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Biosynthesis of the *Bacillus intermedius* subtilisin-like serine proteinase by the recombinant *Bacillus subtilis* strain

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Abstract

The effect of certain nutrients on the growth and production of the *Bacillus intermedius* subtilisin-like serine proteinase by the recombinant strain *Bacillus subtilis* AJ73(pCS9) was studied. Glucose was found to inhibit the synthesis of proteinase in the early (28 h of growth) but not in the late stationary phase (48 h of growth). The inhibitory effect of the other mono- and disaccharides studied was less pronounced. Casamino acids added to the medium at concentrations of 0.1-1% as an additional carbon and nitrogen source stimulated enzyme biosynthesis. Individual amino acids (cysteine, asparagine, glutamine, tryptophan, histidine, and glutamate) also stimulated enzyme biosynthesis in the early stationary phase by 25-30%, whereas other amino acids (valine, leucine, alanine, and aspartate) were ineffective or even slightly inhibitory to enzyme production. The stimulatory effect of the first group of amino acids on the synthesis of proteinase in the late stationary phase was negligible. In contrast, the bivalent ions Ca²⁺, Mg²⁺, and Mn²⁺ stimulated biosynthesis of proteinase in the late stationary phase (by 20-60%) and not in the early stationary phase. The data indicate that there are differences in the biosyntheses of proteinase by the recombinant *B. subtilis* strain during the early and late periods of the stationary phases. © Pleiades Publishing, Inc., 2006.

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Keywords

Biosynthesis, Growth conditions, Recombinant strain, Subtilisin-like serine proteinase