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POSTHARVEST HEAT-SHOCK REDUCES INTERNAL BROWNING OF PINEAPPLE CV. 'MAURITIUS' AND 'KEW' DURING COLD STORAGE

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Internal browning (IB) development in pineapple cv. *Mauritius* during prolonged cold storage was studied and compared with cv. *Kew*. Detailed understanding of the process of IB and associated events in the two cultivars, particularly in *Kew* which exhibits somewhat resistance to IB, was thought to provide clues that would help designing control measures.

In *Mauritius* the IB symptoms began within a week after storage at 10 °C initially in the marginal core tissue which subsequently spread into the surrounding tissue as diffused browning. Where as in *Kew*, the symptoms, commenced only 2-3 weeks after storage as isolated patches in the tissue surrounding the core. The cell damage was shown by tissues both undergoing internal browning and showing translucent nature. These indicated that in both varieties the internal browning probably preceded the browning reaction. The control of internal browning therefore requires prevention of both tissue damage and browning reaction indicating that mere blockage of biochemical processes that lead to browning would not help controlling this condition.

A brief heat-shock in certain fruits, for example avocado, increased tolerance to low temperature injury. Treatments of pineapple fruits immediately after harvest with heat prior to cold storage, was tested at different temperatures and time combination as a control measure. The fruits were subjected to treatment at temperatures 38 °C, 40 °C, 42 °C, 48 °C, 52 °C, 55 °C, 60 °C for different exposure times. Fruits subjected to temperatures between 38 °C-44 °C were exposed to 1 hr period, between 46 °C-48 °C for 1/2 hr, a 10 minute exposure time was given for the temperatures above 50 °C. Exposure of fruits at 38 °C for 1hr appeared to reduce IB in the cv *Mauritius* by over 55%. The fruits treated at this temperature ripened slower than untreated ones and showed lesser brix value after ripening. In treated fruits, the browning was restricted to the tissue in and immediately around the core. The SDS-PAGE indicated the presence of two additional bands ('Heat Shock Proteins') in the treated *Mauritius* tissue and one additional band in *Kew*. 'Heat Shock Proteins' are believed to provide thermotolerance to low temperature stress.