

Effect of Hexanal as a Post-harvest Treatment to Extend the Shelf-life of Banana Fruits (*Musa acuminata* var. Sweet Banana) in Kenya

Abstract

The short shelf-life of fruits in the tropics continues to be a pressing problem for farmers and other value chain actors. Hexanal is a naturally occurring compound that has received attention as a novel postharvest compound preservative. This study was conducted to determine the effect of hexanal on enhancing the postharvest shelf-life and quality of 'sweet banana' fruits. Two hexanal concentrations (2% and 3%) were applied as either a pre-harvest spray or a post-harvest dip. Fruits were obtained from two different agro ecological zones of Kenya (AEZs II and IV). The treated fruits were kept under ambient room conditions of $25 \pm 1^\circ\text{C}$ and $\text{RH } 60 \pm 5\%$ to ripen. Hexanal treatment maintained the fruits quality and prolonged the shelf-life by 6 days in the dipped fruits, 6 and 3 days in the sprayed fruits from the drier AEZ IV and colder AEZ II respectively compared to the untreated controls. Hexanal treatments significantly ($P = .05$) delayed or reduced the rate of most of the physicochemical parameters analysed irrespective of the concentration and mode of application used. Fruit firmness was significantly ($P = .05$) maintained up to day 6 and 9 of storage in the treated fruits compared to the controls which softened drastically as from day 3 and 6 in the sprayed and dipped fruits respectively. Hexanal treatment delayed ethylene and respiratory peaks by 3 days in both modes of application and significantly delayed progression of other ripening related changes such as $^{\circ}\text{Brix}$, titratable acidity, simple sugars and vitamin C. Sensory evaluation showed no significant differences in the various quality attributes analysed between the hexanal treated and control fruits. The results of this study indicate that, use of hexanal is a potential technology that could be adopted by banana farmers to enhance post-harvest shelf-life without compromising on quality.