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Characteristics of a novel secreted zinc-dependent endopeptidase of Bacillus intermedius

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Abstract

A novel zinc-dependent metalloendopeptidase of Bacillus intermedius (MprBi) was purified from the culture medium of a recombinant strain of Bacillus subtilis. The amino acid sequence of the homogeneous protein was determined using MALDI-TOF mass spectrometry. The sequence of the first ten residues from the N-terminus of the mature protein is ASTGSQKVTV. Physicochemical properties of the enzyme and its substrate specificity have been studied. The molecular weight of the metalloproteinase constitutes 19 kDa, the K m and k cat values are 0.06 mM and 1210 sec-1, respectively, and the pI value is 5.4. The effect of different inhibitors and metal ions on the enzyme activity has been studied. Based on the analysis of the amino acid sequence of the active site motif and the Met-turn together with the enzyme characteristics, the novel bacterial metalloproteinase MprBi is identified as a metzincin clan adamalysin/reprolysin-like metalloprotease. © 2010 Pleiades Publishing, Ltd.

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Keywords

Adamalysins/reprolysins, Astacins, Bacillus intermedius, Bacillus subtilis, Metalloproteinase, Metzincins