

### **Effect of *Croton aromaticus* leaf extracts in controlling Crown Rot disease of Embul banana**

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Embul banana (*Musa acuminata*-AAB) is one of the major dessert fruits in Sri Lanka, widely consumed by all economic groups due to its small size and characteristic flavour. Although Embul banana has high potential for export market storage and export of this commodity over long distances is difficult in consequence of postharvest fungal diseases. The most common and serious postharvest disease that affect Embul banana is Crown Rot (CR). Use of synthetic fungicides is the widely used method in controlling postharvest diseases of fruits worldwide. The interest of finding natural bioactive components has increased due to the harmful effects of synthetic fungicides on environment and health. In the present study, antifungal activity of aqueous, hot water and ethanolic leaf extracts of *Croton aromaticus* in controlling CR disease of Embul banana was investigated *in vivo*.

Embul banana hands (85-days mature) were treated with *C. aromaticus* aqueous, hot water 100% (v/v) and ethanolic leaf extracts (400 mg/ml) alone or in combination with alum (1%) or distilled water (control) were stored in modified atmosphere packaging at 12-14 °C for 14 days. Each treatment comprised of 4 replicates. In-package gases were analysed on initial day and thereafter up to 14 days. Physicochemical properties (pH, firmness, TSS, TA), sensory properties (peel colour, flesh colour, aroma, flavour, taste, overall acceptability), and Crown Rot disease severity were determined in ripening induced fruits after 7 and 14 days of storage period. Statistical analysis was done using the MINITAB 16 statistical package. Oxygen levels measured were observed to be maintained at 2.2-4.4% while CO<sub>2</sub> levels were maintained at 5.5-8.4% in all packages at the end of 14 day storage period. *C. aromaticus* ethanolic leaf extract (400 mg/mL) was the most effective extract in controlling crown rot disease of Embul banana compared to aqueous and hot water leaf extracts. Physicochemical properties of Embul banana treated with *C. aromaticus* leaf extract alone and in combination with alum were not significantly different compared to control except for TSS and TA. Most of the sensory properties were preferred by sensory panelists with score values of above 6 indicating the good quality of samples. *C. aromaticus* ethanolic leaf extract + alum in combination with modified atmosphere packaging and cold storage could be used as a potential safe way of controlling Crown Rot disease of Embul banana.

**Keywords:** Banana, Crown Rot disease, In-package gases, Physicochemical, sensory

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