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Book of Abstract

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Co-inoculation of Lactic Acid Bacteria and *Saccharomyces cerevisiae* strains to generate volatile organic compounds with high olfactory impact in Catarratto wine

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The co-inoculation of Lactic Acid Bacteria (LAB) and yeasts ensures time management, completion of malolactic fermentation (MLF) and influences aroma profile of wines. In the present study, three LAB strains (*O. oeni* VP41®, *O. oeni* PN4® and *L. plantarum* MLPK45H®) (Lallemand Inc.) were co-inoculatedwith two *S. cerevisiae* strains (NF213, University of Palermo) collection) and QA23® (Lallemand inc.) to produce Catarratto wine. Length and reliability of MLF differed among trials. The best malic acid degradation kinetics was recorded for the trials with *L. plantarum* strain, MLPK45H® followed by VP41® and finally PN4®.The highest lactic acid yield was displayed by the trial inoculated with *L. plantarum* strain. The co-inoculum of VP41®/NF213 (*O. oeni*/*S. cerevisiae*) strains determined an increase of floral and fruity aromatic components of wines. These results are due to the significant production of 3-ethoxy-1- propanol, ethyl-octanoate and ethyl decanoate. In contrast, the use of PN4®/QA23® (*O. oeni*/*S. cerevisiae*) strains was advantageous in the production of acetate esters such as 3-methyl-1-butanol acetate and phenylethyl acetate compared to control QA23® and all remaining trials. The use of different LAB strains in combination with yeasts was further confirmed as a valid technique capable of reducing the totality of 2,3- butanedione to 2,3-butanediol and 3-hydroxy-2-butanedione to the advantage of the olfactory freshness of wines. Biplot multivariate analysis positively correlated the production of VOCs characterized by low threshold value with MLF length. In conclusion, LAB and *S. cerevisiae* co-inoculation is an important modulator in the production of wine characterized by VOCs with high olfactory impact. Further investigations should be performed to better understand LAB/yeast interaction.