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Science & Wine
THE WINE OF THE FUTURE



Stable isotope ratio analysis of wine: new prospective!

Federica Camin Fondazione Edmund Mach, Italy

The stable isotope ratios of H (D/H), C ($\delta^{13}\text{C}$) and O ($\delta^{18}\text{O}$) have been analysed using IRMS and SNIF-NMR in wine and must since 1987, using official standards that are listed as OIV methods. This analysis enables the detection of sugar and water addition as well as mislabelling, on the basis of a comparison of data with an official reference databank, set up according to the current European Regulation 273/2018. Recently the effect of some oenological practices, such as dealcoholisation, grape withering and the stopping of fermentation on these isotopic ratios has been investigated. The encountered variations in wine isotopic ratios have to be considered when interpreting the isotopic values of actual samples. Moreover, more innovative isotopic methods, based on the analysis of the stable isotope ratio of other elements or of other components (e.g. $\delta^{18}\text{O}$ of wine ethanol, $\delta^{13}\text{C}$ of the main higher alcohols and vanillin and $\delta^{15}\text{N}$ in must, wine and in the extracted proline) have been developed.