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The Development of Liquid Chromatography Tandem Mass Spectrometry Method for Citrinin Determination in Dry-Fermented Meat Products

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Abstract : Mycotoxins are toxic secondary metabolites produced by numerous types of molds. They can contaminate both food and feed so that they represent a serious public health concern. Production of dry-fermented meat products involves ripening, during which molds can overgrow the product surface, produce mycotoxins, and consequently contaminate the final product. Citrinin is a mycotoxin produced mainly by the Penicillium citrinum. Data on citrinin occurrence in both food and feed are limited. Therefore, there is a need for research on citrinin occurrence in these types of meat products. The LC-MS/MS method for citrinin determination was developed and validated. Sample preparation was performed using immunoaffinity columns, which resulted in clean sample extracts. Method validation included the determination of the limit of detection (LOD), the limit of quantification (LOQ), recovery, linearity, and matrix effect in accordance to the latest validation guidance. The determined LOD and LOQ were 0.60 µg/kg and 1.98 µg/kg, respectively, showing a good method sensitivity. The method was tested for its linearity in the calibration range of 1 µg/L to 10 µg/L. The recovery was 100.9 %, while the matrix effect was 0.7 %. This method was employed in the analysis of 47 samples of dry-fermented sausages collected from local households. Citrinin wasn't detected in any of these samples, probably because of the short ripening period of the tested sausages that takes three months tops. The developed method shall be used to test other types of traditional dry-cured products, such as prosciuttos, whose surface is usually more heavily overgrown by surface molds due to the longer ripening period.

Keywords : citrinin, dry-fermented meat products, LC-MS/MS, mycotoxins
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