

Oenoferm® X-Series

NEW

ERBSLÖH
Oenoferm®
X-thiol



Alkoholtolerante Hybrid-Hefe zur Intensivierung
von fruchtigen Thiolen und exotischen Aromen

Alcohol-tolerant hybrid yeast
for fruity thiols and exotic

Levure hybride ré
l'expression d
et exo



ERBSLÖH
Oenoferm®
X-treme



Gärstarke Hybrid-Hefe für X-treme Aromatik
mit würzig fruchtigem Charakter

Strongly fermenting hybrid yeast
for spicy fruity aroma profile with spicy

Lievito ibrido
poligeno per un prof
dal carattere



The “X-tra”
for your success

Oenoferm® X-thiol
Oenoferm® X-treme

ERBSLÖH

Progress is our future

Reproduction

Reproduction of wine yeasts

A wine yeast can reproduce in several natural ways. It is even possible that two related strains cross breed. The first generation of the breeding is called a hybrid. Generally it is tried to transfer the positive characteristics of the parents to the hybrid. In this process a huge number of different offspring are produced. Those hybrids, which have beneficial characteristics for wine-making, are selected. In addition to this cross breeding procedure, a hybrid can be obtained by merging the parental cells together.

This technique is called protoplast fusion. It is a way to create a new microorganism GMO-free and to combine the beneficial characteristics, as for example extreme fermenting power and aromatic versatility, of two different yeasts. In opposite to classic cross breeding, two cells are

merged to a so called “cybrid” after their cell walls have been enzymatically hydrolysed. Then the two nuclei fuse together and a new hybrid is created (figure 1). The advantages of this technique make it possible to use even cells which lack the ability for sporulation and to combine strains just remotely related to each other (e.g. *Saccharomyces* and *Torulaspora*).

To produce Oenoferm® X-Series this method was used. The technique allows to create “fantastic” yeasts with exceptional characteristics.

Micromanipulation

Micromanipulation and identification

To create and confirm the positive hybridisation and to secure the purity of the hybrid culture further techniques are used, like the micromanipulation (figure 2) and the genetic identification. The latter method searches after individual genetic markers with the help of elaborated PCR and electrophoresis techniques.

These markers should identify both the parental strain and the new hybrid. Micromanipulation makes it possible to circumvent laborious steps elegantly and quickly. Single cells of purified cultures are first placed next to each other. Under a microscope vital cells are selected. Then enzymes are added with a special glass capillary to degrade their cell walls and the fusion of the striped cell membranes is initiated. That way the protoplast fusion can be done without the otherwise necessary costly molecular identification. When the fusion is completed the cells are transferred to a special medium for regeneration and further cultivation.

Protoplast fusion

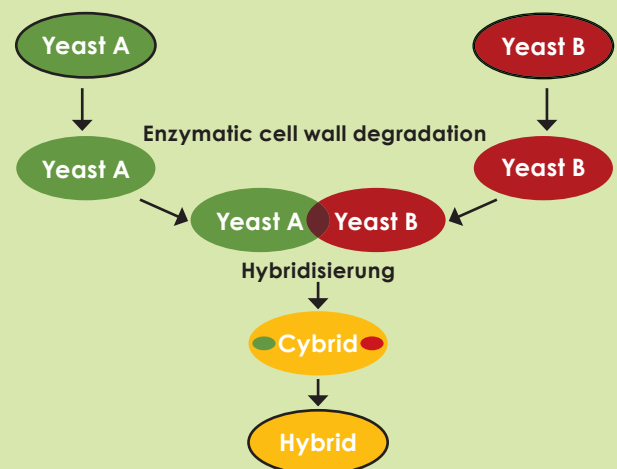


Fig. 1: Basic procedure of protoplast fusion

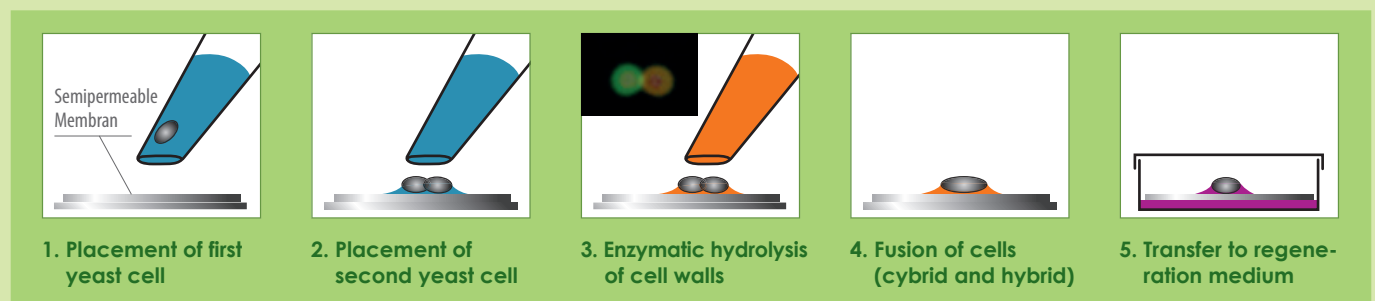


Fig. 2: Micromanipulation of individual yeast cells after staining with different viability-dyes

Oenoferm® X-thiol

NEW

A powerfully fermenting hybrid-yeast with high tolerance of alcohol to enhance fruity thiols and exotic aromas.



Aroma profile of Oenoferm® X-thiol

Recommended varieties

Sauvignon Blanc, Chardonnay, Chenin Blanc, Pinot Gris, Riesling, Muscat Blanc, Petit and Gros Manseng, Colombard, Verdejo, Albariño even suitable for rosé wines.

Advantages and characteristics:

- *Saccharomyces cerevisiae* subsp. *bayanus*
- killer-factor verified
- Alcohol-tolerance: up to 16 % vol. – secure fermentation even at high alcohol levels!
- Nitrogen requirement: low to medium. For an optimal fermentation, without any sulphur off-flavours, a continuous supply of yeast nutrition such as VitaFerm® Ultra F3 is recommended.
- Possible fermenting temperatures 15 to 25 °C (59-77 °F)
- Development of glycerol: medium
- Release of volatile acidity: low
- Release of SO₂ and H₂S: low
- Foaming: low

Aroma characteristics:

- Versatile aroma profile with strong character
- Enhancement of varietal aromas, especially of thiol-components (4-MMP, 3-MH, 3-MHA): cassis, grapefruit, exotic fruits, box tree.
- Thiol-aromas can be protected by *Ercobin*
- Development of complex fermentation aromas boosts a fresh and fruity bouquet
- Enhanced production of mature aromas of exotic fruits like passion fruit and red grapefruit

The characteristic of the aroma expression can be influenced by the temperature of fermentation.

Cooler temperatures (15 °C / 59 °F) promote the “cool-climate” style.

Higher temperatures (18-22 °C / 64-74 °F) enhance a fruity thiol-aroma (4-MMP, 3-MH, 3-MHA) (figure 6 and 7).

Where do thiol-aromas come from?

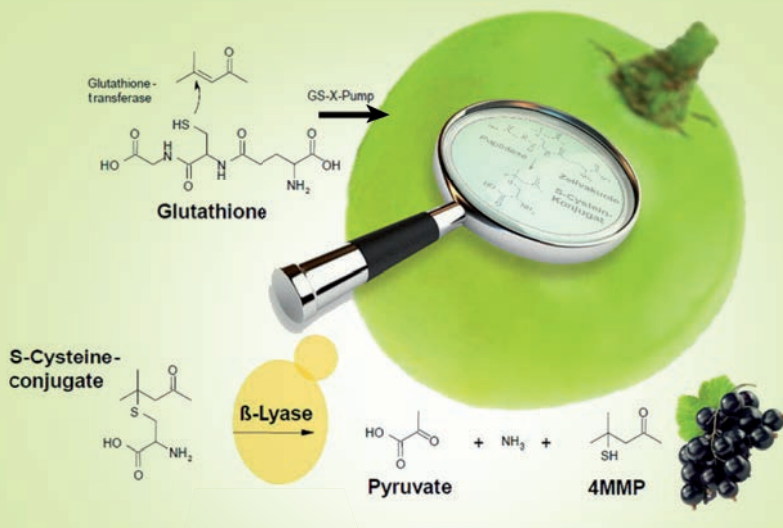


Fig. 4: Origin of thiol-aromas

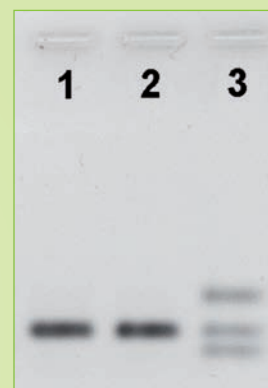


Fig. 5: Analysis of β-lyase gene
1: Thiol-yeast (parental strain)
2: Thiol-hybrid-yeast
3: Bayanus (parental strain)

The precursors of fruity thiols are produced within the grape itself (figure 4). For 3-MH the precursors are primarily found in the skins of the berries. Accordingly Botrytis infections, but even (sun-) ripening or canopy management (early defoliation benefits degradation of grassy pyrazines) play an important role in concentration and overall development of the wine style. By disturbing the fatty acid metabolism (e. g. by Botrytis infection) the precursors are produced and bound to glutathione within the cell. Endogenous proteases break down these structures until just the cysteine moiety is left.

This is the actual precursor, which can be metabolised by the yeast. The active lyase of the yeast cleaves the non-volatile compound with the release of the volatile aromatic substance 4-MMP. Figure 4 shows the analysis of the β -lyase gene: The thiol-yeast, as well as the thiol-hybrid-yeast, shows an active gene (indicated by the presence of a band in the agarose gel). The Bayanus-pattern (right lane) shows a diffuse fingerprint with several bands, which refer to an inactive gene.

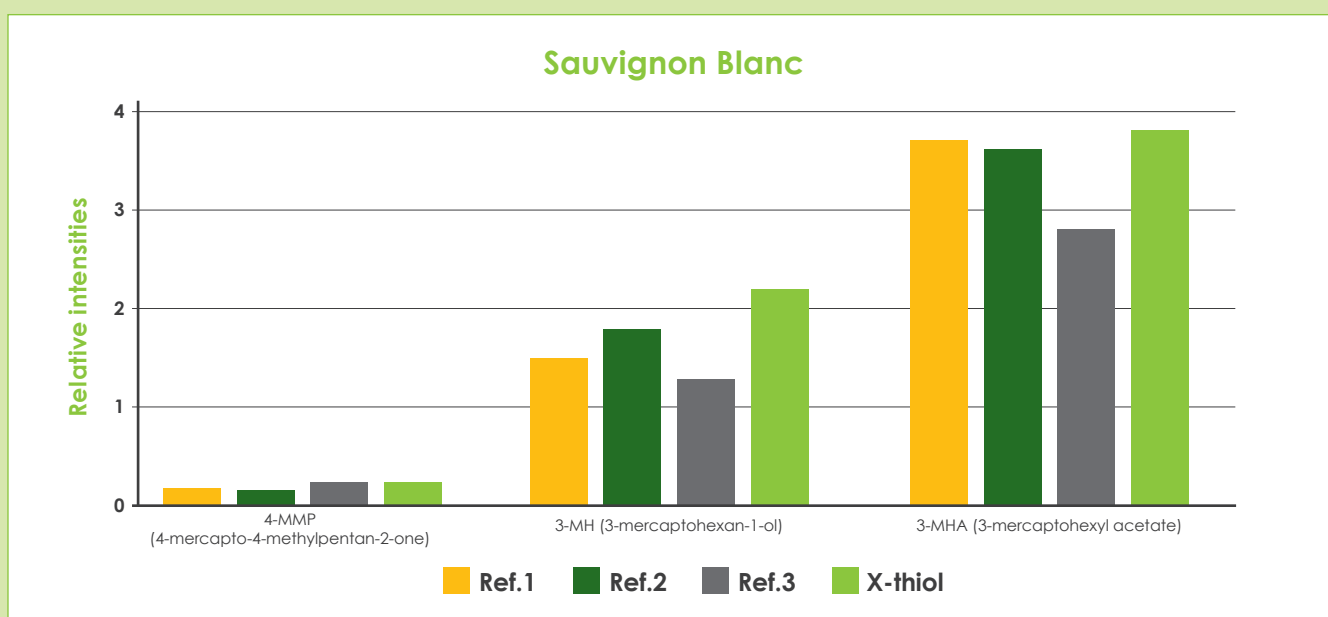


Fig. 6: Relative intensities of thiol-aromas

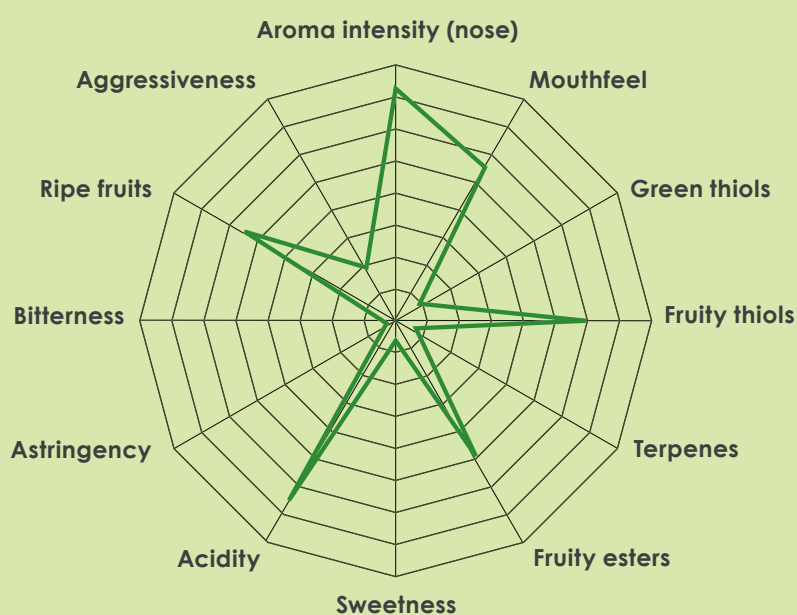


Fig. 7: Sensation of Oenoferm® X-thiol

X-treme and X-thiol

Oenoferm® X-treme and Oenoferm® X-thiol

For the selections a powerful Bayanus strains with strong fermenting capacity as well as a very aromatic strain of *Saccharomyces cerevisiae* were chosen. The new Oenoferm® X hybrids show several heterosis effects. Heterosis is the enhancement of the parental characteristics, such as fermenting power, individual formation of aromas and even the stabilisation of the acidity level. The latter is important for acid-accentuated wines and in areas where acidity levels are low due to the mild climate. Both yeasts require little nitrogen. They form low amounts of SO₂ and do not tend to produce H₂S. The start of fermentation and its further course outperform the parental characteristics by far,

so Oenoferm® X-treme is best used for cold fermentation (around 15°C / 59 °F). The fermenting power of Oenoferm® X-treme was even confirmed in must with high sugar levels, as in late harvest or dessert wines.

To promote fruity thiol-aromas Oenoferm® X-thiol has proven to be particularly suitable at temperatures of 18-22 °C (64-72 °F). Using the new Oenoferm® X-Series it is possible to produce wines of new world style. Furthermore the aromas of autochthonous varieties can be carved out.

Oenoferm® X-treme

Oenoferm® X-treme

Oenoferm® X-treme shows even under low temperatures a high fermenting performance. Hereby the X-treme aroma finds its expression by an intensive bouquet of spicy and fresh components. On the palate the yeast supports the character of modern wines with mineral notes (figure 3).

The aromas in the nose and on the palate are long-lasting. Because of the extreme fermenting power the yeast is very suitable for sparkling wines and to restart stuck fermentations.

Advantages:

- Stabilising effect on acidity
- Low requirement for nutrition
- Forms little SO₂
- Applicable for sparkling wine production
- Suitable to restart stuck fermentations

Characteristics:

- Exceptional fermenting power of a cold-tolerant Bayanus strain
- Supports the individual aroma profile of minerality with well integrated fruity spiciness

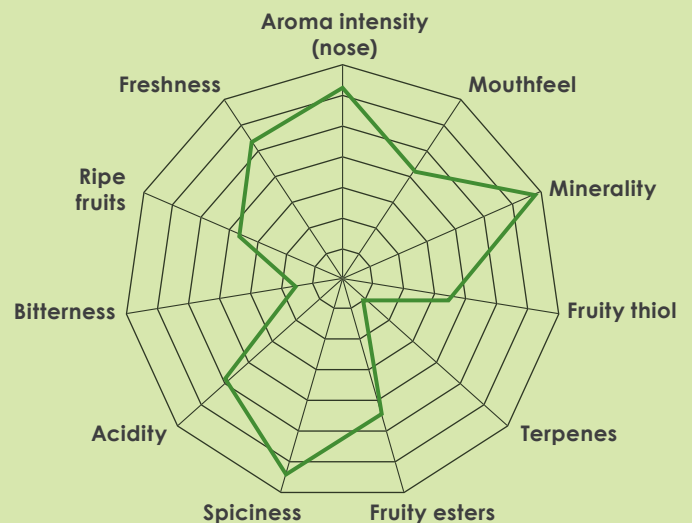


Fig. 3: Sensation of Oenoferm® X-treme



Das Aromaprofil von Oenoferm® X-treme

Empfohlene Rebsorten

Riesling, Weißburgunder, Welschriesling, Chardonnay, Sauvignon Blanc, Silvaner, Müller-Thurgau, Grüner Veltliner, Muskateller

