MULTI-ANALYTE ALLERGEN ANALYSIS IN BAKERY PRODUCTS BY LC-MS/MS

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The presence of hidden allergens in foods can result in serious health issues, necessitating a method capable of detecting them at trace levels . Bakery products may be cross contaminated by milk, egg, peanut and nuts. are usually offered to the consumers stuffed with feta cheese, .almond or hazelnut. According Rapid Alert System for Food and Feed in Europe we had 115 product recalls . Most of them were bakery and confectionary products. The main method of food allergens detection in food products is immunoanalytical (ELISA) ISO15633.

Liquid chromatography tandem mass spectrometry (LC–MS/MS) is a new method for allergen detection that is highly specific, sensitive, and can analyses multiple allergens in a single injection. The method allows direct analysis of multiple allergenic proteins in a single preparation and is more sensitive.

Allergenic proteins are extracted from samples and are subsequently digested into peptide fragments (two lactoglobulin peptides LSFNPTQLEEQCHI& TPEVDDEALEK, and four hazelnut and almond target peptides) that are directly analysed using their characteristic molecular masses. The analysis of multiple target peptides and their unique masses and fragmentation patterns improves the reliability of allergen detection compared to ELISA

techniques. Detection of multiple allergens in olive spreads including almond, milk, , and hazelnut proteins can be performed by the chromatography of 10 target peptides. Waters Premier Quatro LC-MS/MS was used for the tests according to AOAC SMPR 2016.002 performance requirements.

Although sample preparation for LC–MS–MS analysis of allergens might takes longer than that for analysis by Elisa and PCR techniques, the benefits that LC-MS/MS can bring to the analysis of allergenic proteins is significant as you could have by a single injection up to eight different food allergens

Keywords:

BAKERY PRODUCTS, FOOD ALLERGENS , LC-MS/MS