Title Antagonizing effects of (I) volatiles, and (II) water soluble cyclopropene derivates on ethylene action

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Abstract

The potency of 12 new volatile cyclopropenes to inhibit ethylene action synthesized at the laboratory of Edward C. Sisler was assessed. The inhibitory effect was evaluated in the following test systems: ethylene-induced ripening of climacteric fruits, ethylene-induced growth modifications in etiolated pea seedlings and abscission of citrus leaf explants. In some of the test systems, the new compounds were found to be more potent ethylene antagonists than 1-MCP, whereas in other systems they were less potent. A novel water soluble inhibitor of ethylene action 3-(cycloprop-1-enyl-propanoic acid, sodium salt (CPAS, IL patent application 184729, WO 2009/010981 A1)), was synthesized by D-Pharm, Israel, from one of the new cyclopropene derivatives. CPAS was found to counteract ethylene-induced abscission of citrus leaf explants and of avocado fruit peduncles, to inhibit ethylene-induced leaf epinasty in tomato seedlings, and to prolong the vase-life of carnation and petunia cut flowers. It also considerably delayed fruit ripening processes, such as skin colour change in 'Hass' avocado and banana fruit and softening of peach fruit. Banana and avocado fruit softening were delayed by CPAS to a lesser extent, probably due to insufficient penetration.