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Screening of spore-forming bacteria from sesame (*Sesame indicum* L.) roots for plant growth promotion and plant protection properties

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A variety of beneficial bacteria that colonize the plant roots are called rhizospheric bacteria. Interest in beneficial rhizobacteria associated with roots has increased recently due to their potential use as biofertilizers and biocontrol agents. In this study, 38 indigenous spore-forming bacteria were isolated from sesame roots, from which 12 isolates were Gram positive rods. Biochemical tests identified them as *Bacillus* spp. According to the Petri plate assay, only four isolates were antagonistic to both *Rhizoctonia solani* and *Sclerotium rolfsii*. The PCR screening has confirmed the presence of biosynthetic genes involved in biosynthesis of iturin and zwittermicin *A*, two of the important antibiotics of many *Bacillus* spp. These antagonists were further characterized in terms of production of indole acetic acid (IAA), phosphate solubilization ability, and growth promotion ability of sesame plants. Of these only one isolate produced IAA and solubilized phosphate *in vitro*. Interestingly this isolate showed a significant (p = 0.05) growth promotion effect on sesame seedlings when applied as a seed treatment.

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