Metabolomics of *Vitis davidii* Foëx. grapes from southern China: Flavonoids and volatiles reveal the flavor profiles of five spine grape varieties

Ning Shi[1,2], Qiu-Hong Pan[1,2], Jun Wang[1,2,*]

[1] *Center for Viticulture and Enology, College of Food Science and Nutritional Engineering, China Agricultural University, Beijing 100083, China*
[2] *Key Laboratory of Viticulture and Enology, Ministry of Agriculture and Rural Affairs, Beijing 100083, China*

[*] *Corresponding author: jun_wang@cau.edu.cn*

Abstract

The spine grapes (*Vitis davidii* Foëx.) are wild grape species that grow in southern China, and can be used for table grapes, juicing and winemaking. To systematically investigate the flavor profiles of spine grapes, flavonoids and volatile compounds were detected in five spine grape varieties (Seputao, Ziqiu, Miputao, Tianputao and Baiputao) using HPLC-QqQ-MS/MS and GC-MS. The content of these compounds highly depended on the variety, such as the total concentrations of anthocyanins (91.43-328.85 mg/kg FW) and free norisprenoids (2.60 to 11.46 μg/kg FW). Seputao contained relatively higher concentrations of anthocyanins, flavonols and free volatile phenols. Baiputao was characterized by higher concentrations of skin flavanols, with more terpenoids and norisoprenoids in the free form. Ziqiu had a higher concentration of bound benzenoids. Miputao had the lowest flavonols. Their characteristic flavor compounds of were subsequently revealed using multivariate statistical analysis. The results helped the producers to further develop and utilize the spine grapes.

Keywords: Chinese wild grape; Diglucoside anthocyanin; Volatile phenol