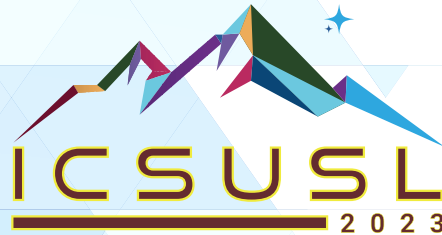
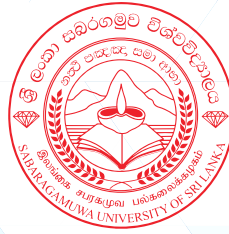


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**9TH INTERNATIONAL CONFERENCE OF
SABARAGAMUWA UNIVERSITY OF SRI LANKA
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COMMUNICATION AND COOPERATION
FORUM**

*"Advancing Multidisciplinary Approaches
for a Sustainable and Resilient Future"*

**6 - 8 December 2023
Sabaragamuwa University of Sri Lanka**



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Unveiling the Probiotic Properties of Lactic Acid Bacteria Inhabiting Tender Coconut Water

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This research delves into the unexplored potential of tender coconut water as a rich source of probiotics, with a focus on identifying promising probiotic lactic acid bacteria (LAB). By employing biochemical screening techniques, four potential LAB strains were isolated: *Lactiplantibacillus plantarum* CWJ3, *Lacticaseibacillus paracasei* CWKu14, *Lacticaseibacillus rhamnosus* CWKu12, and *Lacticaseibacillus casei* CWM15. These strains were comprehensively assessed to evaluate their resilience under various conditions: pH (2, 3, and 6.5), bile (0.3% and 0.5%), phenol (0.4% and 0.6%), salt (3% and 6%) concentrations, and temperatures (20°C, 37°C, 45°C, and 60°C). Further, resistance to lysozyme (100 mg L⁻¹), artificial saliva juice (0.3% α-amylase, at pH 6.9), simulated gastric juice (0.3% pepsin, at pH 2), and simulated intestinal juice (0.3% Ox-gall and 0.1% pancreatin at pH 7) were determined. Their antibiotic susceptibility was tested against ten antibiotics at 100 ppm, and cell surface hydrophobicity, auto-aggregation, co-aggregation with selected pathogens, antibacterial activity, hemolytic activity, and DNase activity, also were evaluated. The statistical analysis demonstrated the survival of all four strains even in demanding circumstances, with *Lactiplantibacillus plantarum* CWJ3 displaying the greatest resilience. Optimum growth occurred at 37°C, while none of the strains survived at 60°C. A pH of 6.5 was optimal for their growth, and *Lactiplantibacillus plantarum* CWJ3 stood out as the only strain capable of withstanding pH 2 after 2 hours. *Lacticaseibacillus rhamnosus* CWKu12 and *Lacticaseibacillus casei* CWM15 showed the highest percentage of auto-aggregation and co-aggregation while *Lacticaseibacillus rhamnosus* CWKu12 and *Lactiplantibacillus plantarum* CWJ3 exhibited high cell surface hydrophobicity. The strains displayed susceptibility to Clarithromycin, Erythromycin, and Azithromycin, but resistance to Cefuroxime and Streptomycin antibiotics. All four strains inhibited various food-borne pathogens, showcasing their potential as probiotics. Moreover, they displayed no hemolytic or DNase activity. Remarkably, *Lactiplantibacillus plantarum* CWJ3 excelled in challenging environments, making it a noteworthy contender for a probiotic role.

Keywords: Lactic acid bacteria, Probiotics, Tender coconut water, Tolerance