Title:

Predicting the ideal texture of "French Fries" by analytical measurements?

Measuring the objective sensory perception by a trained descriptive panel is today's standard in sensory analysis. The gathered data allows companies to compare their own product's characteristics, relative to their competitions', and adjust their recipes accordingly. Using a descriptive panel for these tasks is time and cost intensive, whereas analytical applications benefit from inexpensive and quick results. Thus there is an increasing interest in establishing a system of analytical techniques that can be performed close to the production process and that deliver immediate feedback about the product's attributes.

This actual study was designed to study the relationship between the sensory perception of the texture of "French Frys" and analytical measures of the texture of "French Frys". "French Frys" were selected as the product to be investigated, because numerous studies have proved that the texture of "French Frys" is a key attribute for consumer acceptance. Measurement of the texture of "French Frys" has been extremely costly and time consuming, as it was only carried out by a descriptive panel. Therefore, the objective was to develop a new predictive system, which uses only a few selected instrumental measurements to estimate the textural perception of "French Frys".

For this purpose, the texture properties of different "French Frys" samples were analyzed by an experienced descriptive panel. Afterwards the samples were measured analytically with the "Texture Analyzer TA.XT plus" and an "Acoustic Envelope Detector". An "Analysis of Variance" and a "Principle Component Analysis" were used for the evaluation of the texture measurements, followed by a correlation of the sensory attributes with instrumental parameters using "Partial Least Square Regression".

The results show that it is possible to construct reliable models with a good prediction quality, using mechanical and acoustical parameters. This gives "French Fry" producers a practical method to control the texture attributes of their product.