Electronic Nose Based on Metal Oxide Semiconductor Sensors as an Alternative Technique for the Spoilage Classification of Oat Milk

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Abstract : The aim of the present study was to develop a rapid method for electronic nose for online quality control of oat milk. Analysis by electronic nose and bacteriological measurements were performed to analyse spoilage kinetics of oat milk samples stored at room temperature and refrigerated conditions for up to 15 days. Principal component analysis (PCA), discriminant factorial analysis (DFA) and soft independent modelling by class analogy (SIMCA) classification techniques were used to differentiate the samples of oat milk at different days. The total plate count (bacteriological method) was selected as the reference method to consistently train the electronic nose system. The e-nose was able to differentiate between the oat milk samples of varying microbial load. The results obtained by the bacteria total viable counts showed that the shelf-life of oat milk stored at room temperature and refrigerated conditions were 20 hours and 13 days, respectively. The models built classified oat milk samples based on the total microbial population into "unspoiled" and "spoiled".

Keywords : electronic-nose, bacteriological, shelf-life, classification
Conference Title : ICAFE 2014 : International Conference on Agricultural and Food Engineering
Conference Location : Miami, United States
Conference Dates : March 10-11, 2014