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Antimicrobial activity of methanolic extracts from three selected Sri Lankan herbs against an antibiotic resistant strain of *Staphylococcus aureus*

K B Wijesekara* and M M S N Premetilaka

Uva Wellassa University, Badulla

Medicinal herbs are valuable natural resources which can be used against various infectious agents such as pathogenic bacteria. However, limited or no studies in Sri Lanka have been undertaken regarding the antibacterial activity of medicinal plants against different resistant pathogenic strains such as *S. aureus*. Therefore, in the present study methanolic leaf extracts of three medicinal plants (*Mikania micrantha*, *Ageratum conyzoides* and *Emilia sonchifolia*) that are traditionally used in indigenous medicine were screened for their antimicrobial activity against an antibiotic resistant strain of *Staphylococcus aureus*. Different concentrations (200 mg mL⁻¹, 100 mg mL⁻¹, 50 mg mL⁻¹, 25 mg mL⁻¹ and 12.5 mg mL⁻¹) of crude extracts of various plant parts including leaves, root, stems and flowers were studied using well diffusion method to determine the plant part with the highest antimicrobial activity. Distilled water was used as positive control. Crude methanolic extracts of all three plant species demonstrated significant antimicrobial activity against *S. aureus*. The crude methanolic extracts of leaves of all three species showed the largest inhibition zones over stem, flower or root extracts. Minimum Inhibition Concentration (MIC) for *M. micrantha* was 200 mg/mL, while MIC of *A. conyzoides* and *E. sonchifolia* was 25 mg/mL. The leaf extracts obtained from *A. conyzoides* and *E. sonchifolia* showed a significant inhibition of growth of *S. aureus*. No inhibition zones were observed in the control samples. This study showed that the chemical compounds responsible for the inhibition of the growth of *S. aureus* are localized more in leaves. Results of this study indicate that, fractionate guided bacterial assay of the extracts of *A. conyzoides* and *E. sonchifolia* may result in identification of lead compounds with therapeutic applications against resistant strains of *S. aureus*.

Keywords: Antimicrobial activity, *Ageratum conyzoides*, *Emilia sonchifolia*, *Mikania micrantha*, *Staphylococcus aureus*