

Study of Isoenzyme Pattern of Peroxidase (POX) and Polyphenol Oxidase (PPO) in Phylloplane Microbe Inoculated Tomato Plants

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Abstract—Tomato (*Solanum lycopersicum* L.) phylloplane harbours a wide range of microflora. The present study focused on the influence of one of the most dominant phylloplane microfungus, *Aspergillus niger* on the activity of two important defense enzymes, peroxidase (POX) and polyphenol oxidase (PPO) in tomato plants. The study aimed to understand the isoenzyme pattern of both the enzymes. The tomato plants were raised under aseptic conditions and were divided into two groups of 25 plants each. One group was inoculated with *Aspergillus niger* and the other group with autoclaved distilled water (control). Leaves were sampled at 0, 15, 30, 45 minutes and 1, 2, 3, 4, 5 and 24 hours post treatment and analysed for the isoenzyme pattern of POX and PPO. The results demonstrated that four POX isoenzymes ($R_f = 0.34, 0.45, 0.52$ and 0.60) were expressed in samples at all intervals post inoculation including control while isoenzyme ($R_f = 0.56$ and 0.68) were expressed in *Aspergillus niger* treated samples at 45min and 5hours post inoculation respectively. On the other hand, PPO isoenzymes ($R_f = 0.23, 0.37, 0.44, 0.51, 0.56$) were expressed in all samples including control but isoenzymes ($R_f = 0.50, 0.57, 0.61$) were differentially expressed in *Aspergillus niger* treated samples at various intervals post inoculation. Thus, inspite of being non pathogenic to tomato plants, *Aspergillus niger* elevates the expression of these two important defense enzymes due to plant microbe association.