

EFFECT OF 1-METHYLCYCLOPROPENE ON SHELF-LIFE AND POSTHARVEST QUALITIES OF THREE LEAFY VEGETABLES

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Abstract - 1-Methylcyclopropene (1-MCP) is a nontoxic commercial product, suggested as a postharvest treatment for fresh horticulture commodities. Current research on the use of 1-MCP on leafy vegetables in Sri Lanka is limited. This study was conducted to extend the shelf-life while maintaining postharvest qualities in three leafy vegetables; Leeks (*Allium ampeloprasum*), “Kang Kung” (*Ipomea aquatica*) and “Kathurumurunga” (*Sesbania grandiflora*), by using 1-MCP at ambient conditions (27 ± 1 °C). The experiment was done using four 1-MCP treatments: 0, 50, 75, 100 $\mu\text{L L}^{-1}$ for Leeks with 12 hours exposure time and 0, 5, 10, 15 $\mu\text{L L}^{-1}$ for “Kang Kung” and “Kathurumurunga” with 5 hours exposure time. Colour (L^* , a^* , b^* values), fresh weight loss (%) and chlorophyll content (mg g^{-1}) were evaluated before and daily after treatments. The results revealed that all the colour values in Leeks, L^* , b^* values in “Kang Kung” and a^* , b^* values in “Kathurumurunga” were significantly affected by the treatments. Leeks treated with 50 $\mu\text{L L}^{-1}$, “Kang Kung” treated with 5 $\mu\text{L L}^{-1}$ and “Kathurumurunga” treated with 15 $\mu\text{L L}^{-1}$ reported the lowest fresh weight loss. Leeks treated with 75 $\mu\text{L L}^{-1}$, “Kang Kung” and “Kathurumurunga” treated with 5 $\mu\text{L L}^{-1}$ showed the highest chlorophyll content. In general, the shelf-life and postharvest qualities are most favourably affected by 50 and 75 $\mu\text{L L}^{-1}$ in Leeks, 5 $\mu\text{L L}^{-1}$ in “Kang Kung” and “Kathurumurunga”. Application of 1-MCP increases the shelf-life of Leeks by two days (66%), “Kang Kung” and “Kathurumurunga” by one day (33% and 50% respectively).

Keywords: 1-Methylcyclopropene; Ethylene; Leafy vegetables; Postharvest quality; Shelf-life