Title The effect of dialkylamine compounds and related derivatives of 1-methylcyclopropene in counteracting ethylene responses in banana fruit

Author Edward C. Sisler, Raphael Goren, Akiva Apelbaum and Margrethe Serek

Citation Postharvest Biology and Technology, Volume 51, Issue 1, January 2009, Pages 43-48

Keywords Cyclopropenes; Ethylene; Ethylene antagonists; Ethylene receptor; N,N-Dialkyl-(1-cyclopropenylmethyl)amines

Abstract

Compounds that can block the ethylene receptor and be applied either as a gas or as a salt by spray or dip have been prepared and tested. Cyclopropenes with a methyl group in the 1-position, on which was attached a substituted amine, were allowed to evaporate in the presence of bananas that were treated with the gas. The minimum amount of a given compound required to inhibit chlorophyll degradation in the banana peel (an indicator of protective effect of the compound against ethylene action) that was subsequently exposed to ethylene, varied considerably depending on the compound, but *N*,*N*-dipropyl-(1-cyclopropenylmethyl)amine and *N*,*N*-di-(1-cyclopropenylmethyl)amine were the most effective. The degree of response to the ethylene inhibitory effect was similar for all of the compounds tested (32–34 d). The amount of cyclopropene compound required for inhibiting ethylene action following a 24 h exposure of bananas to the salt followed by a 15 h exposure to ethylene was higher than that required by the gas form used under the same conditions for the same effect. However, time of exposure could be much longer than 24 h with the salt than with the gas. The bananas treated with the salt do not need to be in an air-tight container, but could be used in open spaces. Only the banana peel appeared to be protected against ethylene during the 24 h interval when the salt was used. The pulp ripened upon exposure to ethylene.