

Genome Analysis of *Lactobacillus Plantarum* and *Lactobacillus Brevis* Isolated From Traditionally Fermented Ethiopian Kocho and Their Probiotic Properties

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Abstract : Probiotics are live microorganisms that, when administered in adequate amounts, promote the health of a consumer. The present work aims to study the whole genome sequence of probiotic strains of lactic acid bacteria (LAB) isolated from traditional Ethiopian fermented kocho for bacteriocin production and to evaluate their probiotic properties. LAB were isolated from traditionally fermented kocho samples and characterized following standard methods. Accordingly, a total of 150 LAB were isolated, of which 7 (4.67%) isolates showed 50.52-74.05% and 33.33-62.40% survival rates at pH 2 for 3 and 6 h, respectively. The 7 acid-tolerant isolates were also tolerated 0.3% bile salt for 24 h with 88.96 to 98.10% survival. The acid and bile salt-tolerant LAB isolates also inhibited some reference foodborne pathogenic bacteria to varying degrees. All 7 acid- and bile salt-tolerant isolates were susceptible to ampicillin, tetracycline and erythromycin. However, the potent isolates showed remarkable resistance to kanamycin. Likewise, four of the 7 isolates were resistant to streptomycin, but three of the 7 isolates were sensitive to streptomycin. The identification of the seven selected probiotic LAB isolates and their genetic relatedness was performed based on whole-genome sequence comparisons. Consequently, these isolates belonged to *Lactobacillus* species, including 6 *Lb. plantarum*, 1 *Lb. brevis*. Among the 7 potential probiotic LAB strains, BAGEL predicted 2 bacteriocin for class II in the genome of 7 strains. The 7 *Lactobacillus* strains were found to be potentially useful for producing functional products and could be suitable probiotic candidates for food processing industries

Keywords : fermented foods, kocho, probiotics, lactic acid bacteria

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