National Symposium on Agriculture and Life Sciences, NSALS '24
"Shaping the future with research and innovation"

05th January 2024 @ Uva Wellassa University, Badulla, Sri Lanka.

Paper ID: NSALS24-049

A Comparison of the Antimicrobial Activity of Various Parts of *Syzygium cumini* (L.) Skeels in Jaffna District, Sri Lanka.

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In recent years, there has been interest in researching and developing new antibiotics from various sources to fight microbial infections. Antibacterial properties are found in numerous medicinal plants that can prevent the growth and virulency of different microbes during infections. Thus, there is a great deal of attention given to examining antimicrobial activity of herbal material and its evaluating methods. *Syzygium cumini* L. Skeels is an important medicinal plant which grows in the Jaffna district. In its various parts, there are numerous phytochemical compounds that have multiple pharmacological effects such as hypoglycemic, diuretics, analgesic, anti-inflammatory, antioxidant, and gastro-protective effects. The main objective of this study was to investigate the antimicrobial effect of ethanolic, methanolic, and aqueous extracts of different parts of *S. cumini* plant. The agar well diffusion method was used to analyze antibacterial activity against *Staphylococcus aureus*, *Escherichia coli*, *Pseudomonas aeruginosa* while the standard disk diffusion method was used for the *in-vitro* antifungal activity against *Mucor* sp., *Aspergillus* sp., and *Fusarium* sp. Based on the antibacterial activity results, it was found that the ethanolic seed coat extract had the largest inhibition zone diameter against *S. aureus* (27.56±0.46 mm) while the aqueous extract of bark showed the lowest inhibition zone against *Pseudomonas* sp. (11.50±0.66 mm). Based on the antifungal activity results, it was revealed that the methanolic extract of the leaf had the lowest diameter of inhibition of fungal growth against *Fusarium* sp. (15.87±0.73 mm) while the aqueous extract of bark showed the highest diameter of inhibition against *Aspergillus* sp. (37.93±0.80 mm). The study found that the ethanolic seed coat and methanolic leaf extracts had greater antibacterial and anti-fungal activities than the other extracts obtained from the plant. In the future, drug leads may be generated for treating infectious diseases caused by microbes using the seed coat and leaves of *S. cumini* plant.

Keywords: Agar well diffusion; antibacterial activity; antifungal activity; antimicrobial activity; inhibition zone