



# SafBrew™ BR-8

## Five Star Chemicals - Homebrew Club Program

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01

# Introduction



# Introduction



*Brettanomyces*

01

*Brettanomyces* is a non-conventional yeast species initially found early 20<sup>th</sup> century

02

It can be isolated from different sources of biological materials (fruit peels, kombucha, kefir, tea, olives,...) and is present in Belgian lambic and geuze beers

03

It impacts/modifies the organoleptic profile of the beers with specific phenolic notes, esters and aroma compounds

04

Today its utilization is more and more used in the craft breweries for the production of novel flavors in new range of products



# Introduction

The table shows the main differences in terms of assimilation and production capabilities between *Brettanomyces bruxellensis*, *S. cerevisiae* (Ale yeasts) and *S. pastorianus* (Lager yeasts)

		<i>Brettanomyces bruxellensis</i>	<i>S. cerevisiae</i> (Ale)	<i>S. pastorianus</i> (Lager)
Assimilation	Glucose	+	+	+
	Maltose	+	+	+
	Maltotriose	+	+ / -	+
	Dextrins	+ / -	+ / -	-
	Cellobiose	+	-	-
	Nitrate	+	-	-
Production	Ethanol	+	+	+
	Glycerol	-	+	+
	Acetic acid	+	-	-
	Volatile phenols	+	+ / -	-

02 |

## Objective & characteristics



# Targets of *Brettanomyces* for SafBrew™ BR-8



**Type of microorganism:**  
*Brettanomyces bruxellensis* species<sup>1</sup>



**Typical flavour expression:**  
funky notes, such as horse, farm,  
animal, leather...



**Fermentation profile and sugar assimilation:**  
glucose-fructose-maltose-maltotriose  
exclusively, **no assimilation of dextrins**



**Robust to re-fermentation**  
conditions



**Most suitable for bottle and cask**  
**fermentation** (secondary fermentation)<sup>2</sup>



**No off-flavour**



# SafBrew™ BR-8

## Specifications

### Typical values<sup>1</sup>

Dry matter  
**94,0-96,5%**  
(w/w)

Viable yeast  
**> 5.0 \*10<sup>9</sup>**  
**cfu/g**

### Purity:

Lactic acid bacteria  
**<1 cfu /10<sup>6</sup> yeast cell**

Acetic acid bacteria  
**<1 cfu /10<sup>6</sup> yeast cell**

*Pediococcus*  
**<1 cfu /10<sup>6</sup> yeast cell**

Total Bacteria  
**<5 cfu /10<sup>6</sup> yeast cell**

« Wild » Yeast<sup>2</sup>  
**<5 cfu /10<sup>6</sup> yeast cell**

**Pathogenic micro-organisms**  
in accordance with regulation

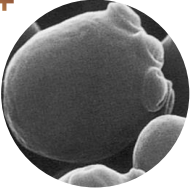










03

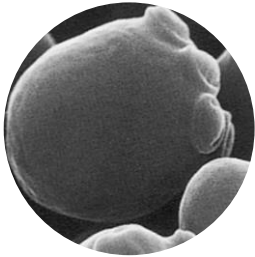
## Aromatic compounds production



# Aromatic compounds production

	Production/Threshold	Descriptors
<b>POF+</b>  <i>Saccharomyces cerevisiae</i>	4-Vinyl Guaiacol (4VG) 300 ppb  4-Vinyl Phenol (4VP) 200 ppb	Clove Medicinal Dentist Smoky    
 <i>Brettanomyces</i>	4-Ethyl Guaiacol (4EG) 600 ppb  4-Ethyl Phenol (4EP) 300 ppb	Horse Animal Leathery Smoke    

# Aromatic compounds production



*Saccharomyces cerevisiae*

Produces acetate ester:

Isoamyl Acetate (banana)

Phenylethyl acetate (rose)

## Specific esters



*Brettanomyces*

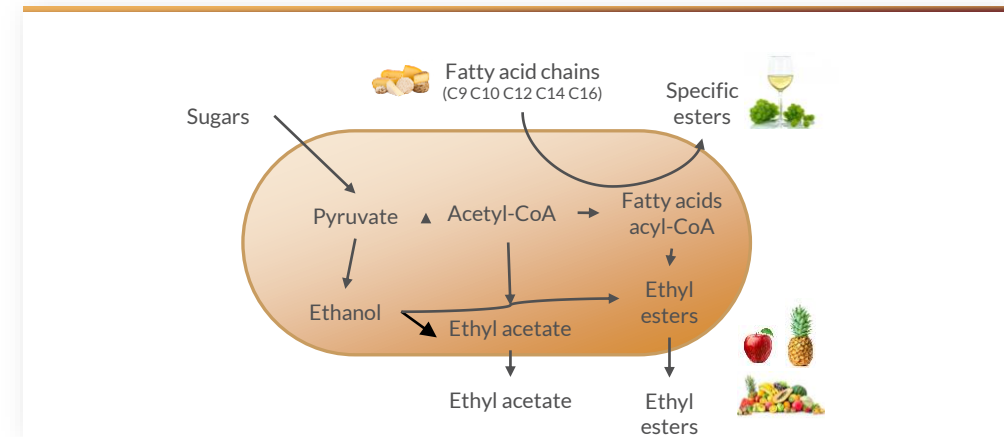
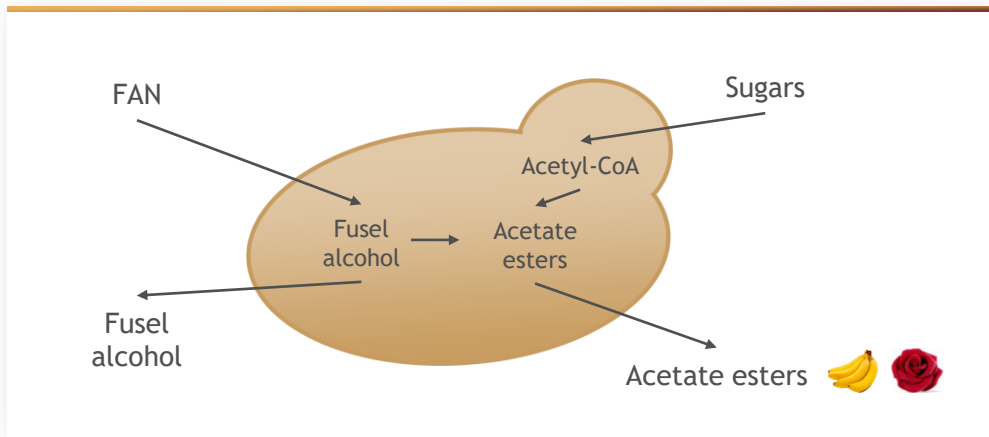
Produces ethyl esters:

Ethyl acetate (solvent)

Ethyl hexanoate (Red apple)

Ethyl octanoate (tropical, pineapple)

Esterify fatty acid chains (grape/wine)

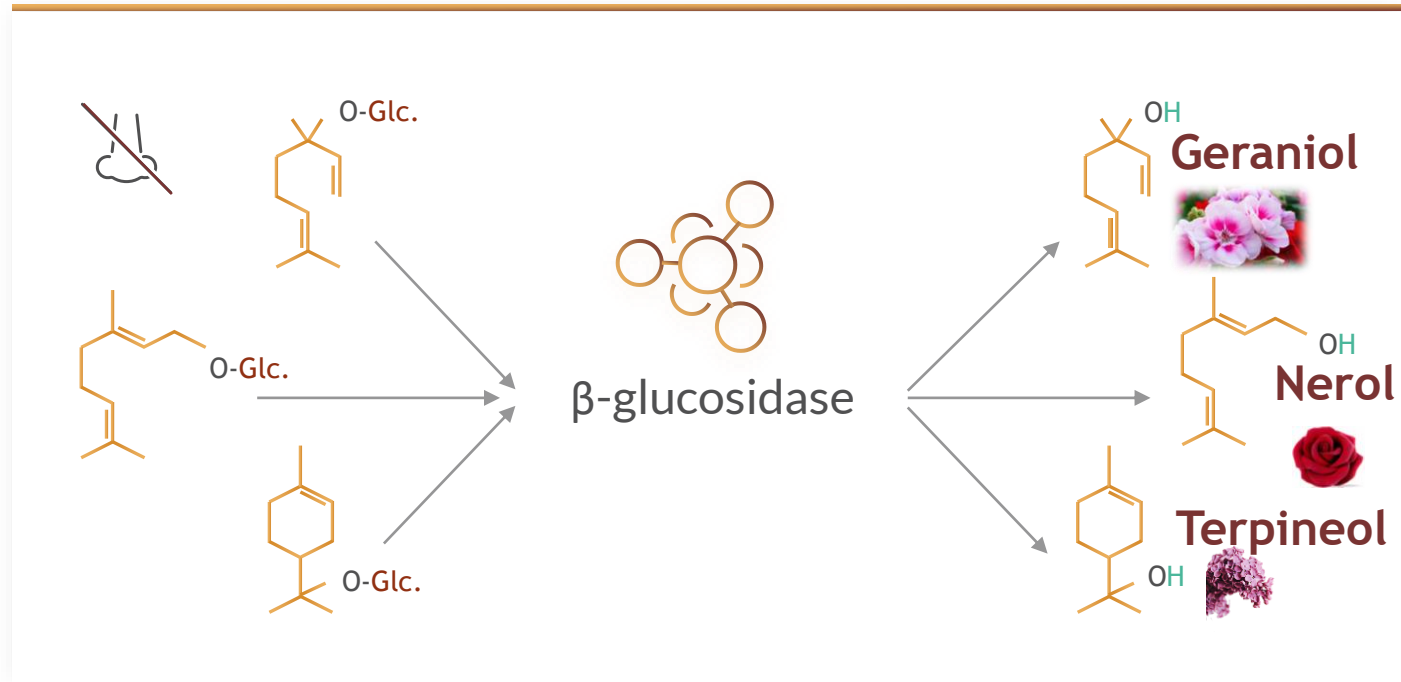


# Aromatic compounds production



## *Brettanomyces*

Posses  $\beta$ -glucosidase activity allowing to release of terpenes, aromatic compounds with a very low threshold in beer



# 04

## Applicative study





# Experimental conditions



## Refermentation beer

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6,3% ABV by a POF-  
yeast

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3g/l (0,41 oz/gal)  
of CO<sub>2</sub>

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## 8 dry samples (S1-8) rehydrated

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In 10 times the weight  
of sterile water

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At 28°C (82.4°F) during  
30 min

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Under low agitation



## Bottles fermentation

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+10 g/l (1.34 oz/gal) of sterile  
sucrose

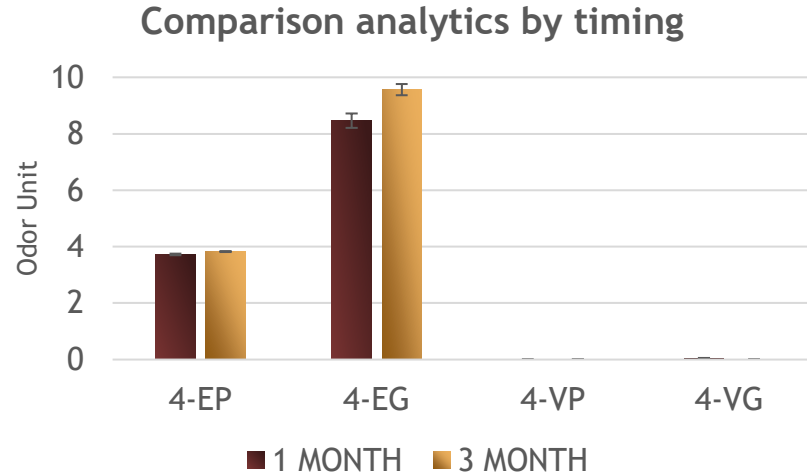
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+5 g/hl (or equivalent) (0.67 oz/gal)  
of SafBrew™ BR-8 vs SafAle™ F-2

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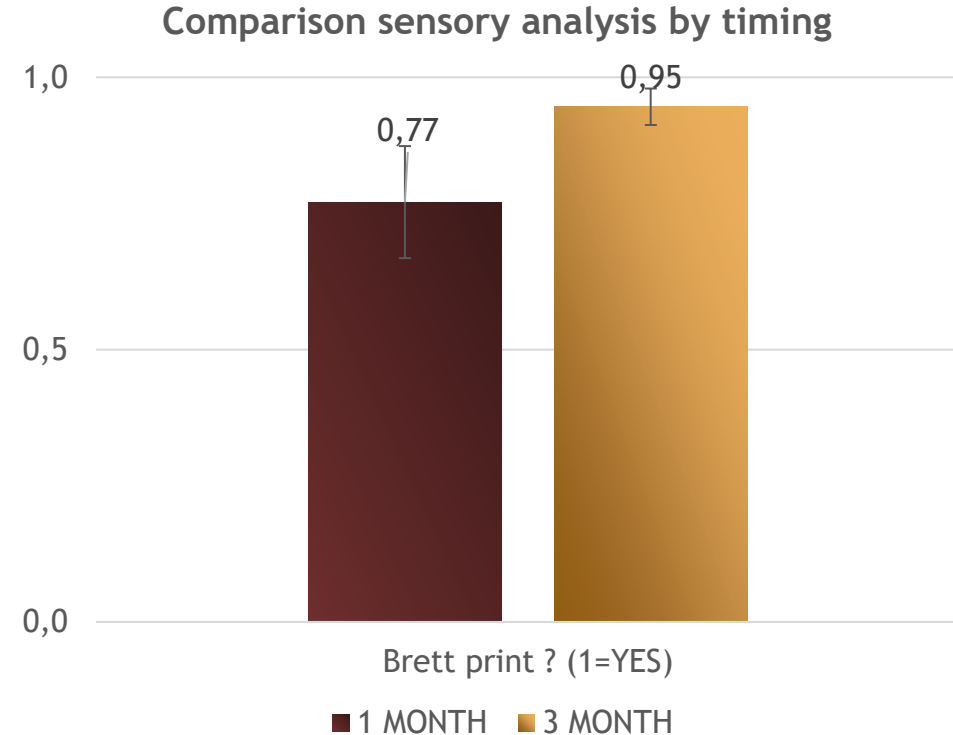
At 24°C (75.2°F) during 1 and 3  
months

# Analytical & sensory data after 1 & 3 months



$$OU = \frac{\text{ppm of phenol}}{\text{Phenol threshold}}$$

All samples refermented with SafBrew™ BR-8 show a concentration in 4-EP and 4-EG >> threshold



All samples refermented with SafBrew™ BR-8 show a brett footprint after 1 month that increases after 3 months

# 05

## Key learnings



# SafBrew™ BR-8

## *Brettanomyces bruxellensis sp.*

### Usage

Bottles & casks fermentation

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Rehydration

**10 times**

the weight in sterile water  
or wort

Dosage rate

**5-10 g/hl<sup>1</sup>**

(0.006-0.013oz/gal)

Rehydration

**25-29 °C**

(77-84.2 °F)

15-30min under  
low/moderate agitation

Refermentation<sup>2</sup>

**15 °C-25 °C**

(59-77 °F)

1-3 months

### Phenols

production

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**4-EP & 4-EG**

« horsy-funky » character  
(after 1 and ideally 3 months)

### Storage

conditions

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**≥ 6 months at 4 °C**

(39.2 °F)

2 years shelf-life



**Hugo Picard**

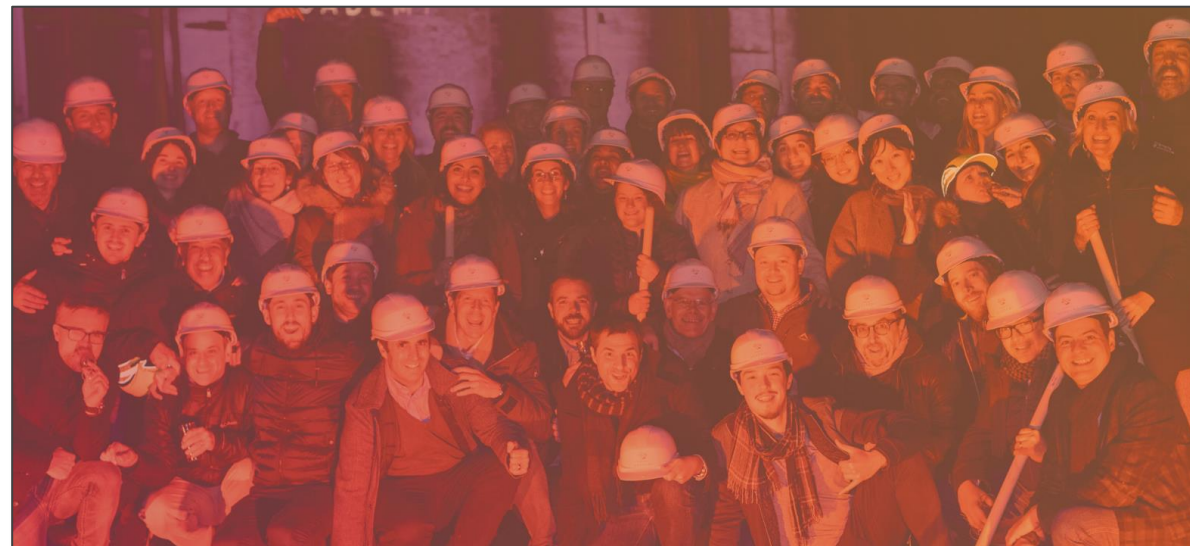
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**Thank you for your attention!**

If you have any questions about the SafBrew™ BR-8, could be about the product itself, could be about the way to use it, could be something else, don't hesitate to contact me and I will do my best to answer you! By the way, if you're coming, don't hesitate to visit our booth during the next Homebrew Con in San Diego, it'll be a pleasure to meet you there.



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