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Localization of alkaline phosphatase in bacillus intermedium Cells

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Abstract

Alkaline phosphatase, an enzyme secreted by *Bacillus intermedius* S3-19 cells to the medium, was also detected in the cell wall, membrane, and cytoplasm. The relative content of alkaline phosphatase in these cell compartments depended on the culture age and cultivation medium. The vegetative growth of *B. intermedius* on 0.3% lactate was characterized by increased activity of extracellular and membrane-bound phosphatases. The increase in lactate concentration to 3% did not affect the activity of membrane-bound phosphatase but led to a decrease in the activity of the extracellular enzyme. Na_2UPO_4 at a concentration of 0.01% diminished the activity of membrane-bound and extracellular phosphatases. CoCl_2 at a concentration of 0.1 mM released membrane-bound phosphatase into the medium. By the onset of sporulation, phosphatase was predominantly localized in the medium and in the cell wall. As is evident from zymograms, the multiple molecular forms of phosphatase varied depending on its cellular localization and growth phase.

Keywords

Alkaline phosphatase of *Bacillus intermedius*, Localization, Membrane-bound form