



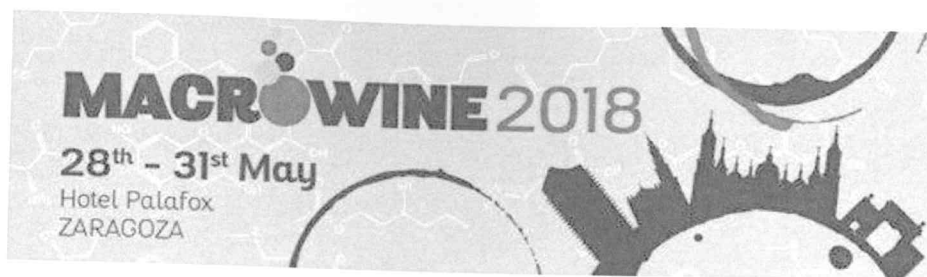
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## Book of Abstracts



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### Electrochemical diversity of Italian red wines

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Voltammetric methods are raising considerable interest for the analysis of oxidizable compounds in wine, including tannin compounds that are key to color, mouthfeel, and longevity of red wines. However, in the red wine matrix where a number of different oxidizable components are present simultaneously, interpretation of voltammograms remains challenging and extraction of enologically relevant data is difficult.

The Diversity of Italian Wines (D-Wines) project aims at analyzing large-scale compositional datasets of Italian wines. Within this project, linear sweep voltammograms (VGs) of 110 red wines from 11 Italian varieties were collected and analyzed along with other markers of tannin composition.

A great diversity of voltammetric responses was observed, although identification of features discriminating wine types was limited with raw data. Derivative VGs were therefore built and studied by multivariate statistical methods. A number of key features were identified and several groups of wines built accordingly. The region of the VGs at 50-150 mV was found to be highly discriminant across the entire dataset. A correlation study with other parameters analyzed indicated that this region reflected oxidation of gallo catechin and epigallocatechin, either as free forms or terminal unit. Studies with other tannin matrices (tea, grape, seed, or oak tannins) indicated that this region is associated with tannin ability to consume oxygen and to the related loss in SO<sub>2</sub>, which is further explored by oxidation studies on real wines.

It is expected that these results will help developing novel tools for tannin analysis as well as improving our understanding of tannin contribution to transformations associated with red wine oxidation.

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