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DEVELOPMENT OF A STRATEGY FOR THE QUANTIFICATION OF FOOD ALLERGENS IN SEVERAL FOOD PRODUCTS BY MASS SPECTROMETRY IN A ROUTINE LABORATORY

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Abstract

Worldwide, mass spectrometry is widely used to detect and quantify food allergens, especially in complex and processed food products. Yet, the absence of a regulatory framework for the developed methods has led to a lack of harmonization between laboratories. In this study, ten allergens were analyzed in eight food products by UHPLC-MS/MS, in order to establish criteria for the retention time, variation tolerance, the ion ratio deviation, and the signal-to-noise ratio for allergen detection. The set of criteria should help laboratories to compare results and avoid false positives and negatives. Furthermore, a strategy combining standard addition and labeled peptide correction was used to quantify milk, soy, peanut, and egg allergens in eight food products. This strategy is particularly interesting for routine laboratories, which receive hundreds of samples and cannot use an external calibration curve for each sample.

Keywords

UHPLC-MS/MS, multi-allergens, detection, quantification strategies, labeled peptides, standard addition.

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