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Salt stress induction of glutamyl endopeptidase biosynthesis in *Bacillus intermedius*

Leila Gabdrakhmanova[a,*], Innokentii Vishniakov[b], Margarita Sharipova[a], Nelly Balaban[a], Sergey Kostrov[b], Inna Leshchinskaya[a]

[a]*Department of Microbiology, Kazan State University, Kazan, Russia*
[b]*Institute of Molecular Genetics, Moscow, Russia*

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Summary

Bacteria from the genus *Bacillus* have evolved complicated regulatory networks to be protected from various environmental stresses, including sudden increase in salinity. Among these regulatory mechanisms is the DegS–DegU signal transduction system, which controls degradative enzyme synthesis and is involved in sensing salt stress in *Bacillus subtilis*. We report the study of biosynthesis regulation of *Bacillus intermedius* glutamyl endopeptidase under salt stress conditions. Salt stress during growth in medium containing 1–2.5 M NaCl, KCl or disodium succinate leads to the induction of glutamyl endopeptidase. Analysis of the regulatory region of the gene for *B. intermedius* glutamyl endopeptidase revealed the presence of a tentative target sequence for DegU control, AGATN$_{10}$TTGAG. For the expression of the glutamyl endopeptidase gene, functional DegU protein is required. Thus, we suggest that expression of the gene for *B. intermedius* glutamyl endopeptidase may be controlled by a regulatory system analogous to DegS–DegU two-component system in *B. subtilis*.

Introduction

Bacteria from the genera *Bacillus* have evolved highly sophisticated regulatory networks for protection against sudden unfavourable environmental changes, including nutrient starvation, changes in temperature and humidity, oxidative stress, sudden elevation in medium salinity and others. *Bacillus subtilis* is able to respond to environmental challenges by spore formation, the uptake of foreign DNA (competence), the production of degradative enzymes, or the induction of a large set of general stress proteins (Sonensein, 2000; Kunst and Rapoport, 1995; Hecker and Volker, 2001; Petersohn et al., 2001).

As a soil bacterium, *B. subtilis* has developed sensing and adaptation mechanisms which allow it

*Corresponding author.
E-mail address: Leila.Gabdrakhmanova@ksu.ru (L. Gabdrakhmanova).

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