



METAL AND LEAD-STRONTIUM ISOTOPE CHARACTERIZATION OF RED AND WHITE WINES FROM BUJORU, SMULTI AND OANCEA WINE CENTER, ROMANIA

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<https://doi.org/10.34302/crpfjst/2019.11.3.11>

Article history:

Received:

28 July 2019

Accepted:

28 August 2019

Keywords:

Dealu Bujorului;

Geographical discrimination;

Heavy metal content;

Isotope ratio.

ABSTRACT

The goal of this research was to assess the potential of Sr and Pb composition and also isotopic signature of lead ($^{207}\text{Pb}/^{206}\text{Pb}$, $^{208}\text{Pb}/^{206}\text{Pb}$ and $^{204}\text{Pb}/^{206}\text{Pb}$), strontium ($^{87}\text{Sr}/^{86}\text{Sr}$) of wines from Bujoru, Smulți and Oancea wine-growing centers from Dealu Bujorului vineyard. In this study 162 wine samples were investigated. The wine samples were obtained from micro-wine production under conditions of 2014-2016 from Dealu Bujorului vineyard. For all tested wine samples, the toxic metals contents were found in quantities below the limits established by legislation. The highest values were registered to wine obtained from Feteasca Neagra(2016) variety (0.74275 ± 0.00261) from Smulți wine-growing center, the lowest value of $^{87}\text{Sr}/^{86}\text{Sr}$ isotope ratio was recorded to wine obtained from Muscat Ottonel (2014) variety (0.70165 ± 0.00058) Oancea wine-growing center. A possible explanation for the higher mean of $^{87}\text{Sr}/^{86}\text{Sr}$ isotopic ration for wine can be the mineral consistency of the vineyard soil and its different eco-climatic conditions. Regarding $^{206}\text{Pb}/^{207}\text{Pb}$ isotopic ratios, we can say that the analyzed wine samples show traces of pollution comes from cars (automobile emissions) (if $^{206}\text{Pb}/^{207}\text{Pb} = 1.1000 - 1.1400$ [automobile emissions]). The Pb isotope ratio from wines varies in range between 1.12305-1.18597 ($^{206}\text{Pb}/^{207}\text{Pb}$), 2.09404-2.14190 ($^{208}\text{Pb}/^{206}\text{Pb}$) and 17.21089-17.70857 ($^{206}\text{Pb}/^{204}\text{Pb}$) with average 1.15202 ($^{206}\text{Pb}/^{207}\text{Pb}$), 2.10878 ($^{208}\text{Pb}/^{206}\text{Pb}$) and 17.42240 ($^{206}\text{Pb}/^{204}\text{Pb}$). Heat map was discovered a separation of wine varieties for white of this red depending on elemental contents and $^{206}\text{Pb}/^{207}\text{Pb}$, $^{208}\text{Pb}/^{206}\text{Pb}$, $^{206}\text{Pb}/^{204}\text{Pb}$, $^{87}\text{Sr}/^{86}\text{Sr}$ isotope ratios.
