



Evaluation of polyphenolic compounds in ‘Syrah’ wine produced in the São Francisco Valley: impact of ripening stage and maceration time

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The São Francisco Valley, located in the Northeast of Brazil, presents ideal environmental conditions to produce wines from grapes *Vitis vinifera*. Nonetheless, wine production in this region is quite recent given its peculiar environmental conditions classified as tropical semi-arid. For this reason, investigations regarding winery practices for this particular region are of utmost importance. Phenolics are of particular interest, since these compounds are responsible for important sensory properties of red wines, including color, astringency, bitterness, body and stability of wine. The harvest date and the maceration duration are critical parameters for producing red wines with a distinctive style. In this context, the aim of this study was to understand the relationship among phenolic compounds profile of the wines and i) the ripening stage of grapes and ii) the maceration duration. Experimental wines were prepared at Embrapa Semi-arid from grapes provided by local wineries. Grapes were harvested in June and July 2013, at three different stages of ripeness after pruning (DAP: days after pruning), namely: T1 (113 DAP 19.0° Brix), T2 (120 DAP – 21.0° Brix), and T3 (127 DAP 22.2° Brix). Three maceration times, 10, 20 and 30 days, were evaluated in this study. By means of high performance liquid chromatography (HPLC), simultaneously coupled to diode array (DAD) and fluorescence (FLD) detectors, 24 phenolic compounds were determined, including flavonols, anthocyanins, phenolic acids, flavanols and stilbene (Natividade et al. 2013). Principal Component Analysis (PCA) performed on the obtained results showed that the first two PC explaining 79.55% of the total variance. In the first PC (PC1- 54.02%) ferrulic acid, *p*-cumaric acid, isoquercetin, quercetin, pelargonidin-3-O-glucoside, malvidin-3-O-glucoside and peonidin-3-O-glucoside had positive correlations and higher weightings. The second PC (PC2-25.53%) correlated positively with gallic acid, (+)-catechin, (-)-epicatechin, procyanidin B1 and procyanidin B2. Caffeic acid, (+)-catechin, procyanidin B1, isoquercetin and maldivin-3-O-glucoside were the main compounds determined. Moreover, the results showed that stage of ripeness T3 favored an increasing in the total phenolic concentration in Syrah wine of the São Francisco Valley. The sum of total phenolic varied from 156.15 (T1) to 295.61 (T3) mg.L⁻¹ with statistically significant difference among them. Although the duration of maceration did not affect the total phenolic content in wine produced from grapes at 113 DAP (T1) and 120 DAP (T2), when considering T3, the phenolic content were higher when longer maceration times were employed, presenting statistically significant difference among the three macerations time.

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References

NATIVIDADE et al., 2013, Simultaneous analysis of 25 phenolic compounds in grape juice for HPLC: Method validation and characterization of São Francisco Valley samples, *Microchemical Journal*, 110, 665-674