Title Effects of 1-methylcyclopropene(1-MCP) on ripening and resistance of jujube (*Zizyphus jujuba* cv. Huping) fruit against postharvest disease

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Abstract

The effects of 1-methylcyclopropene (1-MCP) on senescence and induction of resistance against postharvest decay in jujube (*Zizyphus jujuba* cv. Huping) fruit were investigated in this study. The results indicated that, compared to control, 1-MCP at 1 μL L^{-1} depressed ethylene production by 28% and respiration rate by 30% at 24 h after treatment, resulting in effective delay in fruit senescence. 1-MCP treatment was beneficial for maintaining quality of jujube fruit stored both at 25 and 0 °C, retarding decline of firmness, vitamin C, titratable acidity (TA) and soluble solids content (SSC) which are important parameters for fruit quality evaluation during the storage periods. Moreover, 1-MCP effectively limited the development of lesion diameter of blue mold rot and significantly reduced the incidence of natural decay. The activities of phenylalanine ammonia-lyase (PAL), polyphenol oxidase (PPO), catalase (CAT) and superoxide dismutase (SOD) were significantly induced after 1-MCP treatment. These findings indicate that the induced resistance in jujube fruit by 1-MCP is related with the increase of enzymes involved in scavenging of reactive oxygen species and enzymes associated with phenolics metabolism which produces highly toxic products against pathogen invasion. Our results suggest that 1-MCP has potential effect on maintaining the quality and extending postharvest life of jujube fruit.