

Resistance of *Lactobacillus plantarum* (PTCC 1058) in Acidic and Bile Conditions of Simulated Gastrointestinal Juice

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Background & Objectives: *Lactobacillus plantarum* as a probiotic bacteria possess extra health effects on human. *L. plantarum* has cholesterol lowering activities and can reduce fibrinogen concentrations in blood. It has also, anti-pathogenic properties by producing of the bacteriocin called plantaricin. In order to achieve beneficial health effects, the probiotic bacteria must be present at a minimum amount of 10⁶- 10⁷ CFU/g of product and should be survival in acidic and bile conditions of gastrointestinal tract. The main objective of this study was to examine the resistance of *L. plantarum* PTCC 1058 in acidic and bile conditions of simulated gastrointestinal tract.

Methods: *L. plantarum* by 9.77 log CFU/mL was inoculated into the two different simulated gastrointestinal juices including: bile salt solution (6% w/v, pH 8.25) and simulated gastric juice (pH 1.55), and then incubated at 37 ° C for 120 min. viability of bacteria was investigated every 30 min by culture in MRS agar and incubation at 37°C for 72 h.

Results: According to the results, *L. plantarum* showed 2.35 and 2.47 log CFU/mL reduction in count after 120 min incubation, respectively, in bile salt solution and acidic juice. It was indicated that *L. plantarum* is sensitive to acidic and bile conditions, however its acid sensitivity was significantly higher than its bile sensitivity (P<0.05).

Conclusion: It was concluded that *L. plantarum* could not well survive in acidic and bile conditions of gastrointestinal tract, so, it can not reach to the intestine by the adequate number which is needed for its probiotic function. It is suggested to examine the influence of different Methods in improving its survival such as microencapsulation techniques.

Keywords: *Lactobacillus plantarum*; Probiotic; Resistance; Simulated Gastrointestinal Juice