

Correlation between levels of dissolved O₂ and polyphenols during winemaking of red wines made from different grape cultivars and geographical origin

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Red wines are significantly different regarding quality and aging potential, being their chemical profile main cause of these differences. Natural factors, mainly geographical origin, and genetic differences of the cultivars have a strong influence on the chemical constituents of the wines. Polyphenols, mainly anthocyanins and tannins, are the key compounds in controlling the chemical and sensory evolution of red wines. They are the active compounds in a very large number of chemical O₂ dependent reactions that occur during winemaking and after bottling. With the aim of study the chemical evolution of different red wines and, through it, determine their longevity potential, O₂ dissolved analysis were made by an oxymeter trap in four stages: after malolactic fermentation, middle-stabilization phase, end of stabilization phase (bottling) and early bottle aging. The results were correlated with the tannins (monomeric, oligomeric and polymeric fractions), total anthocyanin, quercetin and total polyphenol content. The varietal wines obtained from Brazilian viticultural regions were Merlot, Cabernet Sauvignon, Tempranillo, Touriga Nacional, Pinot Noir, Syrah, Malbec and Cabernet Franc. A rigorous standard winemaking protocol was applied to all of the wines. The results showed a significative difference among the wines (cultivar and region effect) concerning the evolution of dissolved O₂. It was observed a significative correlation between dissolved O₂ and total anthocyanin and quercetin content.

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