

## Chemistry Department

### P rotein haze formation in white wines

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**Research Interests:**  
Organic Chemistry,  
Organic Synthesis  
Bioactivity of Organic  
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## Objectives

We have very recently discovered missing essential factors required for haze formation in wines, the so called X factor: tyrosol and tryptophol, two aromatic, human-bioactive compounds. Interaction of these compounds with the wine proteins and with an otherwise innocuous compound, erythritol, under conditions leading to wine protein instability, results in protein assembly into higher order supramolecular aggregates.

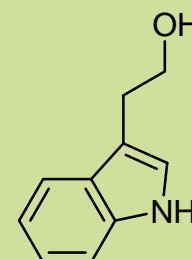
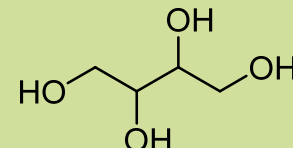
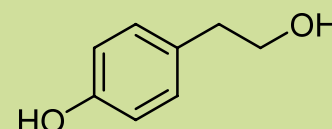
It is therefore of utmost importance to balance protein stabilization with valuable compounds content in white wines. In other words, it is extremely important to fine only those wines which are prone to suffer protein precipitation.

## Methodology

The < 3kDa wine fractions, previously described as containing the compounds that interact with protein haze modulation, will be fractionated using the previously cited chromatographic methods with the adequate eluents for each case. This study will be conducted by chromatographic separations together with haze formation assays of the isolated fractions/compounds. The structures of the isolated compounds will be validated using 1D, 2D NMR and UV spectroscopy, and GC-MS spectrometry. Metals will be quantified directly by ICP analysis. The compounds that prove to be involved in haze formation will be quantified by GC or HPLC methods according to their structures. This task is obligatory due to the lack of specific protocol to quantify certain compounds, like tryptophol, in wine. Therefore, it is necessary to study different extractions and analyses in order to create expedite methods of quantification specific for those compounds.

## Expected Results

Select the wine constituents that induce haze formation by interaction with wine proteins. Elaborate a set of expedite protocols to quantify the concentration of the different compounds that interact with wine protein to form haze.



Funding:

