

Penicillium expansum – Induced release of branched-chain volatile compounds in apple fruit by increasing amino acids accumulation

Di Gong, Yang Bi, Yuanyuan Zong, Yongcai Li, Edward Sionov and Dov Prusky

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Abstract

Amino acids (AAs) play a critical role in resistance response and biosynthesis of volatile compounds (VOCs) in fruit. In this study, we inoculated apple fruits (cv. Delicious) with *Penicillium expansum* to investigate the effect of different AA accumulation on the biosynthesis of branched-chain VOCs at different stages of colonization. Generally, infection significantly increased the total AAs in fruit by 38.65 %. Of the 17 AAs detected in fruit, the contents of Asp, Val, Leu, Ala, Ser, Cys, Thr, His, Agr, Glu, Met, Gly, and Pro increased in the early and middle stages of colonization (< 6 DAI), while Ile, Lys, Phe and Tyr increased at the late stages (> 6 DAI). Moreover, infection promoted higher activities of PDC and PDH involved in branched-chain VOCs biosynthesis, leading to increased contents of branched-chain VOCs. These results suggest that *P. expansum* increases AA's accumulation and release of branched-chain VOCs in apple fruit.