Introduction

One of the most common type of wine adulteration is the addition of cheaper products to the original wine, such as fruit juices, water and sweeteners, which are not related to the grapes or fermentation process from which the wine was originally produced. Adulterated wine is then labeled as the original product, generally an expensive brand, and sold on the market as if the original product. It also relates to the re-labeling of wines, by adding the label of a more expensive wine to a bottle of a different, cheaper version and selling it on the market as an original product. In the European Union, for example, European Commission Regulation (EC) No 607/2009 regulates the origin and labelling of wine, with bilateral agreements in place with Australian, Mexico, Chile, USA, Croatia, Switzerland, amongst others.

In this application brief we report oxygen isotope measurements on wine and show how adulteration by the addition of water can be successfully tracked and identified. This enables the evaluation of wine labels in terms of alcohol content and origin. In addition, analysts can refer to the official wine databank (EU-wineDB), which contains isotopic analysis of authentic and representative wine samples, to compare their data.
Summary
The correct labeling of wine affects producer and consumer value and food safety. Laboratories need an analytical technique providing conclusive answers on origin and authenticity of primary ingredients. The oxygen isotope fingerprint of wine allows the identification of water addition in commercial wine, i.e. adulteration. This helps protect producer reputation and consumer confidence by detecting fraudulent activity and supports EC No 606/2009.

By using Thermo Scientific GasBench II System, laboratories gain:

- Reliable, unique isotope fingerprint data allowing the detection of adulterated and mislabeled wine.
- An analytical system providing compliance with the only official method OIV-MS-AS2-12.
- High throughput and low cost analysis.
- Complete analytical and data evaluation automation.

References