



## Vinifera master thesis abstract (template 2013)

Thesis title: **Quantification of condensed tannins in red wines by fourier transform mid-infrared spectroscopy (FTIR)**

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Institution/company involved: **Instituto Superior de Agronomia**

**Tribunal members (name/position):**

- Jorge Ricardo da Silva, Professor UTL/ISA
- Emilio Cellotti, Professor, Universidade de Udine
- Olga Laureano, Investigador Coordenador, UTL/ISA
- José Carlos Rodrigues, Investigador, IICT

Date & location of the oral examination:

**3-12-12 9:30 AM on Instituto Superior de Agronomia**

Confidential:  Yes  No

**Abstract (max 300 words)**

Grape-derived condensed tannins, also known as proanthocyanidins, are critical quality components for red wines. They have been subject of numerous studies in order to find a fast and reliable methodology for their quantification. In this work it has been tested the method using Fourier transform mid-infrared (FTIR) and chemometrics to quantify the amount of condensed tannins present in 88 different red wines, with the reference method of precipitation with methylcellulose. As well it has been provided a single laboratory validation of the method of fractionation of condensed tannins by reverse phase and quantification by reaction with vanillin. The models developed for the FTIR spectroscopy were not enough robust for the estimation of total condensed tannins, with low values of coefficient of determination and low RPD values ( $R^2$  cross-validation: 0,76 and RPD cross-validation: 1,86). Validation of the fractionation method showed good performance in precision, with values of coefficient of variance for the three fractions FIII, FII and FI respectively of 5,2%; 11,4% and 11,6% and values of reproducibility of 168,1; 32,9 and 3,4 mg/L of epicatechin equivalents, but it was not possible to perform effective recovery studies.

**Keywords (5):** FTIR, condensed tannins, red wine, validation, reverse phase fractionation.

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