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Effect of Irradiated Chitosan on *Colletotricum musae* of 'Embul' Banana

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'Embul' banana (*Musa accuminata* AAB) is a popular variety in Sri Lanka with export potential due to its small size and sweet sour taste. Short storage life is the main problem associated with the export of this commodity. Postharvest diseases such as anthracnose and crown rot are the main concerns for the short storage life. The main causative agent for both diseases is *Colletotricum musae*. A previous study by the authors showed that (unirradiated) chitosan, the deacetylated product of chitin can control anthracnose on "embul' banana. This study explores the effect of irradiated chitosan on *Colletotricum musae* under *in-vitro* conditions.

Colletotricum musae was isolated from anthracnose infected "embul" banana tissues and pure cultures were maintained on PDA plates. The mycelial discs cut from the periphery of 7 day old cultures were transferred into flasks containing a series of irradiated (0-5 kGy) chitosan concentrations (0.1 - 1.5%)(w/v) in a semi-synthetic liquid medium SMKY and inoculated. After 7 day incubation period minimum inhibitory concentration (MIC) and minimum lethal concentration (MLC) were determined at each irradiation dose. Sterile water and 1% acetic acid served as controls. Five replicates of each treatment and controls were arranged according to the completely randomized design (CRD).

Both irradiated and un-irradiated chitosan were effective against the pathogen. There was a clear enhancement of the antifungal activity of chitosan against *Colletotricum musae* with increasing gamma radiation dose. With increasing irradiation dose minimum inhibitory concentration (MIC) and the minimum lethal concentration (MLC) of chitosan against *Colletotricum musae* decreased. MIC and MLC of unirradiated chitosan were 0.8% and 1.0% respectively. The lowest MIC (0.3%) and MLC (0.4%) were observed with the highest irradiation dose, 5 kGy. These results reveal the possibility of using lower concentrations of irradiated chitosan to control *C. musae* compared to unirradiated chitosan. This further shows that irradiation enhances the antifungal activity of chitosan.