

Effect of Heat Treatment on Anthracnose Disease of Mangoes cv. Nam Dok Mai

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Abstract

The effect of hot water on *Colletotrichum gloeosporioides* and anthracnose disease of mangoes were investigated. Dipping conidia in water at 45, 50 and 55°C for 1, 3, 5 or 10 min reduced germination and growth. This reduction was inversely related to the duration of exposure or to the temperature used. At 6 hrs after treatment with hot water at 55°C for 5 min, germination in conidia was about 1% whereas untreated conidia were 40 to 60%. At 36 hrs after treatment, 1% of appressoria was formed by these treated conidia whereas untreated conidia produced 100% of appressoria. In addition, conidia obtained from anthracnose lesion (mass) were more tolerant to heat than conidia from the pure culture of *C. gloeosporioides*. Germinated conidia were more sensitive to heat than ungerminated conidia. Survival conidia from heat still retained their pathogenicity but disease severity was reduced about 15 fold compared to untreated conidia.

Treating mangoes with hot water at 55°C for 5 min or vapor heat until core of fruit at 46°C for 10 min or water at 38°C combined with vapor heat reduced disease severity on mango fruit by 50 fold from untreated fruit. Under scanning electron microscopy, the fruit surface of hot water treated mango showed a softening of epicuticular wax and sealed an opening area on the surface.

Concentration of antifungal compounds in the crude extracts obtained from the peel of mangoes treated with hot water at 55°C for 5 min after 1, 5 and 9 days was at 3.91 to 1000 µg/ml. This compound decreased slowly in the treated mango peel while untreated mangoes had lost this property after 5 days. β -1, 3-glucanase and chitinase activities of hot water treated mango fruits reached their peaks at 3 to 5 fold higher than the levels in untreated mangoes after 72 hrs of heat treatment.