

# Saccharomyces cerevisiae – Oenococcus oeni – Lactiplantibacillus plantarum: focus on malolactic fermentation during production of Catarratto and Riesling white wines

The increasing interest in enhancing groundbreaking sensory profile of wines determined the need to select novel strains of lactic acid bacteria (LAB). Metabolic processes characterizing malolactic fermentation (MLF) lead to the production of several organic compounds that significantly impact the oenological and sensory characteristics of wines. Traditional malolactic fermentation relies on the inoculum of LAB at the end of the alcoholic fermentation performed by yeasts. The present research aimed to evaluate the effect of five LAB (Lactiplantibacillus plantarum MLP K45H, Oenococcus oeni BETA, O. oeni F2016, O. oeni PN4®, O.oeni VP41® purchased from LallemandOenology) and two Saccharomyces cerevisiae strains (QA23 from Lallemand and NF213 belonging to culture collection of University of Palermo) co-inoculated or added sequentially after alcoholic fermentation. All experimentations were performed with Catarratto and Riesling white grapes.

Even though the results varied with LAB strain and inoculation strategy adopted, the best performances were registered for L. plantarum MLP K45H that

concluded MLF within three and eight days during co- and sequential inoculation in Catarratto wine, respectively. Thus, it can be assumed that O. oeni strains were more susceptible to competition with S. cerevisiae in comparison to L. plantarum. With regards to Riesling wine production, the best results were shown by strain F2016 during co-inoculation since the MLF was ended within 5 days, maintain the best fermentative rate also in sequential inoculum.

In conclusion, the use of L. plantarum MLP K45H allowed to overcome the competition of other malolactic microorganisms with yeasts and represents an alternative to the use of O.oeni but the inoculum strategy, and the choice of the strain of bacteria must carefully studied considering the wine complexity.

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