1. Objective

- The objective of this study was the molecular characterization (SSRs and SNPs) of 52 ancient varieties preserved in the Aragon germplasm collection, as well as the preliminary evaluation of their oenological potential.

2. Materials and methods

- Leaves and grapes of 57 grape varieties were collected at Movera and Cariñena germplasm collections (Zaragoza, Spain). Representative accessions of autochthonous varieties, such as Ambrosina, Benedicto, Cadrete-Parrel or Santa Fe (1), as well as, unknown genotypes (ARAG_11_13; ARAG_19_11, ARAG_27_01, ARAG_27_06; ARAG_28_08) were included for the oenological study.

- Standard microvinification assays were used to identify the varieties with the greatest capacity to produce wines with diﬀering sensory characteristics in terms of their color, flavor and aroma properties.

- A sensory and chemical characterization was carried out and the quantification of the most important aromas was conducted through olfactometry and gas-mass chromatography. Some of the compounds detected are of special relevance and could transmit to the wine speciﬁc and novel aromas.

3. Results and discussion

3.1 Molecular characterization

- The molecular characterization of accessions recovered from diﬀerent zones of origin in Aragon was carried out in the EEAAD with 8 microsatellites: VMC4F3-1, VVIN16, VVIV37, VVIV67, VMDB27, VVIPJ1, VVS2 and ZAG79 (Table 1, Figure 2). The identification carried out in the iMiDiRA indicates that some varieties have genotypes included in their database while others have unknown genotypes.

- Furthermore, based on the SNP proﬁles, cultivars were analyzed for trio compatibility (parents-oﬀspring) and duo compatibility (parent-oﬀspring) using Cervus 3.0 software (Field Genetics, London, UK). The analysis carried out at ICSV-CIC also allowed the identiﬁcation of Heben as a putative parental for some unknown genotypes. Benedico also was a putative parental of several accessions such as PARREL (Cadrete-Parrel) and ARAG_27_01 (Unknown). Heben is an ancient winegrape variety described in Spain in the 16th century as and it is considered as an ancestral of most of the Spanish varieties. Benedico was also reported as a parental of the Tempranillo cultivar [3].

3.2 Analytical, tasting properties and Aromatic proﬁle

- Five accessions should be highlighted for future culture for the varietal characteristics of its genotype-derived wines: ARAG_27_01, SANTA FE, ARAG_19_11, ARAG_28_08, and PARREL. The last three are more interesting due to their moderate alcohol content. Varieties with wines with a high tannin content and color, in addition to a moderate degree of alcohol, are a great advantage considering the increase in the degree that is observed in the vineyard around the world attributed to climate change.

- It is important to mention that AMBROSINA, PARREL, and UNKNOWN accessions (ARAG_19_11, ARAG_27_01, ARAG_27_06, ARAG_31_05) highlighted by their basic analytical and organoleptic have been collected in old vineyards of Aragon and probably are varieties very well adapted to our growing conditions.

- The aromatic proﬁle of the accession ARAG_27_06 (Unknown) stood out for its high terpene content, high content of a and b-ionones, high content of isomyl acetate, low content of varietal ethylphens and high content of vinylphenol. This composition suggests sweet and balsamic aroma notes rare in red wines.

- PARREL also presented high contents of isoesters, hydroxymethylfurfural and syringalddehyde. This suggest fruity and floral ﬂavor which is consistent with the sensorial analysis. Another specimen TORTOZONA TINTA shows high contents of guaiacol, t-isoeugenol, ethyl vanillate, furfural and 5- hydroxymethylfurfural, 3-hydroxybutanone, ethyl 3-hydroxybutyrate and g-butyrolactone. This accession has toasted-like aroma.

4. Conclusions

- Twenty-three molecular proﬁles or genotypes were obtained, which constitutes a great source of genetic variation.

- Some of the accessions can therefore be considered special candidates capable of giving completely diﬀerent and unexpected aromas in a red wine.

- The results presented on the analytical characterization of aromas are preliminary but very promising to provide the Spanish wine sector with tools to increase the biodiversity and typicity of its wines.

5. References


Presented at Macrowine 2018. Zaragoza 28-31 May 2018