



Vinifera master thesis abstract (template 2013)

Thesis title: **Outcomes of pre-fermentation and post-fermentation extended maceration for anthocyanin and tannin composition of red wines from hot irrigated vineyards of South Eastern**

Australia

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Tribunal members (name/position):

- Olga Laureano, Investigadora Coordenadora do Instituto Superior de Agronomia da Universidade Técnica de Lisboa.
- Christopher Ford, Professor, Universidade de Adelaide
- Jorge Ricardo da Silva, Professor, UTL/ISA
- Manuel Malfeito, Professor, UTL/ISA

Date & location of the oral examination:

6-12-12 9:00 AM on Instituto Superior de Agronomia

Confidential: Yes No

Abstract (max 300 words)

The aim of this study was to understand the effects of different maceration winemaking techniques on the phenolic composition of red grapevine variety 'Tempranillo' (*Vitis vinifera* L.). Experimental winemaking included 4 different treatments with 3 replicates. (5days pre-fermentation maceration at 11°C, fermentation without any pre-fermentation or post-fermentation extended maceration (control wines), and 3- and 6-days post-fermentation extended maceration on skins). Spectroscopic and RP-HPLC analysis were used to determine changes in phenolic components and between treatments during the alcoholic fermentation, and as they aged in the bottle. It was determined if the wines made with pre-fermentation maceration had increased color intensity compared to the control wines, as well as if the wines that underwent extended maceration had increased concentration of (+)-catechin and (-)-epicatechin, increased color hue, decreased color intensity compared to the control wines. Prolonging the maceration from 7 to 10 and 13 days, lead to significantly higher concentrations of total phenolics, and the monomeric flavan-3-ols, (+)-catechin and (-)-epicatechin, and lead to a significant decrease of the total anthocyanins.

Further investigation is needed in order to analyse the effect of the phenolic, tannin's and anthocyanin's composition on the quality of the wine in terms of color stabilization and mouth-feel. Post-fermentation EM reduced wine colour intensity and imparted a browner hue to the wine compared to the Control wine. This EM treatment is therefore unlikely to benefit winemakers who are seeking to produce highly coloured wines. However, post-fermentation extended maceration increased the concentration of wine flavan-3-ols ((+)-catechin and (-)-epicatechin). Therefore, the winemakers by varying the duration of post-fermentation EM may influence the desired balance between the extraction of these wine phenolics and the mouth-feel properties, taking into consideration the economic factor.

Keywords (5): Tempranillo, maceration duration, phenolic composition, monomeric flavan-3-ols.

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