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Molecular Characterization of Rhizobia Associated with Legume *Rhynchosia Minima* Native to Arid Region of Thar Desert

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ABSTRACT: A survey of native legume *Rhynchosia minima* was conducted at various sites/villages of district Jodhpur, Nagaur, Barmer, Bikaner and Jaiselmer of arid region of western Rajasthan in the months of September to November during post monsoon periods. Rhizobia trapping experiments were also performed with rhizospheric soil collected from various sites in arid regions of Thar Desert. The nodules in *Rhynchosia minima* were found to be indeterminate with bark and lenticels on the surface. More than 80 bacterial strains were isolated from *R. minima* and around 57 bacterial isolates were purified and characterized at phenotypic, biochemical and molecular level. Bacteria isolates were screened for salt (NaCl) and pH tolerance. Genetically diverse bacteria were grouped on the basis of DNA fingerprinting like ARDRA (Amplified rDNA Restriction Analysis) and RAPD using RPO1 primer. On the basis of ARDRA and RAPD pattern, selected root nodule bacteria were characterized by partial 16S rRNA gene sequences and identified by closest match in Blastn. Phylogenetic analysis reveals that *Ensifer*sp. is the most competent nodulating bacteria in this native legume growing in alkaline soil of Thar Desert. 16S rRNA gene NJ tree shows a separate clade of novel *Ensifer* sp. Diversifying from old world rhizobia *Ensifer arboris* TTR 38T (Z78204) and *Ensifer saheli* LMG 7837T (X68390).

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