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Authors: Olga Monago-Maraña, María Guzmán-Becerra, Arsenio Muñoz de la Peña, Teresa Galeano-Díaz

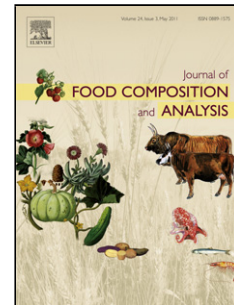
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DETERMINATION OF PUNGENCY IN SPICY FOOD BY MEANS OF EXCITATION-EMISSION FLUORESCENCE COUPLED WITH SECOND-ORDER CHEMOMETRIC CALIBRATION

Olga Monago-Maraña^{1,2}, María Guzmán-Becerra¹, Arsenio Muñoz de la Peña^{1,2} and Teresa Galeano-Díaz^{1,2*}

¹Department of Analytical Chemistry, University of Extremadura, Badajoz 06006, Spain.

²Research Institute on Water, Climate Change and Sustainability (IACYS), University of Extremadura, Badajoz 06006, Spain.

*Corresponding author. E-mail address: tgaleano@unex.es

HIGHLIGHTS

- Coupling total fluorescence signals with second-order multivariate methods allows easy quantification of capsaicinoids in spicy foods.
- A solid-phase extraction step has been optimized to extract capsaicinoids from spicy samples.
- This method provides values of Scoville Heat Units that agree well with those obtained by HPLC analysis

Abstract

Capsaicinoids are a family of compounds responsible for the pungency of spicy foods. In this work, the combination of fluorescence and chemometrics was investigated as a novel quantification method of capsaicinoids in spicy food samples. The excitation–emission matrices (EEMs) of the two major capsaicinoids (capsaicin and dihydrocapsaicin) were identical. Hence, the results were presented as the total content of capsaicinoids. The EEMs of a group of paprika, cayenne and chilli peppers, and of another group of spicy sauces were registered. The decomposition of the EEMs of each group was performed by parallel factor analysis (PARAFAC), obtaining three principal components in each case. After the decomposition, the component corresponding to capsaicinoids was identified by comparison with the profile of a standard mixture of capsaicin and dihydrocapsaicin. In addition, the score values of this component were correlated with the Scoville heat units (SHU) calculated by means of an

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