


Use of quantitative descriptive analysis (QDA) coupled with multivariate statistical methods to detection and discrimination of adulterated fresh cheeses

José M. Juárez-Barrientos, Marisol de Montserrat Tejeda-Paz, Emmanuel de Jesús Ramírez-Rivera, Andrés Aguirre-Cruz, Jesús Rodríguez-Miranda, Cecilia E. Martínez-Sánchez, Erasmo Herman-Lara 

First published: 28 November 2018

<https://doi.org/10.1111/joss.12479>

 [VIEW METRICS](#)

Funding information Consejo Nacional de Ciencia y Tecnología, Grant/Award Number: 290941-ITTUX

Abstract

The most recurrent adulteration of cheeses consists of adding vegetable fat of lower cost than milk fat. Several analytical techniques are used to detect adulteration of cheeses but do not offer sensory perception information. The objective of this study was to detect and discriminate fresh cheeses adulterated with known concentrations of vegetable fat using sensory analysis coupled with multivariate techniques. The panel generated eight attributes through Quantitative Descriptive Analysis. The results showed that the power of discrimination was high ($p < .05$) in each panelist and panel level in all attributes evaluated. Principal Components Analysis explained the use of average value of the attributes, about 85% of the variability of the cheeses in two main components. Using dendrogram and confidence ellipses, the adulterated cheeses with a concentration of 15 g/L or higher of vegetable fat were identified. The discrimination of adulterated cheeses by this method was 92.5%.

Practical applications

The findings demonstrated the high sensitivity of the sensory panel, which aligned well with analytical statistical techniques for the differentiation and detection of cheeses, which may be applied well to other adulterated food products. The proposed methodology could be implemented in companies, research centers, and associations of producers with economic restrictions that do not allow for sophisticated analytical equipment for the determination of adulterated food products.