

Title Inhibition of pericarp browning and shelf life extension of litchi by combination dip treatment and radiation processing

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Abstract

Litchi, being a highly juicy and nutritious fruit, has very short life at ambient temperature, mainly due to microbial spoilage. The fruit soon loses its appeal because of pericarp browning due to anthocyanin degradation and enzymatic oxidation of phenolics. A sequential dip treatment, including sodium hypochlorite (0.2%, 4 min, 52 °C), potassium metabisulfite (3%, 30 min, 26 °C), and hydrochloric acid (0.25 N) containing ascorbic acid (2%, 10 min, 26 °C), followed by gamma irradiation, helped in overcoming this problem confronting trade. Dip treatment reduced polyphenol oxidase activity by ~85%, retained major anthocyanins, cyanidin-3-*O*-rutinoside and cyanidin-3-*O*-glucoside by $\geq 82\%$ and 97%, respectively, and reduced microbial load to below detectable limits. Shelflife of processed ‘Shahi’ and ‘China’ varieties, at 4 °C, was found to be 45 and 30 days, respectively, whereas, unprocessed fruits spoiled within 15 days. Processing helped in maintaining overall quality attributes and can expand market access of the fruit in non-producing regions.