

A partially purified bioactive fraction of *Vernonia arborea* Buch.-Ham. leaves with potency against selected wound pathogens

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Abstract

Wound healing is seldom delayed due to presence of polymicrobial community, acquired either during the wounding or during the hospital stay. The onset of inflammatory phase is manifested to a great extent and the resolution of the same extended beyond desirable time which eventually results in retarded proliferation, reepithelialisation and remodelling phases that complete the healing process. Such mixed microbial population has to be abolished to facilitate the healing process. *Vernonia arborea* is a tree species of Asteraceae family; the leaves being used for healing deep wounds traditionally. With lack of experimental evidences to support, the present study aims at identifying the antimicrobial potency of the leaf fractions against selected wound pathogens covering the regular, nosocomial and burn wound pathogens, viz., *Escherichia coli*, *Staphylococcus aureus*, *Pseudomonas aeruginosa*, *Klebsiella pneumoniae* and *Stenotrophomonas maltophilia*. The phytoconstituents were fractionated from the hexane leaf extract by column chromatography and the fractions were tested for antimicrobial potency. The column chromatography yielded 790 fractions which were further pooled and concentrated to 30 samples based on individual TLC separation. Out of the 30 sample fractions, six fractions showed antimicrobial potency against all the five tested wound pathogens. The Minimum inhibitory concentrations of these fractions were determined, the least being 15.62 µg/mL and the highest being 500 µg/mL concentration. The minimum bactericidal concentration ranged from 1000 µg/mL to 31.25 µg/mL concentrations. The individual bioactive phytoconstituent of the fractions were further elucidated by TLC bioautography. Quantitative HPTLC revealed two compounds in the bioactive fraction with 633 mg (63%) and 97 mg (9.7%) yield per gram of the extract. The structure of the bioactive compound could be elucidated by further analysis.

Biography

Lalitha Vaidyanathan, has completed her master's in biotechnology at the age of 23 from University of Madras, India. She is the senior lecturer in the department of biomedical sciences at Sri Ramachandra Institute of Higher Education and Research, India. She is pursuing her PhD in biomedical sciences and her research interest includes wound healing studies in zebrafish models, wound inflammation and wound pathogens. She has been interested in developing disease models in adult zebrafish, including diabetic wound infection models and obesity models.

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