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HOMEBREWING with ALTITUDE

Brewing with unusual adjuncts

American Homebrewer's Association Conference

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Overview

- Introduction
- Using novel adjuncts
- Potential pitfalls of using novel adjuncts
- Potential benefits of using novel adjuncts
- Conclusion

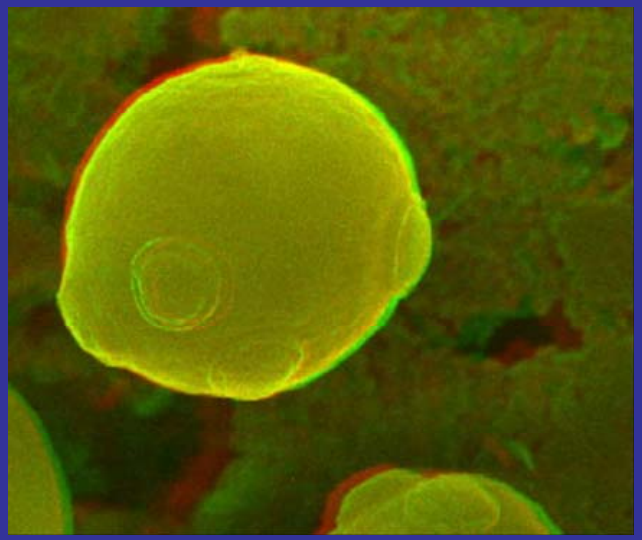
My Credentials

- Homebrewer for 24 years
- Professional brewer for 21 years
- Doctorate in Brewing Biochemistry
- Certified beer judge
- Manager of New Products for Coors

LE TEST « DES CULOTTES »


GC W.R.T.
Caustic
5. 15. 2003


5. 18. 2003

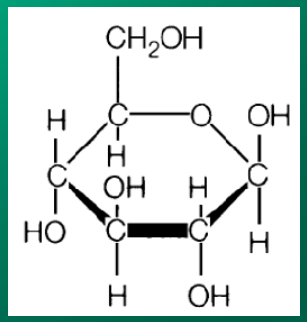


Yeast

- 5-10 microns
- *Saccharomyces carlsbergensis*
- *Saccharomyces cerevisiae*
- Bottom-fermenting; Top-fermenting
- Lager; Ale
- Various phenotypes

Fermentable Sugars

- Glucose



- Maltose (Glu-Glu)
- Maltotriose (Glu-Glu-Glu)

- Starch and dextrins = not fermentable

What is a novel adjunct?

- Fermentable or non-fermentable material added at any point during the process that can change the body, taste, texture, aroma, head, color or other sensory perception of the beer.

- Non-rheinheitsgebot
- Generally non-maltable
- Liquid or solid, sometimes gaseous

Process addition points

- Brewhouse
- Fermenting
- Aging
- Filtration
- Finished product

Brewing Process

Brewing

Fermenting / Aging

Finishing

Ales

English-style Pale ale
India Pale ale
American-style Pale ale
American-style Amber ale
English-style Bitter
- •Ordinary Bitter
- •Special Bitter
- •Extra Special Bitter

English-style strong ESB
Scottish-style ale
- •Scottish-style light
- •Scottish-style heavy
- •Scottish-style export

Golden ale
Kolsch
English-style Brown ale
- •Light mild ale
- •Dark mild ale
- •Brown ale

American-style Brown ale
German-style Brown ale/Altbier
German-style Wheat ale
- •Berliner Weisse
- •Hefeweizen
- •Kristal Weizen
- •Dunkel Weizen
- •Weizenbock

Robust Porter
Brown Porter
Irish-style Dry Stout
Foreign-style Stout
Sweet Stout
American Stout
Oatmeal Stout
English-style Old ale
Strong Scotch ale
Imperial Stout
Other Strong ales
Barley Wine
Belgian-style ales
- •Dubbel
- •Trippel
- •Pale ale
- •Strong ale

Belgian-style Specialty ales
- •Flanders Brown ale
- •White
- •Lambic
- •Gueuze Lambic
- •Fruit Lambic

75 Styles

Lagers

European-style Pilsner
German-style Pilsner
Bohemian-style Pilsner
Munchener Helles
Dortmunder-style Export
American-style Light lager
American-style lager
American-style Premium lager
American-style Specialty lager
- •Dry lager
- •Ice lager
- •Malt Liquor
- •Pilsener

Vienna-style lager
American-style Amber lager
Marzen/Oktoberfest
European-style Dark/Munchener Dunkel
American-style Dark lager
German-style Schwarzbier
Bock
- •Traditional Bock
- •Helles Bock/Maibock

Strong bocks

Mixed

Cream ale
American-style Wheat
- •Oak aged
- •Chocolate
- •Coffee

Fruit/Veg Beers
Herb/Spice Beers
Specialty/Experimental
Specialty Honey
Smoke-Flavored
Wood/Barrel Aged
Aged Beer
Non-alcoholic

Points to keep in mind

- Is it volatile?
- Oily?
- Delicate?
- Solid?
- Liquid?
- Gaseous?
- Cloudy?

Important points

- Always calculate addition in ppm (mg/L).
- Always rate flavor, especially bitter and sweet, using a scale.
- Always note oil/volatile content.
- Try to find specific gravity.

Brewhouse Examples

- Herbs
- Spices
- Fruits
- Meats
- Coffee
- Chocolate
- Nuts
- Honey

Brewhouse Examples

	Sam Adams White	NBB Springboard	NBB Skinny Dip
OE	11.82	11.24	12.15
AE	2.24	1.74	2.2
Alc/RE	0.98	1.1	1.01
BU	9.7	20	15.6
Color	3.8	3.7	12.8
pH	4.84	4.26	4.28
Alc %vol	5.26	6.09	4.16

Fermenting/Aging examples

- Fruit juice
- Milk
- Honey
- Oils
- Anything that can be added aseptically
- Yeast

Fermenting Example

	Bilk	Beck's	Fat Tire	
OE	11.82	11.24	12.15	
AE	2.24	1.74	2.2	
Alc/RE	0.98	1.1	1.01	
BU	9.7	20	15.6	
Color	3.8	3.7	12.8	
pH	4.84	4.26	4.28	
Alc %vol	5.09	5.02	5.29	

Ferm/Aging Examples

	Woodchuck Cider	New Glarus Belgian Red	Chardonnay Blonde
OE	15.65	19.2	15.02
AE	5.8	12.23	1.89
Alc/RE	0.54	0.22	1.27
BU		132.2	3.5
Color	3.1	35.2	3.6
pH		3.81	3.79
Alc %vol	5.3	3.99	7.10

Finished Beer examples

- Clouds
- Colors
- Gas
- Oils
- Flavors

Finished Beer Examples

	Mike's Hard Lemonade	Smirnoff Ice
OE	17.28	17.85
AE	8.06	8.95
Alc/RE	0.4	0.36
BU		
Color	4.4	3.81
pH	3.13	3.21
Alc %vol	5.15	4.99

Pitfalls of Novel Adjuncts

- Toxins
- Allergens
- Unintended flavors/aromas
- Illegalities
- Addictive agents
- Non-Reinheitsgebot

Benefits of Adjuncts

- Better flavor, aroma
- Improved texture
- Vitamins, minerals
- Antioxidants
- Aphrodisiac
- Caffeine
- ???

Conclusions

- Study your desired novel adjunct
- Know where to add it in the process
- Keep careful records
- Make improvements
- Share it with your friends