Inhibitory activity of double-sequence analogues of trypsin inhibitor SFTI-1 from sunflower seeds: an example of peptide splicing.

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Streszczenie

Four 28-amino acid peptides were synthesized whose sequences comprised two molecules of trypsin inhibitor sunflower trypsin inhibitor 1 (SFTI-1) bound through a peptide bond. The peptides in their reactive positions (5 and 19 of the peptide chain) contain two Lys ([KK]BiSFTI-1) and two Phe ([FF]BiSFTI-1) residues, along with a combination of the amino acid residues named thereafter [KF]BiSFTI-1 and [FK]BiSFTI-1. Association constants of the analogues determined with trypsin and chymotrypsin, respectively, indicated that they were potent inhibitors of cognate proteinases. An MS study of the associates revealed that incubation of the compounds with the proteinases resulted in cutting out a fragment of the peptide chain to restore the native monocyclic molecule of SFTI-1 or its analogue [Phe(5)]SFTI-1. This process, analogous to that of the DNA and protein splicing, can be referred to as 'peptide splicing'.

Słowa kluczowe

inhibitors, mass spectrometry, peptides splicing, serine proteinases, SFTI-1

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