

LALBREW POMONA™



A Modern Hybrid IPA Yeast
Selected by:





BIOTRANSFORMATION SUMMARY

BIOTRANSFORMATION

What is Biotransformation?

The transformation of compounds present in unfermented wort into altered, or altogether new, compounds by brewer's yeast

What are terpenes?

Unsaturated chain hydrocarbons of varying length, which can then also have modifications to incorporate different functional groups. Typically introduced to the wort stream or beer through hops

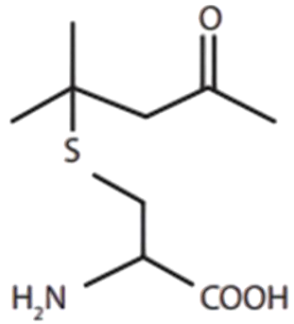
What are thiols?

A polyfunctional thiol (or just thiol for short) is a molecule which contains a terminal -SH group, with strong odor and an incredibly low sensory threshold in the nanograms per litre region



BIOTRANSFORMATION – HOW?

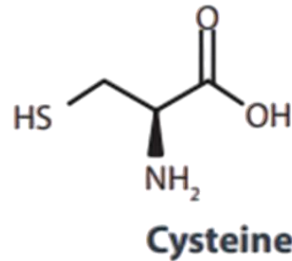
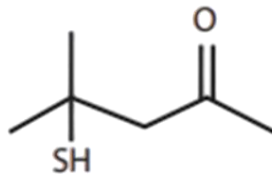
β -lyase



Cys-4MSP
(non-volatile)

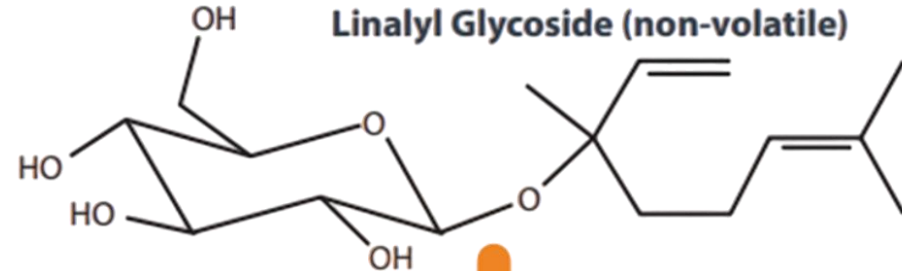


4MSP (volatile)

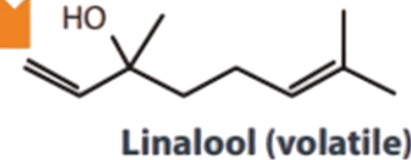
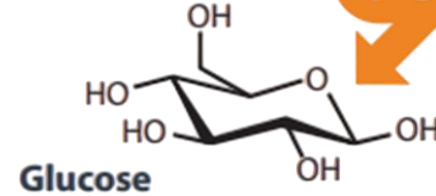


β -glucosidase

Linalyl Glycoside (non-volatile)



β -glucosidase



BOOSTING TERPENES

Step 1: Select hop varieties high in bound terpene (Whirlpool or early dry hop)

Step 2: Select LalBrew Premium strain for max freeing

Step 3: Select hop variety high in free terpene for late dry hopping



Motueka, Amarillo, Chinook, Mosaic, Comet, H. Blanc, Vic Secret, Polaris, Summit, Cascade

BRY-97, Belle Saison, New England, Voss AB Vickers Aromazyme

Motueka, Bravo, US Cascade, Mosaic, Sorachi Ace, Citra



Amarillo, Glacier, Mt. Hood

BRY-97, Belle Saison, New England, Voss AB Vickers Aromazyme

Motueka, Southern Cross, Amarillo, Mt. Hood, H. Tradition, Sorachi Ace Coriander Seed

BOOSTING THIOLS

Step 1: Select malt/hop varieties high in bound thiol (Whirlpool or early dry hop)

Step 2: Select LalBrew Premium strain for max freeing

Step 3: Select hop variety high in free thiol for late dry hopping



Pale pilsner/lager malt
Motueka, Saaz, Cascade, Citra, H. Blanc

Diamond, Nottingham, Farmhouse

Apollo, Galaxy, Simcoe, Citra, Mosaic



H. Blanc

Voss, Nottingham, Verdant IPA

Nelson Sauvín, Ekuanot, H. Blanc, Mosaic

BOOSTING THIOLS

Step 1: Select malt/hop varieties high in bound thiol (Whirlpool or early dry hop)

Step 2: Select LalBrew Premium strain for max freeing

Step 3: Select hop variety high in free thiol for late dry hopping

4MSP



Nelson Sauvín, Aramis, Strisselspalt, Mandarin Bavaria, Simcoe

Voss Nottingham, Diamond

Nelson Sauvín, Appolo, Citra, Galaxy, Mosaic, Simcoe

3SHA



Add high free 3SH hops at this stage for transformation into 3SHA

Farmhouse, Nottingham

None

BIOTRANSFORMATION

**To maximise biotransformation,
consider a holistic approach**

Hop and yeast selection as well as timing
will be key levers

**Terpenes offer a strong aromatic
backbone to enhance overall aromatics**

Much of the research in thiols comes from
wine, new research in beer/wort matrix is
currently ongoing



BIOTRANSFORMATION



**Many hops contain both,
free and bound form of thiols**

Yeast, hop selection, and process considerations will assist in freeing the bound thiols to achieve sensory results

Hop compound sensory is highly complex and made more interesting by the interaction between terpenes, thiols, lactones, and other compounds in beer

BREW CONSIDERATIONS USING LALBREW POMONA™





OPTIMIZING BIOTRANSFORMATION



- Pomona shows medium-high transformation of **Geraniol** (fruity/floral) into **Citronellol** (citrusy/floral)
- To increase citronellol using LalBrew Pomona™ :
 - Use high free Geraniol hops as early DH or cool WP addition
 - Use high bound Geraniol hops in WP and Aromazyme early ferment (to release Geraniol)
 - Use high Citronellol hops for late DH

Step 1: Select hop varieties high
in free Geraniol
(cool whirlpool or early dry hop)

Step 2: Select LalBrew
Premium strain for max
biotransformation

Step 3: Select hop variety
with free terpene for late
dry hopping

B-Citronellol

Created through
biotransformation of
Geraniol



Hops:

Motueka, Bravo, US
Cascade, Mosaic,
Sorachi Ace, Citra

Pomona

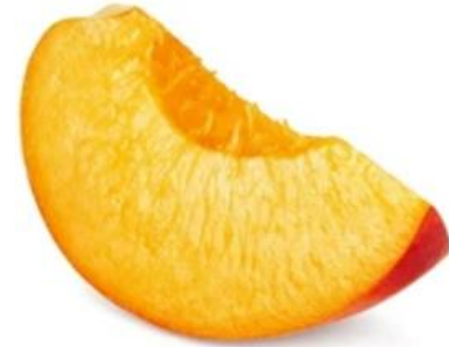
Motueka



ENHANCING STONE FRUIT & CITRUS



- **Distinctive peach or apricot-like aromas**
 - Likely a combination of lactones and esters
 - Reinforce this with stonefruit-y hops e.g. Simcoe, Rakau...
 - Use Pomona as primary strain after kettle souring and with peach/apricot fruit additions.
- **Citrus flavors**
 - Terpenoids are primary source
 - Reinforce this with citrusy hops
 - Pomona pairs well with citrus fruit additions.





FAQS

1. Can you use Pomona™ for other styles?

1. Yes, While it was mostly used for hazy pale ales/IPAs in the trials, some brewers found success with American Brown Ale, (clear) NZ Pale Ale, and kettle sours

2. What effect does temperature have on Pomona™?

1. Optimal temperature range of 18-22°C (68-72°F). Cooler temperatures may produce good flavors, but with slower fermentations. Warmer temperatures may reduce sensory characteristics.

3. Can Pomona™ be repitched?

1. Yes, consistent flavor profile has been reported when repitching

4. How does pitch rate affect aroma?

1. Lower pitch rates favor terpene/thiol perception. Hop selection and addition point have a more significant impact than pitch rate.

FAQS

1. Is Pomona™ acid tolerant?

1. Yes, Pomona works well in kettle sours producing nice tropical fruit aromas that complement fruited sours.

2. How easy is it to filter Pomona™?

1. Trials suggest easy filterability/easy to clarify

3. Is Pomona™ a genetically engineered yeast?

1. No, Pomona™ is a hybrid yeast strain made using no genetic engineering technology



LALLEMAND BREWING

WE BREW
WITH YOU.™

