Solutions for winemaking
LAMOTHE-ABIET

WINEMAKING APPLICATION

THE USE OF EXCELLENCE X-FRESH (LACHANCEA THERMOTOLERANS)

EXCELLENCE® X-FRESH is a pure *Lachancea Thermotolerans* (previously known as *Kluyveromyces thermotolerans*), isolated from Australia, giving winemakers an interesting opportunity for wines lacking in acidity. This yeast, considered as bio-acidifier, has been selected for its natural acidifying properties, increasing freshness in wines. EXCELLENCE® X-FRESH is non-*Saccharomyces* strain with a particular metabolism (Figure 1), capable of acidify the musts and reduce alcohol content. This ability is due to a specific enzymatic activity, lactate dehydrogenase (LDH), which catalyzes the transformation of pyruvate into lactate, the ionized form of L(+)-Lactic acid. As fermentable sugars are the initial substrate to produce pyruvate, the activity of EXCELLENCE® X-FRESH reduce the final alcohol content. EXCELLENCE® X-FRESH also participate to the aromatic complexity of the wine; improving acid and alcohol balance, results in fresher, more harmonious and more stable wines. *Lachancea Thermotolerans* is a moderate fermenter, but typically runs out of steam around 7-9 % alcohol, so it needs to be coupled with a *S. Cerevisiae* strain to ensure complete fermentation

EXCELLENCE® X-FRESH naturally leads to:

- Increase in Total Acidity
- pH decrease
- Alcohol content decrease
- Fresher, more balance, more complex and more stable wines

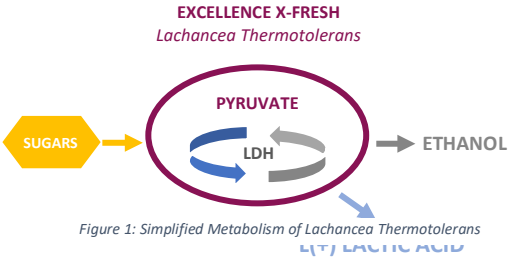

Figure 1: Simplified Metabolism of Lachancea Thermotolerans

HOW TO USE EXCELLENCE X-FRESH?

The use of EXCELLENCE® X-FRESH can be prepared as any *S. Cerevisiae* yeast and requires some nitrogen nutrition.

1- Rehydration

- Mix 20 g/hL of OENOSTIM® in 20 times its weight of chlorine-free water at 40°C (104°F). We recommend using OENOSTIM® (inactivated yeast naturally rich in sterols, fatty acids, vitamins, and minerals), during the rehydration process to facilitate the implantation of the strain and stimulate its fermentative metabolism.
- Sprinkle 20 g/hL of EXCELLENCE® X-FRESH over the surface of the water, and mix in gently.
- Wait 20 minutes.
- Add juice from the tank or barrel to drop the temperature by 18°F. Mix gently and wait 20 minutes.
- Repeat the juice addition and 20 minutes wait until the inoculum is within 18°F of the tank to be inoculated.
- Add to tank and homogenize with a pump-over.

2- Nutrition

During the exponential phase, EXCELLENCE® X-FRESH consumes ammoniacal (mineral) nitrogen. Therefore, it is important to add ~ 20 g/hL of OPTIFERM®, a day following the inoculation to compensate the nutrient consumption of EXCELLENCE® X-FRESH and facilitate the fermentation by *S. Cerevisiae*.

3- Temperature of fermentation

EXCELLENCE® X-FRESH will produce more lactic acid at higher temperature. We recommand to ferment around 75-80°F for best activity and lactic acid production. Under 55°F, the activity of EXCELLENCE® X-FRESH will be inhibited. It is best to make the addition of EXCELLENCE® X-FRESH post cold soak.

4- Time of inoculation

The use of EXCELLENCE® X-FRESH with *S.Cerevisiae* can be done in two ways, leading to different results:

- **Co-fermentation (1),** simpler, easier with lower impact on wine profiles.
- **Sequential (2),** that requires more following with higher impact on wine profiles.

(1) CO-FERMENTATION	EXCELLENCE® X-FRESH and *S. Cerevisiae* must be rehydrated separately and incorporated one after the other into the must, starting with EXCELLENCE® X-FRESH. ▪ The activity of *S.Cerevisiae* and alcohol production will inhibit the action of EXCELLENCE® X-FRESH in few days, resulting in a production of lactic acid of 1-3 g/L depending the fermentation temperature and the must conditions (pH, SO_2 and YAN). We also observed a reduction of alcohol of ~ 0.1-0.3 % alc. ▪ This application does not require specific follow-up. We recommend analysing the lactic acid concentration to check that the production has stopped.
(2) SEQUENTIAL	Sequential inoculation with *S. Cerevisiae* requires more monitoring. The yeasts will be added one after the other with a delay of several days, starting with EXCELLENCE® X-FRESH implantation. ▪ In the absence of *S. Cerevisiae*, EXCELLENCE® X-FRESH will produce more lactic acid, resulting in higher acidification of the must, around 2 g/L of lactic acid for each day of sequencing, depending the fermentation temperature and the must conditions (pH, SO_2 and YAN). ▪ It is important to follow the lactic acid production, daily, during the sequential phase to anticipate the inoculation of *S. Cerevisiae*. We recommend a sequential time of maximum 72hrs between both yeasts to reach about 3-4 g/L of lactic acid. ▪ As soon as *S. Cerevisiae* is inoculated and active, the activity of EXCELLENCE® X-FRESH will be inhibited and production of lactic acid stopped.

Solutions for winemaking
LAMOTHE-ABIET

WINEMAKING APPLICATION

CLASSICAL VINIFICATION

Rehydration and inoculation

OENOSTIM (20g/hL)
S. Cerevisiae (20g/hL)

CO-FERMENTATION

Separated rehydration and inoculation
OENOSTIM (20g/hL)
EXCELLENCE XFRESH (20g/hL)
+
OENOSTIM (20g/hL)
***S. Cerevisiae* (20g/hL)**

Supplement with mineral nitrogen (OPTIFERM 20 g/hL)

SEQUENTIAL

Inoculation 1 : Excellence X-FRESH

EXCELLENCE XFRESH (20g/hL)
OENOSTIM (20g/hL)

36-72 hrs
Inoculation 2: *S.Cerevisiae*

OENOSTIM (20g/hL)
***S. Cerevisiae* (20g/hL)**