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Effect of the RNase from bacillus intermedium on growth and physiological characteristics of escherichia coli

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Abstract

The effect of the RNase from *Bacillus intermedium* on the growth of *Escherichia coli* was investigated. RNase added to growth medium enhanced the synthesis of DNA, RNA, and protein and stimulated cell division; the degree of stimulation depended on the enzyme concentration. A necessary condition for stimulation was the adsorption of the enzyme on the cell surface and its interaction with the cytoplasmic membrane, as demonstrated immunocytochemically. The adsorption of the enzyme was accompanied by a 43% decrease in the surface charge density. Other effects of RNase involved a 25% increase in the growth rate, a 38% biomass gain, and generation time shortening by 10 min. The stimulation of bacterial growth correlated with the stimulation of cellular respiration rate.

Keywords

Escherichia coli, Mechanism of stimulation, Rnase, Stimulation of reproduction