

EFFECTS OF MICROBIAL FERMENTATION ON THE ANTIOXIDANT POTENTIAL OF *Pouteria campechiana* (CANISTEL)

G.A.P.C. Isurandi* and R. Amarakoon

Department of Microbiology, University of Kelaniya, Kelaniya, Sri Lanka.

*chamani.isurandi@outlook.com

Although *Pouteria campechiana* (Canistel, Sinhala; Lawulu) is highly nutritious, it remains underutilised, because of rapid ripening, off flavor development, and a short shelf life. Consequently, the development of effective processing strategies to preserve its quality until consumption is of significant importance. This study aimed to develop a fermented food product from canistel and to evaluate the effects of fermentation on its antioxidant properties. *Lactobacillus plantarum* DMBUK 113080 was introduced into heat-sterilized mesocarp of canistel immersed in 2.5% brine, and fermented at 37 °C for 24, 48 and 72 hours. Both the unfermented and fermented samples were dried and powdered. Antioxidant potential of the methanolic extracts of canistel was determined using 2,2-diphenyl-1-picrylhydrazyl (DPPH) free radical scavenging activity measurement. Significant differences in the mean antioxidant activities between the samples were assessed using one-way ANOVA, followed by Tukey's multiple comparison tests for each triplicate. The percentage inhibition calculated for each sample was used to plot the graph with the respective concentrations of the sample standards to obtain the IC₅₀ value. The corresponding IC₅₀ values of canistel decreased significantly ($p < 0.05$) with fermentation. The 72-hour fermented canistel showed the highest antioxidant activity (IC₅₀; 322.07±2.34 µg mL⁻¹) compared to those of unfermented (IC₅₀; 443.95±1.56 µg mL⁻¹) and other fermented samples [408.36±1.82 µg mL⁻¹ (24 h), 374.97±1.22 µg mL⁻¹ (48 h)]. IC₅₀ values below 1.0 mg mL⁻¹ indicate extremely high antioxidant activity. Therefore, both unfermented and fermented canistel fall within this category. Fermentation significantly enhances the antioxidant activity of canistel. Therefore, this product can be recognised as a fermented food which is rich in beneficial functional properties. The process offers a cost-effective solution to reduce post-harvest losses of the canistel fruit.

Keywords: Antioxidant activity, DPPH assay, Fermentation, *Lactobacillus plantarum*, *Pouteria campechiana*.