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ANTAGONISTIC ACTIVITY OF *Trichoderma* ISOLATES ON PATHOGENIC FUNGI, *Colletotrichum musae, Colletotrichum acutatum* AND *Botryodiplodia theobromae*

P. Janaththani[1], N. K. B. Adikaram[2], S. D. S. S. Sooriyapathirana[1], M. P. C. S. Dhanapala[1]

[1]Department of Molecular Biology and Biotechnology,
[2]Department of Botany, Faculty of Science, University of Peradeniya

Plant disease management is an uphill task. Biological control is hailed as a safe approach to manage plant diseases. *Trichoderma* is a soil inhabitant and it is well known as a potential biological agent to control fungal pathogens of plants. Several commercial biological products based on *Trichoderma* are available in the international market. However, *Trichoderma*-based products are not available in Sri Lanka. If native strains of *Trichoderma* can be isolated from the environment and tested for their antifungal activity against common phytopathogenic fungi, such isolates can be used to control pathogens. Therefore, the present study was conducted to assess the antagonistic activity of *Trichoderma* isolates on three selected postharvest pathogenic fungi of common fruit species in Sri Lanka, namely *Colletotrichum musae, Colletotrichum acutatum* and *Botryodiplodia theobroma.*

Three soil samples were collected from the premises of the University of Peradeniya and another soil sample was collected from a tea estate in Kandy. Soil samples were suspended separately in sterile distilled water and suspensions were filtered and used to make a dilution series (10^{-1} to 10^{-5}). One ml of each dilution was spread on a Potato Dextrose Agar (PDA) plate. After three days of incubation at room temperature, *Trichoderma* colonies were identified by observing the colony and conidial morphology. Ten pure cultures of *Trichoderma* isolates were recovered and labeled A to J. Pure cultures of postharvest pathogenic fungi, *C. musae, C. acutatum* and *B. theobromae,* were obtained from the Plant Pathology Laboratory, Department of Botany, University of Peradeniya. Suspensions of conidia were prepared from fully grown cultures of *Trichoderma* isolates, *C. musae* and *C. acutatum*. The concentration of conidia suspensions of *Trichoderma* isolates was adjusted to 1×10^3 ml^{-1} and the concentration of conidia suspensions of the two pathogenic fungi was adjusted to 1×10^6 ml^{-1}. For *B. theobromae* mycelium discs were picked from the fully grown cultures as spore formation was minimal. A bioassay was conducted to test the antagonistic activity of *Trichoderma* on three fungal pathogens. Two wells were cut on each PDA plate using a one cm diameter cork borer. In each plate, one well was filled with 25 µl of *Trichoderma* conidial suspension and the other well was filled with 200 µl of conidial suspension of either *C. musae* or *C. acutatum*. For *B. theobromae*, a mycelium disc was placed in the well. After incubation, the diameter of *Trichoderma* colony and the pathogenic fungal colony was measured daily for seven consecutive days.

With *Trichoderma* isolates C, D and E, *C. musae* colonies stopped growing after four days of incubation and these *Trichoderma* isolates started to grow over *C. musae* colonies and the entire plates were covered with *Trichoderma* isolates on the seventh day, inferring the effectivity of isolates C, D and E against *C. musae*. The isolate G started to grow over *C. acutatum* colony after five days and was considered as effective against *C. acutatum*. Even though, all the isolates except G, started to grow over on *B. theobromae*, none of them had a significant effect. The *Trichoderma* isolates A, B, F, H, I and J did not exhibit a significant effect against any of these three pathogenic fungi. The *Trichoderma* isolates with antifungal activity must be further studied to formulate them as biopesticides and to understand their mode of action.