BARENA
Technœnologie

Barena is exclusive official distributor of *Caractère Duo by Alter Oak*

ALTER OAK

excell
LA EXPERIENCIA ANALÍTICA
IBÉRICA

Caractère duo; the synergy of ellagic tanins and yeast mannoproteins in a single product.

The use of **oenological tannins** and polysaccharides are currently widely used practices in winemaking. Oak tannins provide the wine with phenolic aromas and compounds that improve both the aromatic and gustatory quality. The main reason for lightly toasting wood is to facilitate the release of hydrolysable ellagic tannins, such as verscalagine, castalagine and roburin. These phenolic compounds are integral in speeding up the oxidative stabilization process of the colouring substances in red wines, causing the gradual appearance of ethanal that accelerates the copigmentation processes between the grape tannins and anthocyanins. This helps to gain more intense and stable colours. These compounds are also known for destroying excess sulphur compounds that are responsible for unpleasant reduction aromas which cover up desirable aromas and the fruity character of wines.

In respect to **mannoproteins**, these are undoubtedly considered as a great winemaking tool, especially when they allow the creation of wines of great quality and originality, such as in the case of aging on lees. The amount of colloids released during alcoholic fermentation depends on the yeast strain used, the level of macromolecules in the initial grape must and the polysaccharides from the grape. Among the many characteristic actions attributed to mannoproteins, the most important are thought to be tartaric stability, protection against protein breakdown, the stabilization of aromas, the activation of malolactic fermentation and to provide better body and roundness in the mouth.

Caractère duo is **internationally patented** and is a product manufactured by **Alter Oak**. It is a **100% natural** product that does not contain any preservatives and can be applied directly to wine, as it is completely **soluble**. This can be carried out either at the beginning of aging or just before bottling. Due to the immediacy of the reaction and integration in the wine matrix, the results obtained in the laboratory guarantee the final result in the wine being treated.

The product contains ellagic tannins from Quercus petrae and Quercus alba (“merrain”) oak, cured for 24 months and then subsequently toasted. These are ellagic tannins from toasted oak chips, which are hydrolysed and pulverized. It also contains polysaccharides from yeast walls of the Saccharomyces cereviseae species (mannoproteins). This combination has a synergistic effect once both elements are found in the wine, which causes a sensory effect that improves aromatic expression by eliminating unwanted aromas and reducing the characteristic of the presence of sulphur compounds. Consequently, this is able to enhance both fruity, and other desirable aromas, as well as increasing the mouth feel, giving smoothness, roundness and body to the phenolic compounds.

Moreover, it is produced in **accordance with the oenological Codex** and the **EC 606/2009 regulation**, and the usage doses are between 5 and 10 g / hL. The combination of both constituent elements of the product formulation allows for this **micro-dosage.**

May, 2020

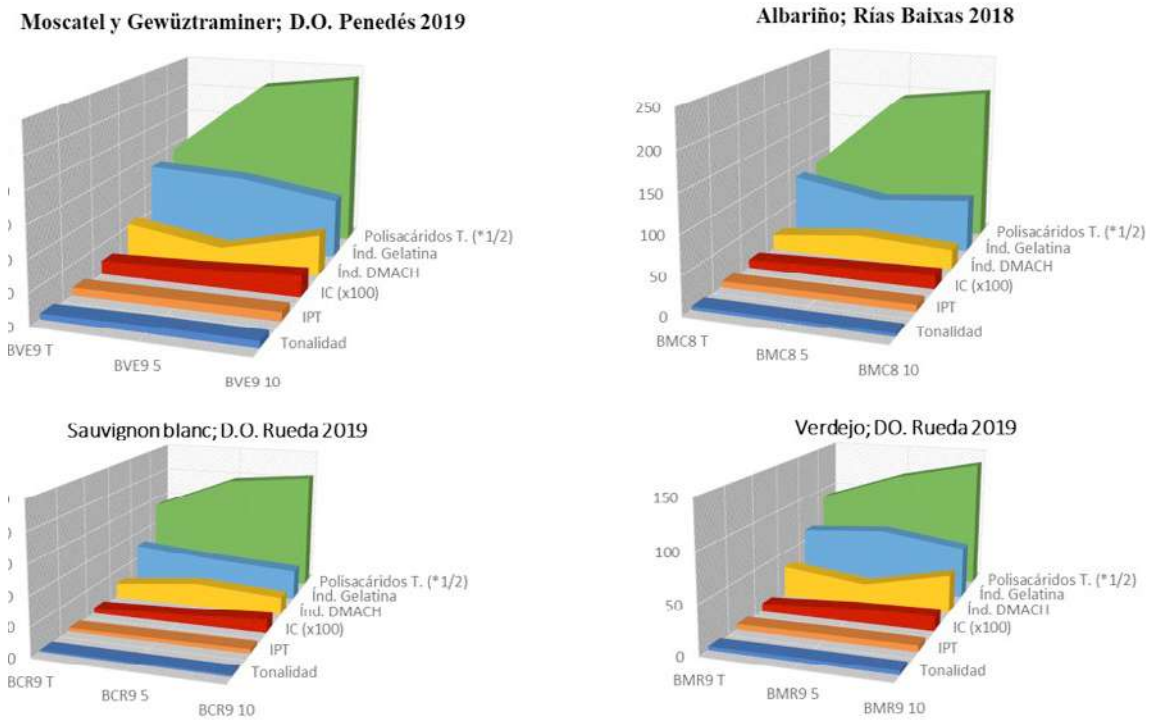
Antonio Palacios
Managing Director of Excell Ibérica

Results of its application in white wines

Chemical parameters

In general, the routine chemical parameters are hardly modified, only the Total Polyphenol Index (TPI) has a slight upward trend according to the dose used.

There is also a shift towards a more intense colour shade. The parameter with the most marked change is that of total polysaccharides, which increases.



Graph 1: *routine chemical parameters of white wines with doses of 5 and 10 g / hL of "Caractère Duo".*

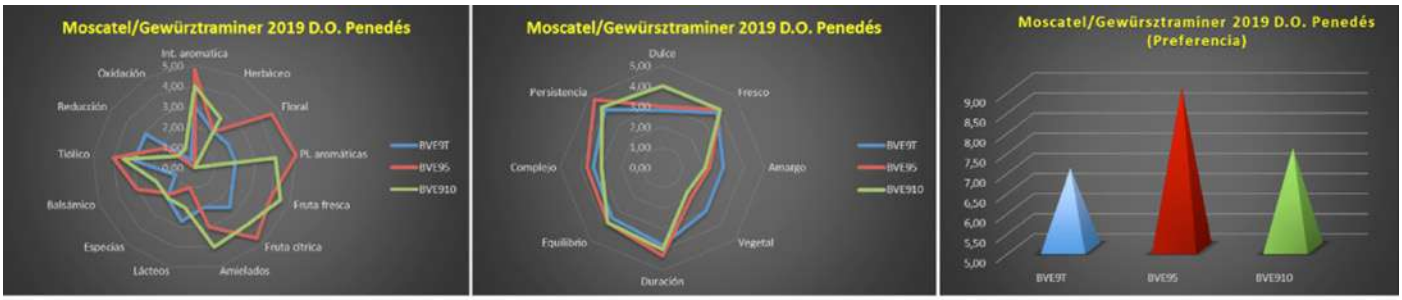
Descriptive sensory analysis

The combined and synergistic treatment by means of the use of ellagic tannins and mannoproteins applied to white wines always produces a sensory effect perceptible by all the tasters who participated in the study.

The D.O. Penedés made with Muscat and Gewürztraminer improves aromatically increasing its intensity scores in the level of floral notes, aromatic plants and fruity aromas, especially with treatment doses of 5 g / hL.

In the mouth, sweetness seems to be the attribute that marks a certain upward trend, although quite lightly. As for the preference analysis, treatment with 5 g / hL is preferred.

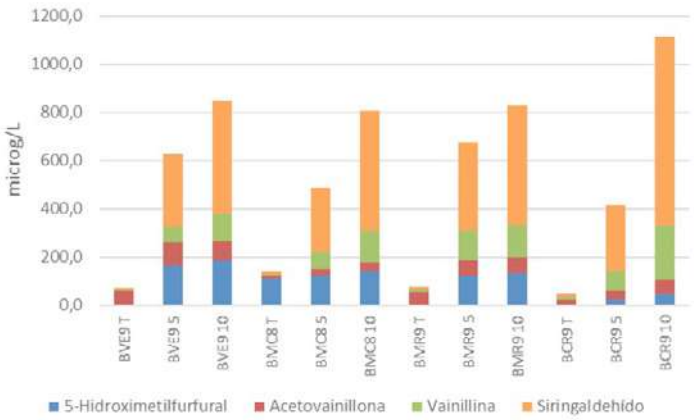
The synergistic use of both products can allow very low doses with both immediate and long-lasting amplified effects. This advantage allows, on the one hand, to cut down on the process and, on the other, to act upon the wine in regard to its qualitative improvement without causing substantial changes.



Graph 2: spider web graphs of descriptive sensory analysis in white wines.

Wood Aromas

The volatile compounds from wood with the highest increase in white wines are those represented in graph 3, with 5-hydroxymethylfurfural, acetovanillin, vanilla and syringaldehyde being the main ones; all of these coming from the toasting of oak wood with pleasant aromas that increase aromatic complexity.

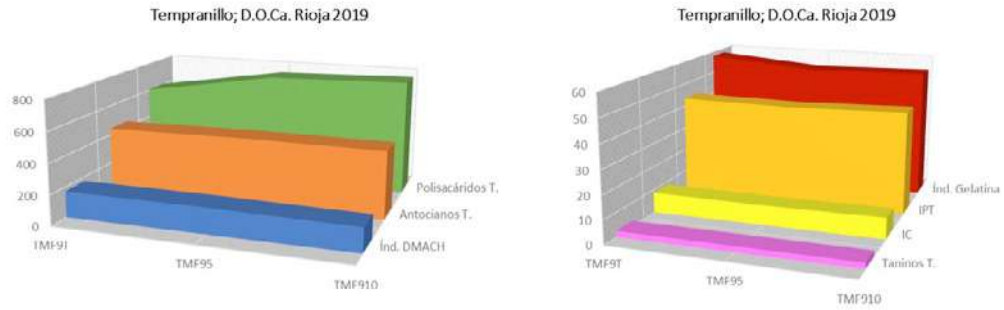


Graph 3: *aromas from wood that increase in white wines.*

Results of its application in young red wines

Chemical parameters

There are slight increases in total polysaccharides due to the composition of mannoproteins in the additive, while the Total Polyphenol Index (TPI) also increases. The Gelatine Index, which measures the reactivity of tannins, and the Dmach Index, which considers the degree of polymerization thereof, are hardly modified, which is very positive.

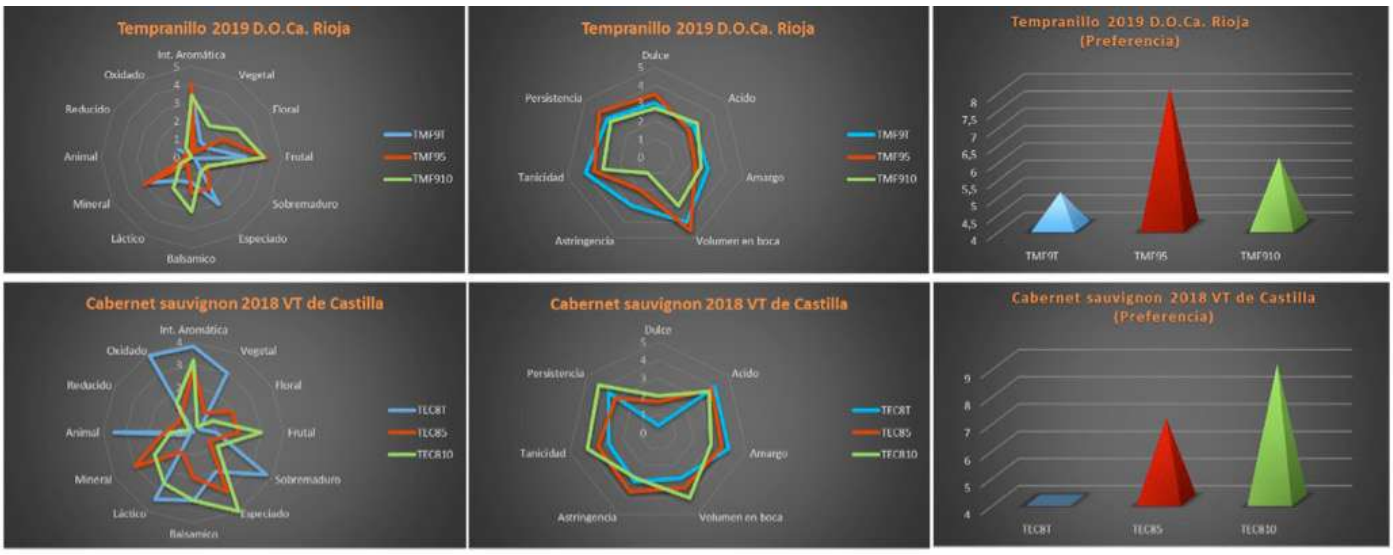


Graph 4: *routine chemical parameters of young red wines with Caractère Duo treatments of 5 and 10 g / hL.*

Descriptive sensory analysis

Regarding the olfactory phase, the 2019 Tempranillo wine from the D.O.Ca. Rioja, which is a young carbonic maceration wine, increases in herbal, floral and balsamic character with the treatment. In the case of Cabernet Sauvignon 2018 wine, the attributes that increase are the floral, spice aroma and the elegant mineral character. The most remarkable of all the observed effects, and perhaps the most recurrent, is an increase in the fruity character of the wines, an indisputable property which is always present in all cases and styles of young red wines (see Chart 5).

The effect in the mouth is much more powerful than in white wines, surely due to the phenolic component, which creates a more impregnable and rigid structure. The gustatory attributes of body, tannicity, sweet character and a persistent aftertaste, all increase with treatment.

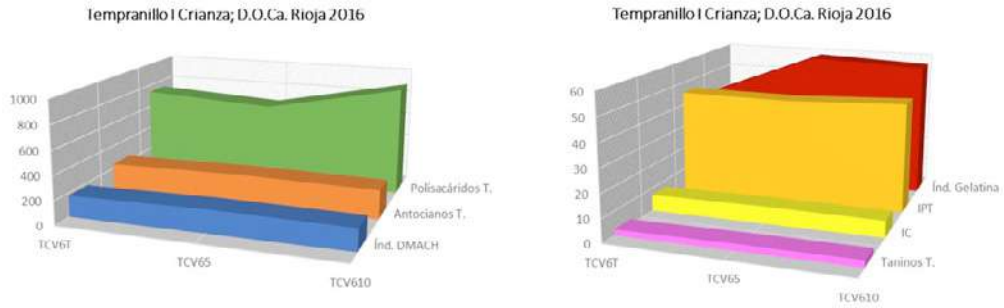


Graph 5: *spider web graph of descriptive sensory analysis in young red wines.*

Results of is application in crianza red wines (wines aged in oak barrels)

Chemical parameters

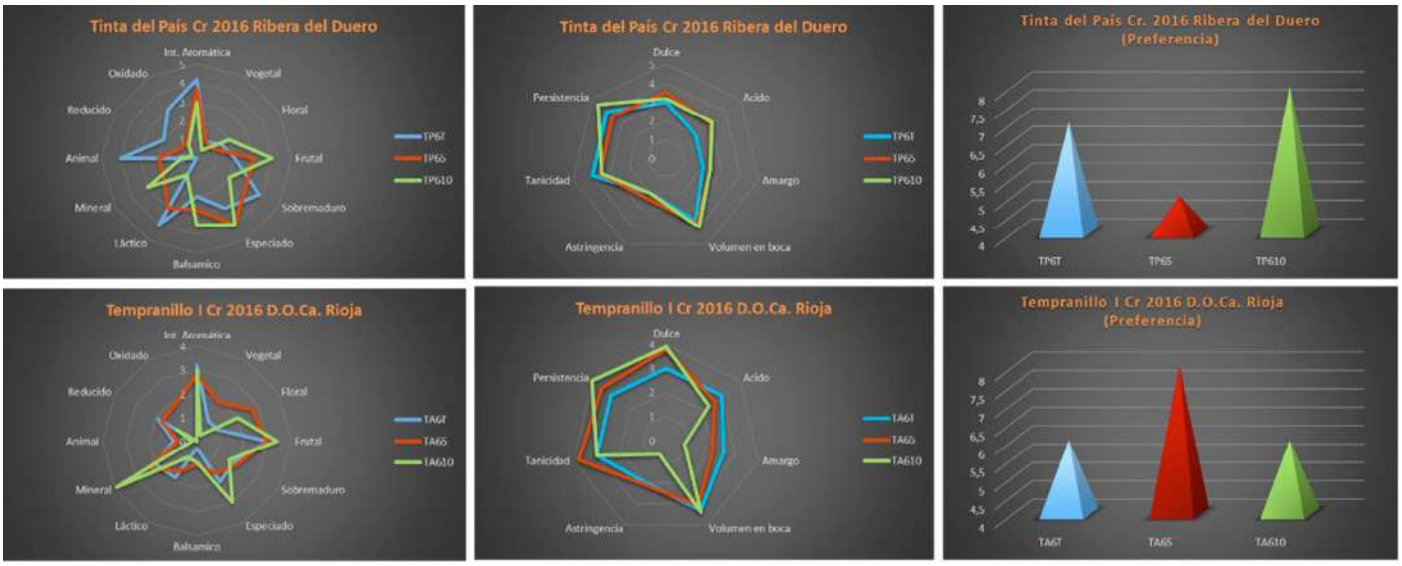
With respect to total polysaccharides there is a significant increase, especially with the second treatment dose of 10 g / hL and a slight increase in the Total Polyphenol Index (TPI). The degree of reactivity of the tannins measured with the Gelatine Index is increased, which means that the aging of the wines in barrels can be longer to reach the desired degree of smoothness in the mouth.



Graph 6: *representation of the routine chemical parameters of crianza red wines.*

Descriptive sensory analysis

The varietal effect is very important regarding the results of the treatment. In the crianza red wine from the D.O. Ribera del Duero 2016 the negative aromas related to the attributes of oxidation, reduction, animal and lactic aroma are decreased considerably, while fruit, spices and balsamic notes are seen to rise.



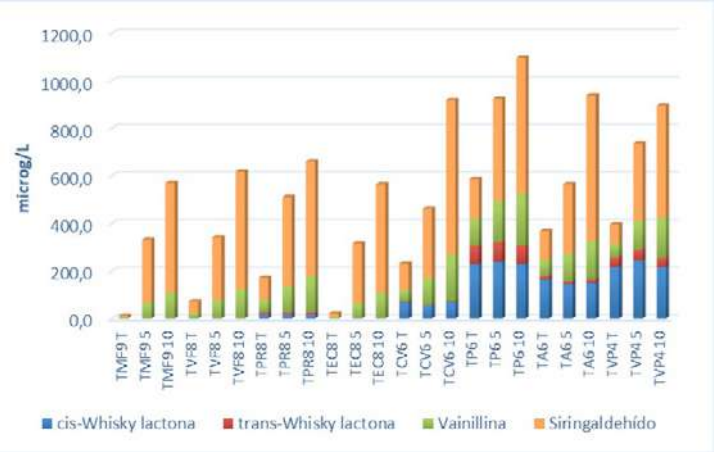
Graph 7: *spider web graph of descriptive sensory analysis in red wines with wood.*

In the Tempranillo crianza 2016 of the D.O.Ca. Rioja increase in terms of the floral, spice and mineral aromas with the treatment. It is also reflected in these wines as the reduction or masking of the reduced aromas and phenolic organisms produces a resurgence of fruit

aromas and varietal character. In the mouth, the most marked effects occur in the level of persistent aftertaste, as the wine benefits from lingering flavour in the mouth. Depending on the wine, it can also increase the sensations of freshness and sometimes decrease bitterness and astringency. Once again, it seems that previous laboratory tests are important since the dose can change the results.

Wood aromas

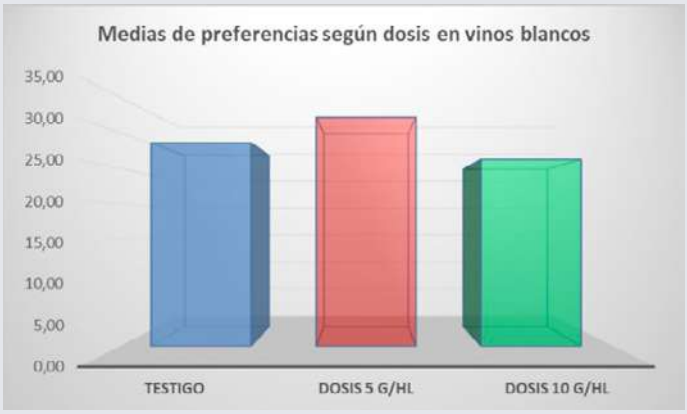
There are compounds from which their main origin is from the toasting of the wood. These increase more significantly than the rest, such as cis and trans-whiskey lactones, vanillin and syringaldehyde. Among the phenolic aldehydes typical of wood, vanillin stands out for its great sensory importance, which is the main substance responsible for the vanilla odor that characterizes many aged wines. This prized compound substantially increases with treatment.



Graph 8: *aromas that increase from the wood in red wines.*

Sensory effects of the dose

The tasters were asked to carry out a ranking of preference after the blind tasting. The most preferred white wine was treated with 5 g / hL. On the contrary, in the treatment in red wines, the averages of any treatment exceed in preference to the control wine, although these are seen to be higher in the case of wines treated with 10 g / hL.

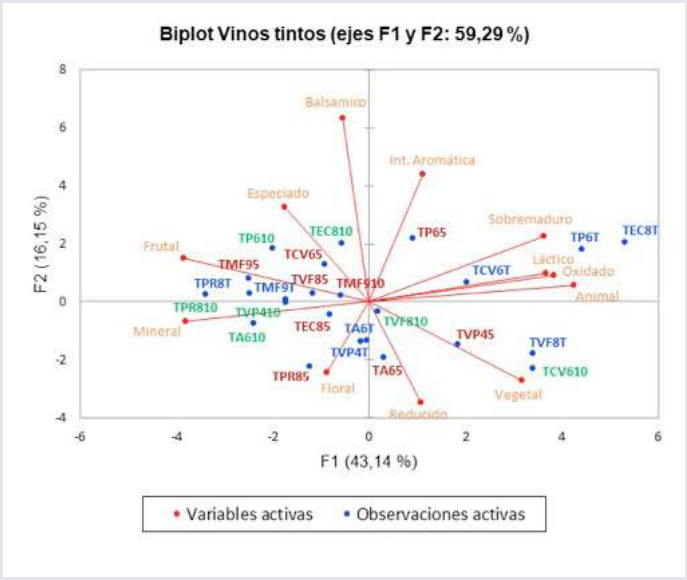


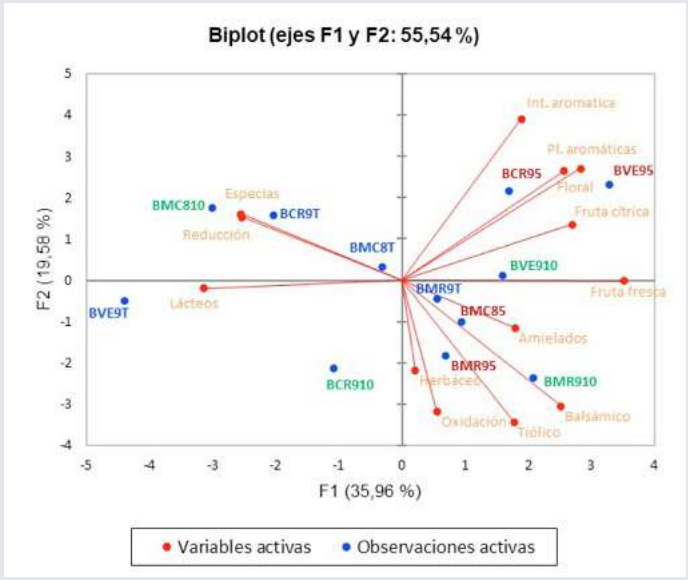
Graph 9: *average for white and red wines.*

According to these results, the most favourable dose for white wines seems to be close to 5 g / hL, while for red wines it exceeds, although by very little, the dose of 10 g / hL to the previous one, this occurs more in young wines than in barrel-aged crianza ones. Previous tests in the dosing laboratory are always recommended.

Effects on the aromatic fraction

Regarding the olfactory phase of the tasting, it can be noted that white wines treated with 5 g / hL (red colour) are associated with attributes of aromatic intensity, fruity and floral aromas, amongst others. So, it can be predicted that there is indeed a benign effect on the aromatic properties. Regarding red wines, in most treatments at high doses of 10 g / hL (green colour) achieve better results than at 5 g / hL. the treated samples are found together with aspects of fruit, spice, balsamic and mineral flavours.

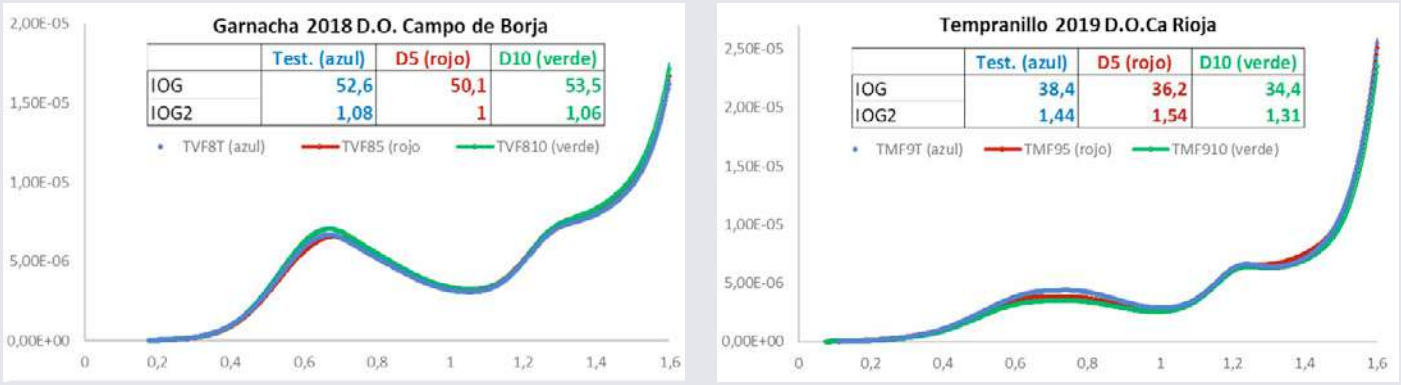




Graph 10: *analysis of the main components of the aromatic phase of the tasting in white and red wines.*

Capacidad antioxidante

It could be thought that the treatment can modify the antioxidant capacity of the wine, but the truth is that it is respected, as can be seen in the following voltammograms where there are no changes regarding the IGO2 and IGO values. This determines that the treatment does not change the level of resistance of the wine to oxidation. Interestingly, the Garnacha 2018 wine from the D.O. Campo de Borja is the most resistant to oxidation and has the highest IGO values, slightly increasing the value of wine treated with 10 g / hL.



Graph 11: *voltammograms of young red wines with and without treatment.*

Enological interest of *Caractère Duo*

The treatment of red wines with Caractère DUO has the following effects:

- It increases the total polysaccharides without modifying the Dmach index and the TPI together with the Gelatine index, although this only happens in crianza red wines. The other parameters of the wine are not modified. The increase in polysaccharides comes from the yeast mannoproteins and the TPI from ellagic tannins.
- Concerning the aromatic fraction of the volatile compounds typical of wood, the wines are modified by a very small degree, slightly increasing vanillin, syringaldehyde and whiskey-lactones, with pleasant aromas.
- Voltammometric analysis show that the treatment respects the oxidation resistance capacity of the wines and does not increase the fraction of easily oxidizable compounds.
- On the sensorial level, the main changes arise in the level of the reduction of negative aromas of reduction, oxidation and phenolated animal character, allowing due to this synergistic effect to increase positive floral, fruity and varietal aromas. In the mouth the sensation of volume in mouth feel increases, the bitterness decreases despite increasing the tannic sensations and lengthens the aftertaste phase, increasing the amount of time that flavours linger in the mouth.
- The synergy of the combination of mannoproteins and tannins allow for micro-dosing, which means considerable economic savings in the treatment of wines. The effect is immediate, since the product is 100% soluble and remains over time.

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