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Antibacterial activity of polysaccharides extracted from the root of *Premna serratifolia* (Wind killer)

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Background: Emerging infectious diseases, especially skin infections pose significant threats to human health. Conventional antibiotics encounter challenges of antibiotic resistance and side effects, necessitating the screening of novel antibiotics. Various plant polysaccharides exhibit significant antimicrobial efficacy. *Premna serratifolia* is a vital traditional herbal plant in which the root is used for treating various diseases including skin diseases, diabetes and fever.

Objective: To evaluate the antibacterial activity of polysaccharides extracted from the root of *P. serratifolia*.

Methods: *P. serratifolia* root collected from the Government Herbal Garden and Siddha Central Dispensary in Jaffna, was subjected to shade drying, powdering, defatting with petroleum ether, oligosaccharides removal by 80% ethanol followed by polysaccharide extraction through hot water extraction. Deproteinization was done at pH 8-9 with CaCl₂ and the mixture was freeze dried. Total sugar content was estimated using phenol-sulphuric acid method using glucose as the standard. Antibacterial activity of polysaccharides of *P. serratifolia* root was evaluated using agar well diffusion method against *Staphylococcus aureus* (ATCC 25923) and *Escherichia coli* (ATCC 25922), with ciprofloxacin as the standard. Data were analyzed using one-way ANOVA followed by Turkey's test at 5% significance level.

Results: Yield percentage and total sugar content of polysaccharides of *P. serratifolia* root was found to be 5.25% and 69.46% respectively. Mean values of inhibition zones of polysaccharides of *P. serratifolia* root against *S. aureus* and *E. coli* at 60 mg/mL were 30.67±0.58 mm and 30.33±0.58 mm respectively, whereas standard showed 40.33±0.58 mm and 37 mm at 0.5 mg/mL respectively. The inhibitory effects showed by standard and polysaccharides of *P. serratifolia* root differed significantly (P<0.05) while there was no significant difference noted between the bacterial isolates.

Conclusions: Polysaccharides derived from *P. serratifolia* root has an antibacterial potential. Further studies are required to isolate the active polysaccharide/s responsible for the observed antibacterial activity.