

**SURVIVAL OF ENCAPSULATED PROBIOTICS
(EMULSION TECHNIQUE) IN
SIMULATED GASTRIC
pH**

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ABSTRACT

The main objectives of this experiment are to increase the survival of viable probiotic bacteria in low pH condition, to fabricate microencapsulated beads containing probiotic bacteria via the emulsion technique, and to determine the optimal concentrations of encapsulation materials; sodium alginate, inulin and glycerol, which will maximize the survival of the microencapsulated probiotic bacteria. *Lactobacillus acidophilus* LA-5® from Chr. Hansen, Denmark was used in this study. Central composite design was used to analyse the experiment data and to optimize the results. Sodium alginate concentration of 2-4% was utilized in the experiment, while concentration of inulin and glycerol that was used in this experiment ranged from 0.5-1.5% and 1-3%, respectively. The microencapsulated probiotic bacteria were subjected to high acidic condition of pH 1.5, for a period of 4 hours at 37°C. The viability of bacteria after the microencapsulation process was lower compared to the initial count, from 10.93 ± 0.21 log CFU/ml to 7.25 ± 0.14 log CFU/g. Overall the results of the microencapsulation of probiotic bacteria showed no growth after the beads was enumerated on MRS agar plate. Thus, protection of probiotic bacteria via the microencapsulation method was not achieved in this experiment. Hence further studies should be carried out to improve the survival of probiotic bacteria in acidic condition; by utilizing higher concentration of alginate, using different types of material for the formation of beads, or by using different methods of microencapsulation.

Keywords: Microencapsulation, Emulsion technique, Lactobacilli, Low pH, Survival

