

SURVIVAL OF ENCAPSULATED PROBIOTICS
(EXTRUSION TECHNIQUE)
IN SIMULATED GASTRIC pH SOLUTION

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2008



ABSTRACT

Synbiotic is a current approach that uses probiotics and prebiotics in combination to effectively protect probiotics under adverse environments. A *Lactobacillus acidophilus* strain was encapsulated with encapsulating materials by extrusion technique. The purpose of this study is to find an optimal combination of encapsulating materials for the probiotic encapsulation after 4 hours exposure in simulated gastric pH, with prebiotic (inulin), glycerol (cryoprotectant) and alginate (coating material) as the encapsulating materials in given ranges of concentrations (inulin 0.5-1.5%, glycerol 1-3%, alginate 2-4%). The procedure includes 3 phases: building the response surface models, finding the significant model for optimization and verifying the optimal value. The response surface methodology of the Design Expert software (Stat-Ease Inc., 2000) was used to analyze the experimental data. Results indicated that the optimized encapsulated bacteria could survive better under simulated gastric pH test. The optimal combination of encapsulating materials for the probiotic encapsulation was found to be 3.59% alginate, 1.28% inulin and 1.75% glycerol. Verification experiment was carried out to verify the value predicted (5.32 Log cfu/mL) by software with the experimental value (5.05 ± 0.07 Log cfu/mL) obtained. There is no apparent difference between the values ($P > 0.05$).

