Dal Cin News

May 2023

PINKING: PREVENTION STRATEGIES IN THE CELLAR

The **pinking** phenomenon affects white wines made from many grape varieties, which manifests itself in a change of colour from yellow to pinkish-salmon.
This defect can be prevented or cured by careful management of O2 and SO2. As well as intervention from certain processing aids.

Extensive research work conducted by the **University of Milan's DeFENS**, with the participation of Dal Cin spa, has led to a better understanding of the molecules involved in the formation mechanism, the chemical and physical conditions that may favour it, and the cellar techniques useful in reducing its occurrence.

The chemical process behind pinking will be addressed in detail in a dedicated scientific publication. Here we only briefly summarise the results obtained with some oenological aids.
Note: Susceptibility to pinking was assessed according to Simpson's method (with ΔmAU at 500 nm >5 the wine is susceptible) (Simpson, 1977).

Factors involved

- Polyphenol content (e.g. **catechins**);
- Presence of **thiol compounds** (e.g. glutathione, cysteine);
- **Oxygen** and the presence of transition metals;
- **Grape varieties** (mainly with high phenolic and/or thiol content, such as Sauvignon, Trebbiano di Lugana, Catarratto, Verdicchio, Grillo, Riesling);
- Processing techniques (e.g. wine making by **reduction**, **pressing)**;
- Vintage

Moments of intervention

- Must pressing and clarification (to be further investigated with tests during the 2023 harvest)
- Alcoholic fermentation
- Clarification and refinement

Alcoholic fermentation

The experiments conducted established a relationship between the yeast strain used and the susceptibility to pinking of the wine obtained.
In particular, the use of the commercial strain **L1** made it possible to obtain, in a series of fermentations conducted under different conditions, wines on average less susceptible to pinking than wines obtained with the L2 strain under the same conditions.

The differences found at the end of alcoholic fermentation are maintained even one month after bottling, both in the presence and absence of SO_2. (Figure 1 and tab. 1).

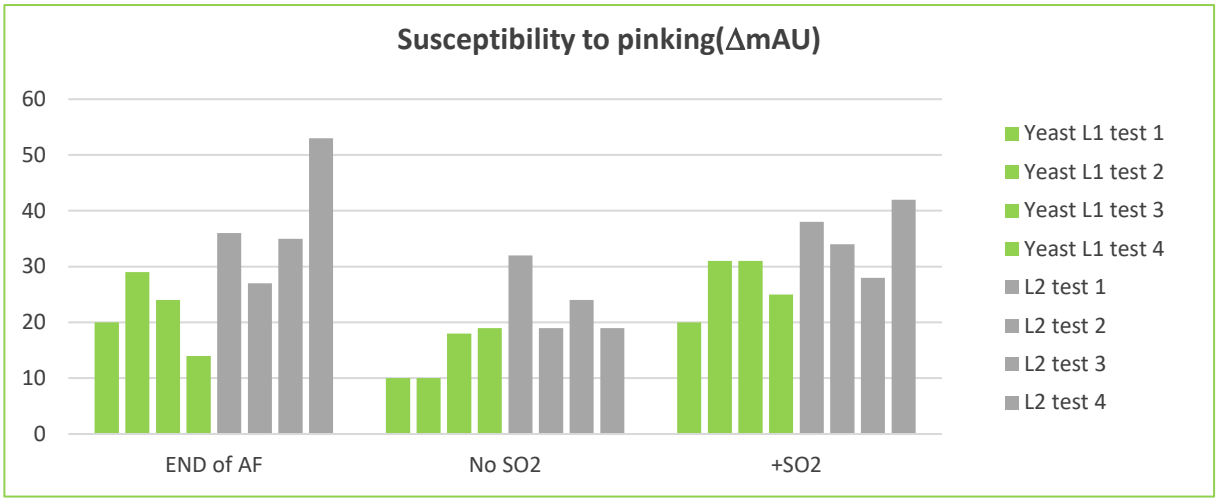

Figure 1: *Fermentation tests of Trebbiano di Lugana, 2022. (Fracassetti et al. UniMI). Wines fermented with L1 are on average less susceptible to pinking than wines fermented with L2 yeast.* ***Key:*** *End of AF, susceptibility test performed at the end of alcoholic fermentation (AF); No SO_2, susceptibility test performed after one month of bottling for wines without added SO_2; +SO_2 susceptibility test performed after one month of bottling for wines with added SO_2.*

	Yeast L1	**Yeast L2**
end of AF	22	38
no SO_2	14	24
+ SO_2	27	36

Tab 1: *Average susceptibility (ΔmAU) of the two yeasts.*

The mechanisms of action and the influence of yeast involved need to be further investigated.

Wine clarification

The trial involved the use of 14 different clarification aids with a corrective effect. The best performing treatments were found to be those conducted with adjuvants that are effective in removing catechins and secondarily metals: Metaless (PVI/PVP), DC-Pol Max (PVPP), Proten100 (Kcaseinato), and chitosan.

Metaless: is the treatment that achieved the best results, drastically reducing the risk of defect within 48 hours of treatment (Figure 2)

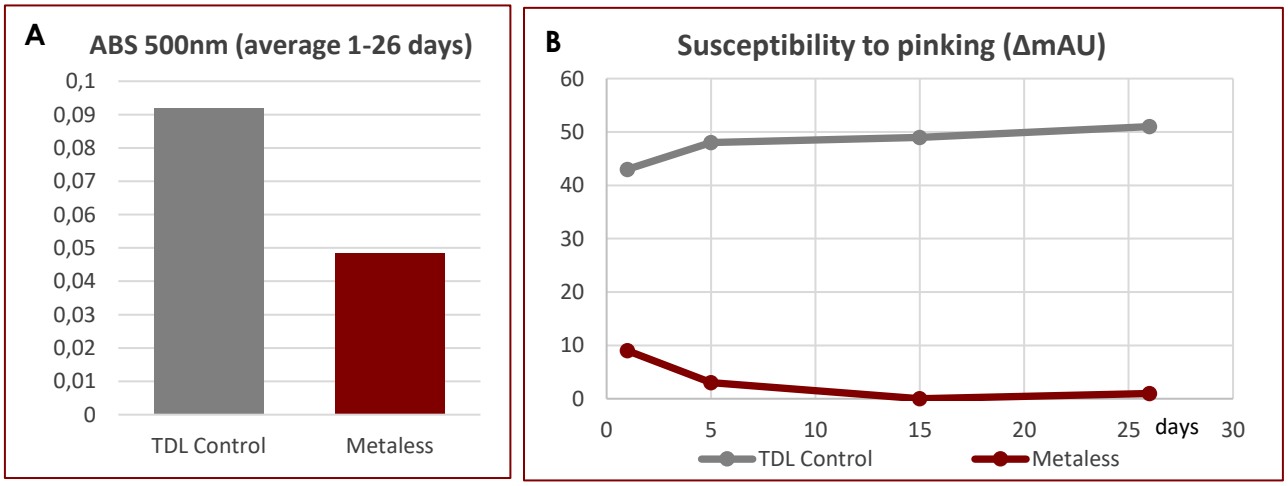

Figure 2: *(**A**) Colour index at 520 nm and (**B**) susceptibility to pinking. Trials on Trebbiano di Lugana wine, 2021 - dosage 50 g/hl. (Fracassetti et al. University of Milan).*

Figure 3 shows the results obtained with **DC-Pol Max** (Figure 3A), **Proten100** (Figure 3B). Both treatments significantly lowered the risk of pinking.

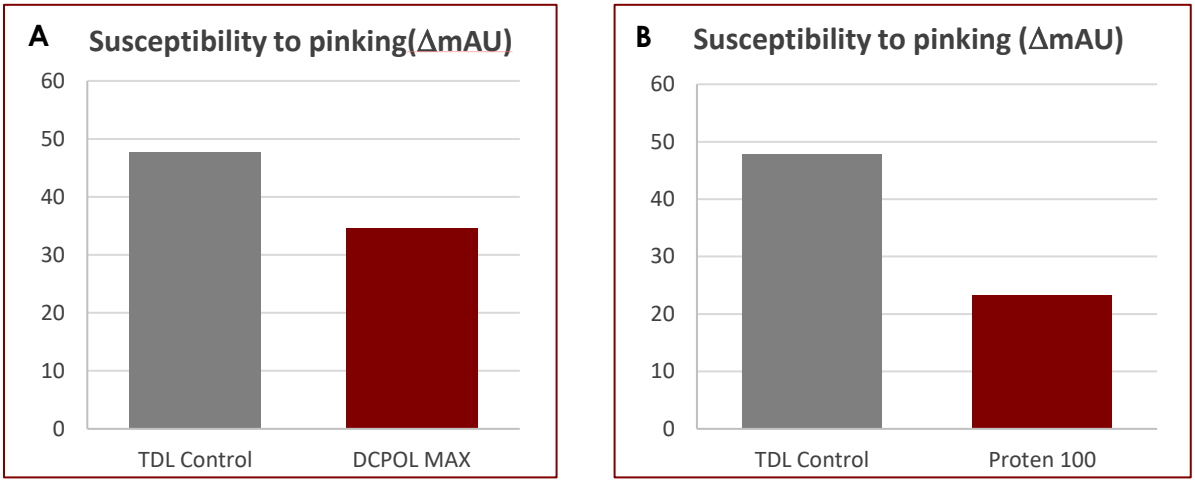

Figure 3: *Susceptibility to pinking following treatment with (**A**) DC-Pol Max (40 ghl) and (**B**) Proten100 (30 g/hl). Trials on Trebbiano di Lugana wine, 2021. Average of data collected during the contact period 1-26 days. (Fracassetti et al. University of Milan).*

With regard to the use of chitosan, the mechanism of action needs to be investigated in order to identify the most effective product.

Refining

Five different yeast derivatives were tested, including cell walls and inactive yeasts, with a contact time of 26 days and continued periodic measurements.
The derivative that showed the greatest effectiveness was **Harmony Vitality** (Figure 4).

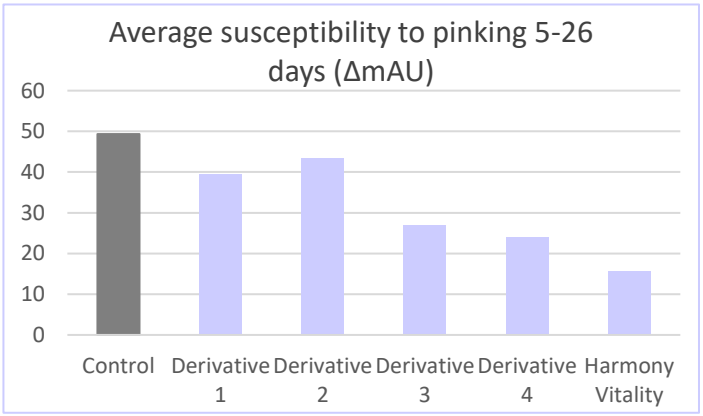

Figure 4: *Trials on Trebbiano di Lugana wine, 2021 - dose 30 g/hl. (Fracassetti et al. UniMi).*

Conclusions

Pinking, a colour change that affects many white wines, can be prevented or corrected by careful management of O_2 and SO_2 but also by the use of certain processing aids.
The experimental work conducted has made it possible to identify a number of wine-making steps during which specific products can be effectively used. What is also interesting is the possibility of producing wine, with the appropriate choice of adjuvants, in an **organic**, **vegan** or **allergen-free** regime.

For more details:
Pinking: formation mechanisms and prevention strategies
www.dalcin.com