

ABSTRACT

Tuberculosis is one of the major infectious diseases afflicting an increasingly growing population in the developing world including India. Emergence of Multi Drug Resistant (MDR) and Extensively Drug Resistant (XDR) strains of *Mycobacterium tuberculosis* has led to the requirement of new anti-tuberculosis drugs. Plants provide a vast range of bioactive compounds that are found to possess antibacterial activity. In the present study five traditionally used medicinal plants of North East India, namely *Mimosa pudica* L. (Lajuki lata), *Thuja orientalis* L. (Jhau), *Cynodon dactylon* L. (Dubori), *Chromolaena odorata* L. (Gundhali) and an unidentified local plant, were screened for their antimycobacterial activity. Our preliminary study reveals that out of the five medicinal plants screened, considerable antimycobacterial activity is present in the crude ethanol and methanol extracts of the roots and leaves of *M. pudica*. The ethanol and methanol extracts of the root of *M. pudica* have exhibited growth inhibitory activity against the two *Mycobacterial* species namely *Mycobacterium smegmatis* (ATCC 14468) and *Mycobacterium tuberculosis* (H37Rv) as evident from Agar Well Diffusion Assay.

The Minimum inhibition Concentration (MIC) of the plant extracts has been calculated to be 1.25µg/µl and 12.5µg/µl against *Mycobacterium smegmatis* (ATCC 14468) and *Mycobacterium tuberculosis* (H37Rv) respectively. Morphological changes like shrinkage and wrinkling of the bacterial cell wall induced by the MIC value of the ethanol and methanol extracts of root has been observed by Scanning Electron Microscopy.

Antioxidant and phytochemical characterization of the extracts of *M.pudica* were also performed. Significant antioxidant activity was observed in case of Leaf (Methanol extract), root (Methanol and Ethanol) extracts of *M. pudica*. Methanol extracts of leaf showed maximum phenolic content whereas the ethanol and methanol extracts of leaf showed high content of Flavonoids. Hemolysis assay was performed to study the effect of the extracts on the eukaryotic cell membrane. Negligible hemolytic activity has been observed in case of ethanol extracts of leaf and root and methanol extracts of leaf.