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Plant growth promoting activities of rhizosphere bacteria from two ferns *Pronephrium nudatum* (Roxb.) Holttum. and *Bolbitis heteroclita* (C. Presl) Ching: an analysis of fern-rhizophere relationship

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Studies on rhizosphere bacterial community of ferns is scarce and with more works in this field, it might become clear how ferns modulate the soil environment and act as repository for good soil modifying bacteria. The rhizosphere is of central importance not only for plant nutrition, health and quality but also for microorganism-driven carbon sequestration, ecosystem functioning and nutrient cycling in terrestrial ecosystems. The survaivality of a particular species of fern is dependent on the types of its microbial association. Rhizosphere microflora tends to differ according to different ecological conditions where the ferns are growing and with different plant groups and plant communities. Studies on twenty six predominant rhizosphere bacteria of two fern species have been done in the present work for their plant growth promoting activities which included phosphate solubilization activity, indole acetic producing capability, ammonia producing capacity, antagonistic activity against *Rhizoctonia solani*, a plant pathogenic fungi, metal tolerance capacity and siderophore production ability. Biochemical and molecular diagonistics of the isolates were done to identify the bacterial species. The results yielded that most of the isolates had plant growth promoting traits and the dominant strains belonged to the genera *Bacillus*, followed by *Pseudomonas* and actinomycetes.

Keywords: Actinomycetes, Ammonia producing capacity, Antagonistic activity, *Bacillus* spp., Indole acetic acid (IAA), Metal tolerance capacity, PGPR, Phosphate solubilization activity, *Pseudomonas* sp., Siderophore production ability