PLANT GROWTH AND NODULATION OF MUCUNA (*MUCUNA PRURIENS*) IN RESPONSE TO *RHIZOBIUM* INOCULATION

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Abstract: A total 20 *Rhizobium* strains were isolated from nodules of *Pisum sativum*. Isolated strains were characterized on the basis of cultural staining and biochemical tests by standard methods. Further, Plant growth activities of characterized twenty *Rhizobium* strains were analysed. Only nine *Rhizobium* i.e. *Rhizobium* PMR-2, *Rhizobium* PMR-3, *Rhizobium* PMR-7, *Rhizobium* PMR-9, *Rhizobium* PMR-12, *Rhizobium* PMR-13, *Rhizobium* PMR-15, *Rhizobium* PMR-17, *Rhizobium* PMR-19 produced siderophore, HCN, IAA and solubilized phosphorous. *Mucuna pruriens* has some medicinal value as well as food –feed crop and selected for present study. Pot experiment had done to analyzed PGPR activity of *Rhizobium* strains. *Mucuna* seeds were surface-sterilized and bacterized with *Rhizobium* strain of density of 10^8 cfu ml^{-1}. Sterile earthen pots (24 cm × 12 cm × 12 cm) were filled with sterilized sandy loam soil. Total 10 treatment were prepared and these are *Rhizobium* PMR-2 + Seed; *Rhizobium* PMR-3 + Seed; *Rhizobium* PMR-7 + Seed; *Rhizobium* PMR-9 + Seed; *Rhizobium* PMR-12 + Seed; *Rhizobium* PMR-13 + Seed; *Rhizobium* PMR-15+ Seed; *Rhizobium* PMR-17 + Seed; *Rhizobium* PMR-19 + Seed and uninoculated seed (control). All bacterized *Rhizobium* strains produced more dry weight and plant height as compared to uninoculated seed (control). *Rhizobium* PMR-13 and PMR-19 increased plant dry weight by 181.7 and 181.9% respectively as compared to control. Maximum height has been observed in *Rhizobium* PMR-19 bacterized seed treatment and it was 122% as compared to control. *Rhizobium* PMR-13 bacterized seeds showed 52 nodules per plant. We concluded that use of rhizobia inoculant enhanced plant growth in Mucuna plant.

Keywords: *Rhizobium*, Siderophore, HCN, IAA, P-solubilization

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