Effect of alum in combination with vacuum packaging in extending the shelf life of Embul banana

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Crown rot disease is the major post harvest disease in Embul banana causing severe post harvest loss both in terms of quality and quantity. Due to hazardous effects of fungicides, use of eco-friendly methods of controlling crown rot disease are being investigated throughout the world. In this study, efficacy of alum (sodium aluminium sulphate) in combination with vacuum packaging was investigated in extending the shelf life of Embul banana at cold temperature.

Approximately 85-day mature Embul banana hands were washed with 1% alum (w/v) solution and control was washed only in water. Treated and control fruits were packed in Low density polyethylene bags, air inside bags were removed using a vacuum and placed in fibre board cartons and stored in a cold room at 12-14 ºC. Each treatment comprised 8 replicate boxes each with 5 hands. In-package gases were analysed on initial day and every seven days thereafter up to 28 days of storage. Physicochemical and sensory properties and crown rot disease severity (CRS) were determined in ripened fruits after each storage period. Medium (50 kg) and large scale (100 kg) test marketing trials were conducted at fruit outlets in Dambulla and Kiribathgoda, Sri lanka by providing treated Embul banana samples to consumers and staff to obtain feedback on the quality of treated banana.

Crown rot disease severity was low (CRS index < 1) in alum treated samples compared to control after 28 days. Physicochemical and sensory properties were unaffected by alum+vacuum packaging treatment. Oxygen within packages was maintained between 3.3 - 4.4 % while CO_2 % varied between 3.9 - 4.0 %. In medium and large scale test marketing trials, treatment controlled crown rot disease to a fair extent and obtained higher score values from the customers and staff of fruit outlets for the sensory properties compared to control. Therefore, this eco-friendly treatment method could be adopted for effective control of crown rot disease and to extend shelf life of Embul banana up to one month.

Key words: Crown rot, Embul banana, vacuum packaging

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