

INFLUENCE OF PRE-FERMENTATIVE FINING ON OXYGEN CONSUMPTION RATE, OXIDATION SUSCEPTIBILITY AND ELECTROCHEMICAL CHARACTERISTICS OF WHITE MUSTS

M. Ugliano¹, A. Seabrook³, A. Massot² and V. Moine²

¹ Department of Biotechnology, University of Verona, Italy

² BIOLAFFORT – 11 rue Aristide Bergès - 33270 Floirac, France

³ LAFFORT Australia – 10 Kalimna Road, Nuriootpa, Australia

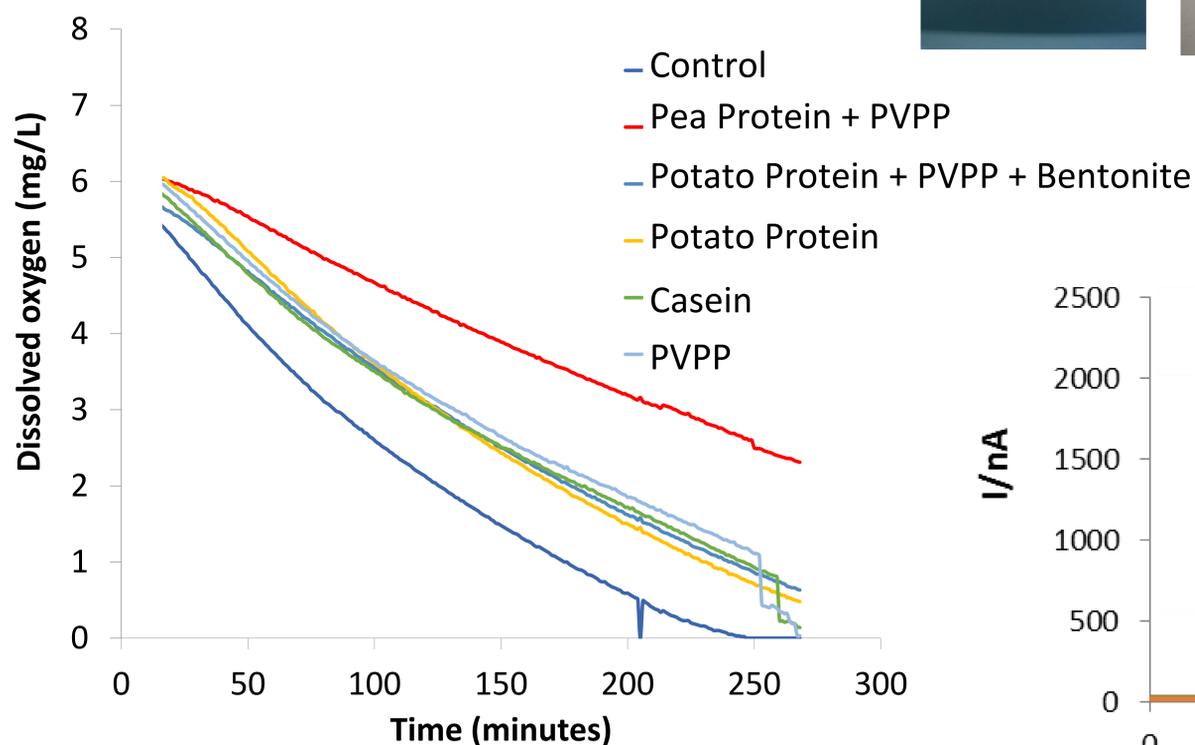
AIM: Pre-fermentative fining is one of the central steps of white wine production. Mainly aiming at reducing the levels of suspended solids, juice fining can also assist in reducing the content of oxidizable phenolics and therefore the susceptibility of juice to oxidation. There is a large variety of fining agents available on the market, many of which have been introduced in recent years in response to specific dietary requirements. The aim of this work is to characterize different fining agents for their ability to reduce oxidation susceptibility of must of different white grape varieties.

METHODS: Musts of Pinot grigio, Garganega and Chardonnay were produced in the laboratory and submitted to different fining treatments by means of casein, PVPP, potato protein, pea protein, or combinations of potato or protein and PVPP. All fining also included pectolitic enzymes. Following cold settling, clear juice was racked and submitted to cycles of controlled oxygen consumption to assess oxidative behaviors. Evolution of dissolved oxygen was monitored using a Presens Sensor dish reader device, allowing to take measurements every 15 min, which was adequate for the fast oxygen consumption rate of grape must.

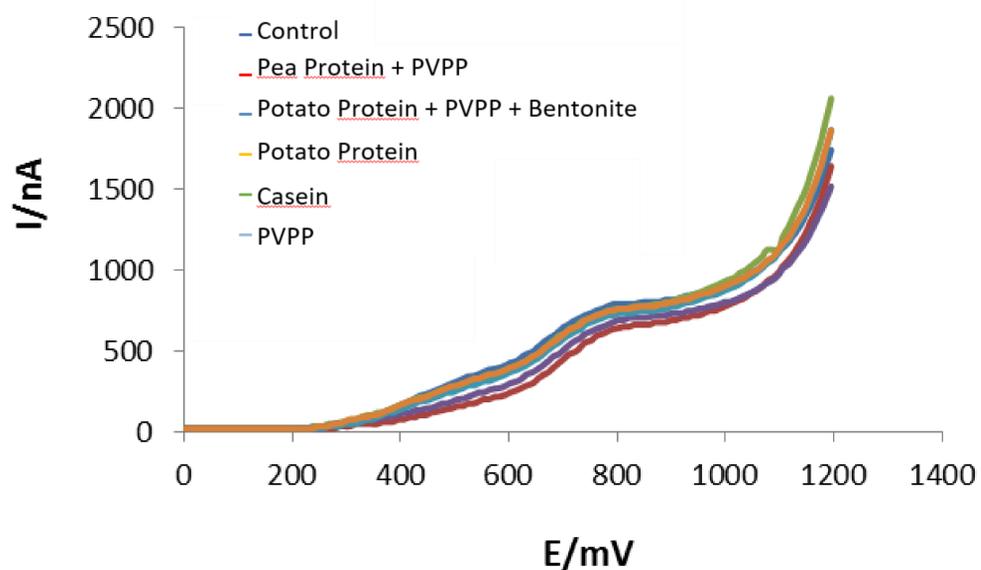
Chemical and electrochemical (linear sweep voltammetry, LSV) analyses, were carried out at the beginning and the end of each oxygen consumption cycle. A treatment consisting of cold settling only with pectolitic enzymes was used as control.



Sensor dish reader used for the study of must oxygen consumption



Oxygen consumption profiles of Pinot grigio must treated with different fining agents



Linear sweep voltammograms of Pinot grigio must treated with different fining agents

CONCLUSION: Fining of the must determines a decrease in its ability to consume oxygen. This appears to be associated with a decrease in must content of oxidizable compounds, as observed during voltammetric analysis. The combination of pea proteins and PVPP is particularly effective in reducing must ability to react with oxygen.