RESEARCH PAPER International Journal of Agricultural Sciences, June to December, 2009, Vol. 5 Issue 2 : 577-581

Molecular characterization among strains of chickpea root nodule bacteria isolated from different areas of middle Gujarat

V.R. HINGE*, R.L. CHAVHAN[1], Y.A. DESHMUKH[2] AND S.N. SALUNKHE[3]
Department of Agricultural Botany, B.A. College of Agriculture, Anand Agricultural University, ANAND (GUJARAT) INDIA

ABSTRACT

Eighteen strains of Root nodule bacteria were collected from the chickpea plant, grown in different areas of middle Gujarat, *viz.,* Anand, Dahod, Thasara, Arnej and Dhanduka. These strains were confirmed as Rhizobium by using different biochemical test and maintained their pure culture. Molecular characterization based on repetitive DNA sequence especially, ERIC sequence (Enterobacterial Repetitive Intergeneric Consensus) were done together with two known Rhizobium strains, one commercial culture (GSFC, Vadodara), five standard strains of Rhizobium and one standard strain of *Agribacterium tumefacinus*. The total of 320 no of amplicons was generated by using ERIC primer pair. The strain MTCC 4188 (*Mesorhizobium ciceri*) produced highest no of amplicons while strain MTCC 120 (*Bradyrhizobium japonicum*) showed a less no of amplicons. Data analysis of ERIC fingerprinting pattern clustered all RNB strains and standard strains into four major clusters as per their phylogenetic relationship. Majority of RNB strains (65 per cent) were closely related to the genus *Mesorhizobium ciceri* species and *Mesorhizobium loti*, while remaining 40 per cent RNB strains showed similarity to *Rhizobium leguminosarum* (MTCC 99) and *Agrobacterium tumefaciens* (MTCC 431). The ERIC-PCR fingerprinting could become a powerful tool for depicting the genetic diversity among eighteen RNB strains and standard strains. The data based on ERIC fingerprinting pattern could help to determine phylogenetic relationships among these RNB strains and will be helpful for development of diagnostic primer for identification of efficient strains of Chickpea Root Nodulating Bacteria.

Key words : Chickpea, *Rhizobium,* Root nodule bacteria, Phylogenetic

*** Author for correspondence.** [1]Department of Plant Biotechnology, College of Agricultural Biotechnology, LATUR (M.S.) INDIA
[2]MAHYCO, Life Sicences Research Centre, Crop Gene Function and Manipulation Lab, JALNA (M.S.) INDIA
[3]Department of Agricultural Botany, Marathwada Agricultural University, PARBHANI (M.S.) INDIA