PREFACE

Mangroves represent highly dynamic and fragile ecosystems yet they are the most productive and biologically diversified habitats of various life forms including plants, animals and microorganisms. The mangrove ecosystems support genetically diverse groups of aquatic and terrestrial organisms. Due to rich sources of nutrients, mangroves are rich in microorganisms. Microorganisms forms integral part of the mangrove ecosystem. They help in recycling and transformation of various nutrients and thus make the mangrove ecosystem more productive. All microbial forms such as bacteria, fungi, cyanobacteria, microalgae, macroalgae, fungus like protists and actinomycetes have been reported in this ecosystem. The microbial community of this ecosystem contributes to the bio-geochemical cycle and nutrient transformation by various mechanisms like degradation of complex molecules, ammonification, nitrification and denitrification as well as carbon flux and methane utilisation.

Mangrove microbial diversity exhibits novel biotechnological applications due to its remarkable adaptation to such a unique swampy, saline and partially anaerobic environment. The biotechnological potentials of mangrove microorganisms include characterization of novel enzymes with useful applications to human life such as in agriculture, industry, medicine and production of other value-added products like drugs, therapeutic proteins, antibiotics, vaccines and diagnostic tools etc. Actinomycetes isolated from mangrove habitats are a potentially rich source for the discovery of anti-infection and anti-tumor compounds, and the agents for treating neurodegenerative diseases and diabetes. Besides their enzyme and antibiotic production, mangrove microbes harbour tremendous potential for bioremediation and environmental protection. Phospahte solubilizing bacteria (PSB) inhabiting in the mangrove soil can directly utilized for biofertilizer production and can be used in agriculture for plant growth improvement. Mangrove leaf litter contains high amount of cellulose which favors the growth of cellulose degrading bacteria. The cellulase enzyme from these cellulose degrading bacteria can be used for many biotechnological applications.

The particular conditions of a mangrove and adaptation of bacterial species to such conditions, represents an important source of biotechnological potential

resources to be exploited. A phylogenetic and functional description of microbial diversity in the mangrove ecosystem has not been well addressed to the same extent as that of the other environments. The microbial diversity and distribution in a mangrove would improve our understanding of bacterial functionality and their interactions found in that ecosystem. Notwithstanding the existing knowledge of microbes and microbial processes, we are still at the base of microbial diversity, which needs to be explored for the judicious and gainful utilization of this nature's treasure.

In the light of this, it was considered necessary to collect as much information as possible on study of microbial diversity in mangroves environment in general and Odisha in particular. The present publication entitled "Mangrove Microorganisms: Biodiversity and Biotechnology" has been prepared with a hope that it generate interest among readers and researchers to learn about the ecology, microbial diversity and its biotechnological potentials.

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