

Title Effect of DPA [Diphenylamine] and 1-MCP [1-methylcyclopropene] on chemical compounds related to superficial scald of Granny Smith apples

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Abstract

Research was carried out to study the mode of action of diphenylamine (DPA) and 1-methylcyclopropene (1-MCP), on control of superficial scald of Granny Smith apples (*Malus domestica* Borkh.), and its relation with chemical compounds. Fruit was harvested from a commercial orchard in Chile, 182 and 189 days after full bloom and received the following treatments: DPA (2,000 ppm); 1-MCP (1.2 ppm) and control (no treatment). All fruit was stored for 4 or 6 months at 0 deg C. A completely randomized factorial design was used (2 harvest dates by 3 postharvest treatments). Monthly measurements were made on maturity indices, ethylene production rate (EPR), scald related compounds (alpha-farnesene (AF), conjugated trienes (CT), total anti-oxidants (AO)), and cell membrane stability. Following 4 and 6 months of storage, plus 7 days at 20 deg C, scald was evaluated. After 6 months, DPA-treated fruit, from both harvests, showed similar firmness, EPR and AO, compared to the control. However, AF and CT were lower, and cell membrane stability higher. Conversely, 1-MCP-treated fruit showed a noticeable EPR suppression and AF inhibition, along with higher firmness, lower CT and AO, compared to the control and DPA. Furthermore, cell membrane stability was superior to that of the control and similar to that of the DPA. Treated fruit (DPA and 1-MCP) showed an important reduction in scald compared to the control. The effect of 1-MCP on the investigated compounds and the reduction in scald, confirms that ethylene plays a major role on its development.