

GC-FID and GC-MS as a tool to screen the influence of wood ageing technologies in the brandies odourless and odourant compounds

Ilda Caldeira^a, Ofélia Anjos^{b,c*}, Vera Portal^b, A.P. Belchior^a, Sara Canas^a

^aINIA-Dois Portos-INRB, Dois Portos, Portugal; ^bIPCB/ESA – Instituto Politécnico de Castelo Branco – Escola Superior Agrária, Castelo Branco, Portugal; ^cCERNAS – Centro de Estudos de Recursos Naturais, Ambiente e Sociedade, Coimbra, Portugal.

*corresponding author: OféliaAnjos -ofelia@ipcb.pt)

The maturation of wine brandies in wooden barrels cause many sensory and physicochemical changes in these alcoholic beverages, namely its flavour modification. Previous work (Caldeira *et al.* 2008) pointed out the most potent odourant compounds of the wine aged brandies. Some of these compounds proceed from the distillate and others are extracted from the wood.

In this study it was quantified, some odourless compounds, such as methanol and higher alcohols and several odorant compounds in brandies aged in presence of two types of wood fragments (staves and tablets), from two different kinds of woods (Limousin oak wood and Portuguese chestnut wood), and compared with those found in the same with brandy aged in wooden barrels. A taster panel have also profiled these brandies and evaluated their overall quality.

The methanol and higher alcohols were quantified by GC-FID equipped with a fused silica capillary column of polyethylene glycol according to the official method [NP 3263, 1990]. The odorant compounds were quantified by GC-FID and identified by GC-MS.

The results showed that the ageing system is the most discriminant factor, having a significant effect on the level of several odourant compounds. The wood botanical species affected few odourant compounds. The importance of odorant compounds was also demonstrated by the high linear correlations between their contents and the intensity of several sensory attributes.

The results show the possibility of using the chromatographic results as a tool to discriminate brandies produced with different ageing technologies.

NP 3263,1990.CT 83 Bebidas alcoólicas e espirituosas, Determinação dos teores de etanol, acetato de etilo, metanol, 2-butanol, 1-propanol, 2-metil-1-propanol, 2-propeno-1-ol, 1-butanol, 2-metil-1-butanol + 3-metil-1-butanol.

Caldeira, I., Bruno de Sousa, R., Belchior, A. P., & Clímaco, M.C., 2008. Sensory and chemical modifications of wine-brandy aged with chestnut and oak wood fragments in comparison to wooden barrels. *Ciência Téc. Vitiv.* 23 (2) 97-110.