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**EFFECT OF POSTHARVEST CALCIUM CHLORIDE TREATMENT
ON SHELF LIFE AND QUALITY OF TOMATO (CV. 'THILINA')**

A PROJECT REPORT PRESENTED BY

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for the award of the degree of*

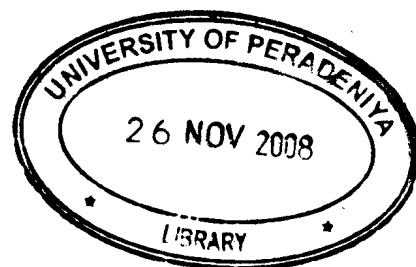
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ABSTRACT

Sri Lankan tomato producers face a glut and market stagnation with consequent loss to the produce, due to the supply of product soon after harvest regardless of the demand. This investigation was to test the effectiveness of different modes and concentrations of postharvest application of CaCl_2 on shelf life of tomato and to find out the effects of vacuum infiltration of CaCl_2 on physicochemical quality parameters of tomato. Mature turning tomato fruits (cv. 'Thilina') were subjected to different modes of application (dipping, vacuum infiltration and pressure infiltration) of CaCl_2 (2%, 4%, and 6%) and vacuum infiltrated fruits at -20 kPa with CaCl_2 (2%, 4%, and 6%) were assessed for pH, total soluble solids, percentage titratable acidity and firmness. Total calcium contents in the inner and outer pericarpal tissues were estimated and the path of calcium infiltration was revealed using black ink. Vacuum infiltration was found to be the most effective treatment with respect to shelf life extension. 6% CaCl_2 treatment at -20 kPa showed the highest shelf life extension (92%) compared to the untreated fruit, indicating its commercial potential to delay ripening. Fruit firmness was significantly increased with increasing CaCl_2 concentration. There were no considerable effects on pH, TSS and %TA with the increase of CaCl_2 concentration. The amount of total calcium in the inner and outer pericarp regions showed a positive relationship with the amount of calcium applied. A 1.4 - fold increase in total calcium content in the inner pericarp compared to the control was found to be effective in shelf life extension. Delay in colour development and lowering of the rate of ethylene production at early stages of incubation were also observed with increasing CaCl_2 concentration. The time taken to reach the ethylene climacteric was also delayed with the increase of applied CaCl_2 concentration. As revealed by the inclusion of black ink in the CaCl_2 solution, the stem end scar was found to be the main pathway of infiltration to the fruit. Vacuum infiltration of 6% CaCl_2 at -20 kPa seems to have commercial potential for growers and traders to delay the process of ripening in tomato (cv 'Thilina').