

Make tart beers without the need to kettle sour.

Lachancea thermotolerans yeast (such as our Lactic Magic) can be used to both acidify and ferment worts, resulting in a one-step sour or tart beer with unique aromas and flavours while avoiding the more complicated processing steps of kettle sours.

USAGE NOTE: A high rate of dextrose/glucose is required for noticeable acidity.

To drop pH below 4.0, you must add 2.5-5% dextrose by volume. That is roughly equal to 2.5-5°P or 0.012-0.020 gravity points, 25-50kg in a 10hL batch, or 0.5-1kg in a homebrew.

Lachancea produces lactic acid from dextrose/glucose. The glucose content of wort is normally low. As a result we recommend either directly supplementing the wort with glucose/dextrose or using glucoamylase enzyme such as Amylo 300 in the mash or fermentation. We highly recommend dosing a specific amount of dextrose/glucose since this will produce the most predictable results.

Our rule of thumb:

Add 2.5% dextrose by volume for light tartness and 5% for stronger tartness.

Glucose Added	Lactic Acid	Citric Acid	Total Acidity	Glycerol	%Attenuation	pH @ 72h	OG	FG	Expected ABV	Actual ABV	ABV Delta
0%	0.14	0.26	0.4	0.27	70%	4	1.05	1.014	4.73%	4.02%	0.71%
2.50%	0.23	0.25	0.48	0.35	77%	3.8	1.06	1.014	6.04%	4.75%	1.29%
5%	0.5	0.37	0.87	0.46	80%	3.58	1.07	1.014	7.35%	5.68%	1.67%
7.5% *	0.67	0.3	0.97	0.37	n/a	3.36	1.08	n/a	n/a	n/a	n/a

* sample was taken at 72 hours fermentation rather than at 14 days

Note: Total acidity and/or pH you obtain with Lactic Magic may depend on the buffering capacity of your brewing water. As we collect more feedback from brewers we will make any necessary adjustments to our recommendations. Also, note that standard ABV calculators do not account for acid and glycerol production and will be inaccurate.

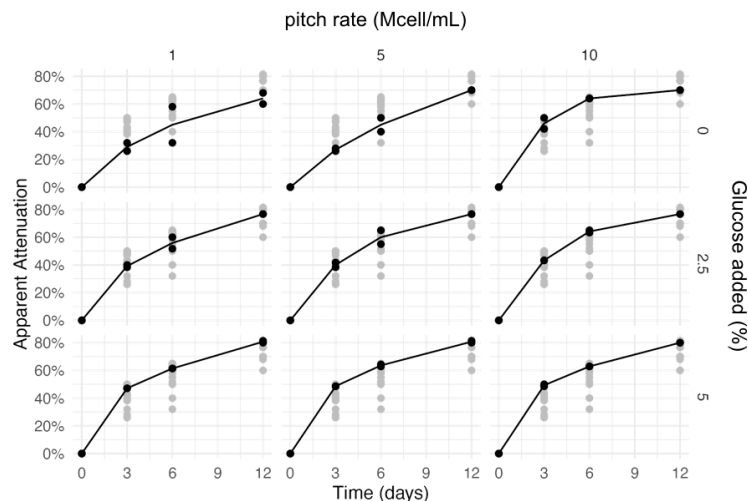
Fermentation kinetics of Lachancea:

Since this is a non-Saccharomyces yeast, it is not as efficient in wort fermentations. You should expect a Lachancea ferment to take 10-15 days to complete fermentation.

Attenuation will range from 65%-80% depending on initial glucose concentration as well as wort sugar composition. This yeast does not ferment the malt sugar maltotriose very efficiently. The acid production is typically complete within 72 hours/3 days of fermentation.

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Brewers looking for a faster turnaround may pitch a *Saccharomyces* strain after 72 hours to rapidly complete fermentation. **Note:** If repitching the *Lachancea* is desired, then cropping a thin slurry at this point prior to the introduction of *Saccharomyces* is required. In a co-pitch environment, *Saccharomyces* will outcompete the *Lachancea*, so repitching a mix of *Lachancea* and *Saccharomyces* will not yield the desired acidity.



Higher pitch rates favour faster fermentation by the *Lachancea* strain. Likewise, higher glucose content favours higher attenuation. Maximum attenuation was 80% in this experiment.

Temperature:

We recommend a fermentation temperature of 20-25°C. Avoid temperatures over 27°C as this yeast is not as high temperature tolerant as *Saccharomyces*.

Lachancea nutrient requirements and repitching:

This yeast has **high nutrient requirements**. If your wort contains less than 12°P (1.048 SG) from malt, we recommend supplementing with a yeast nutrient such as **Yeast Lightning**. This will help ensure timely fermentation and avoid sulfury flavours.

Lachancea also has a **high requirement for oxygen**. Ensure that the wort is oxygenated well. We supply **Lactic Magic** at a pitching rate of 10 million cells/mL for original gravity up to 18°P. *Lachancea* can be harvested and repitched but ensure that it is repitched at the pitching rate of 10 million cells/mL by performing a cell count.

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Adventurous Ideas:

We think that Lactic Magic will pair exceptionally well with *Brettanomyces* as an easy way to produce tart, mixed fermentation beers. Lactic Magic will leave behind some sugars for Brett to ferment, and Brett will produce the ester ethyl lactate from the lactic acid. This could work great for brewers looking to make tart Saisons and barrel-aged sours without having to keep hop-resistant lactic acid bacteria happy (and separate from the clean beers).

We also did an experiment with a wort dosed with amyloglucosidase enzyme, which breaks down malt carbohydrates into glucose. This resulted in mild acidity as well as a high amount of isoamyl acetate (banana) aroma. We think this could produce unique Hefeweizen-like beers or present a nice base for fruit additions.

Frequently Asked Questions:

Can I add fructose, honey or use fruit purée for the sugar addition?

Fructose appears to also work for lactic acid production. However it is less efficient than glucose. Expect to yield half as much acidity per gram of fructose compared to glucose.

Is there a cross-contamination risk using Lactic Magic?

No. The yeast is outcompeted by *Saccharomyces*, so unexpected acid production from cross-contamination even is highly unlikely. It is also more heat-sensitive, ensuring your cleaning procedures will kill it.

Can I use this to replace Lacto in my brewery?

It depends on the beers you're making. Lactic Magic will not produce as much acid as Lacto, so if you're making very sour beers (e.g. pH 3.3, TA over 1%) you may find that Lacto works better.