Postharvest ozone treatment in grapevine white cultivars: Effects on grape volatile composition

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Abstract (250 words)

During postharvest management, the metabolism of fruits remains active and continuous physico-chemical changes occur. Ozone treatment has an elicitor effect on secondary metabolites and the treatment conditions can influence the grape response to the stress (Bellincontro et al., 2017; Botondi et al., 2015). Regarding volatile organic compounds (VOCs), previous studies showed that ozone treatment during postharvest dehydration induces the biosynthesis of terpenes in Moscato bianco grapes (Río Segade et al., 2017). It is well known that grape VOCs greatly influence the organoleptic properties of wines, particularly terpenes in aromatic varieties. Therefore, the aim of this study was to know the VOCs response to oxidative stress during postharvest ozone treatment in Galician white cultivars Albariño, Godello and Blanco Lexítimo (*Vitis vinifera L.)* from Ribeira Sacra wine region (Galicia, Spain). Grape samples from 2021 and 2022 vintages were exposed during 24 hours to ozone (30 mg/L) and air (control) at 10 ºC. Grape free and glycosylated volatile compounds were determined by SPE/GC–MS.

The results obtained showed that the ozone treatment effect on grapes volatiles depends of cultivar and vintage studied. In general, ozone caused an increase of total content of terpenes in all cultivars, however a decrease of C6 compounds was also observed. In free fraction an increase of terpenes was observed in all cultivars by ozone application. However, in bound fraction, terpenes, C_{13}-norisoprenoids and esters showed an increase in Godello (2021) and Blanco lexítimo (2022). Free and bound C6 compounds decreased in all cultivars in 2022 vintage.

Keywords: Galicia, terpenes, C6 compounds, volatile organic compounds, grapes