



SENSORY & CONSUMER SCIENCE

A MULTIDISCIPLINARY APPROACH

From the senses to multimodal experiences and eating behaviour



AARHUS UNIVERSITY

Sensory research at the Food Quality Perception & Society Science Team (FQS) at Aarhus University Denmark, focuses on innovation in food quality through human perception. Our approach is via a cross-disciplinary synergy of multisensory human food analysis, experimental psychology, physiological responses and cognitive neuroscience with partners. This multidisciplinary synergy is uniquely applied in the design and development of high quality, better-tasting, more stimulating, more memorable, and healthier food and drink experiences. As a team we work in all product categories across the food chain, from primary production to food processing and on to eating and retailing scenarios with the consumer.

Our outcome areas are focused on the determination of the sensory and perceptual effects of the intake of food products and constituents in relation to human health. We have specific focuses on, areas such as appetite, sensory specific satiety, sweetness and sugar reduction, lipid reduction and substitution, basic sensory cross modal interactions. In addition, we are interested in the combined influences of product intrinsic and extrinsic factors, and on to an understanding of the workings of our gustatory sensory system. Our research is underpinned by studies on the development of sensory methods and the application of multivariate data analysis in understanding sensory relationships in multidisciplinary scenarios. Moreover, enhancing knowledge about the ways in which variation in foods, contexts and individuals affect consumers' attitudes, hedonic eating experience and food intake is also central in our research.

SENSORY RESEARCH IN MULTIDISCIPLINARY CONTEXTS FOR HEALTHIER EATING

The Senses



- Taste-taste interactions in food quality and new food design
- Quality and sensory perception of raw materials and ingredients re new foods
- Understanding taste via ultra precise profiling of food sensory properties
- Objective expert sensory reference panels in different product categories

Perception



- Sweetness perception in food and beverages
- ISO approved expert sensory profiling lab and associated facilities
- Intrinsic factors in new products to support healthier choices in sweet, sour, salt and bitter contexts
- Sensory quality as affected by production storage- and processing conditions
- New quantitative methods for sensory response measurement

Psychology



- Environmental food-extrinsic factors (e.g. sound) in food perception.
- Biometric and observation based measurements such as eyetracking, emotion recognition, and skin conductance for implicit consumer evaluations
- Colour, shape, weight and size in our food and food portions re eating behaviour
- Hedonic consumer mobile and online measurement capabilities
- Multisensory perception and interactions in food quality and eating experiences

Physiology



- Satiety and hedonic responses in the brain linked to eating behaviour
- Post Ingestive sensations in food design
- EEG, fMRI and sweetness perception in the brain
- Perception and the endocrine response to changing food constituents
- Satiety optimised and focused food product production

Consumers



- Analysis of consumer preferences across the life span and generations
- Developing food in synergy with the industry for the future consumer
- Cross-cultural new food design and development for future key export markets
- Consumer measurement capabilities for different demographic groups, children, adolescents, elderly
- Food consumption / eating patterns of the future, lifestyle and food products

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RESEARCH PLATFORM – IN MULTIMODAL PERCEPTION

Methodologies include the development, application and evaluation of unique approaches to measure and analyse food properties based on human perception from a mind and mouth and physiological perspective. FQS has professional; trained and tested sensory panels in different product categories and a state of the art ISO-approved sensory analysis laboratory.

Qualitative and quantitative consumer studies, (including children, adolescents, adults and the elderly) both in-house and in natural settings, are also utilised to elucidate consumers' reactions to foods before and after food intake and with repeated use. Important also at FQS is the synergy of human sensory measurements and methods with onsite instrumental techniques e.g. Texture and colour analysis, GC-MS, LC-MS and NMR.

Moreover, via key project partnerships we integrate neuro-imaging, physiological measurements, clinical medicine and psychological paradigms into our research.