Winemaking advantages through the selection of a functional aromatic yeast, its E2U™ production and the importance of its inoculation mode followed by flow cytometry.

Matthieu Dubernet[2], Arnaud Delaherche[1], Anne Flesch[1] and Etienne Dorignac[1]

[2]Laboratoires oenologie Dubernet

[1]Fermentis, division of S.I. Lesaffre

Industrial winemaking is based on the use of wine *Saccharomyces cerevisiae* starter cultures that can guarantee the stability and reproducibility of processes as far as their population correctly behaves. Flow cytometry technique can dynamically follow microorganisms' population and an insight of its capabilities will be firstly illustrated. Then an experimental case will be showed involving the study of two modes of yeast inoculation: bioprotection on grapes or during pre-fermentation operations and conventional including direct pitching after settling. Regarding pitching times, four moments were carried out: (i) directly on grapes at reception, (ii) in the juice after crushing or (iii) pressing and (iv) divided into the juice respectively after crushing and settling. For the conventional modes, four timings have been studied: (v) and (vi) as respectively direct inoculation just after settling and temperature rise, (vi) rehydrated in room temperature water and with gradual acclimatization method after settling and temperature rise. In bioprotection modes, we found that HD A54 could be inoculated on grapes and during pre-fermentation phases only if the temperature is cool controlled (< 10°C) in order to slow down alcoholic fermentation start avoiding settling issues. HD A54 yeast inhibited non-*Saccharomyces* and *Saccharomyces cerevisiae* yeasts development when inoculated at 20g/hL before pressing. Inoculation after pressing was the best for fast alcoholic fermentation start. In conventional modes and highly indigenous microflora loaded must, we showed that E2U™ processed HD A54 yeast could be inoculated immediately after cold settling or after temperature rise-up without any implantation and fermentation issues. It also fully showed its particular organoleptic profile (especially extreme amylic notes). When inoculated with prior rehydration or acclimatization, implantation issues have been encountered leading to deviant profiles. This study showed that for certain yeast strains, E2U™ technology combined with early inoculation timing could guarantee the achievement of the targeted type of wine.