

Abstract

Direct sun exposure of 'Keitt' mangoes (*Mangifera indica* L.) in the field can induce a flesh temperature of up to 12°C more than the air temperature. The differential between exposed and non-exposed sides of a sun-exposed mango can be up to 10°C. Severe postharvest hot water treatments (55°C for 50 min) and fruit fly disinfesting hot air treatments (47°C for 20min and 49°C for 90 min) have been used to examine the influence of preharvest sun exposure on postharvest thermotolerance in arrange of mango cultivars. Shaded fruit and non exposed sides of sun-exposed mangoes had high levels of external damage from hot water treatment. However, the exposed side of the sun-exposed mangoes (which also exhibited skin yellowing or reddening) was undamaged. The possible role of heat shock proteins was examined by sampling skin and flesh tissue from exposed and shade sides of sun and shade fruit over a 24 hour period. Changes in heat shock protein gene expression and specific protein bands reflected the diurnal temperature cycle and the synthesis of specific proteins at elevated flesh temperature.