Phenolic and sensorial characterization of Loureiro monovarietal wines from Portugal Vinho Verde Region

Alice Vilela*[1], Cátia Lopes[2], Catarina Marques[2], Fernando M. Nunes[3], Elisete Correia[4] and Fernanda Cosme[1]

*(1) Chemistry Research Centre of Vila Real (CQ-VR), Dep. of Biology and Environment, Enology building, University of Trás-os-Montes and Alto Douro, Vila Real, Portugal. *avimoura@utad.pt*

(2) University of Trás-os-Montes and Alto Douro, Vila Real, Portugal.

(3) Chemistry Research Centre of Vila Real (CQ-VR), Dep. of Chemistry, University of Trás-os-Montes and Alto Douro, Vila Real, Portugal.

(4) CM-UTAD, Dep. of Mathematics, University of Trás-os-Montes and Alto Douro, Vila Real, Portugal.

Abstract

Loureiro monovarietal wines produced in the Demarcated Vinho Verde Region are distinguished by their characteristic flavor and color, revealing the variety that gave rise to them. The aim of this study was to characterize the phenolic composition of seven Loureiro monovarietal wines, from different Vinho Verde sub-regions of 2014 vintage.

A non-parametric MANOVA was used to statistically analyze the results, for there was no assumptions of normality and homogeneity of variance-covariance matrices. To identify significant differences between samples, it was performed the Kruskal-Wallis test, followed by the multiple comparison of means of orders (SPSS *software* Statistics, version 22.0) considering a probability of error type I (α) of 0.05.

In the wines analyzed, significant differences in relation to the physico-chemical parameters: dry extract, reducing sugars and glucose/fructose ratio were found. Regarding the dry extract, the QLI, QDM and QCL wines presented a significantly higher level (25.5 to 23.9 g/L), also being these the wines with a significant content of reducing sugars, 8.71 to 6.51 g/L.

The color ranged from 0.070 - 0.084 u.a., total phenolics from 277 - 371 mg gallic acid/L, flavonoids between 143-201 mg gallic acid/L and non-flavonoids between 132-169 mg gallic acid/L. There were only significant differences in the content of phenolic acids (gallic acid and coutaric acid isomer) and catechin.

The sensory profile of the seven Loureiro wines was quite similar, however, one wine – QPLL- showed a lower score in the attributes related to the nasal perception (aroma), ortho-nasal perception (flavor) and mouthfeel. Correlating these data with the chemical data, the CATPCA clearly showed the detachment of QPLL wine from the other wines.

Keywords: Demarcated Vinho Verde Region, monovarietal Loureiro wines, phenolic compounds, Sensory profile.