Metabolic Variations, Antimicrobial Activity of Methanolic Extract of Nitraria Retusa

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Abstract

Nitraria retusa is a traditional medicinal plant and its leaves serve as supplement for the tea and are used as poultice. In this work, 6 sub-fractions of hydro-alcoholic extract of N. retusa aerial parts; n-hexane (NHe), diethyl ether (NDe) , dichloromethane (NDm) , ethyl acetate (NEa), n-butanol(NBu) and methanol (NMe) were investigated for their antimicrobial activities. For the antimicrobial activities, the NHe sub-fraction had higher antimicrobial activity as compared to the other sub-fractions, and its highest inhibition zone was 14±1.3 mm against Gram negative bacteria Pasteurella hemolitica. Microbial growth of Escherichia coli and P. hemolitica strains was estimated spectrophotometrically at 600 nm under the stress of NHe and NDe sub-fractions for 24 h of incubation. The NHe sub-fraction at 1000 µg/ml concentration inhibited in vitro growth of E. coli and P. hemolitica strains by 85.4±0.12 % and 85.8±0.18%, respectively as compared to the positive control (media growth without any addition). The GC/MS analysis indicated that 3-tert-butyl-4-hydroxy anisole (47.16%) was the major compound in the NHe sub-fraction, while, N-allyl-2-hydroxy-3-methylbutamide (38.03%) was the major compound in NDe sub-fraction. The above results show that different sub-fractions of N. retusa could be a potential source of compounds with cytotoxic and antimicrobial activities as well as for their utilization in the food and pharmaceutical industries.