II International Congress on Grapevine and Wine Sciences

8-10 November 2023
Logroño / La Rioja / Spain

By IVES Conference Series vine & wine

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Aromatic characterization of Moscato Giallo by GC-MS/MS and stable isotopic ratio analysis of the major volatile compounds

Abstract

Among the *Moscato* grapes, *Moscato Giallo* is a winegrape variety characterized by a high content of free and glycosylated monoterpenoids, which gives very aromatic wines. The aromatic bouquet of *Moscato Giallo* is strongly influenced by the high concentration of linalool, geraniol, linalool oxides, limonene, α-terpineol, citronellol, HO-trienol, HO-diols, 8-Hydroxylinalool, geranic acid and β-myrcene, that give citrus, rose, and peach notes.

Except the quali-quantitative analysis, no investigations regarding the isotopic values of the target volatile compounds are documented in literature. Stable isotope ratio analysis represents a modern and powerful tool used by the laboratories responsible for official consumer protection, for the food quality and genuineness assessment.

In this study, samples of *Moscato Giallo* were collected during the harvest season in 2019 from two Italian regions:Trentino – Alto Adige and Veneto, known lands for the cultivation of this aromatic variety.

The flavor compounds were extracted from grapes and wines, after alcoholic fermentation of grape juice, and analysed by GC-MS/MS. The results confirmed the presence of typical terpenoids both in free and glycosylated form, responsible for the characteristic aroma of *Moscato Giallo* variety.

The aromatic compounds were also analysed by GC-C\Py-IRMS for a preliminary investigation. The compound-specific isotope ratio analysis allowed to determine the carbon ($\delta^{13}C$) and hydrogen ($\delta^{2}H$) isotopic signatures of the major volatile compounds for the first time.

DOI:

Publication date: October 4, 2023

Issue: ICGWS 2023

Type: Article

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Keywords

Moscato Giallo, volatile compounds, GC-MS/MS, GC-C\Py-IRMS

Tags

2ICGWS | ICGWS | ICGWS 2023 | IVES Conference Series

Citation

Copy Citation

APA 6th Edition

Mauro Paolini, Lorenzo Cucinotta, Alberto Roncone, Luana Bontempo, Danilo Sciarrone, Federica Camin, Sergio Moser, Roberto Larcher (2023). Aromatic characterization of Moscato Giallo by GC-MS/MS and stable isotopic ratio analysis of the major volatile compounds. *IVES Conference Series, ICGWS 2023*.