Multi-element analysis and differentiation of Chilean wines using mineral composition and multivariate statistics [Análisis y diferenciación de vinos Chilenos empleando su composición de elementos metálicos y técnicas de estadística multivariada]

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The concentration of seventeen metal elements was analyzed in 130 commercial samples of Chilean wines, using flame atomic absorption spectroscopy (AAS) and inductively coupled plasma?mass spectrometry (ICP-MS). The elements analyzed were within the usual concentration ranges previously reported in other wine regions (for example: Fe, 2.08 ± 0.99 mgL-1; Zn, 0.71 ± 0.44 mg L-1; K, 788± 219 mg L-1; and Na, 14.62 ± 8.6 mg L-1). When the metal content of the samples was compared among geographic areas, significant differences in the concentration of K, Na, Mn, Mg, Zn, and Cr were observed (p ? 0.05). Moreover, principal component and linear discriminant analyses, used to discriminate wines according to geographic area, obtained adjustments above 90% for white wines and over 70% for red wines.

AAS

Classification

Element

ICP-MS

Metal

Multivariate statistics

Wine