

**PhD Program:** Food Science

**Research Project Title:** New No-Lo Wines (No Alcohol–Low Alcohol): Study and Optimization of Quality and Stability Parameters in Relation to the Current and Expected Sensory Space

**Supervisor:** Maria Tiziana Lisanti

**Reference Academic Discipline (SSD):** AGR-15 (GSD 07/AGRI-07)

**Research project objectives, methodologies, and interdisciplinary collaborations:**

De-alcoholized and partially de-alcoholized wines represent a new category of products of great interest for the wine value chain. Market analyses predict a significant increase in their global consumption, as they meet the needs of modern consumers, who are increasingly oriented toward healthier and more moderate lifestyles. Despite these promising prospects, the sensory quality of the products currently available on the market is often considered unsatisfactory, mainly due to the loss of aroma compounds during dealcoholization processes and to the imbalance of the taste profile resulting from ethanol removal. Moreover, the behavior of these new products in terms of sensory shelf life and chemical-physical and microbiological stability remains largely unknown.

The project primarily aims to define the sensory space of No-Lo wines currently available on the market and to identify their main qualitative criticalities, also in relation to their evolution over time, through sensory analysis techniques, consumer studies, and accelerated aging tests.

In parallel, through targeted chemical analyses, focusing on volatile compounds, polyphenolic compounds, and oxidation markers, and stability tests (colloidal, tartaric, protein, and microbiological), applied to both dealcoholized wines and model solutions, the project seeks to investigate how ethanol removal affects aroma, structure, and product stability.

The final objective is to identify and propose improvement strategies that can also be applied at the industrial level, in order to enhance the overall quality of No-Lo wines. Achieving these objectives will rely on a multidisciplinary approach that integrates, in addition to the supervisor's expertise in oenology, aroma chemistry, and sensory analysis, specialized knowledge in polyphenol chemistry, microbiology, and winemaking processes, through the involvement of the Section of Vine and Wine Sciences and national and international collaborations.

**Innovation and/or originality of the project:**

No-Lo wines represent one of the most recent trends in the wine market and, more broadly, in the beverage sector. While the factors determining the chemical-physical, microbiological, and sensory stability of conventional wines have been extensively investigated over the past decades, this new category of products remains largely unexplored.

The project is characterized by an integrated approach that involves the use of both commercial wines and controlled experimental models. The latter make it possible to isolate and systematically investigate the factors influencing the quality and stability of dealcoholized and partially dealcoholized wines.

This methodological framework represents an element of originality, as it combines fundamental research with practical applicability, facilitating the transfer of results to the industrial sector and contributing to the development and improvement of products currently available on the market.

**Availability of funds:**

European Commission Call: I3-2024-INV1 (Interregional Innovation Investments Strand 1), PROGETTO LIGAWINE (LOW INPUT GRAPEGROWING AND WINEMAKING IN EUROPE), Project end date: 14/12/2028, budget UNINA 237.065,24€

Research contract with Diam bouchage (responsible Prof. Luigi Moio, PI Prof.ssa M. Tiziana Lisanti), end date: 4/05/2027, budget 190.000€.

**Availability of facilities:**

Shared lab station, shared desk station in PhD students office at Division of Vine and Wine Sciences (Avellino)

**Collaborations with International Institutions:**

Prof. Gilles de Revel (research group in Analytical Chemistry of Wine), Institut des Sciences de la Vigne et du Vin – ISVV, Oenology Research Unit, University of Bordeaux (France).

Dr. Claudia Nioi (Process Engineering research group) Institut des Sciences de la Vigne et du Vin – ISVV, Oenology Research Unit, University of Bordeaux (France).

**Collaborations with External Organizations (outside of UNINA):**

Potential collaborations may involve wineries and other companies within the wine production chain, such as those providing technologies for wine dealcoholization. Possible academic partnerships include collaborations with the University of Padua and the University of Verona.