

Biocontrol of Fusarium Crown and Root Rot and Enhancement of Tomato *Solanum lycopersicum* L. Growth Using *Solanum linnaeanum* L. Extracts

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Abstract : In the present study, leaf, stem, and fruit aqueous extracts of native wild *Solanum linnaeanum* L. were screened for their ability to suppress Fusarium Crown and Root Rot disease and to enhance tomato (*Solanum lycopersicum* L.) growth under greenhouse conditions. Leaf extract used at 30% w/v was the most effective in reducing leaf and root damage index by 92.3% and the extent of vascular discoloration by 97.56% compared to *Fusarium oxysporum* f. sp. *radicis lycopersici* -inoculated and untreated control. A significant promotion of growth parameters (root length, shoot height, root and shoot biomass and stem diameter) was recorded on tomato cv. Rio Grande seedlings by 40.3-94.1% as compared to FORL inoculated control and by 9.6-88.8% over pathogen-free control. All *S. linnaeanum* aqueous extracts tested significantly stimulated the germination by 10.2 to 80.1% relative to the untreated control. FORL mycelial growth, assessed using the poisoned food technique, varied depending on plant organs, extracts, and concentrations used. Butanolic extracts were the most active, leading to 60.81% decrease in FORL mycelial growth. HPLC analysis of butanolic extract revealed the presence of thirteen phenolic compounds. Thus, *S. linnaeanum* can be explored as a potential natural source of antifungal and biofertilizing compounds.

Keywords : antifungal activity, HPLC-MS analysis, *Fusarium oxysporum* f. sp. *radicis-lycopersici*, tomato growth

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