Solutions for winemaking
LAMOTHE-ABIET

MICROBIAL STABILITY DURING AGEING

Ensuring microbial stability is fundamental for preserving wine quality and avoiding economic losses from spoilage. Microbial contamination can have major negative effects on wine quality. Capable of developing at any time during the winemaking process, spoilage microbes are opportunist organisms which are difficult to control and eliminate. Key points of microbial management during ageing:

- Good cellar practices and sanitation
- Manage fermentation stages to reduce risks
- Fining and racking off heavy lees to eliminate cells
- SO_2 management
- Anti-microbial agent use

Anti-microbial agents available to winemakers:

ANTIMICROBIAL AGENT	PROS (+)	CONS (-)
SO_2	Wide spectrum anti-microbial Can be use at any stage of winemaking cost of use	Not effective at pH>3.6 Allergenic Close organoleptic profil of wine Hardness on mouthfeel
LYSOZYME	Effective on Lactic Acid Bacteria Can be use at any stage of winemaking	Not effective on yeast and Acetic Acid bacteria Allergenic (egg protein) Reduce color in reds Requires bentonite fining in whites/roses Cost of use
CHITOSAN	Wide spectrum anti-microbial Effective at low dosage Can be use at any stage of winemaking Vegan Allergen-free	Not effective on Saccharomyces Cost of use
DMDC	Effective on all yeast	Low effect on bacteria Pre-bottling application Requires special skills and equipment Cost of use
SORBATE	Effective on all yeast Cost of use	No effect on bacteria Risks of geranium taint if ML bacteria present Pre-bottling application

A bit more about chitosan…

Chitosan is a polysaccharide with a powerful and wide spectrum anti-microbial. It eliminates and prevents the contamination of Brettanomyces, Lactic Acid Bacteria, Acetic Acid Bacteria and some non-Saccharomyces yeasts.

Chitosan, positively charged at wine pH, first reacts with microbial cell walls by charge interaction. It, then, blocks the cell's receptors, thus interrupting its metabolism, and creates a differential of pH between internal and external of the cell, resulting the perforation of the cytoplasmic membrane. Finally, chitosan acts as a fining agent and helps settling cells.

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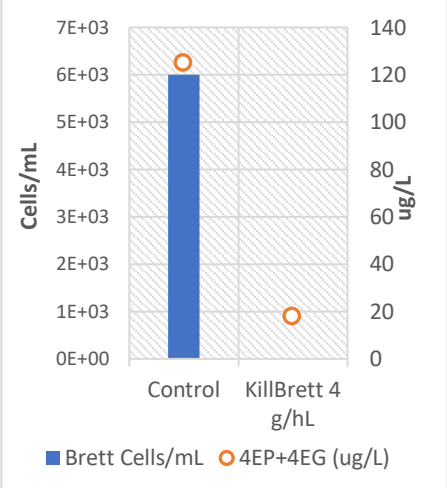
Lamothe-Abiet developed KILLBRETT® is a **pure chitosan fining agent**, vegan and allergen-free, with 100 % fungal origin. KILLBRETT® is easy-to-use and efficient from 2 g/hL as preventive to 8 g/hL as curative treatment. With a pure formulation, KILLBRETT® can be used at very low dosage, limiting organoleptic impact on the wines.
KILLBRETT® has an anti-microbial effect lasting for 4 months. Also, we recommend using **Aroma Protect** (yeast derivates rich in GSH) and **Tan & Sense Volume** (untoasted oak tannin) to reduce redox potential and scavenge oxygen radicals, thus limiting the development of Acetic Acid Bacteria.

Applications:
Preventive - Add 2-4 g/hL of KILLBRETT® during a transfer or racking to prevent any spoilage microbe's development. The anti-microbial effect of KILLBRETT® last about 4 months in contact with wine. Racking is not necessary when KILLBRETT® is used a preventive and low dosage
Curative, in case of microbial contamination - First we recommend to rack the wine off lees. While racking, add KILLBRETT® at 6-8 g/hL according to the microbes and overall load. Rack wine back to cleaned barrels or tank after a week of settling. Add 2 g/hL of KILLBRETT® as preventive

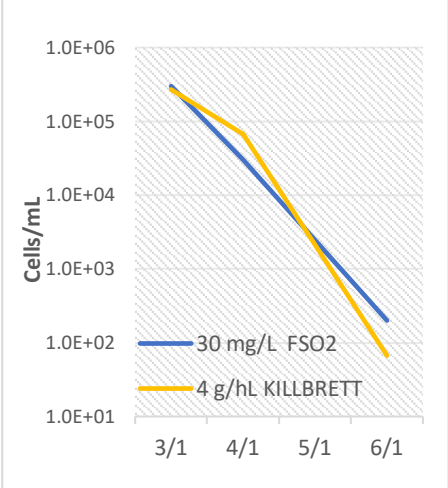
Trials results

Effect of KILLBRETT® treatment (4 g/hL) on Brettanomyces population

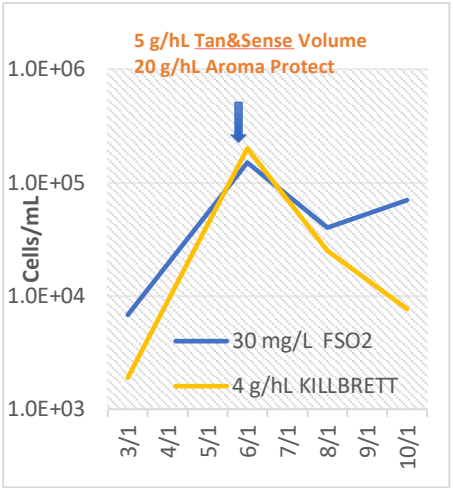


4 g/hL of KILLBRETT® is enough to eliminate quickly high population of Brettanomyces and reduce the production of volatile phenols.

Effect of SO_2 and KILLBRETT® treatment on Lactic Acid Bacteria during ageing in barrels



Effect of SO_2 and KILLBRETT® treatment on Acetic Acid Bacteria during ageing in barrels



4 g/hL of KILLBRETT® can control Lactic Acid Bacteria and Acetic Acid Bacteria as well as or better than the use of 30mg/L FSO2 (pH = 3.72)