

INDUCTION OF DEFENSE ENZYMES AND PHENOLIC CONTENT BY *TRICHODERMA VIRIDE* IN *VIGNA MUNGO* INFESTED WITH *FUSARIUM OXYSPORUM* AND *ALTERNARIA ALTERNATA*

CH. SUREKHA¹, NRR NEELAPU², B. SIVA PRASAD³ & P. SANKAR GANESH⁴

^{1,2}Department of Biochemistry & Bioinformatics, Institute of Science, GITAM University, Rushikonda Campus,
Visakhapatnam, Andhra Pradesh, India

^{3,4}Department of Biological Sciences, Birla Institute of Technology and Science Pilani, Hyderabad Campus, Jawahar
Nagar, Shameerpet Mandal, Hyderabad, India

ABSTRACT

Trichoderma viride is one of the most important biocontrol agents (BCAs) that have been used in agriculture across the globe. They provide systemic resistance to plants infested by various fungal phytopathogens. Biocontrol activity of *Trichoderma* based BCAs inheres in their ability to orchestrate various biochemical pathways in plants parasitized by fungi. Although studies delineating biocontrol activity of *Trichoderma* against fungal pathogens are documented, there is need for divulging the biochemical basis of disease resistance being induced by *Trichoderma*. Therefore, investigations pertaining to induction of such systemic resistance and associated biochemical responses is essential to understand the mechanism of biological control by *Trichoderma viride*. In this regard, current study was designed to understand the role of *T. viride* in inducing defense enzymes (Peroxidase, Polyphenol Oxidase and Phenyl Alanine ammonia Lyase) and total phenolic content in black gram exposed to pathogens *Fusarium oxysporum* and *Alternaria alternata*. It was found that the biocontrol agent, *T. viride* induced higher levels of defense enzymes in black gram during pathogenesis by *F. oxysporum* and *A. alternata*. Therefore, it was concluded that plant defense enzymes play a vital role in mitigating pathogen-induced stress in legume, *Vigna mungo* during the biological control by *T. viride*. Outcomes of the study will be useful in formulating *T. viride* based BCA formulations to control wilt and blight diseases caused by fungal phytopathogens.

KEYWORDS: *Trichoderma viride*, Biocontrol Agent, *Vigna mungo*, Peroxidase, Polyphenol Oxidase and Phenyl Alanine Ammonia Lyase