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Isolation and identification of probiotic lactic acid bacteria from natural fermentation of soymilk

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Lactic acid bacteria (LAB) have been utilized in the food industry for several decades. They are referred to as probiotics because they confer beneficial health effects to their host including balancing the microbial flora, boosting the immune response and lowering cholesterol. Probiotic bacteria from different sources have been isolated and are commercially available. However, due to their extensive use, LAB are ought to adapt to different environmental conditions which might reduce their robustness. In this study, 28 bacterial strains isolated from spontaneous fermentation of soymilk were assessed for probiotic characteristics such as low pH resistance, bile salt resistance, antibacterial activity and hemolysis test. From the 28 organisms, 9 were selected as probiotics because they showed resistance to pH 2.5, bile salt (0.4%) and none of them had hemolytic activity. They also showed resistance to a spectrum of antibiotics, as well as inhibit the growth of pathogenic Gram positive and Gram negative microorganisms. The amplification and sequencing of the 16S rRNA gene of the isolates revealed that these strains were *Leuconostoc pseudomesenteroides (6), Enterococcus mundtii (2) and Lactobacillus plantarum* (1). In addition, 6 of these strains were able to degrade both raffinose and stachyose which are regarded as non-digestible oligosaccharides by humans. In conclusion, lactic acid bacteria of great interest can be isolated from their natural habitat and therefore serve as starter cultures in the food industry to improve organoleptic quality of soy derived products.

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Lactobacillus strains: Screening of probiotics properties *in vitro* and *in vivo*

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There is no doubt that dietary antibiotics have played a fundamental role in animal production as growth and health promoter. However, due to the emergence of microbes resistant to antibiotics which are used to treat animal infections, the European Commission decided to phase out and ultimately ban the marketing and use of antibiotics as growth promoters in feed. In order to meet market and international health organization demands, the poultry industry is studying alternatives to antibiotics. Probiotics can be listed among these products. The objective of the current study was to isolate lactobacilli from Gastro Intestinal Tract of local poultry and investigate their probiotic properties *in vitro* and *in vivo*. The *in vitro* results showed that the lactobacilli strains survived simulated gastrointestinal conditions and were considered to be acid and bile tolerant. The majority of the strains exhibited good antagonistic activity and have the adhesion ability. The results of the in vivo study showed a significant positive effect ($p<0.05$) of probiotic on body weight and feed conversion ratio of chickens ISA 15 strain.

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