

Combining natamycin and 1-methylcyclopropene with modified atmosphere packaging to evaluate plum (*Prunus salicina* cv. 'Cuihongli') quality

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Abstract

This study aimed to investigate the effect of combining natamycin (NT) and 1-methylcyclopropene (1-MCP) with modified atmosphere packaging (MAP) (NT+1-MCP+MAP) on plums stored at 4 °C and 25 °C. Plums packed in a polypropylene (PP) box were used as a control. Parameters such as the decay incidence, respiration rate, weight loss, firmness, malondialdehyde (MDA) content, pectin, enzyme activity, total soluble solids (TSS), and titratable acidity (TA) of the plums were compared to identify an appropriate preservation method. The storage period (decay incidence \leq 50 %) of plums treated with NT+1-MCP+MAP was extended from 80 d to 120 d at 4 °C and from 12 d to 21 d at 25 °C compared to PP plums. The treated fruit exhibited less weight loss, lower respiration rate peaks, and a higher firmness than PP plums. Moreover, the efficiency of NT+1-MCP+MAP treatment exceeded that of NT and MAP (NT+MAP) or 1-MCP and MAP (1-MCP+MAP) alone. Furthermore, NT+1-MCP+MAP treatment significantly reduced MDA accumulation while inhibiting pectin methylesterase (PME) and polygalacturonase (PG) activity. The results suggested that NT+1-MCP+MAP was an effective strategy for improving the postharvest quality and prolonging the shelf life of plums.