

Research Article

Molecular Characterization of *Trichoderma* Isolates and Evaluation of its Biocontrol Potential against White Rot of Chickpea Caused by *Sclerotinia sclerotiorum* (Libert de Bary)

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Abstract

The study aims at characterization of location specific *Trichoderma* spp, and its biocontrol potential against *Sclerotinia sclerotiorum* a key threat in major pulses growing areas. Thirty rhizospheric soil samples were collected from Uttar Pradesh, Madhya Pradesh and Maharashtra for identification and characterization of *Trichoderma* sp isolates, which were further used for evaluating biocontrol potential through percentage inhibition and effect of volatile compounds against *S. sclerotiorum*. Mycelial interaction between *Trichoderma* spp and *S. sclerotiorum* using microscopy were also documented. Species identification of *Trichoderma* sp and *S. sclerotiorum* were performed molecularly through amplification of their ITS region. Highest percentage inhibition in growth of *S. sclerotiorum* was observed with UP:Bam003 (96.33%) followed by UP:Bam002 (94.88%) whereas the isolate UP:Bam003 (84.44%), MP:Gai049 (82.2%), UP:Kus008 (82.2%) were most efficient through volatile metabolite effect. The effective isolates thus obtained were used for *in-vivo* efficacy test. Highest germination (84.37%) and vigour index (5585.12) of chickpea seedlings was obtained with isolate MS:Mar016, followed by MP:Kha 030 and UP:Bam003. The study showed that *Trichoderma* spp can be used as a potential biofertilizer for crop production in sustainable and ecological agricultural systems due to their plant growth promoting abilities and they are helpful in combating various diseases, minimizing the use of high cost agrochemicals.

Key words: Biocontrol, chickpea, ITS, molecular phylogeny, *Sclerotinia sclerotiorum*, *Trichoderma*

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