World Academy of Science, Engineering and Technology
International Journal of Biotechnology and Bioengineering
Vol:9, No:11, 2015

Phytochemical Constituents and Bioactive Properties of Glinus oppositifolius (L.) Aug. DC. against Bacterial Pathogens

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Abstract : This study aimed to determine the presence of bioactive phytochemical constituents and evaluate the in vitro antibacterial activities of Glinus oppositifolius or carpet weed, a plant valued for its use in traditional medicine and as a vegetable. The leaves, stems, and roots were extracted using chloroform, ethanol, and methanol. Phytochemical screening revealed that the entire G. oppositifolius plant, i.e. roots, stems, and leaves, is a rich source of alkaloids, flavonoids, glycosides, saponins, sterols, tannins, and triterpenes. The antibacterial activity of the leaf and stem extracts were evaluated through disc diffusion, minimum inhibitory concentration, and bactericidal concentration assays against methicillin-resistant Staphylococcus aureus (MRSA), vancomycin-resistant Enterococcus (VRE), extended spectrum β-lactamase-producing (ESβL+), carbapenem-resistant Enterobacteriaceae (CRE), and metallo-β-lactamase-producing (MβL+) Pseudomonas aeruginosa and Acinetobacter baumannii. The leaf extracts revealed antibacterial activities, inhibiting the growth of non-resistant and multidrug-resistant (MDR) strains of the Gram-negative bacteria E. coli, P. aeruginosa, and A. baumanii. In conclusion, the various biological activities of G. oppositifolius, including its antibacterial activity, are due to the presence of diverse bioactive secondary metabolites. The presence of phytochemical compounds in G. oppositifolius is scientific evidence on its use for treatment of many ailments. Thus, the results demonstrate the great potential of the plant as a new, alternative source of antimicrobials and other components with therapeutic value.

Keywords : antibacterial, Glinus oppositifolius, multidrug-resistant, secondary metabolites
Conference Title : ICNP 2015 : International Conference on Natural Products
Conference Location : Istanbul, Türkiye
Conference Dates : November 27-28, 2015

Open Science Index, Biotechnology and Bioengineering Vol:9, No:11, 2015 publications.waset.org/abstracts/32996.pdf