

Bioactive potential and chemical characterization of ignored medicinal plants viz., bryophytes for the plant disease management

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Abstract

The use of antibiotics is one of the most common means of treatment of diseases. However, prolonged use of drugs slowly develops resistance in microbial pathogens. Therefore, alternate methods of disease control need to be searched upon. Different plant groups have been reported to possess antimicrobial efficacy against a number of plant pathogens. Very little attention is given to lower plants like bryophytes though they are known to possess unique chemoprofile. Therefore, here an effort was made to determine the biological activity of acetone and ethanol/methanol (80%) extracts of 14 bryophyte species viz. *Conocephalum conicum*, *Marchantia papillata*, *Rhynchostegium vagans*, *Anoetangium thomsonii*, etc., against different plant pathogens. The minimum inhibitory concentration (MIC) and minimum bactericidal or fungicidal (MBC/MFC) was observed employing broth microdilution methods which ranged from 3.91-500 $\mu\text{g/mL}$ against different microbes. Among all the bryophytes *C. conicum* showed the highest bioactive potential followed by *M. papillata* and *A. thomsonii*. Confirmation of fungicidal potential of *C. conicum* (methanol extract) has also been observed against *Aspergillus* sp. through scanning electron microscopy. *C. conicum* also showed the highest content of antioxidant activity which can be correlated with its highest antimicrobial potential. Further, the GC-MS analysis was done for the chemical characterization of the bryophytes. A specific biomarker compound of liverwort-riccardin C was detected in *C. conicum* and *M. papillata*. The bioactivity potential of this neglected group can help in establishing an alternate choice for disease control.

Biography:

Dr. Kavita Negi currently working as a Research Associate (Botany) in Central Council Research in Unani Medicine (Ministry of AYUSH) Government of India.