
Streptomyces* mediated stimulation of defense related enzymes to increase the biocontrol resistance in *Capsicum annuum* L. against *Ralstonia solanacearum

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Kaari, M., Joseph, J., Manikkam, R., Venugopal, G. and Soyong, K. (2021). *Streptomyces* mediated stimulation of defense related enzymes to increase the biocontrol resistance in *Capsicum annuum* L. against *Ralstonia solanacearum*. International Journal of Agricultural Technology 17(5):xxx-xxx.

Abstract The present study evaluated the selected rhizosphere soil *Streptomyces* cultures for the stimulation of defense enzymes in *Capsicum annuum* L. against *Ralstonia solanacearum*. Among the seven *Streptomyces* strains evaluated for the promotion of plant growth in pot experiments, strain UP1A-1 showed highest shoot length (16.8 cm), root length (12.1 cm), fresh weight (7.61 gm) and dry weight (0.81 gm). Similarly, the maximum amount of total chlorophyll was observed in the chili plant treated with the strain UP1A-1 (1.9 mg g⁻¹) and UT2A-30 (1.59 mg g⁻¹). The *Streptomyces* strains UP1A-1 (88.8%), UP2A-9 (87.0%) and UT6A-57 (83.2%) showed maximum biocontrol efficacy against *R. solanacearum*. The maximum phenolic content was observed in the chili pepper plants treated with the strain UP1A-1 at 9 days after pathogen inoculation (DPI). Also the plant defense related enzymes peroxidases (POX) and polyphenol oxidase (PPO) significantly increased in UP1A-1 treated chili pepper at 3 DPI and 6 DPI. It is also noticed that initially at 1 DPI all treatments showed least amount of POX and PPO, later increased at 3 DPI and 6 DPI but suddenly started decreasing at 9 DPI in chili pepper. In conclusion, the current pot experiment indicated that the *Streptomyces* sp. UP1A-1 exhibited the maximum chili pepper growth, good stimulation of defense related enzymes and disease reduction against bacterial wilt and it could be a promising PGP and Biocontrol agent for chilli pepper plants against *R. solanacearum*.

Keywords: Chili pepper, Bacterial wilt, *Streptomyces*, Plant growth

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