

## **Sensory and chemical modifications of wine brandy aged with chestnut and oak wood fragments in comparison with wooden barrels**

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The wooden barrels are used in the ageing or maturation of many alcoholic beverages, namely brandies and wines.

However, the high costs related to the wooden ageing lead to the searching of alternative technologies, namely the application of wood fragments to the beverage in order to promote an accelerated ageing. Thus, this work evaluated the sensorial and chemical modifications in brandy aged in presence of two types of wood fragments in comparison with a brandy aged in wooden barrels.

The same wine brandy filled wooden barrels, stainless steel vessels with wood tablets and wood boards inside, according the two way factorial experiment designed. The factor wood presented two levels (Limousin oak wood and chestnut wood) the factor form of the wood presented three levels (tablets; staves and barrels) and two replicates of essay modality were done. Twelve brandy samples were taken after a maturation period of 6 months. The sensory quantitative descriptive analysis of samples was done and the quantification of several odourants was also done in the brandy samples.

The results of the analysis of variance revealed more significant effects of wood factor than the wood form on the sensory attributes. Concerning the form of wood, it is found significant differences in brandy colour attributes, namely golden, topaz and greenish, olfactory attributes such as alcoholic, toasted and coffee and the gustatory attribute, bitter. The brandies aged in the presence of wood tablets presented the highest intensities of topaz and greenish colour, toasted and coffee odours, while the brandies aged in wooden barrels presented the highest intensities of golden colour, alcohol odour and bitter taste. However, the overall quality of the brandies was similar. Thus, considering the evolution of sensory attributes over the time, the brandies aged in the presence of wood tablets seem to be more matured (Caldeira et al., 2006).

The analysis of odourant compounds showed a great discrimination of the brandies based on the wood form. The brandies aged in wooden barrels presented the highest levels of several ethyl esters, acids, furanic aldehydes and the lowest levels of volatile phenols.

Thus, considering the overall quality of the brandies, these results suggest the use of wood fragments as an interesting alternative technology. On the other hand, the chemical analysis of the brandies showed the possibility of discrimination the ageing technologies based on odourant compounds levels.

Caldeira I., Mateus A.M., Belchior A.P., 2006 Flavour and odour profile modifications during the first five years of Lourinhã brandy maturation on different wooden barrels. *Anal. Chim. Acta* **563**, 264-273