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Evaluation of the chemical constituents and the antibacterial activity of essential oil extracted from *Citrus karna* fruit peels.

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ABSTRACT

Medicinal plants are used for the ailment of several microbial and non-microbial originated diseases due to their valuable effects in health care. The affordability, reliability, availability and low toxicity of medicinal plants in therapeutic use has made them popular and acceptable by all religions for implementation in medical health care all over the world. Plants are indeed the first material used in alternative medicine type of remedy against many diseases. Several plants have therapeutic and pharmaceutical effects, and act as antimicrobial, antioxidant, anti-infectious and antitumour agents. Based upon the above, the present study was concerned with analysis of the chemical constituents of essential oil of Citrus karna fruit peels by GC-MS technique and also its antibacterial activity against some pathogenic bacteria. The essential oil was extracted from fruit peels by steam distillation using Clevenger's type apparatus. GC-MS analysis showed presence of nine compounds in the essential oil of Citrus karna fruit peels and the major compounds were limonene (93.50%), β-pinene (2.97%), α-pinene (0.78%) and β-phellandrene (0.54%). The antibacterial activity was detected by agar well diffusion method against Bacillus subtilis, Escherichia coli, Pseudomonas aeruginosa and Staphyloceceus aureus. The zones of inhibitions obtained were recorded and analyzed against standard control of Ampicillin. The essential oil showed higher antibacterial activity of 18.0 mm against P.aeruginosa and least antibacterial activity of 13mm against B. subtilis. The MIC of the essential oil on the susceptible bacterial isolates was between 111-333µg/ml. Present study concludes that essential oil from fruit peels of Citrus karna have a broad spectrum antibacterial activity against human pathogens.

Keywords: *Citrus karna, Essential oil, GC/MS, Zone of inhibition, MIC*