Terpenoids and norisoprenoids in italian red wines

AIM Terpene compounds are associated with floral notes and are characteristic of aromatic grape varieties such as Muscat (Jackson, 2008). They are generally considered to potentially contribute to the aroma of white wines. However, there is a growing interest towards the potential contribution of terpene compounds to the aroma of red wines. The aim of this work was to investigate the occurrence of different terpenes in red wines from Italian varieties. METHODS For this study wines from 11 mono-varietal Italian red wines from 12 regions were used (19 Sangiovese, 11 Nebbiolo, 10 Aglianico, 11 Primitivo, 10 Raboso del Piave, 9 Cannonau, 11 Teroldego, 3 Nerello, 9 Montepulciano, 7 Corvina). All samples were from vintage 2016 and none of them had been in contact with wood. A total of 19 terpenes and 7 norisoprenoids were analysed by mean of SPME-GC-MS analysis using a DVB-CAR-PDMS fiber. The wines were collected in the framework of the activities of the D-Wines (Diversity of Italian wines) project. RESULTS Significant differences among varieties were observed for basically all the compounds analyzed with the exception of limonene. Overall, the concentrations of the various terpenes remained in the same order of magnitude. However, some differences are noticeable between varieties. Corvina was characterized by higher level of linalool, followed by Aglianico, Nebbiolo, Primitivo and Sangiovese. Cyclic terpenoids appeared as good varietal markers, for instances Montepulciano was characterized by 1,4-cineole and 1,8-cineole, whereas Sangiovese showed higher levels of p-cymene, α-terpinene and 1,4-cineole. Higher terpinene-1-ol content was characteristic of Montepulciano and Raboso wines. Relatively high levels of the norisoprenoid β-damascenone were found in Cannonau up to 3.68 µg/L. CONCLUSIONS This study provide the first survey of a large number of terpenoids and norisoprenoids in different mono-varietal Italian red wines. The results showed that a large number of terpenoids were present in Italian red wines with specific profiles related to the varieties.
ACKNOWLEDGMENTS: MIUR project N. 20157RN44Y

Authors: Davide Slaghenaufi – University of Verona,Giovanni, LUZZINI, University of Verona Marangon, Matteo, University of Padua Mattivi, Fulvio, University of Trento Moio, Luigi, University of Naples 'Federico II' Versari, Andrea, University of Bologna Luca, ROLLE, University of Turin Maurizio, UGLIANO, University of Verona

Email: davide.slaghenaufi@univr.it (mailto:davide.slaghenaufi@univr.it)

Keywords: terpenes, norisoprenoids, red wine, aroma

(https://ives-openscience.eu/ives-conference-series/macrowine-2021/)

(https://ives-openscience.eu/ives-conference-series/)

PREVIOUS POST (HTTPS://IVES-OPENSCIENCE.EU/8367/)

NEXT POST (HTTPS://IVES-OPENSCIENCE.EU/8371/)

Search

Social links

- (https://twitter.com/IVES_Publisher)
- (https://www.linkedin.com/company/international-viticulture-and-enology-society-ives/)

Subscribe our newsletter

* your@email.com

Subscribe

Contact information

Email: jdumercq[@]ives-openscience.eu
Siret 839 985 843 00011 / RNA W332022472

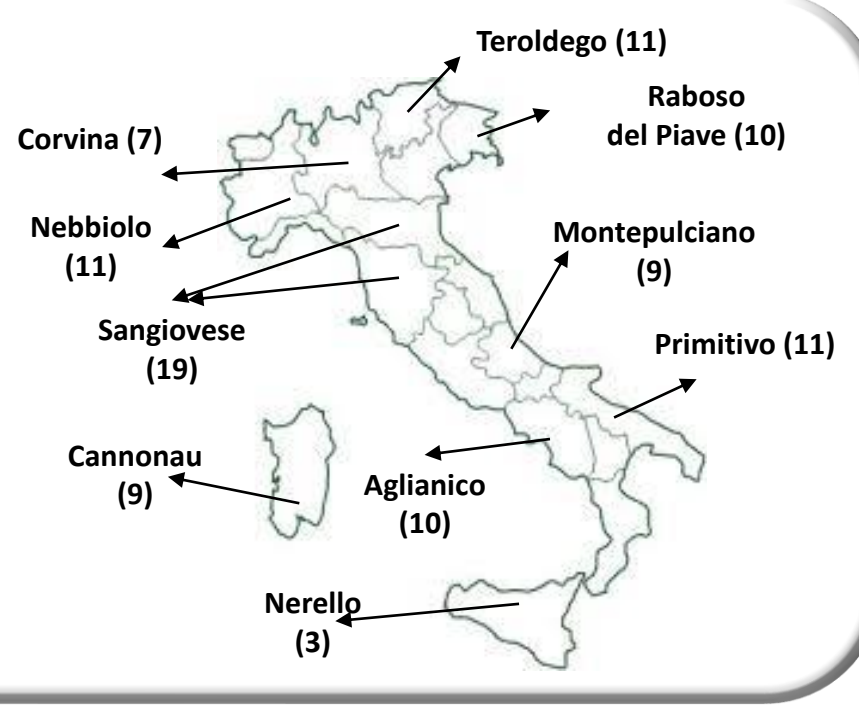
TERPENOIDS AND NORISOPRENOIDS IN ITALIAN RED WINES

Davide Slaghenaufi [a], Giovanni Luzzini [a], Matteo Marangon [b], Fulvio Mattivi [c], Luigi Moio[d], Andrea Versari[e], Luca Rolle [f] , Maurizio Ugliano [a]

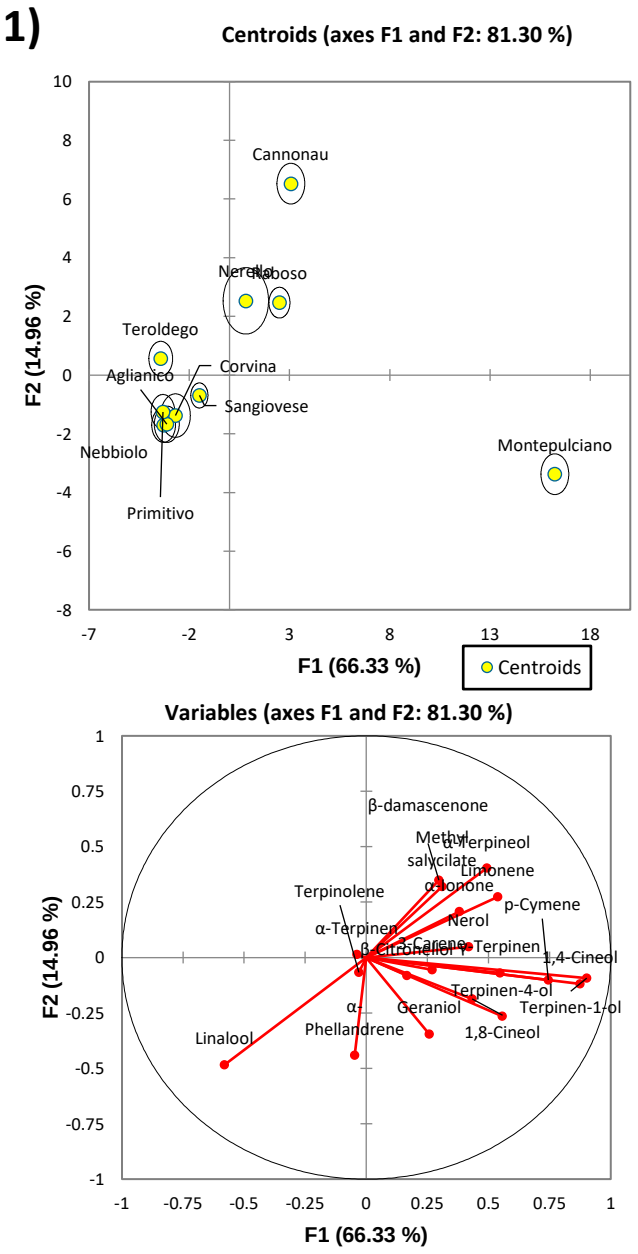
[a] Department of Biotechnology, University of Verona, Italy; [b] University of Padua, Italy; [c] University of Trento, Italy; [d] University of Naples 'Federico II' , Italy; [e] University of Bologna, Italy; [f] University of Turin, Italy

Introduction and methods

Terpene compounds are associated with floral notes and are characteristic of aromatic grape varieties such as Muscat (Jackson, 2008). They are generally considered to potentially contribute to the aroma of white wines. However, there is a growing interest towards the potential contribution of terpene compounds to the aroma of red wines. The aim of this work was to investigate the occurrence of different terpenes in red wines from Italian varieties. For this study wines from 11 mono-varietal Italian red wines from 12 regions were used (19 Sangiovese, 11 Nebbiolo, 10 Aglianico, 11 Primitivo, 10 Raboso del Piave, 9 Cannonau, 11 Teroldego, 3 Nerello, 9 Montepulciano, 7 Corvina). All samples were from vintage 2016 and none of them had been in contact with wood. A total of 19 terpenes and 7 norisoprenoids were analysed by mean of SPME-GC-MS. The wines were collected in the framework of the activities of the D-Wines (Diversity of Italian wines) project.



Results



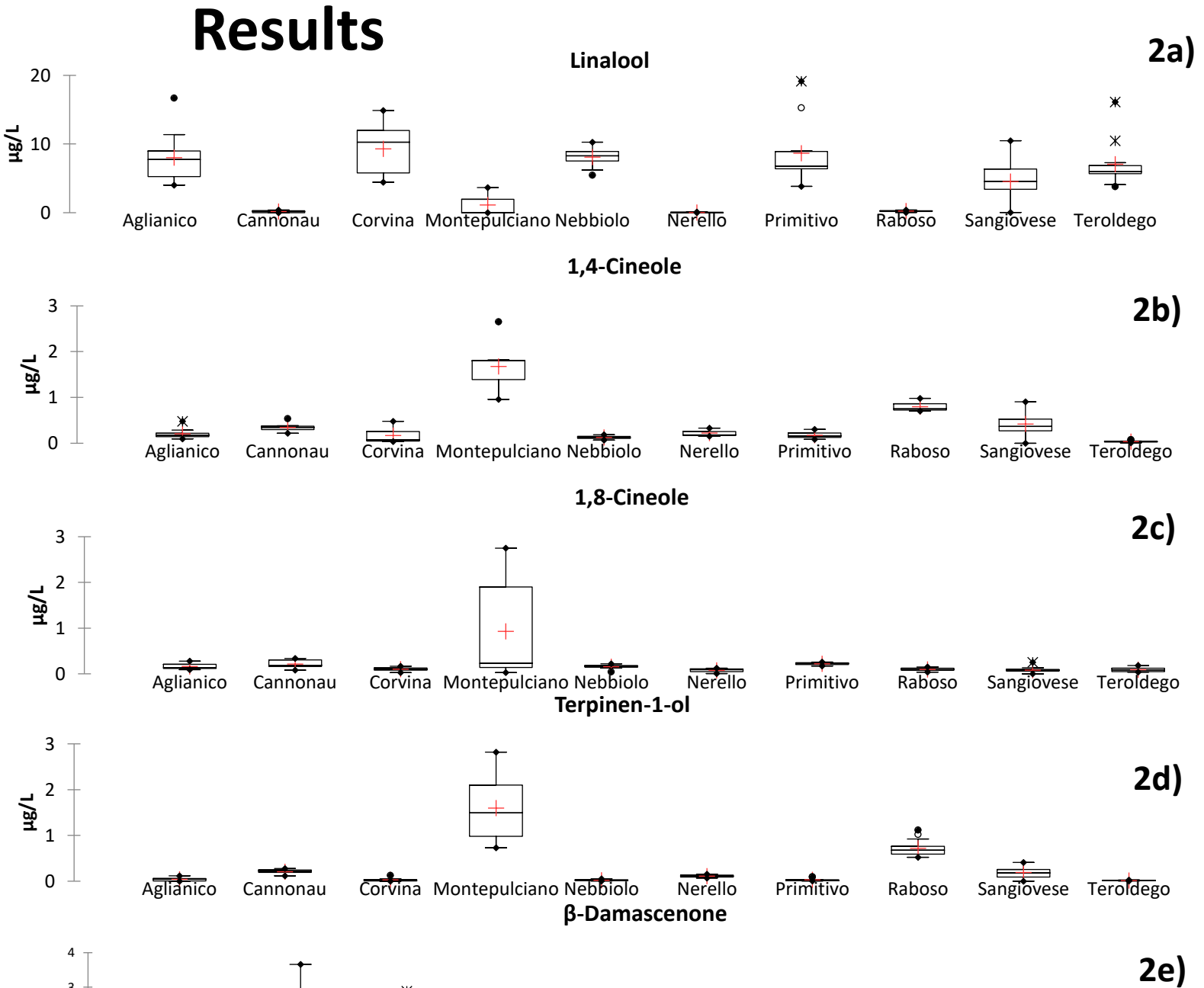


Figure 1. *Discriminant Analysis of volatile compounds of all red wines*

Figure 2. *Content of discriminant compounds* ***a)*** *linalool* ***b)*** *1,4-cineole* ***c)*** *1,8-cineole* ***d)*** *Terpinen-1-ol and* ***e)*** *β-damascenone*

Conclusions

This study provide the first survey of a large number of terpenoids and norisoprenoids in different mono-varietal Italian red wines. The results showed that a large number of terpenoids were present in Italian red wines with specific profiles related to the varieties.

References: Jackson, R.S. (2008). Chapter 6 Chemical constituents of grapes and wine. Wine science (3rd ed.), Elsevier.

ACKNOWLEDGMENTS: **D-WINES groups**
MIUR project N. 20157RN44Y.