Fr10 APPLICATION OF CHEMOMETRIC ANALYSIS TO WINE SAMPLES FROM DIFFERENT SOURCES.

Letícia M. Costa, Joaquim A. Nóbrega, Grupo de Análise Instrumental Aplicada, Departamento de Química, Universidade Federal de São Carlos, Caixa Postal 676, 13560-970 São Carlos, SP, Brasil; Gisele S. Lopes, Grupo de Análise Instrumental Aplicada, Departamento de Química, Universidade Federal de São Carlos, Caixa Postal 676, 13560-970 São Carlos, SP, Brasil, Embrapa Pecuária Sudeste, São Carlos, SP, Brasil; Ana Rita A. Nogueira, Embrapa Pecuária Sudeste, São Carlos, SP, Brasil; Márcia M.C. Ferreira, Instituto de Química, Universidade Estadual de Campinas, Campinas, SP, Brasil, lets@dq.ufscar.br.

Wine is one of the most consumed beverages of the world. Nowadays, in Brazil about 20,000 different types are commercialized. Wine is defined by the O.I.V. (Office International de la Vign et du Vin) as a beverage resulting of the fresh grape juice fermentation. Wine adulteration, mainly considering varieties and sources, is widespread and can cause economic losses. Minerals can be employed for the identification of geographical origin [1]. The contents of Al, Ba, Ca, Co, Cu, Fe, Mg, Mn, and Se were simultaneously determined in red and white wines using an inductively

coupled plasma optical emission spectrometer with axial view configuration (Vista AX, Varian, Mulgrave, Australia). The experimental results were processed by methods of exploratory analysis: principal component analysis (PCA) and hierarchical cluster analysis (HCA). Wine samples of five different countries were analyzed: Brazil, France, Italy, Portugal, and Spain. A simple dilution was made using Milli-Q® distilled and deionized water (Millipore, Bedford, MA) before measurements. The ethanol content did not disturb the plasma. Yttrium was added to reference solution and samples as internal standard. The parameter adopted to discriminate the clusters was the concentration of the metals. White and red Brazilian wines were analyzed and separated in two clusters due to their metal content. In red wines Ba, Ca, Mg, and Mn presented higher concentrations than in white wines. On the other hand, Al and Se discriminated white wine in another group. The high amount of Fe in Brazilian and Portuguese white wines was important to discriminate them from the other ones. Italian white wines presented the highest concentrations of Al, Ca, and Mn, and they were classified in another group. Exploratory analysis was useful for data treatment bringing information that could not be extracted from the original data matrix.

[1] I.S. Arvanitoyannis, M.N. Katsota, E.P. Psarra, E.H. Soufleros, S. Kallithraka, *Trends Food Sci. Techn.*, **10**, 321-336 (1999).