

Abstract

Production of anti-microbial substances by *Lactobacillus plantarum*, immobilized in calcium alginate gel beads was investigated. The beads were very unstable in De man Rogosa and Sharpe (MRS) medium but the stability of the beads improved by removing potassium and phosphate from the MRS medium. The highest stability of the beads was achieved by addition of calcium chloride to the medium. When 5% calcium chloride was added to the medium, the stability of the beads increased from 24h (when no calcium chloride was added) to 500 h, without adverse effects on the growth and antimicrobial substance production by the immobilized cells. Although the produced antimicrobial substances inhibited the growth of *Bacillus cereus*, *B. subtilis*, *Listeria monocytogenes*, and *Escherichia coli*, *B. subtilis* was the most susceptible. Under all the conditions investigated, immobilization of *L. plantarum* significantly increased the organism's ability to produce antimicrobial substances. Although suspended cells produced higher antimicrobial substances under anaerobic condition, aerobic condition improved antimicrobial substance production by the immobilized cells. This implies that microaerophilic condition is the best for antimicrobial substance production by *L. plantarum*. Keywords: Bio-insecticide, anti-microbial substances, *Bacillus thuringiensis*, endotoxin

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