

Title Biochemical changes in 1-MCP treated skin tissue during cold storage and their relationship with physiological disorders

Authors C. Larrigaudière, D. Ubach, M.A. Chiriboga, G. Cascia, Y. Soria, I. Recasens

Citation ISHS Acta Horticulturae 796:119-123. 2008.

Keywords apple skin; ACC metabolism; antioxidants; browning

Abstract

In order to determine how 1-methylcyclopropene (1-MCP) inhibits or induces different physiological disorders in apple skin tissue, 'Golden Smoothee' (*Malus × domestica* L.) apples were treated with 625 nl L⁻¹ 1-MCP and stored in air for 3 months. Changes in ACC metabolism, oxidative behaviour and browning potential were studied during storage. As expected, skin tissue exhibited specific climacteric behaviour; the 1-MCP treatment inhibited the activity of ACC synthase, ACC oxidase and ACC levels, but did not affect MACC levels during cold storage. 1-MCP treatment also increased the skin antioxidant potential and, especially, the activity of peroxidase enzyme, which appeared to have an important regulatory effect. Only slight changes in H₂O₂ levels were observed in 1-MCP treated skin tissue. Finally, 1-MCP treated tissues showed higher browning potential and higher polyphenol-oxidase activity. Collectively, the results described in this work showed that scald and 'Diffuse Skin Browning' were not due to specific climacteric behaviour of skin tissue or to oxidative stress. They also highlighted the important role that POX enzyme played in 1-MCP treated fruit.