Robinia wood barrels for grappa ageing

Interesting potential for an invasive tree species? Focus on aroma compounds formed during ageing.

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Quercus petraea (Oak) is traditionally used to produce barrels for Grappa ageing.

The invasive ***Robinia pseudoacacia*** (black locust) in Switzerland has been subject of discussion in recent years, attracting more and more interest due to its versatility of uses.

Methods and Results

Three newly produced 50 L test-barrels each, from Robinia and Oak, were filled with Ticino Grappa (Merlot grape). The barrels were stored at 17.4 °C and 41.8% humidity for 180 days. The analysis of volatile compounds was performed by gas chromatography-mass spectrometry according to a novel extraction method (Fig. 1) [1,2] and olfactometry analyses were performed on the samples after 180 days of barrel ageing (Fig. 2). Product ageing was examined in replicates by a trained sensory panel of 12 tasters (Fig. 3).

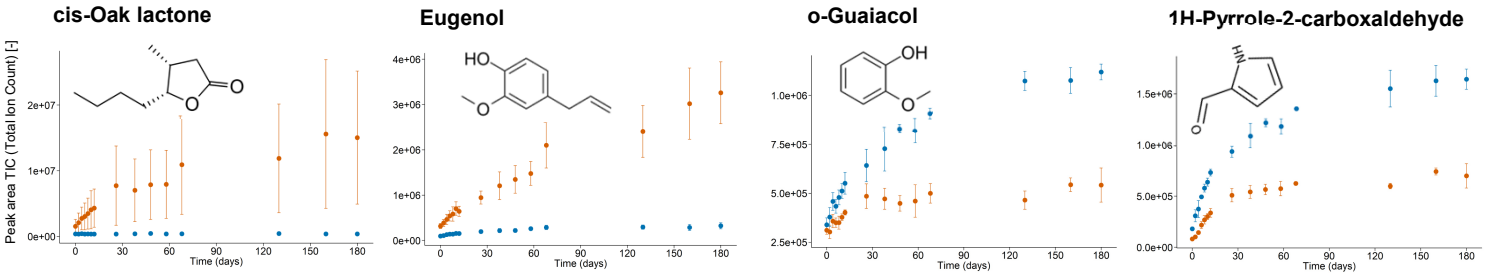


*Fig. 1: Four examples of kinetics of wood-type dependent volatiles during a period of 180 days of ageing in barrels identified by GC-MS analysis. **Orange signal**: Oak barrels, **Blue signal**: Robinia barrels*

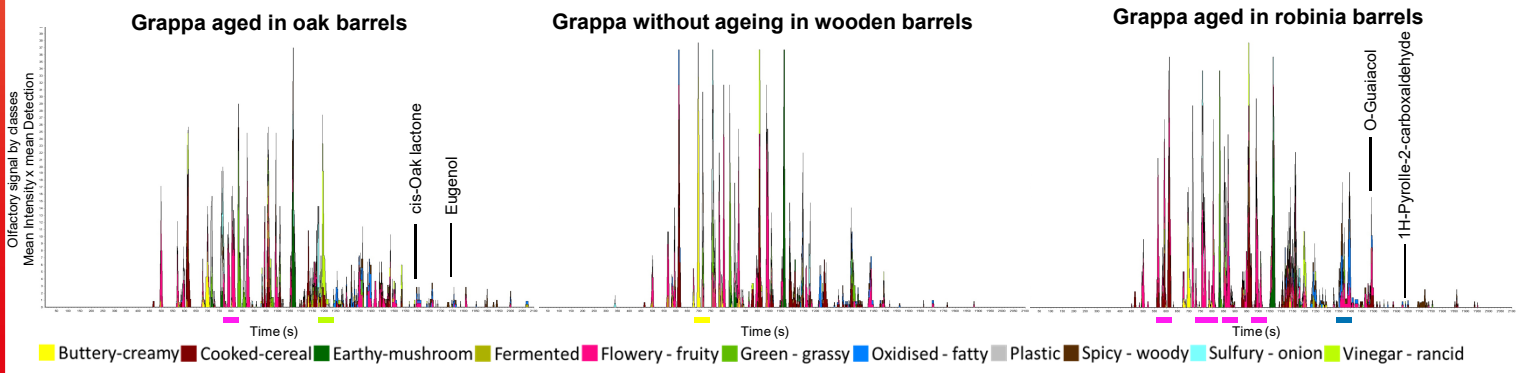
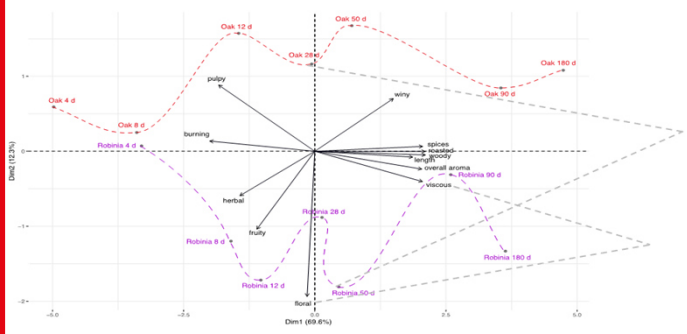


*Fig. 2: Olfactometric profile (N=8) of grappa distillates aged in **oak** barrels versus in **robinia** barrels after 180 days.*



Optimal duration for ageing according to an expert panel (*N* = 5).
Oak 28 days
Robinia 50 days

Grappa stored in Robinia showed **more floral, fruity, herbal aromas** and was perceived to be **more viscous.**

Fig. 3: PCA biplot of the sensory descriptive analysis (N=12), showing the evolution of Grappa stored in Oak and Robinia barrels from 4 to 180 days.

Conclusion

Grappa distilled from Merlot grapes matured in Robinia barrels could have considerable potential as a niche product. The fruity character of the grappa from the Robinia tree, as well as the presence of volatile aromatic compounds typical of this species, such as o-Guaiacol and 1H-Pyrrole-2-carboxaldehyde, give the distillate a unique typicity. Furthermore, the use of barrels from local Robinia wood offers the possibility to obtain a PGI (Protected Geographical Indication) product with a controlled designation of origin - a quality label protected by Swiss law.

References

1) P. Fuchsmann *et al. J Chromatogr. A*, **2019**, 1601, 60-70
2) Patent N° WO2020160686 A1

The authors thank the sensory panellists for their participation.