

## EFFECT OF PACKAGING METHODS ON EXTENDING THE SHELF LIFE OF 1-METHYLCYCLOPROPENE (1-MCP) TREATED TJC MANGO (*Mangifera indica*)

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Cultivar TJC, is a popular mango variety with huge potential in local and export markets due to its high quality. However, it faces challenges due to short shelf life. This study aimed to extend the shelf life of 1-Methylcyclopropene (1-MCP)-treated TJC mango using different packaging methods under cold room storage conditions. Mangos treated with 1-MCP (2 ppm for 12 hours) were packed in LLDPE/nylon bags under vacuum (T1), LDPE (gauge 300) bags under modified atmosphere (T2), and cellophane cling wraps (T3). Unwrapped mangoes were used as control (C). The fruits were stored at 14°C and 85–90% RH for 40 days. Samples were analysed initially and at four-day intervals for flesh and peel colour, pH, total soluble solids (TSS), physiological weight loss (PWL), respiration rate, and ethylene production. Significant changes ( $p < 0.05$ ) were observed in L\*, a\*, b\* values, pH, TSS, respiration rate, and ethylene production. The pH changed from an initial  $3.12 \pm 0.01$  to  $2.13 \pm 0.18$  (T1),  $2.33 \pm 0.05$  (T2),  $2.21 \pm 0.18$  (T3), and  $3.88 \pm 0.03$  (C). TSS values changed from  $6.5 \pm 0.47$  to  $5.76 \pm 0.09$  (T1),  $6.73 \pm 0.23$  (T2),  $14.46 \pm 0.83$  (T3), and  $18.43 \pm 0.24$  (C). Respiration rates increased from 4.5 to 5.9 (T1), 6.1 (T2), 5.0 (T3), and 7.8 (C), and ethylene production increased from 0.6 to 1.1 (T1), 0.72 (T2), 0.85 (T3), and 0.92 (C). PWL was higher in the control group, while other treatments showed slower rates ( $p < 0.05$ ). Control fruits ripened within 20 days, while T1 and T2 samples lasted 36 and 40 days, respectively. However, T1 samples developed a fermented odour and diseases, and T2 samples exhibited peel browning. T3 fruits delayed ripening for 40 days without any colour or odour defects. In conclusion, cellophane wrapping of 1-MCP treated TJC mangoes is recommended for extending the shelf life up to 40 days in cold storage while maintaining quality.

**Keywords:** Cellophane wrapping, Cold storage, LDPE, Vacuum packed