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Biosynthesis and localization of glutamylendopeptidase from Bacillus intermedius strain 3-19

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Abstract

The biosynthesis of glutamylendopeptidase from Bacillus intermedius strain 3-19 and localization of the enzyme in the bacterial cells was studied. The synthesis of the enzyme was suppressed by easily metabolizable carbon sources. Inorganic phosphate and NH+ 4 ions stimulated the production of glutamylendopeptidase. Complicated organic substrates such as casein, gelatine, and haemoglobin did not affect the biosynthesis of the enzyme. The divalent metallic ions Ca2+, Mg2+, Co2+ increased the production of glutamylendopeptidase while Zn2+, Cu2+, and Fe2+ reduced the biosynthesis of proteinase. The rate of synthesis of the enzyme increased when the rate of the bacterial growth decreased. The maximum enzyme activity in the culture fluid was determined at the stationary phase of growth. In the cells glutamylendopeptidase was bound to the cytoplasmic membrane, and the maximal enzyme activity was detected in the stationary growth phase. The results facilitated the development of a medium which yielded the maximum glutamylendopeptidase production by B. intermedius strain 3-19.

Keywords

Biosynthesis, Glutamylendopeptidase, Growth conditions, Localization, Proteinase