

Expression of the guanyl-specific ribonuclease genes in bacillus intermedius and bacillus pumilus is regulated by the PhoP-PhoB two-component signal-transduction system of the PHO regulon of bacillus subtilis

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Abstract

Promoters of the genes of guanyl-specific ribonucleases of *Bacillus intermedius* (binase) and *Bacillus pumilus* (RNase Bp) were found to contain sequences homologous to those recognizable by the regulatory protein PhoP in the promoters of the PHO regulon of *B. subtilis*, as well as regions partially homologous to the binding sites of another regulatory protein, PhoB, in the promoters of the PHO regulon of *Escherichia coli*. The role of the two-component regulatory systems PhoP-PhoR and PhoB-PhoR in the regulation of expression of the genes of binase and RNase Bp in recombinant strains of *B. subtilis* and *E. coli* was studied by using mutant strains. It was established that the expression of these genes in recombinant *B. subtilis* cells is stringently controlled by the PhoP-PhoR two-component regulatory system, whereas the expression of these genes in *E. coli* cells is not controlled by the regulatory proteins PhoB or PhoR. Presumably, regulatory systems of the response to phosphate starvation, analogous to the PHO regulon of *B. subtilis*, also function in other representatives of the genus *Bacillus*.

Keywords

Bacilli, PHO regulon, Ribonuclease, Two-component regulatory systems