

Microbiology 2009 vol.78 N6, pages 689-695

Effect of the regulation system of metabolic nitrogen exchange on biosynthesis of serine proteinases from *Bacillus intermedius*

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Abstract

The regulatory link between biosynthesis of *Bacillus intermedius* subtilisin-like serine proteinase and nitrogen metabolism in *B. intermedius* cells was determined. The level of the enzyme biosynthesis by the recombinant strain of *Bacillus subtilis* in the medium containing ammonium ions was three- to fivefold less than that in the medium with poorly utilized sodium nitrate. Accumulation of glutamyl endopeptidase in a culture liquid of this microorganism did not depend on the source of nitrogen present in the medium. During cultivation in the rich medium, the productivity of subtilisin-like proteinase in the recombinant *B. subtilis* strain carrying a mutation in the NrgB sensor protein was demonstrated to increase threefold compared to that of the control strain. In the minimal culture medium, mutation in the *nrgB* gene abolished the effect of a nitrogen source on the level of the subtilisin-like proteinase gene expression. At the same time, this mutation did not affect glutamyl endopeptidase biosynthesis. Thus, expression of the gene coding for subtilisin-like proteinase from *B. intermedius* is suggested to be positively regulated by the regulatory system of nitrogen metabolism. © Pleiades Publishing, Ltd., 2009.

<http://dx.doi.org/10.1134/S0026261709060046>

Keywords

Bacillus intermedius, Glutamyl endopeptidase, Nitrogen catabolite repression, Subtilisin-like proteinase