Abstract

Title: Wound healing potential of oil extracted from Parrotiopsis jacquemontiana (Decne) Rehder

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Background: Oil extracted from Parrotiopsis jacquemontiana stem traditionally used for wound healing, body aches and dermatitis. In this study we have evaluated oil for its phytoconstituents, antioxidant, antimicrobial and wound healing activities.

Methods: Phytochemical characterization of oil was determined by standard qualitative procedures, gas chromatography mass spectrometry technique (GC-MS) and Fourier transform infra-red spectroscopy (FT-IR). The in vitro antioxidant aptitude was determined by scavenging of DPPH radical, hydroxyl ion, nitric oxide, inhibition of β-carotene bleaching assay and iron chelation power assay. The antimicrobial potential of oil was investigated by disc diffusion method against multidrug resistant (MDR) bacterial isolates and fungal strains. Wound healing was performed in vivo with determination of wound contraction rates, histopathology, hemostatic potential and hydroxyproline estimation.

Results: GC-MS analysis indicated that oil was constituted mainly of 2, 6-dimethyl-8-oxoocta-2, 6-dienoic acid, methyl ester (18.2%), syringol (17.8%), catechol (12.4%), guaiacol (5.2%), p-cresol (5.4%) and phenol, 2-propyl- (3.7%). FT-IR analysis revealed several important functional groups in its chemical composition especially phenolic O-H compound stretching. Scavenging of DPPH radical, hydroxyl ion, nitric oxide, inhibition of β-carotene oxidation and iron chelation power assays indicated strong antioxidant activities of oil. Further it efficiently inhibited growth of multidrug resistant isolates of Staphylococcus aureus, S. lugdenesis, Klebsiella pneumoniae, Escherichia coli, Coagulase –ve staphylococci and Pseudomonas aeruginosa. The minimum inhibitory concentrations ranged between (32–256) (μg/mL) of oil. The oil also strongly inhibited the growth of various fungal isolates with low level of minimum inhibitory concentrations (64–256) μg/mL. Remarkable rate for wound closure and epithelization, hemostatic potential and marked increase (p < 0.05) in hydroxyproline content was observed for oil during wound healing in rat.

Conclusion: The results suggested that oil can be used as a potential source of wound healing therapeutics.

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