

IDENTIFICATION OF SOIL BACTERIAL AND FUNGAL DIVERSITY OF MALAYATTOOR FOREST DIVISION OF WESTERN GHATS

SUMMARY OF THE WORK

Western Ghats of India, though covering an area of 180,000 km, or just under 6% of the land area of India, contain more than 30% of all plant, fish, herpetofauna, bird and mammals species found in India. It is recognized as a UNESCO World Heritage Site and is one of the eight "hottest hotspots" of biological diversity in the world. Starting from southern tip of Gujarat and extending from Satpura range in the north traversing through the states of Maharashtra, Goa, Karnataka and Kerala, hills of Western Ghats ends at Southern tip of India, standing tall at an altitude of 295 m (Anamudi) in Kerala. Among various ranges of organisms in Western Ghats, microorganisms are the least studied and unidentified microbes could be explored for potential applications.

In this particular study the distribution of cultivable bacteria and fungi present in soil from two different locations were analyzed. The soil dilution and plate count methods have been used for enumeration and isolation of soil microorganisms. Appropriate soil dilutions are plated on suitable media and incubated. 27 bacterial strains were identified in the study mainly by morphological and biochemical methods. Bacteria identified include the ones involved in nitrogen fixation, phosphate solubilisation and pest controlling and protection of the plants from insect pests. The bacteria *Salinimicrobium sp.*, *Paenibacillus sp.* and *Bacillus sp.* are present in both the samples. Three of 27 bacterial strains were identified using 16S rRNA gene sequencing and analysis as *Bacillus amyloliquefaciens*, *Burkholderia sp.* and *Bacillus subtilis*. 18 Fungi are isolated and identified by both macroscopically and microscopically. Among the 18 isolates *Aspergillus sp* was the predominant species. 2 fungal strains were identified by DNA sequence analysis of ITS-1 and ITS-4 and are *Eutypella sp.* and *Trichoderma harzianum*.

Further molecular analysis is required for the identification of the unknown bacterial and fungal isolates and confirmation of biochemically and microscopically identified strains. Further investigations on the isolates are going on to identify their potential industrial, medicinal and agricultural application.