SURVIVAL OF ENCAPSULATED *LACTOBACILLUS ACIDOPHILUS* LA-5 (EXTRUSION TECHNIQUE) IN YOGURT DURING REFRIGERATED STORAGE

TEOH PECK LIAN

B. Sc. (Hons.) Food Science & Nutrition
Faculty of Applied Sciences
University College Sedaya International

2008

ABSTRACT

Encapsulation of *L. acidophilus* LA-5 was tested for its protective role against low pH of yogurt during refrigerated storage up to 2 weeks. The central composite design (CCD) and response surface methodology (RSM) were adopted to derive a model for optimising the composition of the encapsulating materials, namely alginate, glycerol and inulin that resulted in the maximum survival of encapsulated *L. acidophilus* LA-5 in yogurt at 2 weeks storage. There was no significant difference in the viable count of encapsulated cells as compared to free cells. Analysis of variance (ANOVA) have shown that only alginate concentration had significant effect ($P>0.05$) on the viability of *L. acidophilus* LA-5 at 2 weeks refrigerated storage. A Linear model was obtained. The experimental results showed that the optimum concentration of alginate for encapsulation of *L. acidophilus* LA-5 was 1.81%. Inulin and glycerol concentration did not show any effect on the viability of *L. acidophilus* LA-5, thus suggesting that any amount of both inulin and glycerol within the concentration range could be used in combination with 1.81% of alginate. pH of yogurt containing the encapsulated *L. acidophilus* LA-5 was also being monitored during the whole storage period. It was observed that 11 out of 32 runs of experiments showed a decline in pH from 0 week to 2 weeks of yogurt refrigeration storage. The drop in pH was between 0.44% and 4.30%. The pH of most yogurts showed slight increment (increased between 0.95% and 5.85%) throughout storage period of 2 weeks. Beads' diameter for the optimum combination of encapsulating material was found to have a mean of 2.84mm with a standard deviation of ± 0.13.