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Microorganisms in Saline Environments: Strategies and Functions

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Chapter 5
Investigation of the Structural and Functional Microbial Diversity in Indian Mangroves

Shayantan Mukherji, Shyamalina Haldar, and Abhrajyoti Ghosh

Abstract Mangrove forests are excellent examples of extremely productive ecosystems, present on earth. Located along the coastal zones, they provide nutrients that help to nourish the coastal waters, as well as serve as barriers that protect the coastal zones. In the last century, mangrove ecosystems became increasingly threatened due to changes in land usage pattern, different biotic pressure, natural calamities, and finally anthropogenic influences. It is therefore indispensable to monitor and assess mangrove ecosystems at a regular interval. India has a long coastline of which an area of about 4921 km^2 is covered with mangroves, making this country the fourth largest concerning the area covered with mangrove ecotype. Microbes are important components of mangrove ecosystems where they play an integral part in maintaining the biogeochemistry of such ecologically important regions. In Indian mangroves, a considerable effort has been made to understand flora and fauna biodiversity. However, knowledge about the microbial diversity and function within Indian mangrove ecosystem is comparatively less. The present chapter focuses mainly on diversity, distribution, and function of microbes in Indian mangrove ecosystem. Both culture-dependent and culture-independent studies on understanding the diversity and function of microorganisms in Indian mangroves have been discussed.

Keywords Mangrove forests · Microbial diversity · Mangrove ecosystem · Coastal estuarine ecosystems

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