

Peculiarities of the biosynthesis of *Bacillus intermedius* glutamyl endopeptidase in recombinant *Bacillus subtilis* cells during the stationary growth phase

Chastukhina I., Sharipova M., Gabdrakhmanova L., Balaban N., Kostrov S., Rudenskaya G., Leshchinskaya I.

Kazan Federal University, 420008, Kremlevskaya 18, Kazan, Russia

Abstract

We studied the biosynthesis of *Bacillus intermedius* glutamyl endopeptidase in the recombinant *Bacillus subtilis* strain AJ73 Δ 58.21 during the stationary growth phase. We optimized the composition of the culture medium to favor effective enzyme production during the stationary growth phase, and found that the nutritional requirements for glutamyl endopeptidase synthesis were different in the stationary phase and growth retardation phase. Proteinase accumulation was activated by complex organic substrates (casein and gelatin). During final stages of the culture growth, the enzyme production was stimulated by Ca^{2+} , Mn^{2+} , and Co^{2+} and inhibited by Zn^{2+} , Fe^{2+} , and Cu^{2+} . The synthesis of glutamyl endopeptidase in the late stationary phase was not inhibited by glucose, unlike that in the trophophase during proliferation. We conclude that the regulatory mechanisms of proteinase synthesis during vegetative growth and sporulation are different.

Keywords

Glutamyl endopeptidase, Growth conditions, Recombinant strain, Regulation of biosynthesis, Sporulation