



***In vitro* screening and characterization of bacteria isolated from the rhizospheric soil of *Ocimum sanctum* for multiple plant growth promotion activities**

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Abstract : Plant growth-promoting rhizobacteria (PGPR) are free-living, soil-borne bacteria, in the rhizosphere, which, when applied to seeds or crops, influences the plants physiology to a great extent. In our study, soil samples from rhizosphere of medicinal plant *Ocimum sanctum* were collected from different locations in Phulwarisharif, Patna. Total of sixteen bacterial strains were isolated out of which six strains were selected and screened for *in vitro* plant growth promoting activities like ammonia production, Indole Acetic Acid (IAA) production, Phosphate solubilization, Hydrogen Cyanide (HCN) production and antifungal activities. All the six bacterial strains that showed plant growth promoting activities were subjected to cell wall degrading enzyme production and intrinsic antibiotic resistance. The selected six strains were further identified as

Klebsiella sp., *Bacillus sp.*, *Rhizobium sp.*, *Pseudomonas sp.*, and *Azotobacter sp.* Our results showed that use of PGPR as inoculants or biofertilizers is an efficient approach to replace chemical fertilizers and these PGPR isolates may be used as biofertilizers to enhance the growth and productivity of commercially grown medicinal and aromatic plants under local agro-climatic conditions of Bihar.

Key words: PGPR, Biofertilizer, *Ocimum sanctum*, Rhizosphere.

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Introduction :

India has one of the richest medicinal plant cultures in the world. Ancient Indian literature incorporates a remarkably broad definition of medicinal plants and considers all plants as potential sources of medicinal substances (Malleswari and Bagyanarayan, 2013).

There are thousands of herbal plants in the world but Tulsi (*Ocimum sanctum*) is considered to be the “queen of herbs” due to its greater medicinal values (Asha et al., 2011). Medicinal plants support a great diversity of microflora surrounding