



## ***LACTOBACILLUS FERMENTUM: POTENTIAL PROBIOTIC ISOLATED FROM FERMENTED SRI LANKAN FINGER MILLET (ELUCINE CORACANA)***

D.M.W.D.Divisekera<sup>1</sup>, J.K.R.R.Samarasekera<sup>1</sup>, C.Hettiarachchi<sup>2</sup>, J.Gooneratne<sup>1</sup>, S.  
Gopalakrishnan<sup>3</sup>

<sup>1</sup>Industrial Technology Institute, 363, Bauddhaloka Mawatha, Colombo 07, Sri Lanka

<sup>2</sup>Department of Chemistry, Faculty of Science, University of Colombo, Sri Lanka

<sup>3</sup>International Crops Research Institute for Semi-Arid Tropics, Telegana, India

Finger millet (*Eleusine coracana*) is one of the ancient millet, that is rich in dietary fiber, minerals, and sulfur containing amino acids compared to white rice, the current major staple in South Asia. Due to the presence of water - soluble fibers, oligosaccharides and resistant starch, it fulfills the prebiotic effects and can stimulate the growth of probiotic bacteria. This study was focused to isolate, characterize and identify probiotic bacteria associated with Sri Lankan finger millet. Seeds were collected from germplasm of Seed and Planting Material Centre, Pelwehera. Seeds were milled, sieved, fermented at 30 °C, 16h. Aliquots were prepared from fermented sample, isolation of probiotics were carried out on de Man Rogosa and Sharpe Agar (Hi-Media, India), incubated at 37 °C , 24 h. The colony morphology of the isolate was noted. Isolate was further characterized phenotypically (Gram, endospore staining, motility), biochemically (indole, methyl red, voges proskauer, citrate, gelatin liquefaction, H<sub>2</sub>S production, starch hydrolysis, urease and Catalase). Sugar utilization pattern (maltose, lactose, glucose, sorbitol, arabinose, mannitol, dextrose, salicin, ribose, melezitose, cellobiose and melibiose) was examined. Tolerance to Acid, sodium chloride and temperature was investigated. To assess the safety of isolate, hemolysis was conducted. The 16S rRNA sequencing was carried out by extracting genomic DNA using an in-house optimized SDS proteinaseK DNA extraction method. For PCR, primers 1492R, 27F and for sequencing, primers 518F and 800R were used. Sequence alignment was carried out by Basic Local Alignment Search Tool. The result revealed that the isolate was Gram positive, non spore forming, non motile rod shaped bacteria, which fermented sugars except salicin, ribose, melezitose, cellobiose and melibiose. Isolate was positive for MR and negative for other biochemical tests performed. Isolate could tolerate high acidic conditions (pH 2, 3, 4), temperature of 30 °C - 37 °C and sodium chloride concentrations of 5.5%, 6.5%. 16S rRNA sequencing analysis of the amplified gene identified the isolate as *Lactobacillus fermentum*. This is the first report of the isolation and characterization of *L. fermentum* from Sri Lankan fermented finger millet. Prior to commercialization of the isolate, the toxicity will be investigated and the efficacy of the isolate will be determined.

**Keywords:** *Lactobacillus fermentum*, probiotic, prebiotic, finger millet,