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The cellular location of proteolytic enzymes of bacillus intermedius

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Abstract

The activities of proteinases in the culture fluid and cellular fractions of *Bacillus intermedius* 3-19 grown under various conditions were studied. Thiol-dependent serine proteinase was the prevalent enzyme in the total pool of extracellular proteinases (70%); its catalytically active form was also detected in the cell membrane and, during active enzyme production, in the cell wall. Another enzyme, glutamyl endopeptidase (10% of the total pool), was detected in the cell membrane; it was also found in the cell wall and cytoplasm during active enzyme secretion into the growth medium. Production of these enzymes was maximal on medium containing inorganic phosphate and gelatin and decreased 2- to 4-fold on medium with glucose and lactate. The level of activity of extracellular enzymes correlated with that of corresponding membrane-bound proteins. The addition of CoCl_2 (2 mM) into the medium caused an essential increase in extracellular glutamyl endopeptidase activity and promoted the release of the membrane-bound enzyme into the culture fluid. Proteolytic activity towards casein was also detected in the cytoplasm. The proteinases localized in the cytoplasm were shown to differ in their properties from those secreted.

Keywords

Bacillus intermedius, Glutamyl endopeptidase, Location, Thiol-dependent serine proteinase