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Book of Abstract



Non-conventional yeasts (*Starmerella lactis-condensi* and *Candida oleophila*) and Lactic Acid Bacteria (*Lactiplantibacillus plantarum* and *Oenococcus oeni*) in sequentially inoculated fermentations: a strategy to improve aroma of Catarratto wine

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Catarratto is one of the most common non-aromatic white grape varieties cultivated in Sicily (Southern Italy). To improve the aromatic expression of Catarratto wines, different combinations of non-*Saccharomyces* strains and Lactic Acid Bacteria (LAB) were applied during experimental vinification. Two non-*Saccharomyces* strains, (*Starmerella lactis-condensi* MN412 and *Candida oleophila* YS209) isolated from “manna” and two commercial strains of lactic acid bacteria (*Lactiplantibacillus plantarum* MLPrime™ and *Oenococcus oeni* VP41™) were used in sequentially inoculated fermentations. The strain *Saccharomyces cerevisiae* (QA23™) was inoculated to complete the alcoholic fermentation. Control trials were conducted without the inoculum of non-*Saccharomyces* and/or LAB strains. The experimental design resulted in nine different treatments (S1-S9). Microbiological counts showed the ability of *St. lactis-condensi* and *C. oleophila* to persist at high cell densities (6.0 Log CFU/mL and 5.5 Log CFU/mL, respectively) up to six days of fermentation. *L. plantarum* and *O. oeni* performed malolactic fermentation in the inoculated trials (with levels above 7.0 and 8.0 Log CFU/mL respectively). The dominance of the two non-*Saccharomyces* strains over native yeast populations was estimated to be more than 90 % as revealed by genotypic strain typing. In terms of chemical parameters, *St. lactis-condensi* increased glycerol content by about 2-3 g/L and *C. oleophila* showed lower acetic acid content than the other trials. The use of *St. lactis-condensior* *C. oleophila* increased the aromatic complexity of the wines as reflected by volatile organic compounds (VOCs) composition and sensory profiles. Forty-two VOCs were identified, and they were mainly represented by esters (ethyl acetate, ethyl octanoate and ethyl lactate), alcohols (1-pentanol and 2,3- Butanediol), aldehydes, ketones and carboxylic acids. Results of sensory analysis showed a significant increase of floreal/fruity intensity and complexity of Catarratto wines produced with *C. oleophila* and *St. lactis-condensi* in combination with *L. plantarum*.