

EFFECTS OF CAPROALDEHYDE TREATMENT ON SHELF LIFE, PHYSICOCHEMICAL PROPERTIES, AND ANTIOXIDANT ACTIVITY OF D24 DURIAN (*DURIO ZIBETHINUS* L.) UNDER AMBIENT TEMPERATURE STORAGE

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Durian (*Durio zibethinus* L.) is a highly valuable edible fruit with significant economic importance for Malaysia, especially in the current context where fresh durian is being exported to other countries. However, fresh durian faces major challenges, including uncontrolled ripening processes that lead to reduced shelf life and substantial postharvest losses. Traditional postharvest techniques, such as cold storage, require significant investment, consume considerable space, and may alter the fruit's original flavor. Caproaldehyde is GRAS material that has been used in food production. Currently, there are no established postharvest techniques utilizing caproaldehyde treatment to extend the shelf life of fresh durian. The effectiveness, as well as the physicochemical and biochemical changes in caproaldehyde-treated durian remains unexplored. This study aims to evaluate the impact of caproaldehyde on the shelf life and quality attributes of D24 durian at ambient temperature. Fresh durian fruits were treated with caproaldehyde through vapor treatment for one night at ambient temperature. Sampling was conducted from day 1 to day 4, during which the opening of the husk was monitored. Key parameters assessed included total soluble solids, titratable acidity, pH, color changes, respiration rate, and weight loss. Antioxidant activity was measured using DPPH, ABTS, and FRAP assays. The results indicated that caproaldehyde treatment effectively inhibited husk opening until day 4, while the untreated group (control) exhibited husk opening by day 3. No significant changes were observed in physicochemical or antioxidant properties among all samples. However, the pH, respiration rate, and weight loss of caproaldehyde-treated durians were lower compared to the control. These findings suggest that caproaldehyde treatment can enhance the shelf life of durian by preventing husk opening. This treatment shows promise as a postharvest technique to extend the shelf life of fresh durian at ambient temperature, thereby increasing profitability in the durian market by reducing postharvest losses.

Keywords: Fresh durian, shelf life, postharvest treatment, export market, postharvest treatment