Electrospray ionization mass spectrometric analysis of complexes between peptide-derived Amadori products and borate ions.

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Streszczenie

Hexose-modified peptides, products of the enzymatic hydrolysis of glycated proteins, could be used as markers of diabetes mellitus, the aging process and other diseases. The main difficulty in this approach is the detection of glycated peptides in the complex mixtures of compounds. In this study we investigated the formation of borate complexes of the peptide-derived Amadori products by high-resolution mass spectrometry (HRMS) and tandem mass spectrometry (MS/MS) experiments. It was found that the formation of a complex with the borate ion stabilizes the sugar moiety, resulting in the simplification of the fragmentation patterns of peptide-derived Amadori products. The level of dehydration, as well as the elimination of formaldehyde from the precursor ions of borate complexes, was lower as compared to the free peptide. On the other hand the intensity of the b- and y-type ions for borate complexes is significantly higher in comparison to the free peptide-derived Amadori product. Moreover, the elimination of a whole hexose moiety was not detected in the examined peptides.

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