Title Modified and rapid heat treatment for the control of postharvest diseases of mango (*Mangifera indica* Linn. cv. carabao) fruits

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Abstract

The long treatment time involved in the hot water treatment (HWT) of mangoes for disease control, consisting of a 10 min dip at 52-55 deg C followed by 10 min hydrocooling, and 30 min drying prior to packing, is considered a bottleneck in packinghouse operations, hence, the slow adoption or misapplication of HWT. There is a need therefore to modify the current HWT procedure specifically to reduce treatment time without affecting treatment efficacy and fruit quality. Four heat treatments namely, hot water brush (HWB), hot water spray (HWS), rapid heat treatment (RHT) and hot water treatment (52-55 deg C, 10 min dip) were evaluated using naturally infected and green mature 'Carabao' mango fruits grown in Davao Oriental. In the first three heat treatments, water temperature was 60 deg C and duration of treatment was 25 or 35 sec. Subsequent experiments using fruits grown either in Davao del Sur o Sarangani Province optimized the time-temperature combination for RHT as this showed potential commercial application. The optimum time-temperature combination for RHT as this showed potential commercial application. The optimum time-temperature combination for RHT was 35-60 sec dip at 59-60 deg C without the need for hydrocooling after heat treatment. Incidence of disease was reduced by 60-100 percent with RHT and was comparable with HWT or the hot fungicide dip. Due to the considerable reduction in treatment time, the volume of fruits treated was three times higher than that obtained with HWT. Rapid heat treatment did not affect the ripening behavior as well as the physicochemical attributes of the fruits at the ripe stage. The reduction in disease incidence with HWB and HWS was lower than with HWT and RHT. HWB aggravated lenticel spotting.