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III.O.5

BIO-PROTECTION BY ONE STRAIN OF *M. PULCHERRIMA*: MICROBIOLOGICAL AND CHEMICAL IMPACTS IN RED WINES

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In oenology, bio-protection consists in adding bacteria, yeasts or a mixture of microorganisms on grape must before fermentation in order to reduce the use of chemical compounds such as sulphites.

More particularly, non-*Saccharomyces* yeasts are used as a total or partial alternative to sulphites.

However, scientific data capable of proving the effectiveness of adding these yeasts on grape must remain scarce. A single study in white winemaking showed that early addition of a non-*Saccharomyces T. delbrueckii* strain could be a microbiological and chemical alternative to sulphites (Simonin *et al.*, 2018).

However, there is a lack of scientific data concerning red winemaking where the process allows to leave the yeasts added during the whole winemaking. This study reports for the first time the analysis of microbiological and chemical effects of one *Metschnikowia pulcherrima* strain, inoculated at the beginning of the red winemaking process in three wineries as an alternative to sulphiting. The implantation of the *M. pulcherrima* was successful in all the wineries and effectively limited the development of spoilage microorganisms in the same way as the addition of sulphites. The addition of non-*Saccharomyces* strain could protect must and wine from oxidation as demonstrated by the proanthocyanidin and anthocyanin analysis.

Adding *M. pulcherrima* had no effect on wine volatile compounds and sensorial analysis. However, the untargeted analysis by FTICR-MS highlighted a bio-protection signature and an activation of certain metabolic pathways.