



EXTRACTION AND STABILISATION OF THE COLOUR MATTER OF RED WINES

The colour of a red wine is one of the parameters that determines the consumer's choice. With this in mind, winemakers wish to produce wines with a colour that is characteristic of their variety, their region, and that reflects the practices in the winery.

However, achieving sufficient colour can be a major challenge (varieties with less colour, high yields, presence of diseases in the vineyard). Many factors play a role in red wines' colour, and it is therefore crucial to take a broad view.



Each grape has its own phenolic potential (tannins, anthocyanins) that determines the colour of the future red wine. This phenolic potential depends on different factors (variety, fruit's maturity/health). Once the grapes have been harvested, the operations that promote the extraction and conservation of this potential will help to give the desired colour.

The goal of this booklet is to list the practices that optimize the following points:

- Anthocyanin extraction
- Polysaccharide extraction
- Extraction of beneficial tannins
- Protection of grape tannins
- Stabilisation of anthocyanins
- Adapting fining and filtration so as not to lose the colour extracted during winemaking

PROBLEM	PRACTICE	LA SOLUTIONS
Protein precipitations	Tannin addition	PRO TANIN R®
Inhibition of laccase	Tannin addition	PRO TANIN R®
Extraction of polysaccharides	Enzyme addition	VINOZYM® VINTAGE FCE OU VINO CRUSH® CLASSIC
Extraction of tannins	Enzyme addition	VINOZYM® VINTAGE FCE OU VINO CRUSH® CLASSIC
Extraction of anthocyanins	Enzyme addition	VINOZYM® VINTAGE FCE OU VINO CRUSH® CLASSIC
Stabilisation of anthocyanins	Yeast addition	EXCELLENCE® XR
Colour Stabilisation	Tannin addition Addition of polysaccharides	SOFTAN® VINIFICATION NATUR'SOFT®
Loss of colour during preparation for bottling	Choice of fining agent	NATUR'FINE® PRESTIGE
Stabilisation of colour	Tannin addition	TAN'EXCELLENCE®



EXTRACTION OF PHENOLIC POTENTIAL

Beneficial phenolic compounds are found in the grapes' skins. The cell walls of the skins are the thickest and most resistant. In order to extract as many polyphenols as possible, it is particularly recommended to use purified maceration enzymes. These are capable of hydrolysing the resistant cell walls and thus facilitate the release and stabilisation of colour matter.

Objectives: 1. Extract the beneficial phenolic compounds
2. Extract the grapes' polysaccharides



L.A SOLUTIONS

Enzyme addition : **Vinozym® Vintage FCE** (3 to 5 g/100 kg) or **VinoCrush® Classic** (3-5 mL/hL)

- ◆ Increased colour intensity, especially red pigment
- ◆ Increased concentration in skin tannins, with relatively fewer seed tannins
- ◆ Release of large amounts of polysaccharides that play a role in phenolic compound stabilisation (RGII)
- ◆ Large decrease in level of medium to long polysaccharides (PRAG), leading to greatly improved filterability



CONSERVATION OF PHENOLIC POTENTIAL IN PRE-FERMENTATION PHASE

Once the grapes are in the tank, unstable proteins react with the grapes' tannins leading to a loss in the potential of quality tannins. Alongside this, during hot and humid vintages, the fungus *Botrytis cinerea* can develop on the bunches. It produces a polyphenol oxidase, **laccase**, which leads to **heavy oxidation of the must's phenolic compounds and aromas**.

Objectives: 1. Protect the grapes' tannins
2. Inhibit laccase activity to conserve the tannic potential



L.A SOLUTIONS

Tannin addition: **Pro Tanin R** - 10 to 80 g/hL or **Tanin gallique à l'alcool** (3 to 15 g/hL)

- ◆ Strong inhibition of laccase activity
- ◆ Antioxidant and anti-oxidasic role, limits amount of SO₂ required
- ◆ Precipitation of unstable proteins and conservation of quality grape tannins



STABILISATION OF PHENOLIC POTENTIAL DURING FERMENTATION

1. Using polysaccharides

The choice of yeast for the fermentation is not as simple as it might seem when taking into account the colour of red wines. Certain yeasts play a role on the wine's pigmentation since they release large amounts of polysaccharides during autolysis. **Certain yeast derivatives, rich in polysaccharides, have a similar effect on anthocyanin stability.**

Objectives: Stabilise the colour matter using yeast derived polysaccharides



L.A SOLUTIONS

Anthocyanin stabilisation: Excellence® XR - 20 g/hL

- ◆ Increased concentration in polysaccharides at the end of fermentation
- ◆ Improved stability of the tannin-anthocyanin complex leading to deeper colour
- ◆ Improved stability of the colour matter during the wine's maturation

Colour stabilisation: Natur'Soft® - 30 g/hL after first third of the AF

- ◆ Stabilise the phenolic compounds during the alcoholic fermentation, giving a more intense and stable colour
- ◆ Gives roundness on the palate

2. Using specific tannins

Whilst certain tannins are formulated to bind proteins, others are for different uses. Tannins used to bind the colour generally contains **higher levels of catechin, a colourless flavan-3-ol which reacts very effectively with anthocyanins for long lasting colour stabilisation.**

Objectives: Add exogenous tannins to promote colour stabilisation



L.A SOLUTIONS

Colour stabilisation: Softan® Vinification - 10 to 60 g/hL one day after yeast addition

- ◆ High level of catechin that promote anthocyanin binding
- ◆ Vinification tannin linked to polysaccharides bringing roundness on the palate



STABILISATION OF PHENOLIC POTENTIAL DURING MATURATION

Objectives: 1. Add exogenous tannins to participate in colour stabilisation
2. Effective fining



L.A SOLUTIONS

Colour stabilisation: Tan'Excellence® - 5 – 30 g/hL

- ◆ Formulation of grape proanthocyanidic tannins and oak ellagic tannins of stave quality
- ◆ Fast stabilisation of colour and preparation for maturation of top quality red wines

Fining red wines during maturation has the benefit of helping to stabilise the wine's colour. The particles in suspension that have the potential to cause colour precipitation are removed through fining, thus increasing the length time that the colour remains in the wine.

Fining: Natur'Fine® Prestige - 5 à 40 g/hL

- ◆ Product derived from *Saccharomyces cerevisiae* yeast; it is 100% natural and made exclusively for fining high quality red wines
- ◆ Better stabilization of colour and improved organoleptic characteristics



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