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Antimicrobial activity of poly-herbal formula “Dasapanguwa” against several Gram positive bacteria and Gram negative bacteria

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The resistance of bacteria against available antibiotics has become a rising problem worldwide. Therefore, the discovery of alternatives using medicinal plants is widely studied. Although medicinal plants have been studied individually, the impact of herbal formulas was studied rarely. “Dasapanguwa” is a poly-herbal formula prepared as a decoction of 10 different plant parts to use in Ayurvedic medicine in Sri Lanka for colds, fever, and infectious diseases. Although the formula is used as a treatment for infectious diseases in Ayurvedic medicine in Sri Lanka, the antimicrobial action of this preparation was not scientifically assessed. The objective of the research was the determination of the antibacterial activity of the *Dasapanguwa* formula against Gram positive and Gram negative bacteria. Plant parts of *Mollugo cerviana* (L.) Ser., *Solanum virginianum* L., *Solanum melongena* L., *Justicia adhatoda* L., *Rothea serrata* (L.) Steane & Mabb., *Glycyrrhiza glabra* L., *Zingiber Officinale*, *Coscinium fenestratum* (Gaertn.) Colebr., *Piper nigrum* L., and *Coriandrum sativum* L. were collected in dried form. Water extracts of decoction 1 (D1) (plant part: 5.0 g) and Decoction 2 (D2) (plants parts: 5.0 g ground into fine powder) were prepared by refluxing in 500.0 ml of water for two hours at 100 °C followed by freeze-drying. The antibacterial susceptibility test was performed by the Kirby-Bauer disc diffusion method against Gram positive bacteria (*Staphylococcus aureus*, *Bacillus subtilis*, and *Enterococcus faecalis*), and Gram negative bacteria (*Pseudomonas aeruginosa*, *Escherichia coli*, and *Klebsiella pneumoniae*). Antibiotic discs were prepared for each concentration of two decoctions (1.0 to 15.0 mg ml⁻¹). Commercially available tetracycline (30 µg) and ceftriaxone (30 µg) were used as positive controls against Gram’s positive and Gram’s negative bacteria respectively according to the CLSI guideline. The diameter of the clear zones was measured. There were no inhibition zones against all the bacteria for tested concentrations of both decoctions compared to positive controls. Previous studies showed that the antibacterial activity of an herbal extract could depend on the plant, solvent, test pathogens, and concentrations. Furthermore, the activity could depend on the plant itself or the formula of poly-herbal. Therefore, it is recommended to further study the antibacterial activity of both decoctions for higher concentrations from 15 mg ml⁻¹ against selected bacteria. Furthermore, the antibacterial activity could be studied for extracts prepared by different solvents including methanol and ethanol.

Keywords: Antibacterial activity, Poly-herbal formula, Dasapanguwa, Gram positive bacteria, Gram negative bacteria