

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

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### **Abstract:**

Wooden barrels are used in the ageing or maturation of many alcoholic beverages, namely brandies and wines. However, the high costs related to ageing in wooden barrels have led to a search for alternative technologies. In this study we examined the application of wood fragments to the beverage in order to promote an accelerated ageing. We evaluated the sensory and chemical modifications in brandy aged in presence of two types of wood fragments, from two different woods (Limousin oak wood and Portuguese chestnut wood), and compared those with a brandy aged in wooden barrels.

The results of the analysis of variance revealed more significant effects of wood botanical species than the ageing system on the sensory attributes. Concerning the ageing system, significant differences in brandy colour attributes were found, 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.

The analysis of odourant compounds showed a great discrimination of the brandies based on the ageing system. 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 to be an interesting alternative technology. On the other hand, the chemical analysis of the brandies showed the possibility of discriminating the ageing technologies based on odourant compound levels.