

The chemical composition and potential role of epicuticular and intracuticular wax in four cultivars of table grapes

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Abstract

Plant cuticular wax is the first barrier to resist biotic and abiotic stress. However, little is known about the compositional differences between the epicuticular and intracuticular wax in grape berry. The compositional, morphological and functional features of cuticular wax in grape berries of *Vitis vinifera* cv. 'Kyoho', 'Muscat Hamburg', 'Redglobe', and 'Zuijinxiang' were investigated. The total and epicuticular wax of four berries were mainly composed of terpenoids, hydrocarbons, alcohols, fatty acids and esters. Oleanolic acid was the most abundant terpenoid among the four cultivars. Scanning electron microscopy revealed the crystalline flakes structure of the cuticular wax. Additionally, the removal of epicuticular wax accelerated the weight loss, browning, and softening of grape berries, indicating the plastic-wrap-like effect of the cuticular wax on postharvest quality. This study provided the theoretical basis for further application of the fruit wax or waxy analogue.