

Investigation of Antimicrobial Properties and Phenolic Compounds in Sri Lankan Rice Varieties

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Rice is a popular global grain belonging to the *Oryza* genus. It is the staple food and one of the most significant agricultural products in Sri Lanka. This study investigated the antimicrobial activity and phenolic compounds, such as total phenolic and flavonoid content, of twelve traditional rice varieties and three BG rice varieties available in local markets. The 80% methanol extraction of rice extract was used to determine the antimicrobial activity and the methanol with 1% HCl extraction of rice was used to determine the phenolic contents. According to the research findings, all traditional rice varieties showed high antibacterial activity against *Staphylococcus aureus* and *Escherichia coli* and a high antioxidant content. Among the tested traditional rice varieties, Kuruluthuda exhibited the highest antimicrobial activity showing 9.70 ± 2.04 mm of inhibition zone against *S. aureus*, while Kalu Heenati showed the highest antibacterial activity against *E. coli* with 10.40 ± 1.73 mm of inhibition zone. The highest total phenolic content (5.79 ± 0.05 mg/g) was observed for Sudu Heenati, while the highest total flavonoid content (9.69 ± 0.25 mg/g) was observed for Rathkada rice variety. Among traditional rice varieties, Kahawanu, a traditional rice variety, and BG 300, which are highly consumed in Sri Lanka, have significantly low total phenolic and flavonoid contents. Overall, these results confirmed the presence of high antibacterial and antioxidant properties in Sri Lankan traditional rice varieties. Since rice varieties have a variation in antimicrobial and antioxidant properties, consumption of rice varieties with high antimicrobial and antioxidant properties is essential for a healthier life. Further experiments are recommended to investigate the antifungal properties of these traditional rice varieties to understand the complete potential of antimicrobial properties.

Keywords: *Antimicrobial activity; Traditional Rice varieties; Total phenolic content; Total flavonoid content; Staphylococcus aureus; Escherichia coli*