



Control of Authenticity and Geographic Origin of Austrian, Slovenian, Romanian, Montenegrin and Argentinean wine

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Consumers are willing to pay elevated prices for specific product qualities, e.g. for food from a certain region, thus there is the need to control the correct declaration of origin of these products. Conventionally this is done by estimating the flow of goods and by controlling the documentation accompanying the products. However, this means are often not sufficient to detect intentional deception.

Since the 1990-ies the EU controls the authenticity of wine by isotope analyses of authentic wine samples from every wine-producing EU-country. Initially this was implemented to counteract adulteration of wine, but the produced data can also be used for the control geographic origin of wine samples. The measurement of the stable isotope composition of wine offers the possibility to investigate the product itself. The stable isotope ratios of the elements C and O are varying geographically due to diverse environmental conditions (e.g.: climate, soil, altitude, geography, cultivation. . .) thus creating individual patterns for different regions. Therefore analysis of the stable isotope pattern can be a potent tool for geographic differentiation.

We investigated the stable isotope composition (C and O) of wine samples from Austria, Slovenia, Romania, Montenegro and Argentina from the years 2008 and 2009. Significant isotope variations are identified within samples from the same country as well as between samples from different countries, evidencing the potential of identifying wine from different regions in an individual country as well as discriminating wine from different countries. Also differences between the two investigated vintages exist, due to variations in the respective climate conditions.