ABSTRACT

DEVELOPMENT OF MODIFIED ATMOSPHERIC PACKAGING SYSTEM FOR EXTENDED STORAGE OF TOMATO

The present study was undertaken with the objectives to develop a suitable modified atmospheric packaging system for extended storage of Tomato and to study the influence of various post harvest treatments and storage conditions on various physico-chemical changes associated with ripening during the storage of tomato. The post harvest treatment experiment was laid out in factorial randomized design with three replications. The treatments consisted of Untreated tomato (control) Paper packaging (T1), 1%CaCl2 (T2), Hot water (T3) and Hot Air (T4). Significant differences were observed among the physico-chemical parameters due to various post harvest treatments at ambient storage conditions. The tomato fruits kept in paper packaging had a significantly low physiological loss in weight and better density however scores of Colour, Texture and titrable acidity were found to be best in hot water treatment, whereas 1% CaCl2 treatment was found to be best in retaining Total Soluble Solids and Ascorbic acid content. For modified atmospheric experiment, Fresh Tomatoes (Var. Avinash) were sorted out and packed aseptically in different polymer packaging films (P1-BOPP film, P2-SARAN™, P3-Polyethylene and P4-PVC film) at different concentrations of CO2 and O2 (t0 -unpackaged tomato, t1 - 3% O2 + 3% CO2, t2 - 5% O2 + 3% CO2 , t3 - 5% O2 + 5% CO2 ) and t4 -7% O2 + 5% CO2 stored at three different temperatures (T1-8°C, T2-15°C and T3-30°C). Modified atmosphere packages recorded significantly higher organoleptic scoring in terms of colour and texture. Fruits kept under 8°C storage recorded a higher organoleptic scoring, but, symptoms of chilling injury were observed at the end of storage period. Cold storage of modified atmosphere packed fruits significantly delayed the colour development and maintained a better texture. Among the polymeric films the biaxially oriented poly propylene (BOPP)film extended the shelf life of tomato as well as retained the physical, organoleptic and chemical properties of tomato as compared to the other polymeric films at the gaseous concentration of MA (5% O2 + 5% CO2)