



ASSESSMENT OF SAFETY ATTRIBUTES OF POTENTIALLY PROBIOTIC LACTIC ACID BACTERIA (LAB) OF SRI LANKAN DAIRY ORIGIN FOR FUTURE FOOD APPLICATIONS

Rajawardana D.U.1*, Hewajulige I.G.N1, Nanayakkara C.M.2
and Shanaka W.A.D.S.3

1Industrial Technology Institute, Sri Lanka

2Faculty of Science, University of Colombo, Sri Lanka

3Advanced Technological Institute, Sri Lanka

upearajawardana@yahoo.com

The use of lactic acid bacteria (LAB) as probiotics has now been extended due to their well-known beneficial properties on general health and wellbeing. Documented associations between adverse events and probiotic consumption are few compared to their widespread use. However, the use of new strains for probiotic use requires more detailed evidence of their safe use. Therefore, this study was to evaluate the safe use of LABs, isolated from dairy sources of Sri Lanka, to determine their suitability to use as either probiotics or as starter cultures in local food industries. Thirty eight LABs with probiotic affinities; including *Lactobacillus pentosus*, *Lactobacillus plantarum*, *Lactobacillus fermentum*, *Lactobacillus paracasei*, and *Lactobacillus rhamnosus* were assessed in this study. DNase test, Gelatinase production and Bile-esculin test were performed as screening assays. Haemolytic activity was determined by streaking onto Columbia blood agar plates, containing 7% human blood and were observed for β , α and γ haemolysis. Antibiotic susceptibility was determined following the modified standard Kirby- Bauer procedure as used by Rojo-Bezares *et al* 2006 for 12 antibiotics (Oxoid, UK). A microorganism should not produce gelatinase or DNase enzymes so as to be used as a probiotic, and none of the strains studied produced those two enzymes. Around 15 (39.5%) isolates may belong to *Enterococcus* category though isolated from dairy sources and 11 (28.9%) were not suitable for live consumption due to haemolytic activities. One isolate of *Lactobacillus plantarum* strain HL-20, and another of *Lactobacillus paracasei* strain 4SY1 produced clear zones around colonies (β -haemolytic) and the remaining isolates produced green zones (α -haemolytic). Rest of the isolates did not produce green or clear zones on human blood agar plates (γ -haemolytic) and those could be considered as safe for human consumption. The non haemolytic isolates were resistant only to vancomycin and norfloxacin and susceptible to rest of the antibiotics. Therefore, majority of the LABs screened were likely to be safe for human use, though need further *in vivo* evaluations.

Keywords: *Lactobacillus*, probiotic, safety assessment, antibiotic resistance, haemolytic activity