

Mitigating Off-flavor Notes in Rapeseed and Pea Protein Isolates by Means of the SENSOMICS Approach

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ABSTRACT:

As food bottlenecks encourage political unrest and drive conflicts, a lasting supply of safe, tasty and high-quality protein-rich food for the population is of key importance. Due to the growing world population and individual consumer needs, the global demand for sustainable, nutritional and functional plant-derived food proteins increased during the last decade. Next to the most common plant protein, soy, which contains sufficient quantities of the essential amino acids, other vegetable proteins from e.g. pea or rapeseed are known and seems to be promising protein sources for the future. Although these proteins offer an alternative to vegans, and people who live in regions where animal proteins sources are scarce, their grassy-beany and bitter-astringent off-flavor is often the reason for consumer complaints and, therefore, is causing a major problem for plant protein processors and user.

The presentation will highlight analytical strategies to identify key flavor compounds and off-flavor stimuli in plant-based proteins by means of the Sensomics approach. The knowledge of such chemosensory key molecules then opens new avenues towards a better understanding of their sensory activity by correlating functional data from human psychophysics studies and taste receptor activation patterns. Moreover, these results can be taken to effectively navigate breeding plans or technological processes and to improve application studies toward the production of preferentially pleasant and least grassy/beany smelling and bitter/astringent tasting plant derived protein isolates.