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Activation of biosynthesis of guanyl-specific ribonuclease secreted by *Bacillus circulans* under salt stress

Kharitonova M., Kipenskaya L., Ilinskaya O.
Kazan Federal University, 420008, Kremlevskaya 18, Kazan, Russia

Abstract

© 2016, Pleiades Publishing, Inc. The gene transcription of guanyl-specific ribonucleases (RNases), which provide available phosphate to cells of *Bacillus*, is controlled by the signal transduction system PhoP–PhoR. However, the biosynthesis of *B. circulans* RNase does not depend on the signal-transduction regulatory proteins of Pho regulon. It has been found that raising the salt molar concentration in culture medium increases the level of extracellular guanyl-specific ribonuclease Bci synthesized by *B. circulans*. Sequences homologous to the binding sites of the regulatory protein DegU were found in RNase Bci promoter. The functioning of the DegS–DegU signal transduction system is stimulated by a high salt concentration. Using a strain of *B. subtilis* that is defective in the DegU regulatory protein, we have shown that the DegS–DegU system participates in the regulation of RNase Bci expression under salt stress.

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Keywords

Bacillus circulans, biosynthesis activation, guanyl-specific ribonuclease, salt stress