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INFORMATIONS

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SHORT ORAL – SO16

Aromatic elegance in a changing climate: A three-year study on *Oenococcus oeni* variability and organic acid modulation in sparkling wine bases

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ABSTRACT

This study explores the dynamics of maintaining aromatic elegance in a challenging oenological landscape by investigating the intraspecific variability of O. oeni in response to OIV-approved organic acid additions. Conducted over a 3-year period across both laboratory and cellar scales, specifically using sparkling wine bases, the research integrates microbiology with advanced chemical analysis via HS-GC-IMS and HS-SPME-GC-MS/MS. The volatile profile of the obtained wines was characterized to evaluate the evolution of key compounds throughout the fermentation process. Among the primary constituents identified, the analysis highlighted significant concentrations of isoamyl alcohol, 2-methyl-1-butanol, phenylethyl alcohol, and hexanoic and octanoic acids. Results demonstrate that supplementing the native acidic profile with tartaric, malic, or citric acid significantly alters microbial growth, malolactic fermentation (MLF) rates, and aromatic production. Crucially, the acids induced distinct behaviours: at equivalent addition levels, tartaric and malic acids tended to repress microbial activity and delay MLF evolution. Conversely, citric acid stimulated both fermentation kinetics and diacetyl production. The quantitative analysis of the wine samples analyzed revealed distinct profiles for vicinal diketones and their reduction products. Diacetyl concentrations ranged from 0.35 to 0.02 mg/L. Notably, sample made by strain PN4 exhibited the highest levels within this group, suggesting a specific metabolic peak or a lower rate of subsequent reduction during the winemaking process. The detected levels of acetoin were significantly lower than those of diacetyl, with values spanning a narrow range between 0.008 and 0.001 mg/L. 2,3-Butanediol showed the highest overall concentrations, ranging from 8.0 to 0.5 mg/L. In contrast to the diacetyl trends, sample made form strain IB6 emerged as the one with the most prominent values. Sensory analysis indicated that citric acid treatments enhanced freshness and varietal adherence while preventing defects associated with uncontrolled bacterial activity. This work provides a strategic roadmap for winemakers: by leveraging specific O. oeni responses to acidification, producers can better navigate modern vinification complexities to safeguard quality and achieve sensory balance.

REFERENCES

Guzzon, R., Larcher, R., Bertoldi, D., Luzzini, G., Slaghenaufi, S., & Ugliano, M. (2020). Influence of different Lactobacillus plantarum and Oenococcus oeni strains on the chemical and sensory profile of red wine. *OENO One*, *54*(3), 569–581. https://doi.org/10.20870/oeno-one.2020.54.3.3129