

# APPLICATION OF FUZZY LOGIC FOR DETERMINATION OF OPTIMAL NUMBER OF EVALUATORS FOR DESCRIPTIVE SENSORY ANALYSIS

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## Abstract

Descriptive sensory analyses are methods used for evaluation of food products quality. Assessor selection and an evaluation team forming is a responsible and complex job. For an objective assessment of the food product sensory quality, it is necessary to determine the optimal number of qualified assessors who will give reliable measurement results at minimal cost. Fuzzy logic heretofore has not been used in determining of optimal number of the evaluation team members required for food products sensory analysis. The aim of this paper is to rank the assessors based on the results of descriptive analysis, and to determine the optimal number of evaluation team members, required for the products quality evaluation.

Ranking the assessors was based on the results of descriptive sensory analysis of cocoa pastry quality, using fuzzy logic. After training, 20 assessors analyzed 4 selected sensory quality parameters of cocoa pastry appearance. The obtained results were analyzed and processed using fuzzy logic. The evaluators were ranked and classified into one of six groups, formed based on the assessment of the similarity of the results of the products appearance sensory analysis.

It was determined that 18 of 20 evaluators had values for similarity results in the range from 0.8461 to 0.9150, and that they very successfully realized the sensory evaluation of the products quality. In addition, by applying the fuzzy logic, it was found that with 9 trained assessors, can be formed a team of optimal size, suitable for an objective descriptive sensory analysis of the cocoa pastries quality.

The presented methodology of processing the results of sensory analysis by fuzzy logic can be used as a model for determining the optimal size of the evaluation team for sensory analysis of the other sensory properties of food products.

**Key words:** *Fuzzy logic, Sensory analysis, Food product, Assessor selection.*