

Title Chilling injury development in 'Kensington Pride' mango fruit in relation to free polyamines  
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### **Abstract**

Mature green 'Kensington Pride' uniform mango fruits were stored at 0, 5, 10, 15 and 20 deg C for 1, 3, 7, 14, 21 and 28 days to induce different levels of chilling injury (CI) and to investigate the relationship with free polyamines. Endogenous putrescine, spermidine and spermine levels in skin and pulp were analysed during different storage temperatures and periods. Fruits were removed from the storage and allowed to ripen at 22 deg C and CI was assessed from fully ripe fruits. CI index increased at low storage temperatures and when the storage period was extended. In chill-injured fruits, the accumulation of putrescine and reduction in endogenous levels of spermidine and spermine in skin and pulp were observed. Mean CI index and putrescine levels in skin and pulp increased as the storage temperature was lowered. Mean skin spermidine and spermine levels were significantly reduced at 0 deg C compared to all other storage temperatures. Mean pulp spermidine and spermine content showed an inverserelationship with mean CI index from 15 to 0 deg C. Mean CI index increased as the storage period was prolonged. Mean putrescine and spermidine content in skin and pulp increased from day 1 to day 14 and declined from day 21 to day 28 of the storage period. Mean spermine levels in skin and pulp increased from day 1 to day 7 and declined during the later storage period. Prestorage exogenous application of all the three polyamines tested, reduced CI symptoms and spermine (0.50 mM) was most effective in reducing CI. In conclusion, putrescine was accumulated whilst, spermidine and spermine levels declined in skin and pulp due to CI. The depletion in endogenous levels of spermidine and spermine with CI and the reduction of CI with prestorage exogenous application of spermidine and spermine indicates that polyamines are associated with the CI development in Kensington Pride mango fruit.