

FIRST APPLICATION OF LACHANCEA THERMOTOLERANS IN THE FERMENTATION OF “VINO SANTO” AS BIOLOGICAL ACIDIFIER.

The exploitation of secondary metabolic pathways of non-Saccharomyces yeasts is a promising approach to protect traditional wines from the ongoing climate change, which can alter their peculiar features by modifying the chemical composition of grape musts. In this regard, an interesting example is the sequential inoculum of *Lachancea thermotolerans* and *Saccharomyces Cerevisiae*. The aim of the sequential inoculum is to increase titratable acidity by lactic acid accumulation, to lower pH and to reduce the alcohol and acetic acid content in wine.

In this work, grapes of Italian's variety Garganega were dried and crushed according to the traditional winemaking protocol to produce *Vino Santo*, a sweet wine produced from withered grapes in different wine appellations in Italy. The performances of a traditional inoculum of *S. cerevisiae* were compared to that of a sequential inoculum with a commercial strain of *L. thermotolerans* followed by *S. cerevisiae* when the 30% of the alcoholic fermentation was reached. Furthermore, different nitrogen supplementation protocols (with yeast autolysates and diammonium phosphate) were tested, considering that the lack of nutrients is one of the main criticism in the fermentation of must coming from dried grapes.

Results demonstrated that *L. thermotolerans* is capable to acidify wines in the fermentation of must at high osmotic pressure (~400 g/L of reducing sugars), in particular during the first stages of winemaking, thus contributing to the microbial control. The sensory evaluation performed by a panel of eleven winemakers showed that *L. thermotolerans* balanced the mouthfeel of wines with a high sugar residue. The nature and timing of the nutritional supplementation also affected the pH and the sensory evaluation of wines. This winemaking practice is crucial to regulate yeast metabolism, managing the competition among different species that modify the quality perception of wines.

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