

Non-invasive evaluation of protein efficiency for wine clarification

In collaboration with French Institute on wine research (INRA)



Introduction

In oenology, in addition to the improvement of colloidal stability and sensory properties of wine, fining is also done to clarify wine. The process consists on introducing a substance (fining agent) that induces the flocculation and sedimentation of suspended particles in a turbid wine. This critical step reduces the number of filtration cycles, required to achieve desired brightness and microbiological stability. Fining agents can be either organic polymers (proteins, polysaccharides) or minerals (bentonite).

This study aims to compare the efficiency of two different vegetal proteins (A and B) used to clarify red wine. Using SMLS, the optimum concentration for more efficient clarification process was determined.

KEY BENEFITS

VERSATILE
NO DILUTION
FAST & ACCURATE

Reminder on the technique

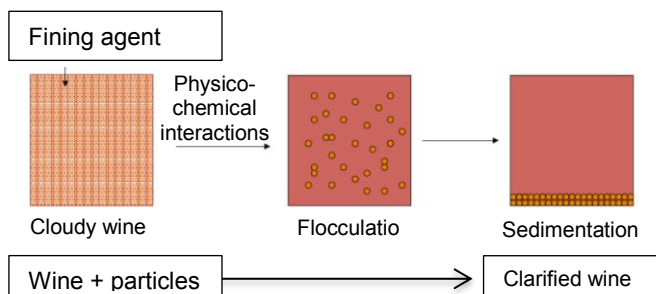
Turbiscan™ instrument, based on Static Multiple Light Scattering, consists on sending a light source (880 nm) on a sample and acquiring Backscattered (BS) and transmitted (T) signal. Combining both detectors (BS & T) enables to reach wider concentration range. The backward reflected light comes from multiple scattering (the photons scatter several times on different particles or drops).

This signal intensity (BS) is directly linked to different parameters, according to the Mie theory

$$BS = f(d, \varphi, n_p, n_f)$$

Method

The following figure describes the evolution process from cloudy to clarified wine, with the first step: the addition of the fining agent.



Comparison of fining agents for red wine clarification

Identification of the destabilization phenomena

The raw data on figures 1 and 2 show that the addition of fining agent leads to size variation followed by the formation of a compact sediment at the bottom and a large clarification on the rest of the tube.

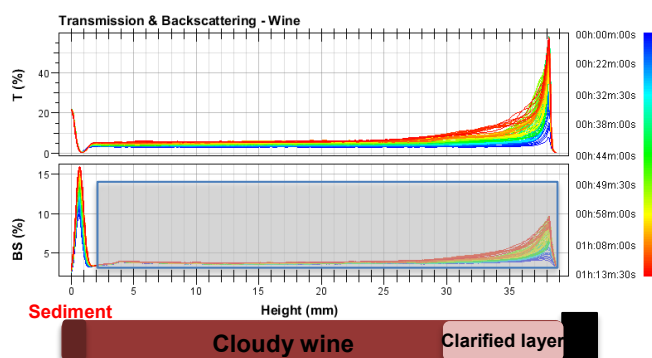


Figure 1: Backscattering variation for Fragrance C 1.75% in emulsion 2

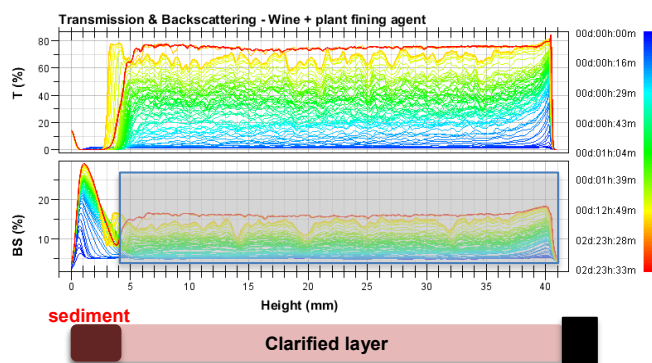


Figure 2: Turbiscan Backscattering and Transmission profiles obtained for the fined wine (fining agent B)