

**Title** Methods of postharvest disease control influence mango fruit ripening and quality  
**Author** Khuyen T.H. Dang and Zora Singh  
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### Abstract

Various postharvest diseases of mango fruit (*Mangifera indica* L.) cause economic losses during storage and can be controlled by chemical, physical or biological methods. This study investigated the effects of different physical and/or chemical disease control methods on fruit ripening, colour development and other quality parameters in 'Kensington Pride' mango. Hard mature green mango fruit were collected from an orchard located at Carnavon, Western Australia. In the first experiment, fruit were either heat-conditioned (8h at  $40\pm 0.5^{\circ}\text{C}$  and  $83.5\pm 0.5\%$  RH) or dipped in hot water ( $52^{\circ}\text{C}$  for 10 min), in Sportak ( $0.55\text{ mL.L}^{-1}$  for 5 min), in hot Sportak ( $0.55\text{ mL.L}^{-1}$  at  $52^{\circ}\text{C}$  for 5 min), in Carbendazim ( $1\text{ mL.L}^{-1}$  for 5 min), or in hot Carbendazim ( $1\text{ mL.L}^{-1}$  at  $52^{\circ}\text{C}$  for 5 min). Non-treated fruit served as control. Following treatments, the fruit were air-dried and ripened at  $21\pm 0.5^{\circ}\text{C}$ . In the second experiment, the same treatments were applied but fruit were stored at  $13\pm 0.5^{\circ}\text{C}$  for three weeks before being ripened at  $21\pm 0.5^{\circ}\text{C}$ . Ripening time, respiration, and colour development were measured daily while disease incidence and severity, weight loss, firmness, and concentration of soluble solids, titratable acidity, ascorbic acid, and total carotenoids were determined at the eating ripe stage. In both experiments, hot water dipping improved fruit colour development whereas there were no substantial differences in fruit quality among the treatments. In the first experiment, no diseases developed during ripening and all hot-dipped fruit exhibited better brightness than controls. In the second experiment, hot water dipping and fungicides (cold or hot) effectively controlled postharvest diseases while heat conditioning had no effect. In conclusion, hot water dipping can be an organic disease control method for mango for up to three weeks postharvest with some improvement in colour development and without any adverse effect on the other fruit quality parameters.