

Thiol Libre



Thiol Libre liberates tropical thiol aromas from your hops and malt.

Unlock bolder tropical fruit aromas in your brews with Thiol Libre — no extra hops or adjuncts required! Thanks to the thiol compound 3-MHA and others, beers fermented with Thiol Libre have enhanced guava and passionfruit aromas.

Key Characteristics:

Attenuation:	68-80%
Temperature Range:	17 to 23°C (63 to 73°F)
Diastatic (STA1+):	No
Fermentation Rate:	High
Flocculation:	Medium
Alcohol Tolerance:	Medium
Phenolic:	No*
Biotransformation:	Very High
Flavour Profile:	Passionfruit, Guava, Grapefruit
Suitable Beer Types:	American IPA, NEIPA, Wine-Beer Hybrid, Pale Ale, Blond Ale



** As of June 2023, Thiol Libre is non-phenolic*

Quick Tips for Success:

1. Try using hops with high amounts of bound thiols, such as Cascade, Saaz, Calypso, and Perle. This opens up the possibility of using and enhancing locally-grown hops! Use these in the mash (mash hopping) and whirlpool.
2. Experiment with base malts, including locally-produced options. Different malts have different bound thiol concentrations.
3. Try adjuncts like Phantasm (grape skin powder) that contain a high amount of bound thiol precursors.



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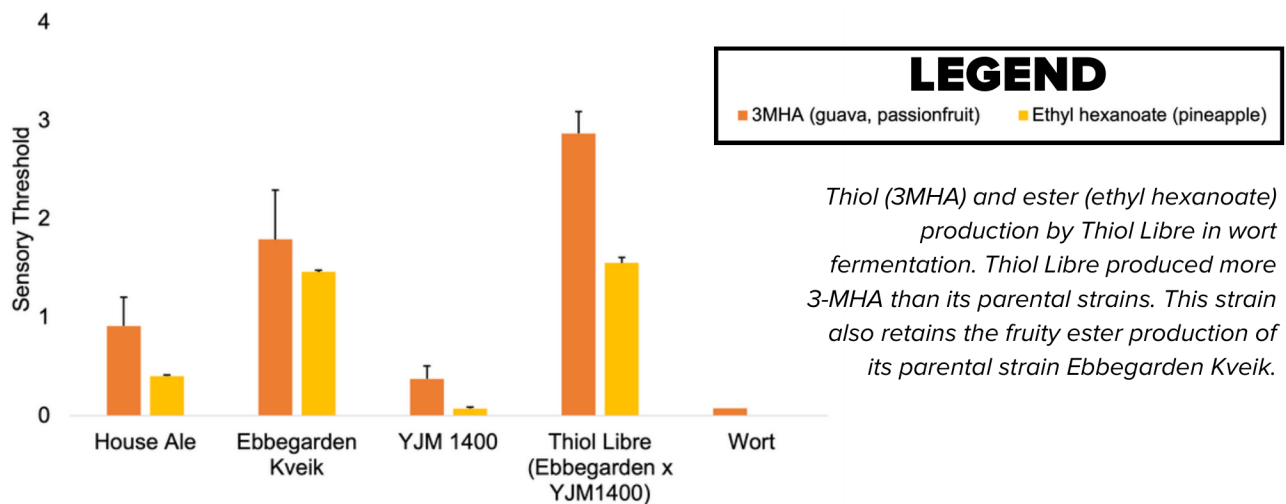


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How was Thiol Libre made?

Thiol Libre was made by breeding a kveik yeast with a wild yeast strain that naturally has high IRC7 gene expression using a process called yeast hybridization. This strain is a great example of “hybrid vigor” because it ferments faster and displays stronger thiol biotransformation than the parental strains.

Thiol Libre was improved in June 2023 to eliminate the production of phenolic aroma compounds. This improvement was done by creating a variant of Thiol Libre with the FDC1 enzyme fully inactivated, reproducing a naturally-occurring mutation of this gene found in other yeast strains.



How does Thiol Libre compare to other thiol-enhanced yeast strains?

This strain has a unique genetic background compared to other thiol-enhancing yeasts on the market, giving it a different flavour and fermentation profile. Its thiol profile leans toward the thiol 3-MHA, which tastes like guava and passionfruit. This strain also produces above-threshold concentrations of fruity esters including ethyl hexanoate (pineapple). Overall, this lends a strong tropical white wine character to beers made with Thiol Libre.

Since this yeast uses IRC7 (native yeast beta lyase) rather than engineered bacterial enzymes, it is not an “extreme” producer of thiols.



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What are thiols?

Thiol compounds can smell like Sauvignon Blanc wine, gooseberry, guava, grapefruit, and passionfruit! It's no surprise that the hops with the highest amounts of free aromatic thiols are also the most expensive: Citra, Sabro, Mosaic, Nelson Sauvin, to count a few. Thiol compounds have in common a sulfur-hydrogen group, which tends to make these molecules really noticeable to humans.

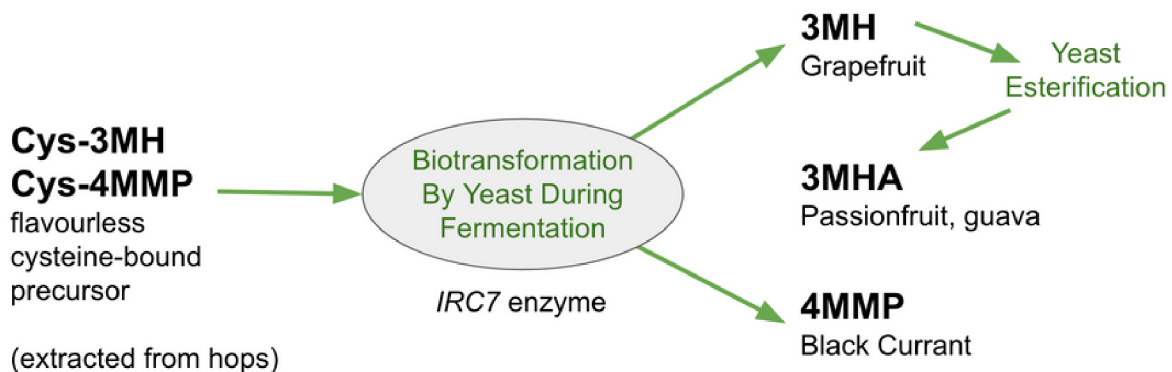
Which thiols are found in beer?

Thiol	Aroma Profile
4-MMP	Black Currant
3-MH (3-SH)	Grapefruit
3-MHA (3-SHA)	Guava, Passionfruit

This list is not exhaustive, but illustrates some of the key compounds when we talk about thiol aromas in beer. These molecules contribute tropical fruit notes to beer.

How does thiol release work?

In ordinary brewing yeasts, the IRC7 gene is either inactivated or shows low activity. Thiol-releasing yeasts have been developed to have enhanced activity from the IRC7 enzyme, which is a cysteine beta lyase that helps the yeast release aromatic thiols from flavourless precursors (bound thiols, including cysteine-bound thiols).



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Which hops should I use with Thiol Libre?

Late kettle and whirlpool with hops high in bound thiol precursors including Cascade, Calypso, and Motueka. Perle and Saaz are also options. Balance this with a hop that will round out the flavour, such as Cashmere or Chinook. When dry hopping, we recommend starting at a lower rate and using hops that contain some unbound thiols such as Citra, Sabro, or Simcoe.

How do I avoid unpleasant sulfur aromas (hydrogen sulfide) with Thiol Libre?

Any yeast that releases nice-smelling thiols (like 3-MHA and 4-MMP) also poses a risk to release unpleasant sulfur compounds, especially when it doesn't get proper nutrition. However, we have found that Thiol Libre is not prone to producing negative thiol aromas like hydrogen sulfide or mercaptans as long as it gets appropriate yeast nutrition.

How does mash hopping work?

We suggest starting at 3 g/L of mash hops and experimenting with dialling it up to 8g/L of mash liquid volume (not kettle full volume). A step mash that includes a protease step in the 50-60°C (122 - 140°F) range will maximize the conversion of glutathione-bound thiols to cysteine bound thiols, in turn maximizing thiol release by the yeast. In our experience, bitterness utilization ranges from 30-40% when mash hopping.

What is the impact of temperature on Thiol Libre?

Fermenting on the lower end of the temperature range will promote a more focused thiol aroma, perceived as white wine/Sauvignon Blanc-like. Fermenting at the upper end of the temperature range will promote the pineapple ester ethyl hexanoate lending a more complex tropical profile.

What other ways can I boost thiols?

Experiment with local malts, especially Pilsner style malts. It is likely that different malt varieties and regions contain different thiol precursors, and this is an active area of discovery! The same goes for local hops. Thiol Libre can be used to enhance the character of your local hops and deliver bolder, fruitier results.

Want to learn more about thiol biotransformation?

Scan to check out our Guide to Yeast Flavour and Biotransformation!

