

ENARTIS NEWS

SKIN TANNIN ADDITION TO ENHANCE VOLATILE THIOL CONTENT OF WINE

The aim of the study described in the article "Importance of polyfunctional thiols on semi-industrial Gewürztraminer wines and the correlation to technological treatments" by Roman et al., was to examine the role of volatile thiols in the aroma of Gewürztraminer wines, as well as the potential use of grape skin tannin as a source of thiol precursors.

Among tannins, those extracted from grape skin are, on average, the richest in precursors even though inside this group their content can vary (GHS-3MH: 0.232 – 138 mg/kg; Cys- 3MH: 0.329 – 200 mg/kg).

Results obtained on lab scale fermentations already proved that pre-fermentation addition of a tannin rich in thiol precursors resulted in wines with a higher content of free thiols and increased fruity/green notes than the corresponding reference wines.

This new study meant to confirm—in a real vinification process on a semi-industrial scale—the preliminary evidence on the possible use of enological grape tannin to increase wine thiol content.

DESIGN OF THE EXPERIMENT

- 500 kg each of Gewürztraminer and Sauvignon blanc grapes were harvested in Trentino, Italy.
- Both grape varieties were fermented with two different yeast strains known for being able to reveal thiols.
- Both wines were treated with two types of grape skin tannins: one *low* in thiol precursors and one *high* in thiol precursors (**EnartisTan Skin**).
- Tannin additions were done pre-fermentation and control wines had no tannin additions.
- In a second trial, wine only received tannins post-fermentation.

RESULTS

a) Effects of Pre-fermentation Tannin Addition (Table 1)

- Wines treated with the **low** thiol content tannin did not increase thiol precursors or final volatile thiol content of wine.
- Wines treated with **EnartisTan Skin** - tannin with **high** thiol content - significantly increased thiol precursors and final 3MH and 3MHA content of wine.
- Sensory analysis performed by expert producers belonging to the commission for ascertaining the sensory qualification of Trentino Designation of Controlled Origin concluded that treatment with **EnartisTan Skin** significantly augmented the grapefruit-like sensations.

Table 1: Thiol content of wines divided by variety vs. treatment (tannin addition at juice stage)

	Control	Tannin (low precursor content)	EnartisTan Skin (high precursor content)
Gewürztraminer	Mean (n = 6)	Mean (n = 6)	Mean (n = 6)
3MH (ng L ⁻¹)	195	175	558
3MHA (ng L ⁻¹)	5	5	20
Sauvignon Blanc	Mean (n = 6)	Mean (n = 6)	Mean (n = 6)
3MH (ng L ⁻¹)	642	536	1168
3MHA (ng L ⁻¹)	67	45	114

Results from "Importance of polyfunctional thiols on semi industrial Gewürztraminer wines and the correlation to technological treatments", T. Román et al., *Eur Food Res Technol* (2017).

b) Effects of Pre-fermentation Tannin Addition (Table 1)

- Wines treated with the **low** thiol content tannin did not increase thiol precursors or final volatile thiol content of wine.
- Wines treated with **EnartisTan Skin** - tannin with **high** thiol content - significantly increased thiol precursors and final 3MH and 3MHA content of wine.
- Sensory analysis performed by expert producers belonging to the commission for ascertaining the sensory qualification of Trentino Designation of Controlled Origin concluded that treatment with **EnartisTan Skin** significantly augmented the grapefruit-like sensations.

ENARTIS RECOMMENDATIONS

Based on these results, Enartis recommends supplementing juice with **EnartisTan Skin**, a skin tannin rich in 3MH precursors, prior to fermentation to increase the concentration of free thiols in wine. Selecting a yeast strain known for its ability to release and convert thiols is fundamental for achieving this

result. **EnartisFerm Aroma White** and **EnartisFerm ES 181** are yeast strains with a strong capability of releasing and converting thiols and, when used in combination with **EnartisTan Skin**, can produce wines with more grapefruit, citrus and tropical notes.

REFERENCES

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