



ENO 2023 Macrowine

BOOK OF ABSTRACTS



10-13
July 2023

Eno Macrowine 2023

Bordeaux KEDGE Business School
680 cours de la Libération
33405 Talence

II.P.9

AROMATIC AND FERMENTATIVE PERFORMANCES OF *HANSENIASPORA VINEAE* IN DIFFERENT SEQUENTIAL INOCULATION PROTOCOLS WITH *SACCHAROMYCES CEREVISIAE* FOR WHITE WINEMAKING

Adelaide GALLO ¹

Email: adelaide.gallo@fmach.it

Adelaide Gallo^{1,2*}, Mauro Paolini¹, Nicola Cappello¹, Francisco Carrau³, Rémi Schneider⁴, Roberto Larcher¹, Tomas Roman¹

1. Fondazione Edmund Mach—Technology Transfer Center, via Edmund Mach 1, 38010 San Michele all' Adige, Italy

2. C3A - Università degli Studi di Trento, via Edmund Mach 1, 38010 San Michele all' Adige, Italy

3. Seccion Enología, Departamento de Ciencia y Tecnología de Alimentos, Facultad de Química, Universidad de la República, Montevideo, Uruguay

4. Oenobrand SAS Parc Agropolis II-Bât 5 2196 Bd de la Lironde-CS 34603, CEDEX 05, 34397 Montpellier, France

Keywords: *Hanseniaspora vineae*, non-*Saccharomyces*, sequential inoculation, wine aroma

Hanseniaspora vineae (Hv) is a fermenting non-*Saccharomyces* yeast that compared to *Saccharomyces cerevisiae* (Sc) present some peculiar features on its metabolism that make it attractive for its use in wine production. Among them, it has been reported a faster yeast lysis and release of polysaccharides, as well as increased β -glucosidase activity. Hv also produces distinctive aroma compounds, including elevated levels of fermentative compounds such as β -phenylethyl acetate and norisoprenoids like safranal. However, it is known for its high nutritional requirements, resulting in prolonged and sluggish fermentations, even when complemented with Sc strain and nutrients. The study aims to assess the impact of progressive inoculation of Sc yeast during white wine fermentation at different stages: 24 h, 48 h, 72 h, 100 h, and 200 h after the initial inoculation of Hv yeast. The latter time point corresponds to the halfway of the fermentation process. The concentration of some yeast-derived aroma compounds was evaluated in wines by GC-MS/MS (2-phenylethyl alcohol, β -phenylethyl acetate, isoamyl acetate and ethyl hexanoate) as indicators of the metabolic response of yeasts during fermentation. The 200 h protocol took an average 13 extra days to complete alcoholic fermentation compared to the pure Sc. The difference decreased as the moment of sequential inoculation neared, with a difference of ~4 days for the 24 h protocol. Regarding volatile compounds, the production of isomyl acetate and ethyl hexanoate were higher in Sc wines respect to any Hv wines (up to 2.5-fold), for which it was found no significant differences between them. However, every Hv protocol was richer in β -phenylethyl acetate. Interestingly, the 24 hour protocol produced the highest concentration (~11-fold than Sc) while the 200 h protocol showed the lowest (~8-fold), demonstrating a downward trend with respect to the time of Sc inoculation. Conversely, 2-phenylethanol concentration was higher in the 200 h protocol and it showed a positive correlation with reduced inoculation time. Results confirm the ability of Hv to change the aroma features of wines, increasing the rose-like scents that characterise β -phenylethyl acetate. By reducing the delay in Sc inoculation, the performance of Hv became better aligned with industrial standards while also maintaining an increased production of β -phenylethyl acetate.