves of the EEG are most likely involved in information encoding/retrieval and general alertness, respectively, whereas beta waves may indicate the coordination of multiple brain processes during information encoding and integration.

Results of the EEG imaging showed that alpha waves were most active for the optimized water-ice recipe, indicating that this combination had a positive effect on brain alertness.

Fig 3: Effects of the three stimuli on brain activity using EEG



The optimized water-ice with the refreshing recipe delivered (1) immediate in-mouth refreshment and (2) a sustained positive effect on brain alertness.

The knowledge and insights gained from the study are used to identify refreshing ingredients for water-ice/sorbet to provide enhanced in-mouth refreshment.

References

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