

BREWING WITH CANNABIS

Using THC and CBD in Beer



#HOMEBREWCON

Homebrew Con Seminars Archive



<https://www.homebrewersassociation.org/seminars/>



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Brewmaster/Founder

Ceria Brewing Company

Donavon Brewing Company

Blue Moon Brewing Company

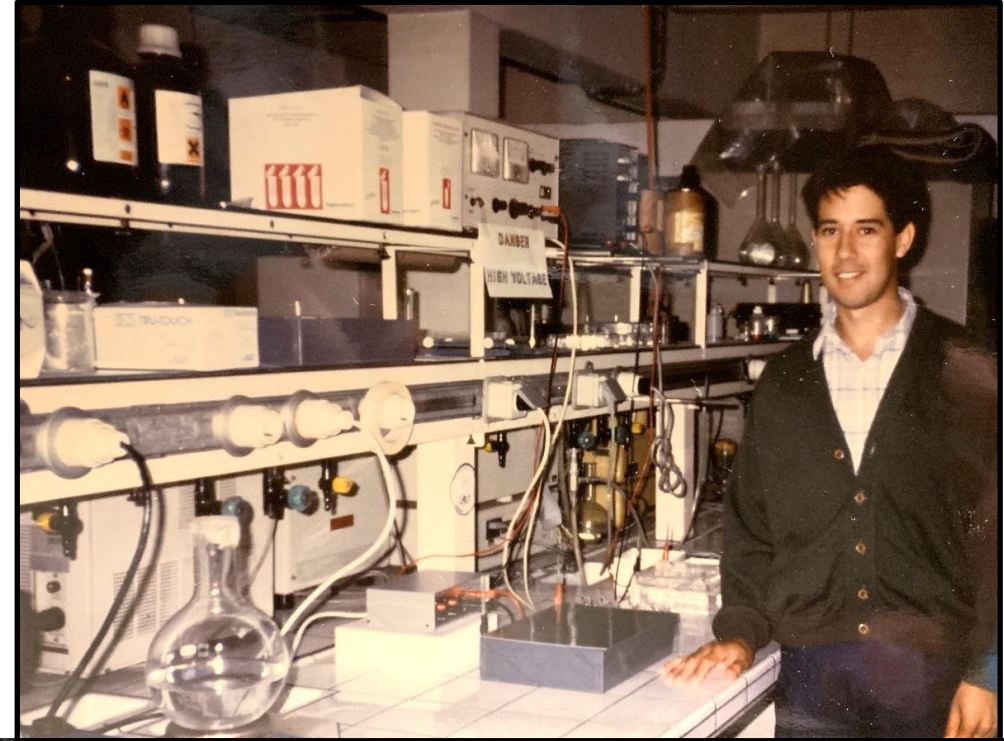
Warning on Mixing Alcohol and Cannabis

- Lots of unknowns
- CBD stimulates the Vagus nerve
 - Cross fading and Couch Lock
- Lots of unknowns (4Loko Story)



Formal Education

- **University of Colorado** - Undergraduate degree in Molecular, Cellular and Developmental Biology; 1986
- **University of Brussels, Belgium** - PhD in Brewing Science and Fermentation Biochemistry; 1995



The effects of plasmid amplification of the ILV genes on the expression & sub-cellular localization of ILV gene products in *S. cerevisiae* during aerobic & fermentative growth

Villa

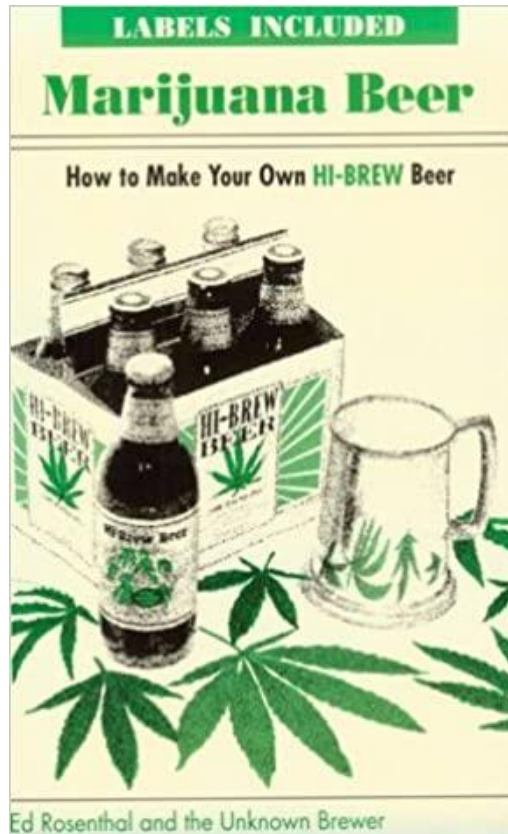
1995

1986 – 2018 Coors Brewing Company

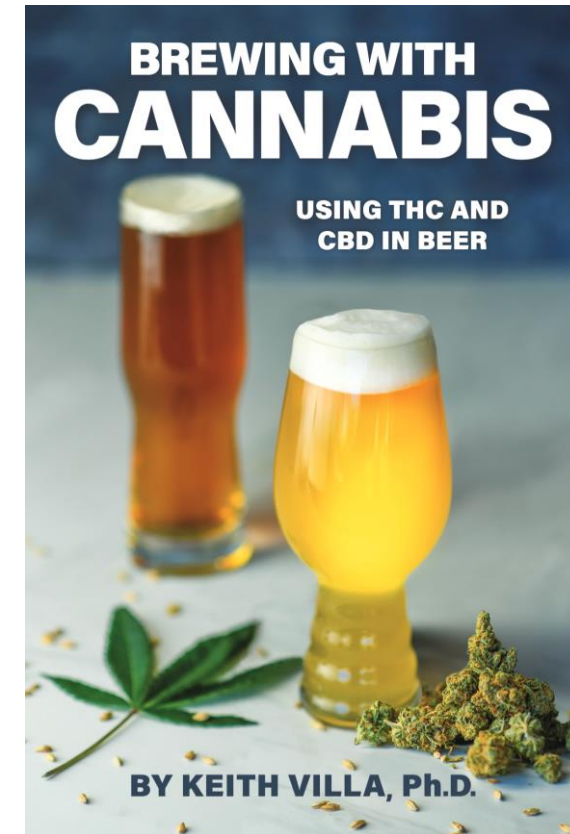
- Research and Development
- New Product Development:
 - Coors Banquet Beer
 - Aspen Edge
 - Batch 19
 - **Blue Moon Brewing Company**



25 Years Since The Last Book



1996

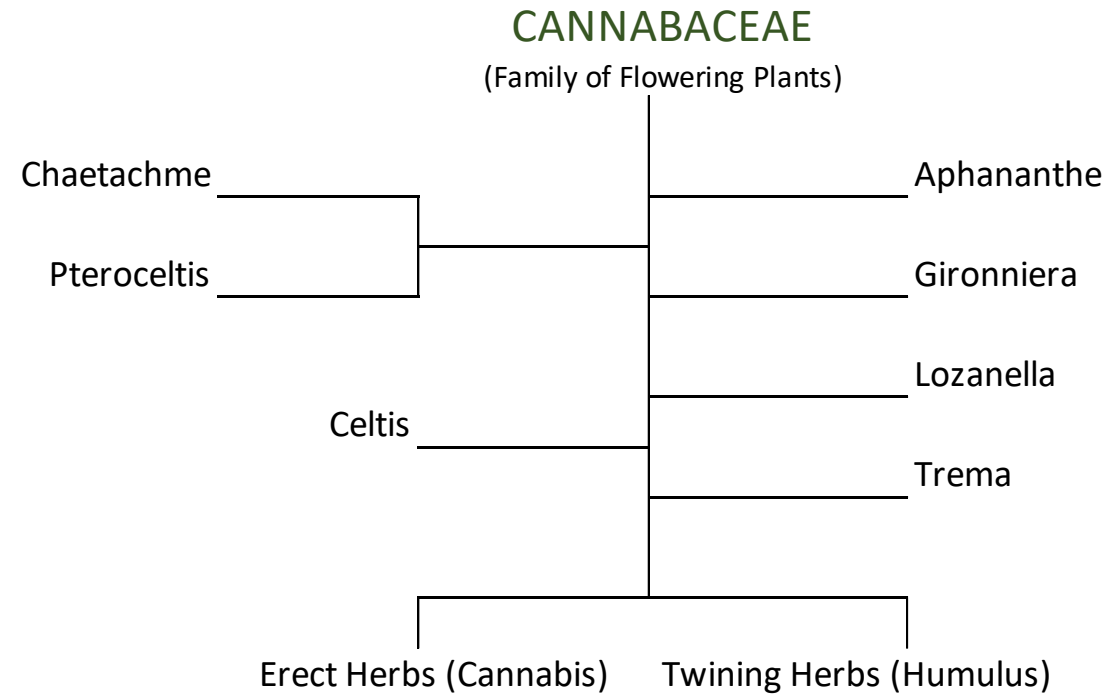


2021

Legalities

- What about Delta 8 or Delta 10 THC?
- For up to date status on state medical and recreational cannabis:
 - <https://www.disa.com/map-of-marijuana-legality-by-state>
 - <https://norml.org/laws/>

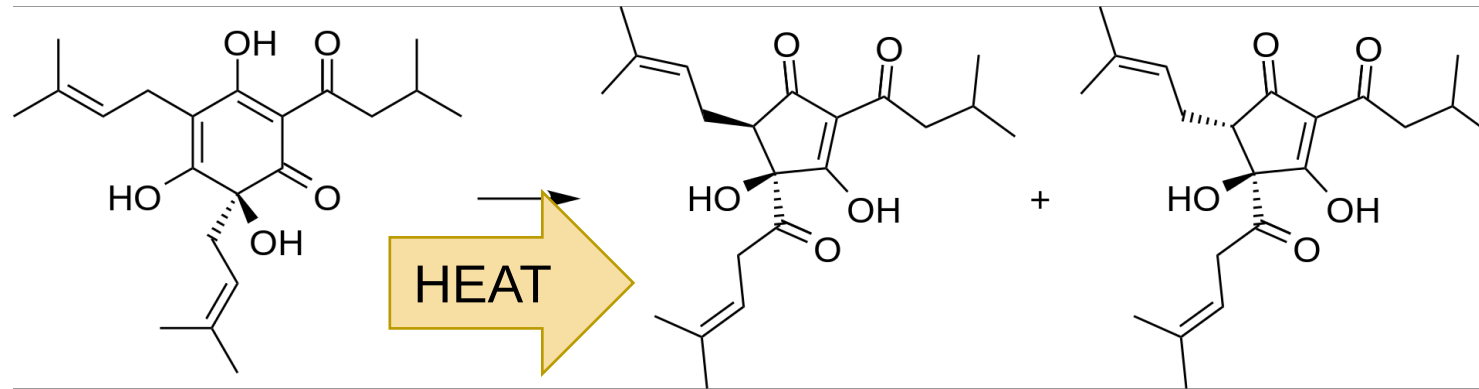
Cannabis & Hops “Cousins”



Hop Cones vs. Cannabis Trichomes



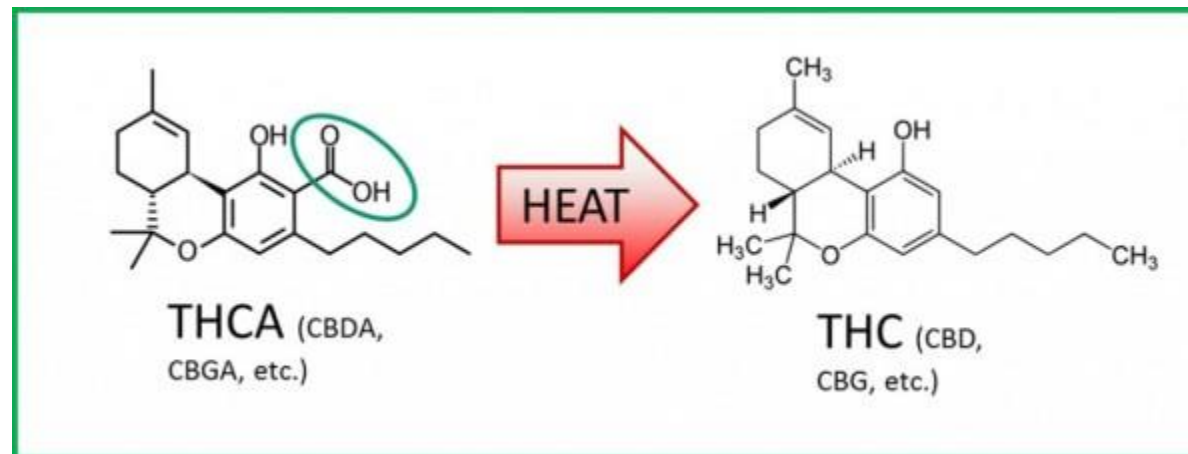
Isomerization vs. Decarboxylation



HUMULONE

ISOHUMULONE

WIKIPEDIA



THCA (CBDA,
CBGA, etc.)

THC (CBD,
CBG, etc.)

RESTEK

Cannabinoids (over 100)

Cannabinoid	Perceived effect
δ -9-Tetrahydrocannabinol (THC)	Intoxicant; Euphoria
Cannabidiol (CBD)	Pain relief; Relaxation
Cannabinol (CBN)	Sleep aid; Sedative
Cannabigerol (CBG)	Pain relief; Anti-inflammatory
δ -9-Tetrahydrocannabivarin (THCV)	Decreases appetite; Increases satiety

Note: cannabinoids have bitter taste, but no aroma

Terpenes (over 100)

Terpenoid	Hops Prevalent	Cannabis Prevalent	Hops & Cannabis	Perceived Physiological Effect
α -Humulene	X			Anti-inflammatory; appetite suppressant
Limonene		X		Anti-inflammatory; Sedative
Myrcene			X	Anti-inflammatory; Sedative
β -Caryophyllene			X	Anti-inflammatory; Pain relief
Farnesene			X	Calming; Sedative

Entourage Effect

Cannabinoid	Terpene	Perceived Effect
CBD; CBG	β -Caryophyllene	Pain Relief; Anti-inflammatory
THC	Myrcene	Muscle relaxant; Couch Lock
CBG	Limonene	Relaxant; Mood Lifter
THCV	Humulene	Weight Loss; Appetite Suppressant

How to Get Cannabinoids into beer

- Cannabinoids are non-polar and very hydrophobic
- Cannabis terpenes are non-polar and very hydrophobic
- Chlorophyll, waxes, lipids
- You'll need an ultrasonic mixer
- Cannabinoids have bitter taste, but no aroma

Step 1: Activation

- 110 deg C (230 deg F) for 30 minutes
- Optimal decarboxylation and activation of cannabinoids

Step 2: Extraction

- Butane
- CO₂
- Super-critical CO₂
- Ethanol (this can be added to beer, but will be cloudy with sediment)

Step 3: Encapsulation of Cannabinoids

- Important for stability and bioavailability. Be cautious of food allergens!
- Carrier Oil (almost any food-grade plant oil)
 - 1. Coconut Oil (Allergenic! MCT Oil)
 - 2. Palm Kernel Oil
 - 3. Hemp Seed Oil
 - 4. Olive Oil
 - 5. Sunflower Oil
 - 6. Sesame Seed Oil
- Use 1 – 20% Cannabinoid extract to 80 – 99% Carrier Oil
- Hold at 150 - 200 deg F (66 - 93 deg C) until homogenous

Step 4: Emulsification

- Mixing oil into water
 - Lecithin
 - Xanthan Gum
 - Polysorbate 80/Tween 80
- General procedure: Use 2 volumes of water+emulsifier to 1 volume encapsulated cannabinoids
- Mix about 2 volumes of room temperature water with about 10% emulsifier
- Put sonotrode tip of ultrasonic mixer in and begin sonicating (start with medium power)
- Slowly add 1 volume of encapsulated cannabinoids while sonicating
- Sonicate until translucent, 10 minutes, avoid overheating

Homebrew Cannabis Tincture (Alcohol based)

1. Add 1 ounce finely ground buds in a glass container
2. Add 16 ounces GNS (>70%) and mix thoroughly
3. Seal and shake for 30 seconds
4. Store at room temperature for 48 hours. Shake daily
5. Filter thru food-grade cotton cloth into glass container
6. Squeeze cotton cloth to recover all liquid
7. Store in cool, dark place

Tinctures and Emulsified THC can be added directly to beer

NA Beers Are Required

➤ Biological

- Arrested Fermentation
- Novel New Yeasts
- Dilution



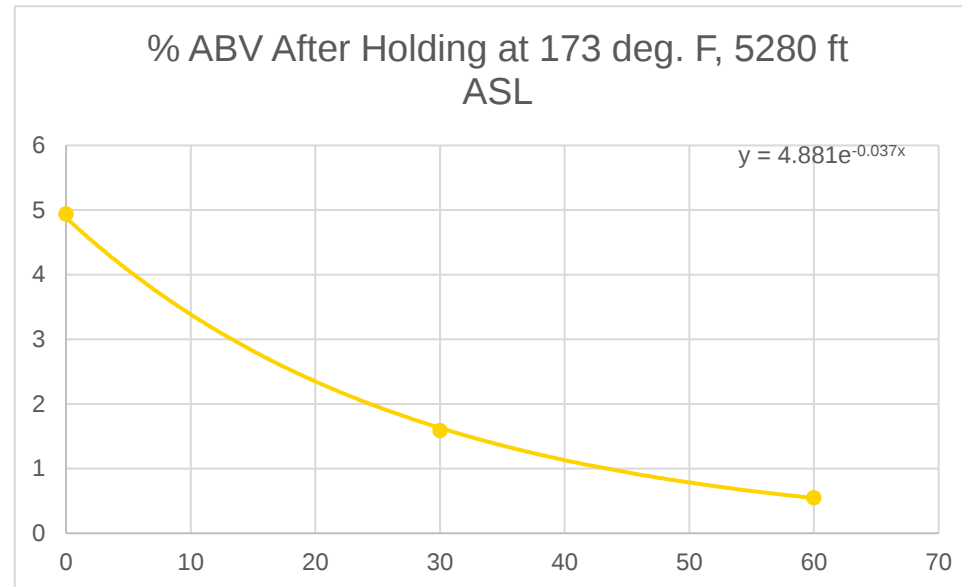
➤ Mechanical

- Reverse Osmosis
- Vacuum Distillation



LA = Low Alcohol, Reduced Alcohol	< 2.5% ABV
NA = Non-Alcoholic/Near Beer	< 0.5% ABV
ZA = ZERO Alcohol	0.0% ABV?
AF = Alcohol Free	0.0% ABV

Stove-top alcohol removal



Generally, one hour at 173 degrees F will decrease alcohol by 10-fold.

Final Warnings

- **Federally illegal**
- **Never fool or trick someone into taking cannabis**
- **Avoid or be very careful mixing alcohol with cannabis**
- **Understand dosage of THC. Start low (e.g. 2 – 5 mg)**

Related Resources

Find hundreds of other member resources on [HomebrewersAssociation.org](https://homebrewersassociation.org)

- **Zymurgy Article: [Brewing with Cannabis: A Measured Approach](#)**
- **For up to date status on state medical and recreational cannabis:**
 - <https://www.disa.com/map-of-marijuana-legality-by-state>
 - <https://norml.org/laws/>

THANK YOU!

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