

# Prolonging the shelf life of papaya (*Carica papaya* L.) using *Aloe vera* gel at ambient temperature

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## Abstract

The edible coating is one of the promising aspects in the preservation of climacteric fruits like papaya. Among the various edible coating, *Aloe vera* gel has drawn serious attention to the scientific community as one of the promising bio-preservatives due to its human health benefit and antimicrobial properties. The packaging of fruits using polythene bag is already a common practice. Thus, this study was conducted to evaluate the effect of no packaging and packaging with both perforated and unperforated polythene, together with *Aloe vera* gel coated and uncoated papaya fruits on post-harvest ripening behaviour and physicochemical properties when stored at room condition ( $25 \pm 2$  °C temperature and 80–85 % relative humidity). The results showed that *Aloe vera* gel coating alone delayed colour development during storage compared to the control (no packaging without *Aloe vera* gel). After 12 days of storage (DAS), the weight loss and moisture content of fruits treated with only *Aloe vera* gel were 11.7% and 89.9% respectively, whereas in control, the weight loss was 25.2% and moisture content was 87.1%. Moreover, soluble solids concentration (SSC) and disease severity were reduced as around 3% and 29% respectively, for coated compared to uncoated fruits. Similar to *Aloe vera* gel coating, packaging of papaya fruits with only both types of polythene bag showed better performance compared to control but not as much as *Aloe vera* gel coating alone. In addition, if the fruits are coated with *Aloe vera* gel as well as packed with polythene bag their edible quality drastically reduces once the fruits reach their peak climacteric or ripening stage, although these results were more severe with unperforated polythene compared to perforated polythene bags. These findings also suggest that *Aloe vera* gel as an edible coating could be used commercially for extending the storage life of papaya fruits for up to 14 days, while packaging of *Aloe vera* gel-coated papaya fruits in polythene bags must be avoided during, storage, transportation, and marketing. In addition, this is in accordance with the need to avoid the use of non-recycled plastic material due to its pollution effects on ecosystems worldwide.