ŒnoMacrowine 2025 abstract (max 1 page)

Oral communication / poster contribution (please choose the desired option, which will be evaluated by the scientific committe)

# Title of the abstract (lower case)

**Effects of hydroxytyrosol on the chemical profile and sensory attributes of a red Tuscan wine**

# Name(s) and affiliation(s) of the corresponding author and co-author(s) (lower case, separated by a comma)

Adriana Teresa Ceci1,2, \*, †, Aakriti Darnal1,2, Simone Poggesi1,2, Edoardo Longo1,2, Enrico Angelo Altieri3, Reeta Davis3, Margaret Walsh3, James Britton3, Renzo Nicolodi,4 Kevin O Connor3, and Emanuele Boselli1,2

*1. Oenolab, NOI TechPark Alto Adige/Südtirol, Via A. Volta 13B, 39100 Bolzano, Italy (all affiliations in italics)*

*2. Faculty of Agricultural, Environmental and Food Sciences, Free University of Bozen-Bolzano, Piazza Università 5, 39100 Bolzano, Italy*

*3. Nova Mentis Ltd., c/o Nova UCD, Belfield Innovation Park, University College Dublin, D04 V2P1 Belfield, Ireland.*

*4. Nutramentis srl, NOI Techpark South Tyrol/Alto Adige, Building D1, Via Ipazia, 2, 39100 Bolzano, Italy.*

\* Corresponding author. Email: adrianateresa.ceci@unibz.it

† Presenting author

**Keywords**

Projective mapping, CATA, polyphenolic profile, hydroxytyrosol (4 key words)

**Abstract**  
The chemical profile and sensory attributes were studied in Borrigiano IGT Toscana wine (Italy), a blend of Sangiovese 85% and Cabernet Sauvignon 15% grapes harvested in September 2020, where 2-(3,4-dihydroxyphenyl)ethanol (hydroxytyrosol, HT, [1]) was added to a 750-ml wine bottle in 3 different amounts (30, 60, 120 mg) and compared with the control (no HT addition). The study aimed to evaluate whether Polyphenol-HT1®, a high purity HT (>99%) produced by Nova Mentis using biotechnology, could be used as a supplement to sulfites and how it would impact the sensory and chemical profile of this wine [2]. Each sample was prepared in triplicate. The chemical profile and sensory analysis were studied every three months (T1, T3 and T6) for a total of six months of storage. HT stability and evolution of sensory attributes were also investigated. The oenological parameters (such as free and total SO2, residual sugars, organic acids) were evaluated with multiparametric wine analyser, the dissolved oxygen was measured according to OIV protocols, and HPLC-DAD was used to evaluate the phenolic profile [3]. To explore the effects of HT addition, Multiple Factor Analysis (MFA) was applied. The Projective Mapping sensory protocol [4], combined with CATA (check-all-that-apply) method, were chosen to achieve a rapid categorization and characterization of Borrigiano wine using an internal panel of fourteen assessors (aged 25-40 years old). Procrustean Multiple Factor Analysis (pMFA) and CLUSTATIS methods [5] were used to manage the sensory data. Evaluators were asked to rank wine samples according to their preferences and a frequency table was constructed. The HT addition (at different concentrations) and storage time influenced the chemical profiles and sensory attributes. After six months of storage, free sulfur dioxide remained higher in wines with the highest HT content. On the contrary, the dissolved oxygen was higher in the control wines, and was negatively correlated with the HT content. Acetic acid, which is the most important quality parameter of wine, was higher in the control wine samples. The assessors preferred the samples with the highest amount of HT; in fact, this wine gained first position for a greater number of times in the ranking constructed by the panel. The samples with the highest amount of HT had the lowest values of astringency, the highest level of vegetal, red fruit, dried fruit and wood aroma and red fruit flavour.

**References**

[1] Boselli, E., Minardi, M., Giomo, A., Frega, N. G. (2006). *Anal. Chim. Acta*, 563(1-2), 93-100.

[2] Raposo, R., Ruiz-Moreno, M. J., Garde-Cerdán, T., Puertas, B., Moreno-Rojas, J. M., Gonzalo-Diago, A., Cantos-Villar, E. (2016). *Food Chem*., 192, 25-33.

[3] Poggesi, S.; Darnal, A.; Ceci, A.T.; Longo, E.; Vanzo, L.; Mimmo, T.; Boselli, E. Foods (2022), 11, 3458.

[4] Valentin, D., Chollet, S., Nestrud, M., Abdi, H. (2018). *Descriptive analysis in sensory evaluation*, 535-559.

[5] Morand, E., Jérome Pagès Morand, E., and Jérome P. *Food Qual. Prefer.* 36-42. 17.1-2 (2006): 36-42.