

**DEVELOPMENT AND EVALUATION OF A NEEM SEED
(*Azadirachta indica*)- BASED EDIBLE COATING TO EXTEND THE
SHELF LIFE OF BANANA AND MANGO FRUITS**



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ABSTRACT

Mangoes and bananas are highly perishable and prone to postharvest losses, particularly due to fungal infections such as anthracnose caused by *Colletotrichum gloeosporioides*. This study evaluated the effectiveness of neem-based edible coatings in extending shelf life maintaining fruit quality and controlling disease. Neem oil extract was prepared at two concentrations (0.5ml,1ml) and tested in vitro against anthracnose, with 1 ml showing the highest inhibitory effect. In the second experiment, mangoes and bananas were coated with three different neem seed oil-based edible coating formulations made from natural biopolymers, while another group of fruits was kept uncoated as the control for comparison. The coating formulations were prepared in four treatments; T1 contained 0.5% neem oil along with pectin, guar gum, acetic acid, stearic acid, Tween 80, and potassium sorbate, T2 had the same formulation but with 1% neem oil, T3 included the base coating without neem oil, and T4 was kept as the uncoated control. Mangoes and bananas were coated and stored at room temperature (28–30 °C, 55–60% RH) for eight days to evaluate changes in quality and disease incidence. The study evaluated the effectiveness of neem-based edible coatings in maintaining the postharvest quality of mangoes and bananas. Among the treatments, the coating containing 1% neem oil combined with 2% pectin (T2) was the most effective in preserving fruit quality. T2 significantly minimized changes in fruit firmness, pH, total soluble solids (TSS), and titratable acidity (TA), while recording the lowest incidence of disease. In mangoes, T2 slowed ripening, with TSS values changing from 0.30 to 0.25, texture remaining around 3.8, pH ranging from 3.55 to 3.67, and TA at approximately 0.10. Similarly, in bananas, T2 maintained firmness (3.8), pH (5.4), and TA (0.17), effectively extending shelf life compared to untreated fruits. These results suggest that neem-based coatings, particularly the T2 formulation, offer a sustainable approach for enhancing postharvest fruit quality and reducing spoilage.

Keywords: Mango; Banana; Neem oil; Edible coating; *Anthracnose*; Shelf-life extension; Pectin; Guar gum.

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