

## Survival of Four Probiotic Strains in Acid, Bile Salt and After Spray Drying

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**Abstract :** The objective of the study was to select the survival of probiotic strains when exposed to acidic and bile salts condition. Four probiotic strains (Lactobacillus casei subsp. rhamnosus TISTR 047, Lactobacillus casei TISTR 1500, Lactobacillus acidophilus TISTR 1338 and Lactobacillus plantarum TISTR 1465) were cultured in MRS broth and incubated at 35°C for 15 hours before being inoculated into acidic condition (5 M HCl, pH 2) for 2 hours and bile salt (0.3%, pH 5.8) for 8 hour. The survived probiotics were counted in MRS agar. Among four stains, Lactobacillus casei subsp. rhamnosus TISTR 047 was the highest tolerance specie. Lactobacillus casei subsp. rhamnosus TISTR 047 reduced  $6.74 \pm 0.07$  log CFU/ml after growing in acid and  $5.52 \pm 0.05$  log CFU/ml after growing in bile salt. Then, double emulsion of microorganisms was chosen to encapsulate before spray drying. Spray drying was done with the inlet temperature 170°C and outlet temperature 80°C. The results showed that the survival of encapsulated Lactobacillus casei subsp. rhamnosus TISTR 047 after spray drying decreased from  $9.63 \pm 0.32$  to  $8.31 \pm 0.11$  log CFU/ml comparing with non-encapsulated,  $9.63 \pm 0.32$  to  $4.06 \pm 0.08$  log CFU/ml. Therefore, Lactobacillus casei subsp. rhamnosus TISTR 047 would be able to survive in gastrointestinal and spray drying condition.

**Keywords :** probiotic, acid, bile salt, spray drying

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