



Research Paper

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Effect of calcium chloride on post harvest changes in papaya fruits

■ PRIYANKA SINGH¹, SANJAY KUMAR, SUTANU MAJI¹, ADESH KUMAR¹
AND YOGESH CHAND YADAV¹

Members of the Research Forum

Associate Author :

¹Department of Applied Plant Sciences (Horticulture), Babasaheb Bhimrao Ambedkar University, LUCKNOW (U.P.) INDIA

Author for correspondence :

SANJAY KUMAR

Department of Applied Plant Sciences (Horticulture), Babasaheb Bhimrao Ambedkar University, LUCKNOW (U.P.) INDIA
Email : sanjay123bhu@gmail.com; sanjay123_bhu@yahoo.co.in

Abstract : The present experiment entitled effect of calcium chloride on post harvest changes in papaya fruits (*Carica papaya* L.) was carried out at Laboratory of Department of Applied Plant Science (Horticulture), Babasaheb Bhimrao Ambedkar University (A Central University), Lucknow during the year 2010 and 2011. Calcium chloride has been proposed as safe and effective alternative means to control postharvest rotting of fruit. It delays aging or ripening, controls the development of many physiological disorders and increases the calcium content, thus improves the nutritional value. The objective of this work was to evaluate the effects of various concentrations of CaCl₂ (1.0%, 2.0%, 3.0% and 4.0%) on shelf life of papaya fruits when stored under ambient conditions. The treated fruits were observed for physiological changes such as loss of fruit weight (%), percentage of ripening, biochemical aspects such as TSS (°Brix), titratable acidity (%), ascorbic acid content (mg/100g), total sugars (%), reducing sugar (%), total carotenoids (mg/100g) along with sensory evaluation. The observations were recorded at 3, 6 and 9 days after storage. The experiment was laid down using Completely Randomized Design. The overall performance of the above characteristics was found best when the fruits were treated with 2 per cent calcium chloride followed by 3 per cent calcium chloride by enhancing the shelf life after nine days of storage.

Key words : Papaya, Calcium chloride, Ripening, Shelf-life

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Papaya (*Carica papaya* L.) is an important and widely distributed fruit crop, commercially grown in all tropical and many sub-tropical regions. Papaya provides cheap source of vitamins and minerals in the daily diet of the people. It is an abundant source of carotene (2020 I.U./100g, precursor of vitamin A). Papaya fruits are used for the treatment of piles, dyspepsia of spleen and liver, digestive disorders, diphtheria and skin blemishes. Pre and post harvest application of calcium may delay senescence in fruits with no detrimental effect on consumer acceptability. Exogenously applied calcium stabilizes the plant cell wall and protects it from cell wall degrading enzymes. Studies have shown that the rate of senescence often depends on the calcium status of the tissue and by increasing calcium levels, various parameters of senescence such as respiration, protein, chlorophyll content and membrane fluidity are altered. Calcium ions has been

extensively reviewed as both an essential element and its potential role in maintaining postharvest quality of fruit and vegetable crops by contributing to the linkages between pectic substances within the cell-wall. The presence of calcium ions increases the cohesion of cell-walls. It is also involved in reducing the rate of senescence and fruit ripening. Calcium chloride has also been proposed as safe and effective alternative means to control postharvest rots decay of fruit and vegetables. It has been shown that the addition of this salt can improve the efficacy of microbial antagonism against postharvest decay of a variety of fruits. The bio-control efficacy of *C. oleophila* against *B. cinerea*, *P. expansum* (Wisniewski *et al.*, 1995) and *Pichia guilliermondii* (Scherm *et al.*, 2003) against postharvest rots of grape fruits and apples was improved significantly by addition of calcium chloride. Calcium at 2.5 per cent combined with chitosan proved to extend the