

EXECUTIVE SUMMARY OF THE PROJECT

UGC –MRP No.MRP-MAJOR-BOTA-2013-25956 (ST) titled: Management of biotic stress by using antagonistic isolates of *Trichoderma* spp. in tomato vegetated temperate agro ecosystems (01.07.2015 to 30.06.2018)

Objective 1. Isolation and identification of *Trichoderma* spp. from the rhizosphere of tomato grown in vegetated agro ecosystems.

Total six strains of fungi (*Trichoderma* spp) (designated as T1, T2, T3, T4, T5, T6) have been isolated following standard dilution technique (Warcup, 1950). The molecular characterization of the six isolates designated as T1, T2, T3, T4, T5, T6 was done by direct sequencing of 5.8 rRNA gene. The isolates have been identified as *Trichoderma viride* (T1), *Trichoderma asperellum* (T2), *Trichoderma viride* (T3), *Hypocrea lixii* / *Trichoderma harzianum* (T4), *Trichoderma atrobrunneum* (T5) and *Hypocera lixii* (T6)

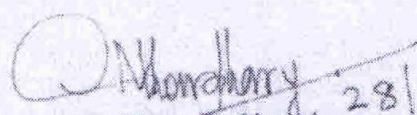
Objective 2. Screening of different isolates of *Trichoderma* spp. for antagonistic activities against *Fusarium oxysporum* f.sp. *lycopersici* the causal agent of wilt of tomato.

All the above mentioned six isolates were tested for their antagonistic activity against the wilt pathogen (*Fusarium oxysporum* f.sp. *lycopersici*) by colony interaction method (Skidmore and Dickinson, 1976). The isolates exhibited differential antagonistic activity against the pathogen. *Trichoderma viride* (T1), *Trichoderma asperellum* (T2), *Trichoderma viride* (T3), *Hypocrea lixii* / *Trichoderma harzianum* (T4), *Trichoderma atrobrunneum* (T5) and *Hypocera lixii* (T6) were found to effectively inhibit the growth of the test pathogen.

Objective 3. Molecular Characterization of Enzymes involved in Trichodermin biosynthesis pathway

Work on molecular characterization of enzymes involved in Trichodermin biosynthesis pathway as planned under the Project has been carried out and published in the reputed SCOPUS indexed international Journals. List of major publications is given below. Reprints are available on line.

1. Indu Kumari, Mushtaq Ahmed and Yusuf Akhter, 2016. Deciphering the protein translation inhibition and coping mechanism of trichothecene toxin in resistant fungi. *The International Journal of Biochemistry and Cell Biology*, 78 (2016) 370-376. Elsevier. Impact factor (Thomson Reuters) 3.905.
2. Indu Kumari, Mushtaq Ahmed and Yusuf Akhter, 2017. Evolution of catalytic microenvironment governs substrate and product diversity in trichodiene synthase and other terpene fold enzymes. *Biochimie*. (French Society of Biochemistry and Molecular Biology), 144 (2018): 9-20. Elsevier, Impact factor (Thomson Reuters) 3.112.
3. Indu Kumari, Mushtaq Ahmed and Yusuf Akhter, 2016. Multifaceted impact of trichothecene metabolites on plant-microbe interactions and human health. *Applied Microbiology and Biotechnology*. 100 (13): 5759-5771. Springer. Impact factor (Thomson Reuters) 3.376.

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