Title Effect of (-)- and (+)-methyl jasmonate on the bioformation of aroma-active esters in strawberry fruits

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Abstract

The effect of (-)- and (+)-methyl jasmonate on the bioformation of selected volatile esters in strawberry was evaluated. To that end, post-harvest treatments of strawberry fruits with (-)- and (+)-methyl jasmonate vapors were accomplished. The selected esters were ethyl 2-methyl butanoate, isoamyl acetate, ethyl hexanoate and hexyl acetate. The results obtained were compared with those provided by the treatment of strawberries with the commercial racemic mixture, i.e., (-/+)-methyl jasmonate. In addition, untreated samples were analyzed to be used as a control. Although the target esters were differently affected by the three treatments depending on the ester considered, a general trend could be observed. The levels of ethyl 2-methyl butanoate and isoamyl acetate decreased significantly with respect to the control sample with both (-)-methyl jasmonate and (+)-methyl jasmonate treatments. However, the variation in the concentrations of ethyl hexanoate and hexyl acetate depended on whether the (-)- or the (+)-enantiomer of methyl jasmonate was used in the treatment. These results reflect different activity of both methyl jasmonate enantiomers on the enzymes regulating strawberry ester biosynthesis. The application of methyl jasmonate enantiomers is here proposed as a possible mean to minimize strawberry aroma alterations and/or losses during post-harvest and storage.