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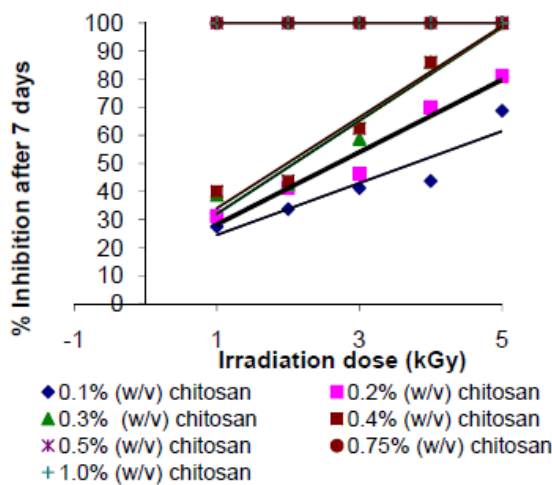
In-vitro Application of Chitosan in Controlling the Fungal Pathogen, *Colletotrichum musae* in ‘Embul Banana’

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Crown rot and Anthracnose are the major postharvest fungal diseases of ‘Embul’ banana (*Musa acuminata*) grown in Sri Lanka. The main causative agent of Anthracnose is *Colletotrichum musae*, while three fungi, namely, *Colletotrichum musae*, *Lasiodiplodia theobromae* and *Fusarium proliferatum* are responsible for the crown rot. Chitosan is the deacetylated product of chitin, a natural polysaccharide obtained from shrimp and crab shells. Antifungal properties of chitosan is well recognized by now and it has been successfully applied to control the postharvest fungal diseases of many fruits and vegetables. Furthermore, an enhancement of antifungal properties by irradiation has been reported.

In this study the potential use of chitosan (irradiated and unirradiated) against the crown rot and anthracnose pathogens of ‘Embul’ banana was tested. Only *Colletotrichum musae* was isolated from the infected lesions of Crown rot and Anthracnose. Chitosan showed very good inhibitory action ($P < 0.01$) against *Colletotrichum musae* under *in-vitro* conditions. Unirradiated chitosan is fungistatic and fungicidal against *C. musae* at the concentrations of 0.75% and 1% (w/v) respectively whereas for irradiated chitosan these values were determined as 0.3% and 0.4% (w/v) at the irradiation dose of 5 kGy (Table 1). These results show that the antifungal effect of chitosan has been increased by irradiation (Figure 1).



Irradiation dose / kGy	MIC/ % (w/v)	MLC/ % (w/v)
0	0.75	1.00
1	0.50	0.75
2	0.50	0.75
3	0.50	0.75
4	0.50	0.75
5	0.30	0.40

MIC- Minimum Inhibitory Concentration
 MLC- Minimum Lethal Concentration

Table 1. The MIC and MLC values for irradiated and unirradiated chitosan.

Fig. 1: The inhibitory effect of chitosan in different concentrations in different irradiation doses.