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Elemental profile and Sr isotope ratio as fingerprints for geographical traceability of Romanian wines

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Wine geographical traceability is an important topic in the context of wine authentication and for that many researchers from worldwide have been addressed this subject by developing different methodologies based on multivariate analysis of natural chemical composition data (inorganic or organic parameters) and isotopic signature. The goal of this work was to assess the potential of the elemental composition and strontium isotope ratio ($^{87}Sr/^{86}Sr$) of wines from the important producing areas in Romania located in relatively small geographical area, in order to highlight reliable markers for wines geographical origin discrimination. Elemental determinations were done by ICP-MS and F-AAS techniques after microwave acid digestion of the wine samples. The strontium isotope ratio (^{87}Sr /^{86}Sr) from resulted extracts was determined by Quadrupole Inductively Coupled Plasma Mass Spectrometry (Q-ICP-MS), after separation of strontium from rubidium using cation-exchange chromatography with Dowex50W-X8 resin and the complexation ability of the carboxylic acid EDTA. The variation in elemental composition (Li, Sr, Se, Ni, Pb, U, Mn, Mg, Al) and the 87Sr/86Sr ratios of the wine samples analyzed in this study clearly demonstrated that these parameters are suitable tracers of wines origin. The proposed methodology allowed a 100% successful classification of wines.

Biography

Geana Elisabeta-Irina is a scientific researcher at National R&D Institute for Cryogenics and Isotopic Technologies-ICIT Rm. Valcea, Romania and also is in the final stages of completing her PhD at Bucharest University, Romania. The main current interests are identification and quantification of essential active principles like phenolic compounds, organic acids, amino acids, terpenes, micro and macronutrients in different food matrices (wine, honey, fruits, plants, organic products, functional foods) by highlighting key biomarkers used in authentication using the main instrumental analytical (HPLC, UV-VIS, ICP-MS). She was involved in several national projects: CEEX, PN II, sectoral project and Nucleus Programme (2005-2015) with the aim to develop analytical methods for quality control and origin authentication of foods.

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