



SafBrew™ BR-8

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01

Introduction



Introduction



Brettanomyces

01

Brettanomyces is a non-conventional yeast species initially found early 20th 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 species¹



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**



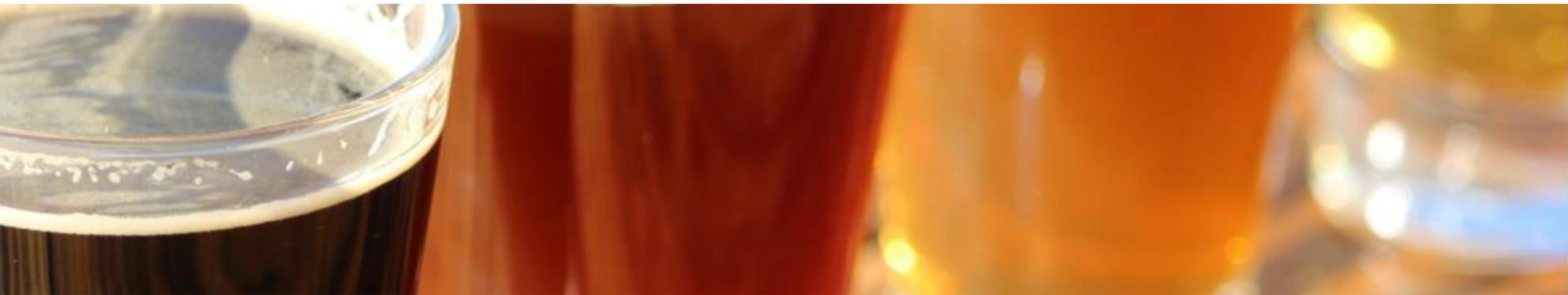
Robust to re-fermentation
conditions



Most suitable for bottle and cask
fermentation (secondary fermentation)²



No off-flavour



SafBrew™ BR-8

Specifications

Typical
values¹

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

Viable yeast
> 5.0 *10⁹
cfu/g

Purity:

Lactic acid bacteria
<1 cfu /10⁶ yeast cell

Acetic acid bacteria
<1 cfu /10⁶ yeast cell

Pediococcus
<1 cfu /10⁶ yeast cell

Total Bacteria
<5 cfu /10⁶ yeast cell

« Wild » Yeast²
<5 cfu /10⁶ yeast cell

Pathogenic micro-organisms
in accordance with regulation

03

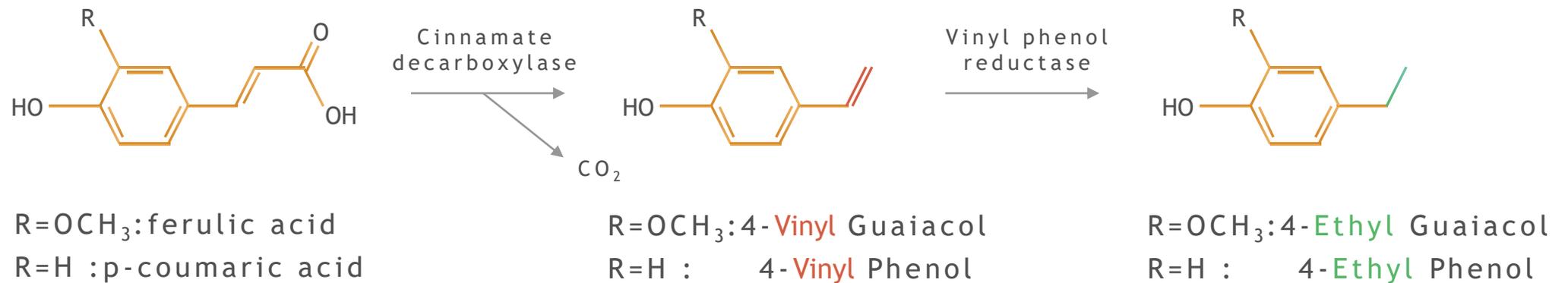
Aromatic compounds production



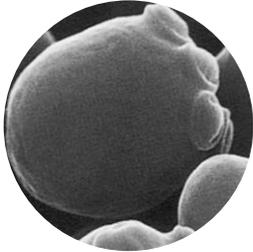
Aromatic compounds production

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

Aromatic compounds production



Aromatic compounds production



Saccharomyces cerevisiae

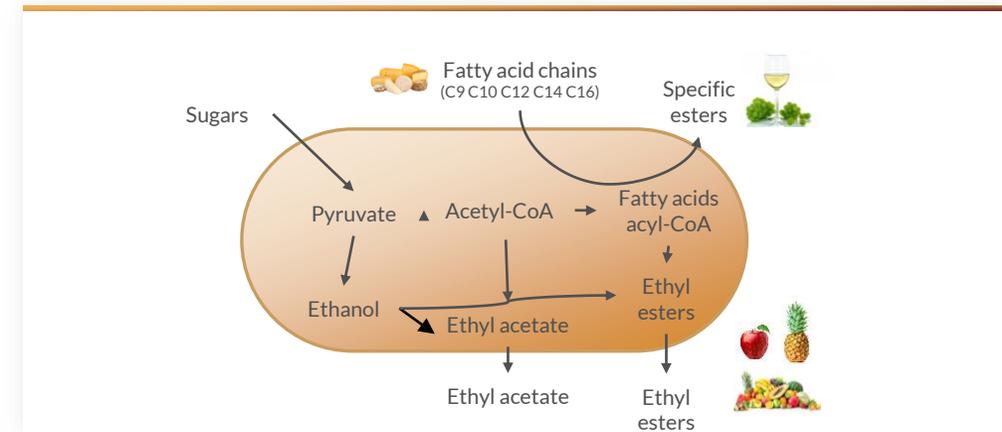
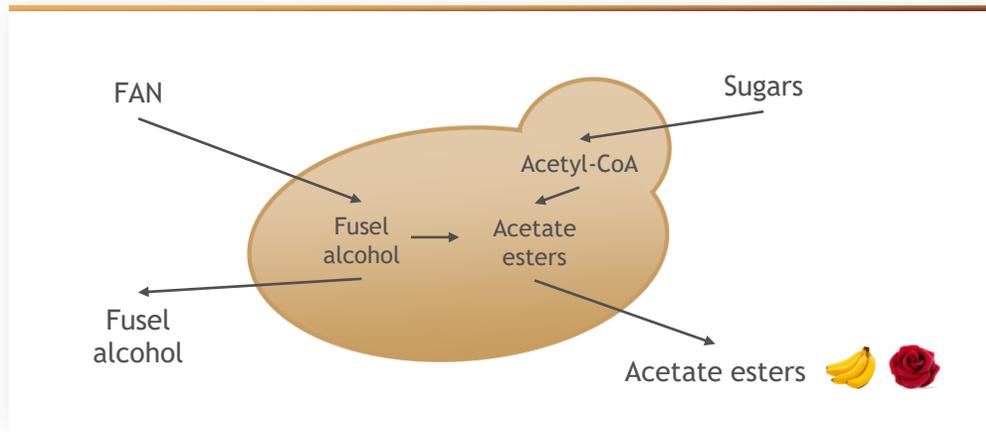
Produces acetate ester:
 Isoamyl Acetate (banana)
 Phenylethyl acetate (rose)



Brettanomyces

Produces ethyl esters:
 Ethyl acetate (solvent)
 Ethyl hexanoate (Red apple)
 Ethyl octanoate (tropical, pineapple)
 Estery fatty acid chains (grape/wine)

Specific esters

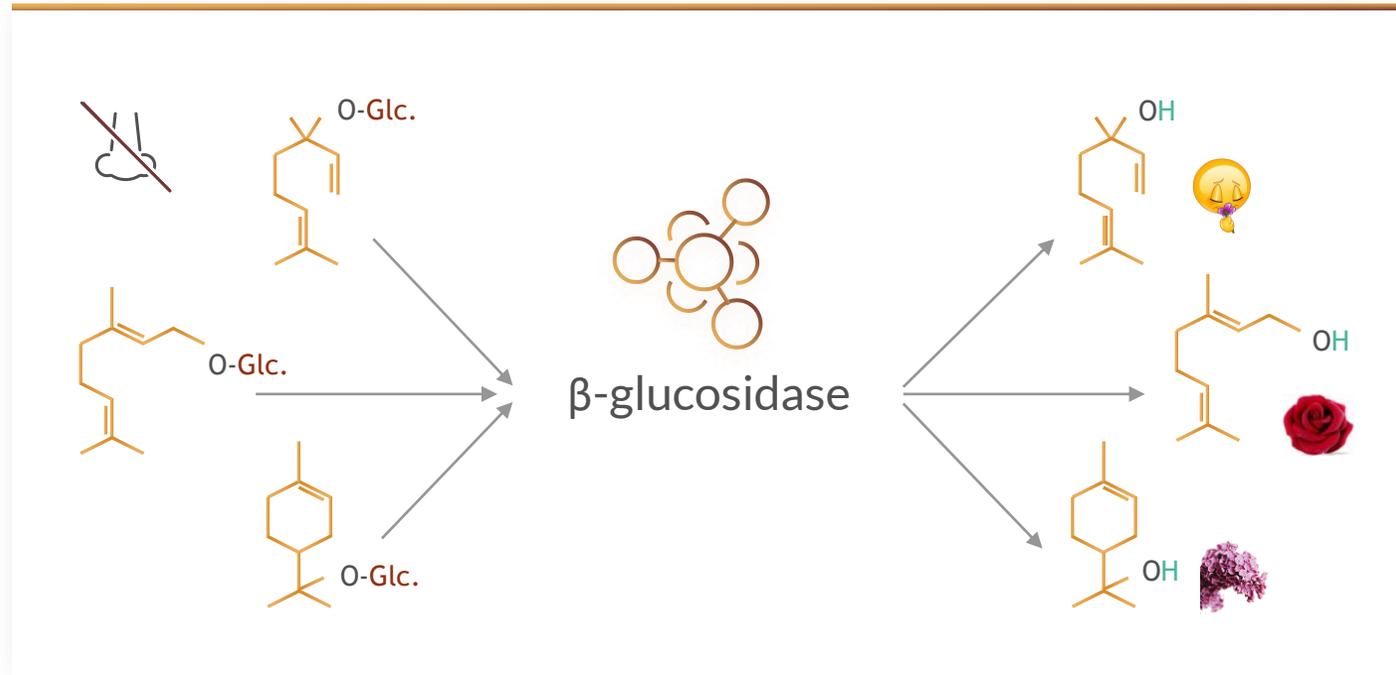


Aromatic compounds production



Brettanomyces

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



04

Applicative study



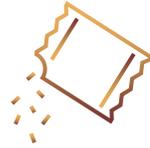
Experimental conditions



Refermentation beer

6,3% ABV by a POF-
yeast

3g/l (0,41 oz/gal)
of CO₂



8 dry samples (S1-8) rehydrated

In 10 times the weight
of sterile water

At 28°C (82.4°F) during
30 min

Under low agitation



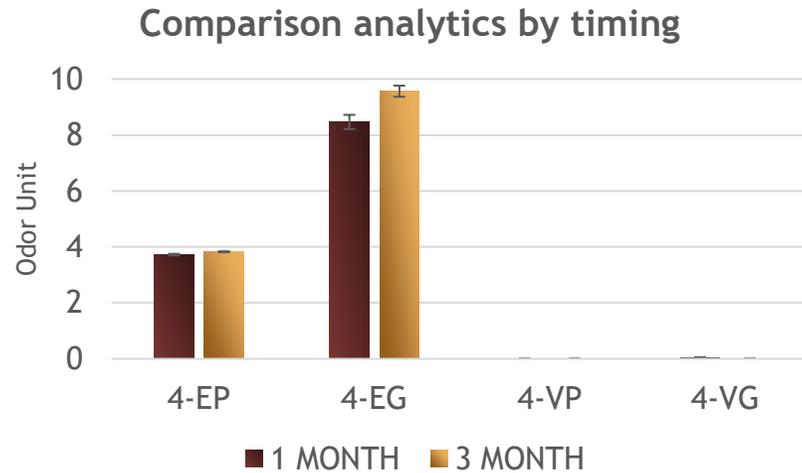
Bottles fermentation

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

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

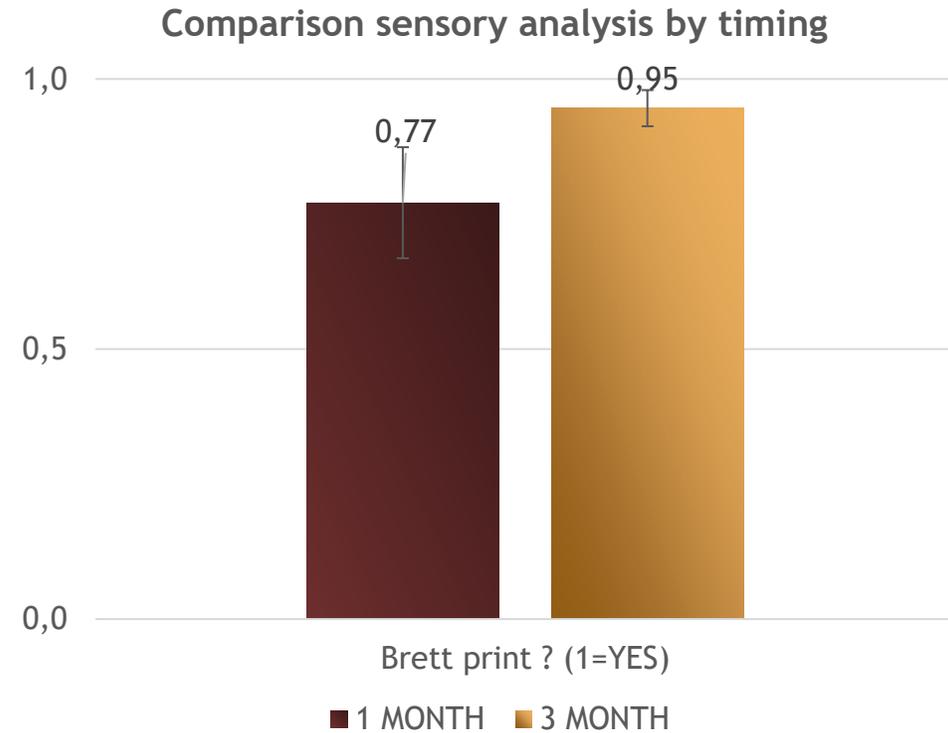
At 24°C (75.2°F) during 1 and 3
months

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

Rehydration

10 times

the weight in sterile water
or wort

Dosage rate

5-10 g/hl¹
(0.006-0.013oz/gal)

Rehydration

25-29 °C

(77-84.2 °F)
15-30min under
low/moderate agitation

Refermentation²

15 °C-25 °C
(59-77 °F)
1-3 months

Phenols

production

4-EP & 4-EG

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

Storage

conditions

≥ 6 months at 4 °C

(39.2 °F)
2 years shelf-life



Thank you for
your attention!



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