

Background

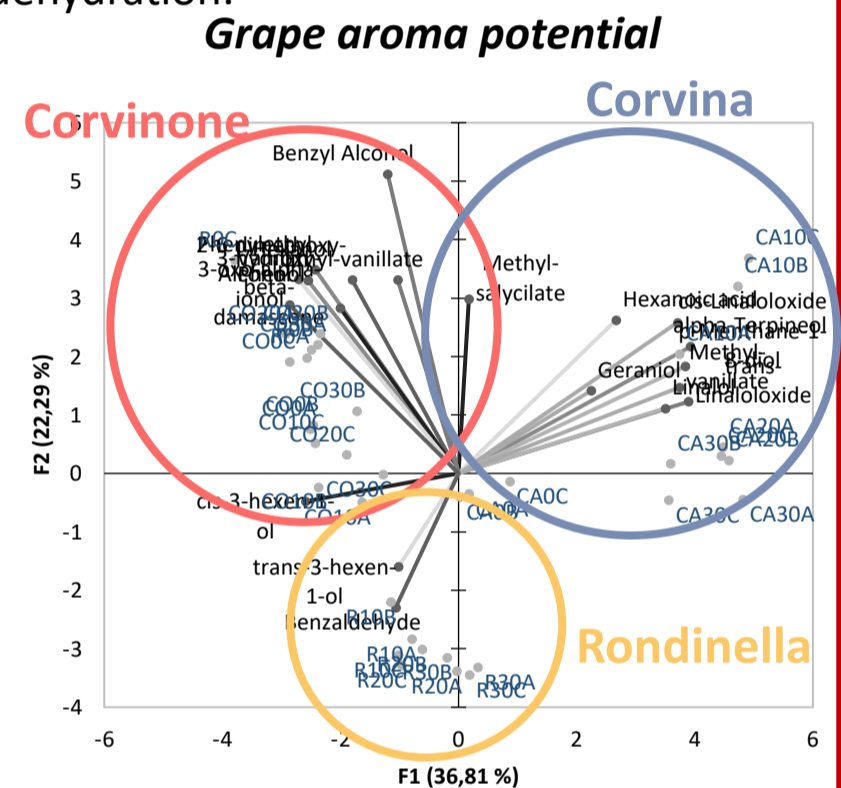
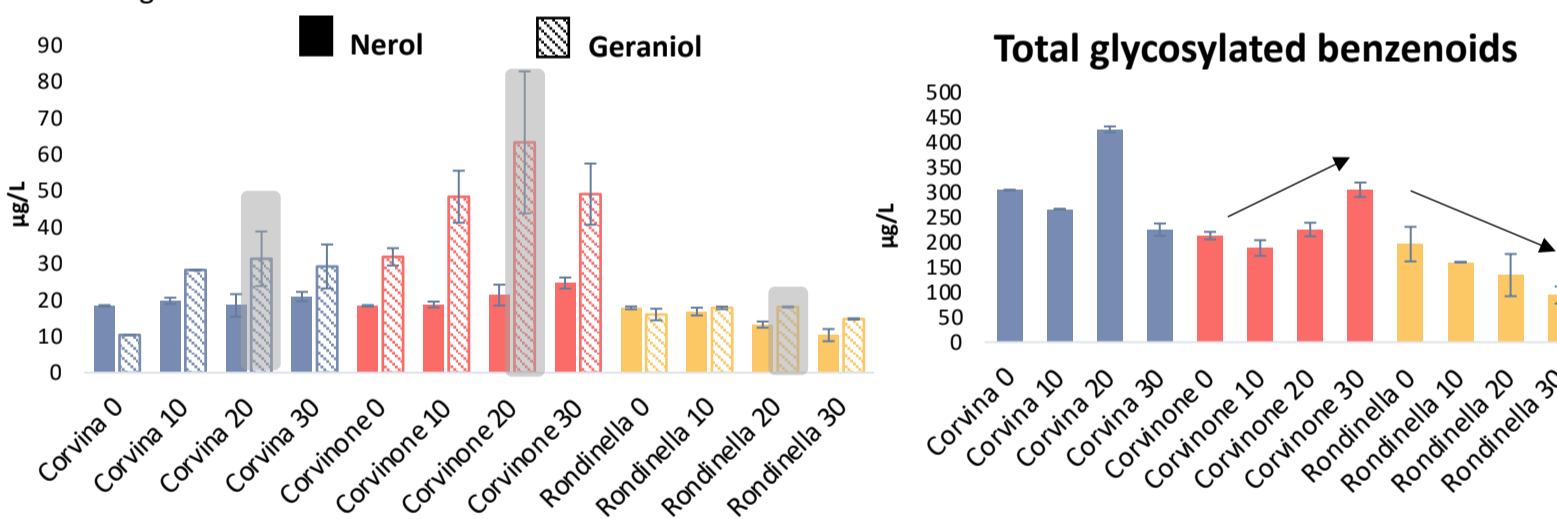
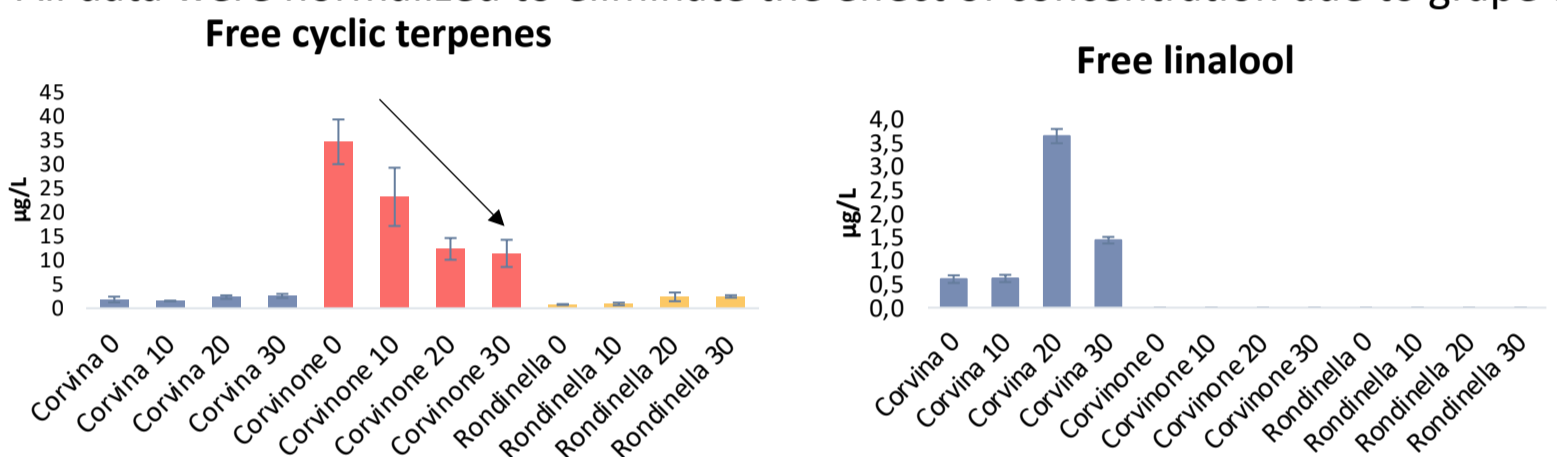
Grape withering is one of the key steps in the production of the most renowned red wines of the Valpolicella area, namely Amarone and Recioto. This practice, entails important modifications in grape composition and in the chemical and sensorial characteristics of the corresponding wines, especially in terms of aromatic profile.

Aims

The aims of this research are: 1) study the aromatic evolution during grape withering of the three main varieties used in Valpolicella wines: **Corvina**, **Corvinone** and **Rondinella**. 2) To evaluate the aroma potential of the varieties through acid hydrolysis.

Experimental part

Grapes were analyzed at different stages of withering **10%**, **20%** and **30%** of **weight loss**. Free and glycosidically bound (enzymatic and acid hydrolysis) compounds were extracted by SPE and SPME, respectively, and analyzed using GC-MS. All data were normalized to eliminate the effect of concentration due to grape dehydration.



Corvinone	Corvina
1-hexanol	<i>cis</i> -linalooloxide
Phenylethyl alcohol	<i>trans</i> -linalooloxide
2,6-dimethoxyphenol	Geraniol
Ethyl vanillate	Linalool
Vanillin	α -terpineol
Benzyl alcohol	<i>p</i> -menthane-1,8-diol
3-oxo- α -ionol	Methyl vanillate
3-hydroxy- β -damascone	Hexanoic acid
	Rondinella
	<i>trans</i> -3-hexen-1-ol
	Benzaldehyde

Concentration of volatiles depending on the degree of withering

Corvina

Free cyclic terpenes
Bound Geraniol and Nerol
Higher alcohols
1-Hexanol (glycosylated)

Corvinone

Nerol and Geraniol (bound)
1-Hexanol (glycosylated)
Glycosylated benzenoids
Hexanoic acid

Rondinella

Free cyclic terpenes
Geraniol (bound)
Hexanoic acid

Free cyclic terpenes

Nerol (bound)
Glycosylated benzenoids
1-Hexanol glycosylated

Discussion and conclusions

Terpene content and evolution varied considerably in relationship to grape variety. Corvinone was richer in free cyclic terpenes and they decreased during withering. Conversely, Corvina was richer in linalool, with a peak at 20% of weight loss. Glycosylated nerol and geraniol were more abundant in Corvinone grapes. Complex patterns of evolution were also observed for free and glycosylated benzenoids (mostly benzyl alcohol, vanillin, and methyl vanillate), which increased in Corvina and Corvinone while tended to decrease in Rondinella. Regarding the aroma potential, it was observed that Corvina has higher potential related to terpenes, while Corvinone to benzenoids and norisoprenoids.

The present results highlighted a variability between the different classes of aromatic compounds and between the three different varieties due to metabolic changes that do not depend solely on grape dehydration.