

Effect of postharvest methyl jasmonate and ethylene treatments on the biosynthesis of volatile compounds of hot pepper fruits

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Abstract

Hot pepper (*Capsicum frutescens* L.) can show climacteric behavior at the beginning of ripening and the role of ethylene in the aroma formation of these fruits is not very clear. Methyl jasmonate (MeJA) is known to play an important role in regulating metabolic changes that promote aroma formation in fruits. This study investigated the correlation between ethylene and MeJA on the biosynthesis of volatile hot pepper compounds. Hot peppers were randomly separated and distributed in five groups, corresponding to the four treatments, MeJA, Ethylene, 1-MCP (1-methylcyclopropene), MeJA+1-MCP and control. Analyses of volatile compounds and gene transcripts for the enzymes lipoxygenase (LOX), alcohol dehydrogenase (ADH) and hydroperoxide lyase (HPL) were carried out during the fruit ripening. Results revealed that ripening influenced the aroma biosynthesis more than treatments applied to hot pepper, probably due to the intermediate climatic character of the fruit. Despite this, the perception of ethylene seems to be important at the beginning of the formation of volatile hot pepper compounds. This effect was observed in monitoring with C6 volatiles, in which treatment with ethylene was highlighted on day 1, including a corresponding increase in *HPL*. In the ripe fruit, there was a small delay in the volatile composition caused by MeJA, MeJA+1-MCP and 1-MCP. In C6 volatiles, MeJA caused an evident increase in hexanal on days 01, 06 and 12, and there was also a correspondent increase in *HPL* for day 1.