

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 ± 0.07 log CFU/ml after growing in acid and 5.52 ± 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 ± 0.32 to 8.31 ± 0.11 log CFU/ml comparing with non-encapsulated, 9.63 ± 0.32 to 4.06 ± 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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