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Feasibility of high pressure processing towards quality parameters preservation in reduced sodium chloride vegetable juices and purées - Project description

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We present a new research project towards food reformulation financed by the Federal Ministry for Food and Agriculture (FKZ 2819107816).

Background and Aim

While worldwide a daily salt intake below 6 g sodium chloride is recommended, in Germany a great number of the population consume more than 10 g salt a day. The German Nutrition Society (DGE) recommends a reduction of the daily intake mainly by reduction of the salt content in industrialised food products. Bread, meat, sausages and cheese are the food products with the highest contribution to salt intake, but the amount delivered by vegetable products cannot be neglected.

A reduction of the salt content in the food formulation can induce both microbiological and sensorial quality detriments. In vegetable products such as juice and purées, salt is added mainly to enhance sensorial properties.

Nowadays it is known that: (i) the structure, texture and rheological properties of food have an impact on salt perception, (ii) high pressure (HP) processing modifies the structure and rheological properties of plant food matrices and (iii) an enhanced salt perception has been reported for HP treated meat products.

Based on this knowledge, our aim is to investigate the feasibility of HP processing towards the preservation of quality parameters in reformulated vegetable products, such as juice or purée, with reduced salt content.

Methods

Tomato and carrot juice and/or purée with addition of salt at different levels ($0 - 1 \text{ gmL}^{-1}$) will be produced and processed by applying static and dynamic HP ($\leq 400 \text{ MPa}$). The analytical methods include: dietary fibre characterisation; particle characterisation; rheological properties; sodium content and release. Selected HP processed samples will undergo sensory analysis with the focus on salt perception. Relationships between treatment parameters, properties of the samples and salt perception will be established.

Expected Outcomes

Scientific basic knowledge for the development of low salt vegetable juices and purées by HP processing.