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SR ISOTOPES AS A ROBUST TRACER FOR HIGH-QUALITY WINES AND PRODUCTION TERROIR

Braschi Eleonora^{*[1]}, Marchionni Sara^[1], Bucelli Pierluigi^[2], Priori Simone^[2], Costantini Edoardo^[2], Bollati Andrea^[3], Mattei Massimo^[3], Conticelli Sandro^[1], Tommasini Simone^[1]

^[1]Università degli Studi di Firenze ~ Dipartimento di Scienze della Terra ~ Firenze ~ Italy ^[2]CRA ~ Dipartimento Agronomia Foreste e Territorio ~ Firenze ~ Italy ^[3]Università di Roma 3 ~ Dipartimento di Scienze della Terra ~ Firenze ~ Italy

The work presented here is the result of a research project aimed to define a geochemical marker suitable to associate the wine to its grape terroir. We determined Sr isotope ratios in a number of microvinifications on single grapevines belonging to the “Azienda Barone Ricasoli” at Brollo, during the 2008 and 2009 grape harvest, together with the soil portion underneath each single grapevine. Our results demonstrate an excellent reproducibility of the $^{87}\text{Sr}/^{86}\text{Sr}$ values of each sampling point in the two harvesting years suggesting that the Sr uptake process from the grapevine roots to the wine is time independent. Furthermore, we find a small-scale, albeit detectable, variability of $^{87}\text{Sr}/^{86}\text{Sr}$ values among the different sampling points. This variability is due to both the heterogeneity of the geological substratum of the vineyard, and the isotopic change of the leachable Sr fraction from the soil. $^{87}\text{Sr}/^{86}\text{Sr}$ values on soils are similar to the corresponding wine despite some scattering. They show a consistent trend with the Sr-isotope ratios characterizing each wine on each sampling point, corroborating that wines inherit their inorganic elements from the soil parent material on which each vineyard is embedded. The $^{87}\text{Sr}/^{86}\text{Sr}$ value can safely represent a meaningful parameter and an extremely promising isotope-geochemical tracer in the analysis procedure to guarantee the geographic origin and the production terroir of wines. To corroborate our results, we also consider other high-quality wines of the Italian territory, such as Chianti Classico, Cesanese, Aglianico del Sannio and Aglianico del Vulture for comparison.