

P2.087 From texture analyzer to mouth: development of predictive models to estimate sensory textural properties in cheese

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Abstract

Trentingrana is a semi-fat, hard, cooked cheese ripened for 2 years and more. The distinctive production process ensures the peculiar sensory quality and its characteristic granular texture.

Texture properties are critical quality traits for ripened cheese, affecting its overall sensory quality and acceptability. Because monitoring texture sensory properties using traditional sensory evaluations is highly expensive and time-consuming, predictive models could be promising tools that lower the costs and produce effective results.

The present study developed Partial Least Squares Regression models to estimate textural sensory attributes from instrumental texture measurements and gross composition in 64 cheese wheels sampled from the Trentingrana consortium dairies (n = 15).

A trained panel (n = 14; 71 % males; average age = 40 years old) analyzed Trentingrana samples in duplicate according to conventional descriptive sensory analysis. The texture attributes evaluated were hardness, friability, humidity, crystals, microstructure, and solubility.

The same cheeses were analyzed for mechanical properties using uniaxial penetration in 24 replicates in the same portion of cheese evaluated by the panel, sampled in different positions considering the variability inside the product. Cheese gross composition was estimated by Near Infra-Red (NIR) spectroscopy.

The predictive models had performances significantly different from the null distribution for three descriptors: hardness, solubility, and humidity.

Coefficients of the models were bootstrap validated, thus estimating the relationships between oral perception and physical properties of cheese.

Significant correlations between perceived hardness and the maximum force applied and between perceived humidity and the presence of fat were estimated.

Results suggest that mechanical parameters can be associated with the sensory perception of texture, and their measurement could be related to the estimation of sensory quality.

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Keywords

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