

Effects of 1-methylcyclopropene treatment on quality and anthocyanin biosynthesis in plum (*Prunus salicina* cv. Taoxingli) fruit during storage at a non-chilling temperature

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Abstract

The effects of 1-methylcyclopropene (1-MCP) treatment on the quality attributes of 'Taoxingli' plum fruit, particularly on whole fruit anthocyanin content *via* anthocyanin biosynthesis during storage at the non-chilling temperature of 10 °C were investigated. The results showed that 1-MCP treatment effectively reduced weight loss and better maintained soluble solids content (SSC) and titratable acidity (TA), resulting in increased contents of fructose, glucose, sorbitol, and malic acid, and reduced decay during storage. Furthermore, major anthocyanins, including cyanidin 3-*O*-glucoside and cyanidin 3-*O*-rutinoside, were detected. 1-MCP treatment delayed increases in total anthocyanins along with the major individual anthocyanins during storage, which was attributed to its effect in suppressing the expression of synthesis-related structural genes and the transcription factor *PsMYB10* early in storage, enhancing their expression later in the storage period. Thus, 1-MCP treatment was beneficial for retaining the quality of 'Taoxingli' plums, particularly the chemical attributes, and extending the storage life with low economic loss during storage.