The unusual hydrogen-deuterium exchange of α-carbon protons in*N*-substituted glycine-containing peptides.

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Streszczenie

Hydrogens connected to α-carbon (α-C) of amino acid residues are usually resistant to hydrogen-deuterium exchange (HDX) unless reaction conditions promote racemization. Although N-methylglycine (sarcosine) residue has been found in biologically active peptide such as cyclosporine, to the best of our knowledge, the HDX of α-C protons of this residue was not explored yet. Here, we presented a new and efficient methodology of α-C deuteration in sarcosine residues under basic aqueous conditions. The deuterons, introduced at α-C atom, do not undergo back-exchange in acidic aqueous solution. The electrospray ionization-MS and MS/MS experiments on proposed model peptides confirmed the HDX at α-C and revealed the unexpected hydrogen scrambling in sarcosine-containing peptides. Although the observed HDX of α-C protons is only successful in N-acylglycine when the amide possesses a certain degree of alkylation, it offers a new approach to the analysis of sarcosine-containing peptides such as cyclosporine

Słowa kluczowe

ESI-MS/MS, HDX of peptides, cyclosporine, hydrogen scrambling, sarcosine

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