

Title Pre-storage application of polyamines by pressure or immersion improves shelf-life of pomegranate stored at chilling temperature by increasing endogenous polyamine levels

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Abstract

With the aim of reduce chilling injury (CI) in pomegranate fruit (*Punica granatum* L.) stored at low temperature (2 °C), putrescine (Put) or spermdine (Spd) at 1 mM under pressure-infiltration or immersion were applied to pomegranates prior to cold storage. Non-treated fruit developed rapidly CI, with main symptoms being skin browning, increased electrolyte leakage and weight loss. During storage losses of firmness and colour and increases in soluble solids concentrations/acidity ratio and respiration rate were observed. All these changes were significantly delayed by polyamine treatments, with both pressure-infiltration and immersion being similarly effective. The reduction in CI severity was correlated with increased levels of free endogenous Put and Spd in the skin, which might induce acclimation of pomegranate to cold temperature and a mechanism of protection against CI, with a net increase in shelf-life.