

Studies on Antioxidant and Antibacterial Activity of some Important Ethnomedicinal Plants from Darjeeling Himalayan Region of West Bengal

Vijeta Rai¹ and Shilpi Ghosh²

^{1,2}Department of Biotechnology, University of North Bengal, Siliguri 734013, India
E-mail: ¹vijetaarpan@gmail.com, ²ghosshilpi@gmail.com

Abstract—The present study sought to evaluate the chemical composition, antioxidant and antimicrobial potentials of the methanolic extracts of the leaves, fruits and rhizomes of seven different ethnomedicinal plants collected from Darjeeling Himalayan region of West Bengal, with a view of validating its use in folklore medicine. The preliminary phytochemical screening conducted on the crude extracts revealed the presence of tannins, flavonoids, phenols and glycosides which are known to support the bioactive activities of the plant in folk medicine. The free radical scavenging activity of these extracts by spectrophotometric assay on the reduction of 1,1-diphenyl-2-picrylhydrazyl (DPPH) as well as the NO scavenging activity and H₂O₂ scavenging activity was also examined. The methanolic extract of *Astilbe rivularis*, *Chromolaena odoratum* and *Calamus rotang* showed the highest DPPH scavenging activity, whereas the H₂O₂ scavenging activity was intermediate followed by the NO scavenging activity. The antibacterial activity of the methanolic extracts of *Astilbe rivularis* (rhizome), *Calamus rotang* (fruit), *Thuja occidentalis* (leaf), *Campylandra odoratum* (fruit), *Zanthoxylum oxyphyllum* (fruit), *Chromolaena odoratum* (leaf) and *Artemesia vulgaris* (leaf) against two Gram -ve bacteria namely; *Aeromonas liquefaciens* and *Flexibactor Sp.* and two Gram +ve bacteria namely; *Bacillus subtilis* and *Bacillus amyloliquefaciens* was evaluated in the present research study. The extracts of *Thuja occidentalis*, *Chromolaena odoratum* and *Astilbe rivularis* extracts demonstrated considerable antibacterial activity against gram +ve and gram -ve bacteria. Antioxidant and antibacterial efficacy shown by these plants extracts provides a scientific basis and thus, validates their traditional uses as homemade remedies. Isolation and purification of different phytochemicals may further yield significant antimicrobial agents and a potential source of natural antioxidants.

Keywords: Ethnomedicinal plants, phytochemical analysis, DPPH scavenging.