Methods of the site-selective solid phase synthesis of peptide-derived Amadori products.

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Streszczenie

Two procedures of glycated peptides' synthesis have been developed. The first method involves reductive alkylation of the ε-amino groups of lysine with 2,3:4,5-di-O-isopropylidene-β-d-arabino-hexos-2-ulo-2,6-pyranose in the presence of sodium cyanoborohydride on solid support. The second one uses a new fully protected lysine derivative, which is a building block designed for direct introduction of the glycated lysine moiety into a peptide, according to the standard solid phase synthesis protocol. The applicability of the proposed methods for the synthesis of peptide-derived Amadori products is discussed. The structure of the synthesized glycated peptides was confirmed by high-resolution mass spectrometry and enzymatic hydrolysis. Circular dichroism studies, performed in water solution, revealed that the formation of the Amadori rearrangement product in the lysine side chain does not influence significantly the conformational preferences of the peptides studied. However, when the solvent was changed to trifluoroethanol, the glycated peptides preferred β-turn conformation.

Słowa kluczowe

Solid phase peptide synthesis, Amadori rearrangement, glycation, Enzymatic stability

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