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## Proteinases from *Bacillus intermedius* secreted in the late stages of sporulation

Balaban N., Gabdrakhmanova L., Sharipova M., Mardanova A., Sokolova E., Rudenskaya G., Leshchinskaya I.

*Kazan Federal University, 420008, Kremlevskaya 18, Kazan, Russia*

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### Abstract

**Background:** Proteinases are widely used in various fields of medicine, such as the treatment of burns, purulent wounds, or decubitus ulcers. On the basis of new microbial proteinases produced by nonpathogenic organisms, a new generation of medical preparations can be developed. Representatives of the *Bacillus* genera are nonpathogenic and are suitable for producing various proteases in large quantities. *B. intermedius* is shown to produce a set of alkaline proteases at the early and late stationary phase of growth. **Material/Methods:** The activity of alkaline proteinases was determined using synthetic chromogenous substrates Z-Gl-pNA and Z-Ala-Ala-Leu-pNA. To determine  $\beta$ -galactosidase activity, 2-nitro--D-galactopyranosid was used. Spores were calculated by phase-contrast microscopy. **Results:** During the late stages of sporulation *B. intermedius* 3-19 cells were shown to secrete two proteinases into the medium: glutamyl endopeptidase, with maximum activity at 40 hours of growth, and subtilisin, with maximum activity at 44 hours of growth. Evidence for the secretion of these enzymes into the medium was provided by measuring  $\beta$ -galactosidase activity. **Conclusion:** Our results show that proteinases from *B. intermedius* (glutamyl endopeptidase 2 and subtilisin 2) in the late stationary phase of growth are secreted enzymes. This suggests that these enzymes play a role in sporulation.

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### Keywords

*Bacillus intermedius*, Glutamyl endopeptidase, Secretion, Sporulation, Thiol-dependent proteinase