

## Abstract

The present work is an endeavor to explore the local flora for its ethnopharmacological potential, thus the crude extracts of plant parts of *Pentanema vestita* (Wall. ex DC.) Ling and *Euryale ferox* Salisb., obtained by maceration in polar and non-polar solvents, i.e. water, ethanol, chloroform, n-hexane were tested for their physico-chemical features, antimicrobial, antioxidant and anthelmintic activities. The percentage yield of aqueous extract of the flowers and leaves, i.e. 26.21 and 24.28, respectively. It is followed by both the ethanolic extract of the flowers and aqueous extract of the stem of *P. vestita*, with %age yield 20.69 and 18.06, respectively. On the other hand the %age yield of the chloroform extract of the root and ethanol extract of shoots of *P. vestita* were the lowest, i.e. 0.82 and 1.28 respectively. Terpenoids, tannins, saponins, flavonoids, reducing sugars, alkaloids and anthraquinones were found present in almost all the polar and non-polar extracts of the plant parts of both the plants, except cardiac glycosides that were detected only in the chloroform extract of the plant parts.

Almost all the extracts of *Pentanema vestita* and *Euryale ferox* showed antimicrobial activity against all the microbes used as test organisms such as two fungal strains (*Aspergillus niger* and *Penicillium notatum*) and four bacterial strains (*Bacillus subtilis*, *E. coli*, *Pseudomonas fluorescens* and *Staphylococcus aureus*). Alcoholic and chloroform extracts exhibited the most promising results while the aqueous extracts showed least potential. Roots provided the best results, i.e. 37.6 mm which was also confirmed through MIC. Antimicrobial potential of all the extracts was recorded in an order of water < hexane < chloroform < ethanol. Antimicrobial investigation of *Euryale ferox* Salisb. revealed that maximum inhibition to bacterial strains was offered by chloroform and ethanol extract of leaf, i.e. 34.1 and 39.2 mm zone of inhibition. Bacterial strains were more susceptible to extracts than fungal strains. The antimicrobial activity among all extracts increased in an order of hexane < water < chloroform < ethanol. It is worth mentioning that the antimicrobial activity of extracts was either more or less equal to or even higher than more of the standard antibiotic or antifungal agents.

The antioxidant estimation of *Pentanema vestita* has clearly showed that ethanol extract of branch had provided best response to ABTS (6.20 mM Trolox), aqueous

extract of leaf gave best results during metal chelating assay (72.9%), chloroform extract of branches in TFC (489.3 mg/L of Quercetin ) while chloroform extract of flower exhibited highest values of TPC (17.9µg/ml). Antioxidant evaluation of *Euryale ferox* extracts demonstrated hexane extract of stem in ABTS assay indicating highest value (6.38 mM Trolox), chloroform extract of leaf exhibiting remarkable potential (58.48%) in Metal chelating activity, hexane extract of leaf showed highest level (389.7mg/L) of TFC and ethanol extract of leaf with highest values (40.1µg/ml) of TPC was proved to be highly antioxidant. The anthelmintic investigations of *Pentanema vestita* render its root and branch most effective whereas in *Euryale ferox* Salisb. leaf was more effective as compared to stem.