

Comparative study of the volatile organic compounds of four strawberry cultivars and its relation to alcohol acyltransferase enzymatic activity

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Strawberry is one of the most popular fruits in the world because of its good organoleptic characteristics, as its aroma is a complex characteristic that significantly contributes to fruit quality. In the present work, we performed a comparative study of the differences in the volatile organic compounds (VOCs) contents and the enzymatic activity and gene expression of alcohol acyltransferases (AATs) in four strawberry (*Fragaria x ananassa* Duch.) cultivars ('Camarosa', 'Cristal', 'Monterrey', and 'Portola'). In the four cultivars esters were the most important group among the observed VOCs; however in terms of differences in concentration, the 'Monterrey' and 'Portola' cultivars showed the highest ester concentrations, while 'Cristal' showed the lowest, and 'Camarosa' showed an intermediate concentration. With respect to the mRNAs of the genes encoding two enzymes (SAAT and FaAAT2), we observed higher transcript levels in the 'Monterrey' and 'Portola' cultivars than in the other two cultivars ('Cristal' and 'Camarosa'). Finally, the results suggested a temporal relationship exists between total AAT activities, VOCs contents and mRNA gene expression, which could be valuable for future breeding activities. © 2019 Elsevier B.V.

Alcohol acyltransferase

Aromatic compounds

Esters

qRT-PCR

Strawberry cultivars

chemical compound

comparative study

concentration (composition)

cultivar

enzyme

enzyme activity

ester

fruit

gene expression

plant breeding

polymerase chain reaction

RNA

volatile organic compound

Fragaria x ananassa