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THE FATE OF GLYCOALKALOIDS DURING THE CULINARY PROCESSING OF POTATOES

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Potatoes (*Solanum tuberosum*) are an important world crop and raw material for the production of popular food products. They are associated not only with nutritionally significant components, but also the presence of toxic glycoalkaloids (GAs), specifically α -solanine and α -chaconine, is described in them. These toxic metabolites can have an adverse effect on the consumer's health at higher intakes. The European Commission therefore recommended (2022/561/EU) to monitor the concentrations of these naturally occurring substances in potatoes and their products in order to obtain a high-quality data set for health risk assessment. During the processing of potatoes, degradation of the original substances occurs and therefore it is necessary to study their degradation products, such as β -solanine/chaconine, γ -solanine/chaconine and their aglycone solanidine. This study aimed to monitor the spectrum of GAs in potato products (n = 20) purchased in the market network of the Czech Republic. A U-HPLC-HRMS method was developed and validated, which also enabled the monitoring of target analytes for which no analytical standard was available. Some concentrations in the analyzed sample exceeded the indicative level of the EU Commission recommendation of 100 mg/kg for the sum of α -solanine and α -chaconine, the sum of the concentrations in all these samples was in the range of 32 to 144 mg/kg. In addition, this study also paid attention to the influence of the culinary processing of potatoes. High levels of signals corresponding to the target analytes were detected in samples of fried crisps, degradation products were also observed after scraping, grating or slicing raw potatoes. This part of the here presented research led to the acquisition of an important complex data set summarizing the presence of hydrolysis products of the original glycoalkaloids.

Keywords: glycoalkaloids, liquid chromatography, mass spectrometry, degradation products, potatoes

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