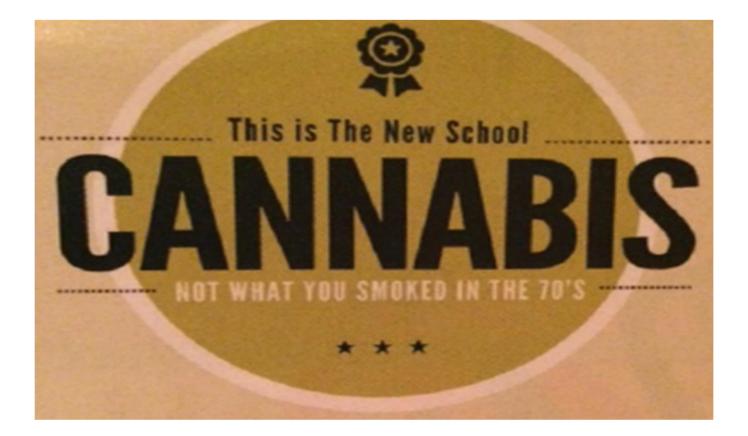


What You'll Need to Know

What I've Been Up To

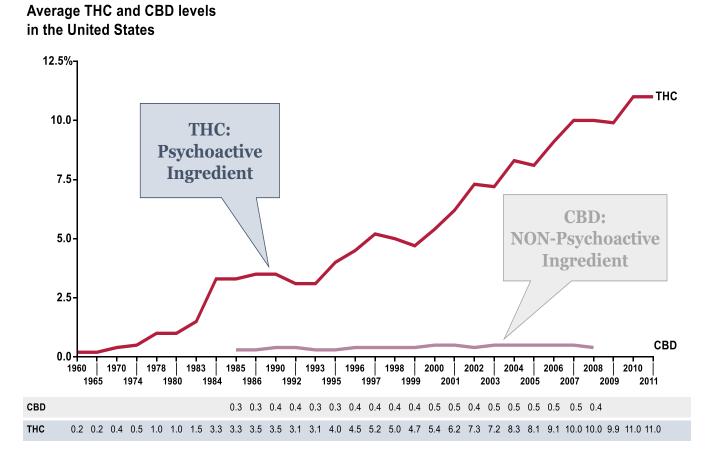
- Kids and Colorado
- > Recovery
- > Phoenix Multisport 2007-12
- > UCH 2012-17
- Book "Weed Inc"
- Cannabis in Medicine: An Evidence Based Approach
- ➤ TED Talk 2017
- Consulting (Treatment, Athletics, Labor)
- > US States, Canada, New Zealand
- Foundry
- Other Affiliations
 - NALGAP
 - NMI
 - University of Florida
 - SAM

The Times They Are A Changin'



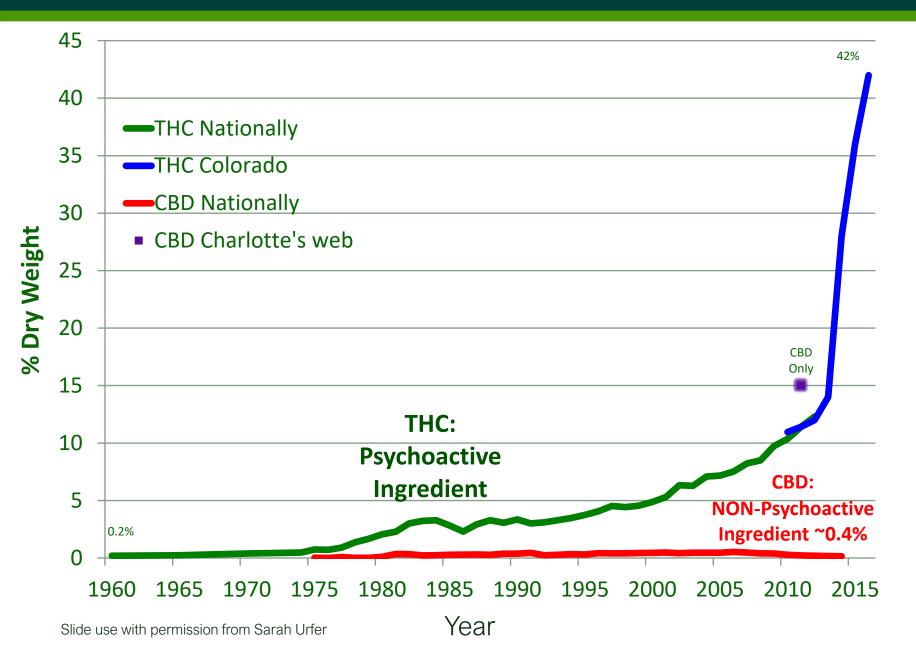


Marijuana has become significantly more potent since the 1960s

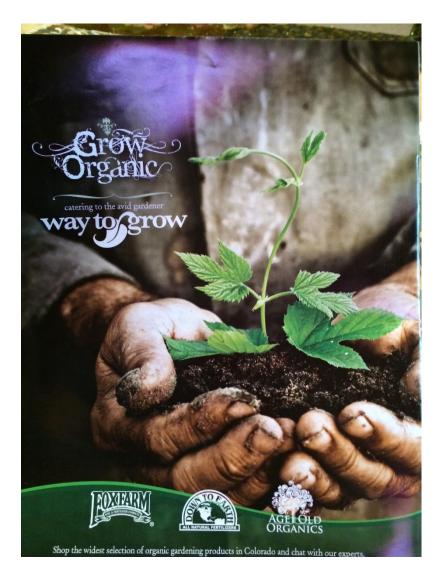


• Source: Mehmedic et al., 2010

Cannabis: % THC Over Time



Gardening vs. Chemistry



Good Chemistry

HOME OF \$30 RECREATIONAL 1/8THS

www.goodchem.org

330 E. Colfax Ave nver, Colorado 80203

т. 720 524 4657

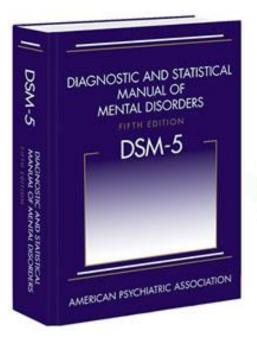
What is Substance Use Disorder (Addiction)

2–3 criteria indicate a mild disorder, 4–5 a moderate disorder, 6 or more, a severe disorder

- 1. Taking the substance in larger amounts or for longer than the you meant to
- 2. Wanting to cut down or stop using the substance but not managing to
- 3. Spending a lot of time getting, using, or recovering from use of the substance
- 4. Cravings and urges to use the substance
- 5. Not managing to do what you should at work, home or school, because of substance use
- 6. Continuing to use, even when it causes problems in relationships
- 7. Giving up important social, occupational or recreational activities because of substance use
- 8. Using substances again and again, even when it puts the you in danger
- 9. Continuing to use, even when the you know you have a physical or psychological problem that could have been caused or made worse by the substance
- 10. Needing more of the substance to get the effect you want (tolerance)
- 11. Development of withdrawal symptoms, which can be relieved by taking more of the substance.

DSM 5

Marijuana & Addiction



The DSM-5 clearly spells out the **objective** criteria for addiction, and for the first time "**cannabis withdrawal**" is listed as a diagnosis.

THC and Addiction

- This is very real and not easy to treat
- Often requires long stays in treatment and anti-psychotic medications
- Traditional rates were around 10%
- Rates today are reaching up to 30% as a result of increased potency (Janni Leungn et al 10/20)
- Many of these addicted patients require physical detox and medical intervention

Econ 101

- Less than 300 cannabis facilities in 2014
- 1,190 Cannabis facilities exist in Colorado in 2017
 2,709 in 2019
- How can Colorado support this amount of retail?
- How does this growth continue?
- > Why does the old 80/20 rule matter here?

(6.1% of MJ users in CO purchase 75.7% of the THC products)

Contributing Factors to Marijuana Dependence



Age of Onset Frequency of Use THC Potency



Coming Attractions

Consumption Trends – Beyond Smoking







Concentrates

Edibles

Vape

strain gang Y HERBERT FUECO

Crack Is Back

nee

Crack is whack. Crack kills. Say no to crack. Sound familiar? Well, kids, I'm here to tell you that not all crack is bad. Some crack is actually really, really good. I'm not talking about the stuff that Shawn Carter cooked in his kitchen and sold in G-packs before he became Jay Z. I'm talking about Green Crack — the classic energetic strain formerly known as Cush, only to be allegedly rebranded "Green Crack" by Snoop Dogg because of the uplifting high that made the rapper and his crew fiend for more.

IFIC

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EEK

= M

After bumping some 213 on the way to Herbs4You, 20 East Ninth Avenue, I was already in a West Coast state of mind and ready to enjoy some sunshine with a sativa on a Friday afternoon. Since this was my first time at the dispensary, I asked the budtender to show me almost everything she had in stock – but my choice wasn't difficult. While the Pineapple Express and Chem #4 were both moderately intriguing, with their firm buds and distinct aromas, a few friends have grown these strains to near perfection, and I didn't



INE

CRAFT CONCENTRATES

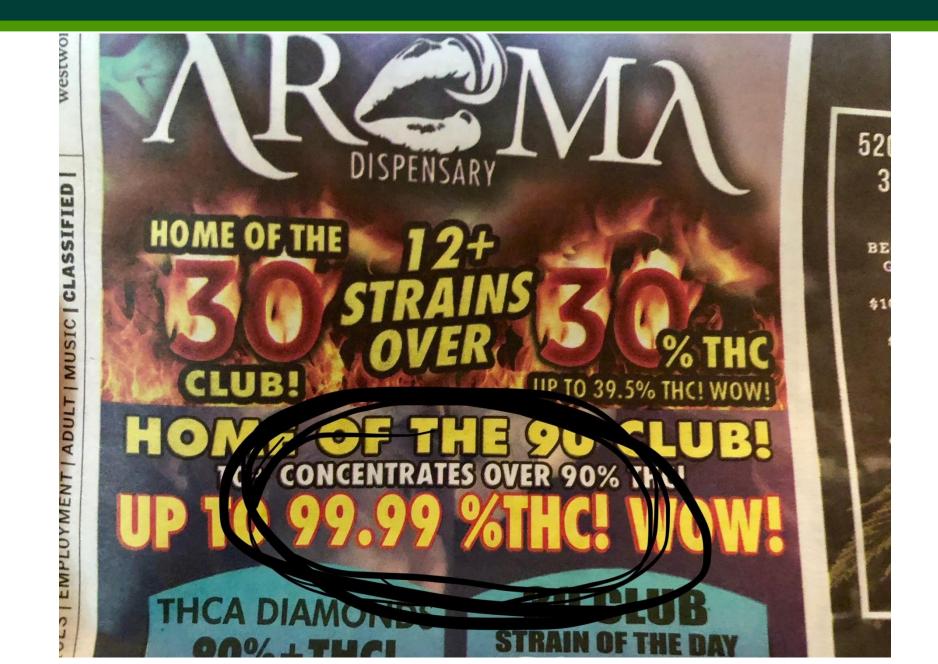
THCA CRYSTALS

HARMONY EXTRACTS GROWN BY: HARMONY EXTRACTS GARDENS PROCESSED IN-HOUSE WHOLESALE HARMONYDENEVER.COM



PURE THCA

SUMMIT CONCENTRATES WHOLESALE GROWN AND PROCESSED IN-HOUSE SUMMITCONCENTRATES.COM



Consumption Trends

2 videos to watch on consumption of concentrates:

https://www.youtube.com/watch?v=uxan2qvNlls

https://www.youtube.com/watch?v=SIPMFpKBBmY&t=191s



NON M

MUST PRESENT COUPON TO RECEIVE

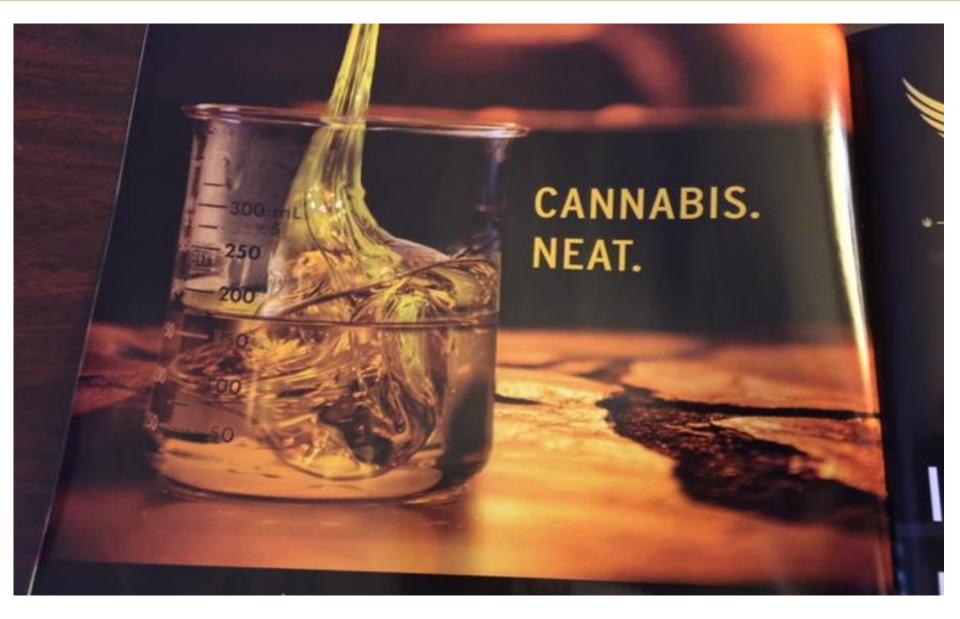
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7739 E. COLFAX AVE DENVER CO 80220 OPEN DAILY 9:00 AM - 6:45 PM WE HONOR EPC PATIENTS MUST BE A MEMBER TO RECEIVE EPC

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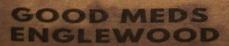
Valid 6/1/18-6/30/18.



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Sweet Summer Deals

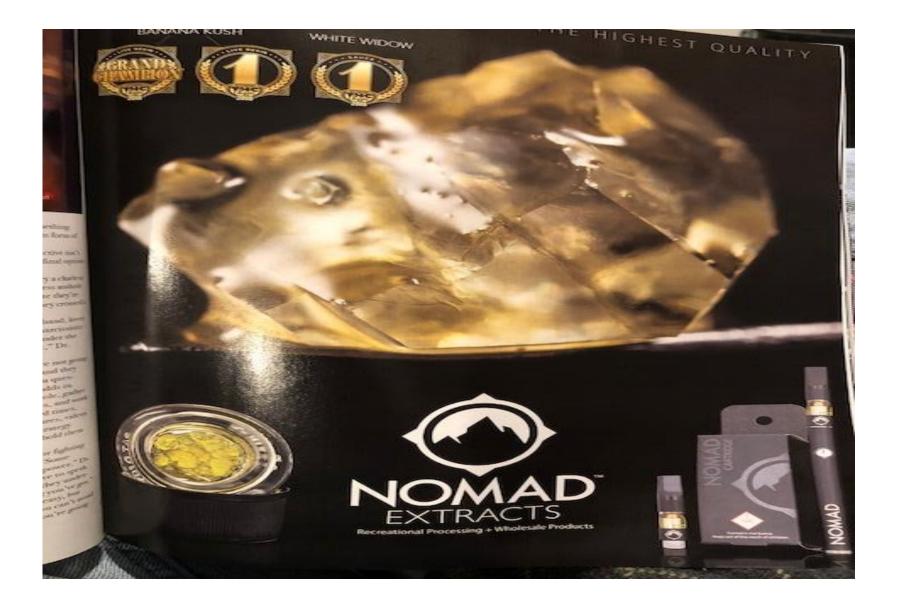
\$495 (oz) & \$134.10 (7g): Member \$540 (oz) & \$152.10 (7g): Non-Member THROUGH SUNDAY, JUNE 24 LIMIT 56 GRAMS, WHILE SUPPLIES LAST



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GOOD MEDS LAKEWOOD

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By using only medical grade stainless steel equipment, reverse osmosis water and ice, and the most advanced techniques available - we produce a terpene rich, 0 ppm product with high THC counts (60-72%) unlike any other.



OISTILLATE WATER CLEAR. NO ALCHEMY. JUST PURE SCIENCE.

TECOLORADO Cannabis CO



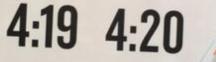
Colorado Cannabis Company is leading the industry in producing high potency, water clear distillate.

0

6

Our clean, pure distillate contains no additives or cutting agents and is available in sleek 1,000 mg glass syringes, 500 mg refillable vape cartridges, and 250 mg disposable vape pens depending on your needs.

We re-infuse our distillate with strain specific 100% cannabis-derived terpenes to bring out the essence of the plant. The effects, flavor, and aroma of our offerings reflect the true characteristics of each strain as if it were just freshly out of the



THE ALL-IN-ONE TOOL FOR DABBING

INTRODUCING

This 420, scrap the sticky tools. forget your stray shatter, and do away with dust bunny dabs. Make it easy on yourself with the clean, one-click solution for dabbing

THE DABARATUS BAKKED Sech without the mess.

FULL SPECTRUM cannabis oil made BY patients FOR patients

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"It's Natural"

Going Back to Nature? Don't Forget the Natural Cannabis! We're Your Concentrate H adquarters for the Day of Dabs Summer Harv t Special uality Medical & Recreational Ca abis with prices starting at 20 Eighths · \$65 Half O ices · \$110 Ounces DO 1178 South Kalamath Denver CO 80223 APOTHECAR 303-777-1840 ColoradoHarvestCompany.com al & Recreational at both locations - Aurora locations opening soon - Debit Expires 7/16/15 Concentrate nd \$50 Mondays & Tuesdays /brid Cone 20% Get Penny Any One O.penVAPE, White Mousse, Top Shelf, Essential Extracts, Botanico & Live Resin d with other offers EVERY DAY THIS WEEK through 7/10

Driving Trial, Sound Familiar?







Vapes







The Adjusta Agricor Lab Bear Mortg Bulldog Pro Cannabis T Cannopoly CLogistics The Clinic Cohen Me Colorado (Concentra CWC Soil DoobyDa EndoCani Escape/E Evolve Fo Franklin Greenho GreenLir Hybrid F Kindred L'Eagle Lab Soc Lowspa LUXX R Mac & marQa Mary Ja MedPh Monte

Vapes





Titanium Grasshopper leaps to next level of discretion, packs surprising power (review)



PUBLISHED: NOV 30, 2016, 4:15 PM + UPDATED: NOV 30, 2016, 4:15 PM

By Chris Thomas, The Cannabist Staff

The days of Tim "Tool Man" Taylor have long passed, but I'm still a sucker for more power.

There's something oddly satisfying about using a well-made, powerful tool. There's a reason people buy muscle cars, iPhones and power drills. Not SLOW DOWN BREATHE INHALE THERE IS TIME FOR THERE IS TIME FOR BREATHE INHALE THIS IS INDICA



PERFORMANCE | VAPE | TECHNOLOGY

Vape different



HOME . REVIEWS . PRODUCT REVIEW



(Ben Livingston, The Cannabist)

melice

indi

Stealth PUFFiT vaporizer mimics asthma inhaler (review)

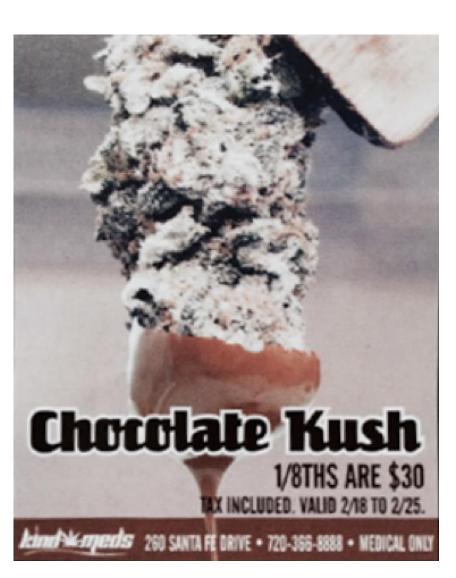


A single charge for a singlalar experience. The enhanced before on the birties 'sage reserves provides up to be mirest of surfaces are when fully charged. Giving you amplication in lowering, initiale, and store down.

Vapes

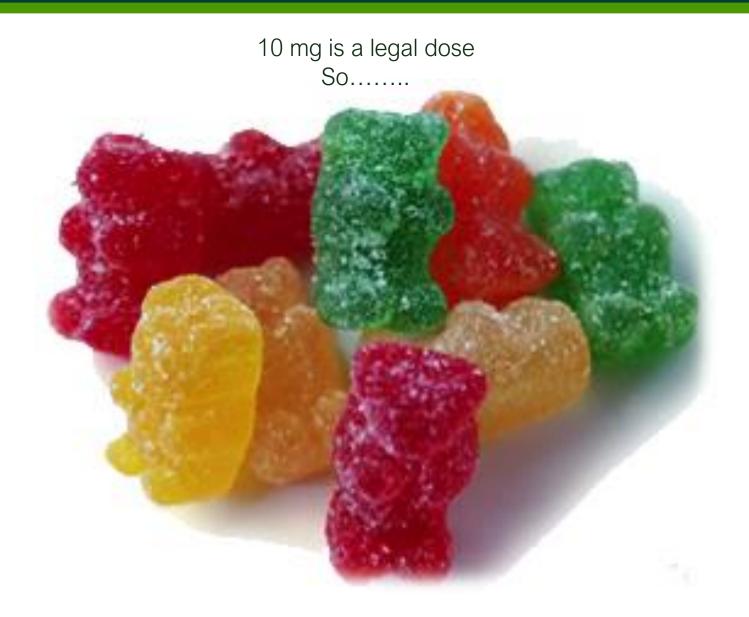


The Incredible, Edible Weed













A New Record!



Edible

Korova Black Bar 1000mg \$35!

Description

Get \$10 off each Korova Black Bar while available!



3 mi Newport Beach, CA



"Infused Everything"

Infused everything: These cannabis products might surprise you

Coffee. Post-tattoo ointment. Toothpaste. Um, vaginal suppositories? The staggering variety begs the question, 'What can't we infuse?'



PUBLISHED: JUN 24, 2016, 7:27 PM • UPDATED: 7 DAYS AGO

ADD A COMMENT

By Katie Shapiro, The Cannabist Staff

Move over edibles, lotions and tincture potions — there's an entire new realm of cannabisinfused products hitting the shelves of dispensaries and recreational shops as marijuana moves even further into the mainstream

7 COOL CANNABIS CONDIMENTS

By Elise McDonough June 24, 2016





Turn any dish into a medicated meal with versatile, cannabis-infused condiments. Using medicated sauces lends valuable flexibility to menu planning while making correct THC dosing very easy.



7 ENERGIZING CANNABIS COFFEES

By Elise McDonough January 27, 2017

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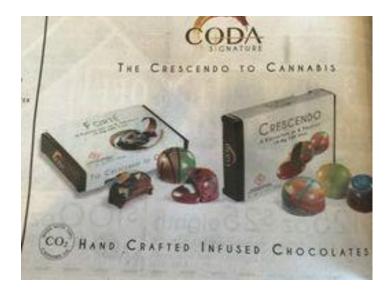
PHOTO BY DAMION LLOYD

Making a "hippie speedball" is easier than ever before with these blends of THC and caffeine.





16 NOVEMBER 2018 Denver / Boulder







Marijuana Infused Ice Cream

Embark on a never ending munchies loop as you indulge in a sweet bowl of marijuana infused ice cream. This sugary treat comes laced with grade-A funk that'll leave you feeling like your brain and body have melted into a carefree nirvana.

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INTRODUCING THE FIRST EVER CANNABIS NASAL MIST

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CANNABIS DOWN TO A SCIENCE

With unmatched quality, consistency and purity, our scientifically formulated wellness product line has the power to change the way the world thinks about cannabis. Find Verra products and learn more at VerraWellness.com

SHE

VERRA

Trin

Ino-but the Fabs, Bob Dylan, and their contemporaries kicked it into the stratosphere. I started buying albums and subscribed to *Rolling Stone*, *Creem*, and *Crawdaddy* magazines to keep up with all the activity.

It wasn't until 1975 that my first piece—a review of Bob Dylan's Blood on the Tracks—was published in a local Kansas City monthly. I soon applied to the Kansas City Times (back then, the Times was the morning paper, the Star the evening), and by 1979 I was working full-time—first as a









THIS AD IS INTENDED FOR COLOR



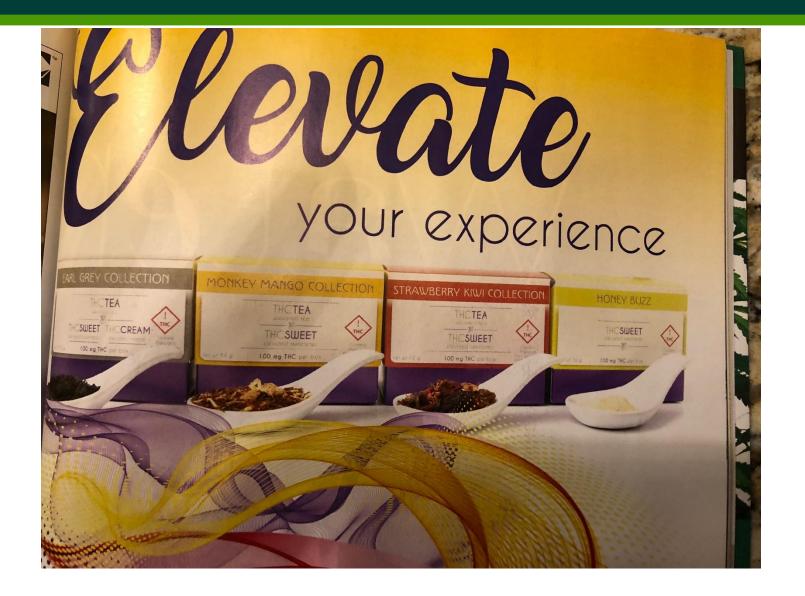
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DENVER GRA OCTOBER 7 T





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What are THC/CBD nanoparticles?

Our NANO BITES provide more efficient absorption & a faster onset compared to traditional edibles. Made from our extensively refined distillate, NANO BITES contain cannabinoid nanoparticles which are utilized by the body much more efficiently than unrefined oils. Get more out of your dose...with far less waiting.

dosdedibles.com info@dosdedibles.com



sensimag.com MARCH 2018 19



THE HE

WE INVENTED A HAPPY PILL

BLISS.

This peanut butter cup will make you very happy. Like, bubbly, euphoric, hot damn I'm fascinating and oh what a beautiful world and wait, did that barista just wink at me, yes they did. Introducing Bliss, thoughtfully engineered to give you a deep sense of wellbeing and enthusiasm for all the amazing things the day may bring.

Try it. You'll really, really like it.

AVAILABLE IN DARK AND MILK CHOCOLATE 5 MG THC / 5 MG CBD 20 MG THC / 20 MG CBD (FOR MEDICAL PATIENTS)

Edibles (Look-a-likes)





Have your pot and drink it too

o you ever come home after a long day at work and feel torn between which substance you want to use to escape reality? It's OK, you're not alone. It's a tough choice, especially in Colorado where thriving microbreweries and marijuana dispensaries both



the keg? Well, back in January, Keith Villa, the guy who created Blue Moon Brewing Company and worked as the head brewmaster for 35 years, announced his retirement from Molson Coors.

Fortunately for us, retirement must have been hella boring for Keith 'cause he spent the entire time experimenting with craft beer and marijuana in preparation for his next venture. Now, he's teaming up with his wife, Jodie, to officially launch their new brand: Ceria Beverages. Actually, now that I think about it, three months of concocting drinks and researching how to get the masses lit sounds like the best retirement ever. Sign me up.

Based in Arvada, Ceria's company goals this

six milligrams of THO beers will be in the 1 the full-bodied offer gram range. And in ever, the drinks will lar to ski slopes: a blue leaf for inter experienced user ultimate experie

To be clear, exist, so this is Brewing previ IPA, but it on high, because active cannab things that n





AnnaPunch 100% Sveed Fed ted

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Our one of a kind extraction uses hydrocarbon solvent that is 99.5%+ pure and contains NO CHEMICAL ADDITIVES.

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We use an organic preservative that keeps the medicine completely emulsified throughout the punch in addition to balancing the PH, making a Highly Refreshing beverage for any occasion. Every flavor in Refreshing beverage for any occasion. Every flavor in our line has gone through rigorous scientific testing to make sure we are offering the best infused drink product on the market.

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WATERMELON NECTAR

hake product well. roduct setting which setting the opening. his Package is Child reached children reached children reached children riton (children) riton (children)

A

Keef - born in Boulder Colorado - is proud to announce the world's first cannabis infused sparkling water - Keef Sparkling.

With over 7 years of experience in creating cannabis infused beverages -Keef has become the market leader. In 2015, the Keef Cola Bubba Kush Root Beer was named "Best Edible" at the U.S. High Times Cannabis Cup. As the market leader - Keef has met the demand for a zero calorie cannabis infused beverage that is the go-to social option for people looking for an alternative to sugary cannabis-infused edibles.

Keef Sparkling is sugar free, has zero calories and is naturally flavored providing a guilt free social beverage experience. Unlike other edibles that can take up to two hours to fully activate, cannabis infused beverages offer their full effects in as little as 15 minutes after drinking - leading to a more real-time and responsible consumption experience.

Keef Sparkling is available in two flavors: Lemon and Blood Orange. Each 12 oz. bottle contains 10mg of activated THC. Visit www.keefcola.com to find your nearest retailer.



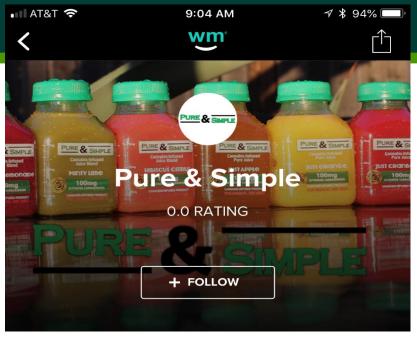
KEE

New from Keef - Oil leading technology extract.

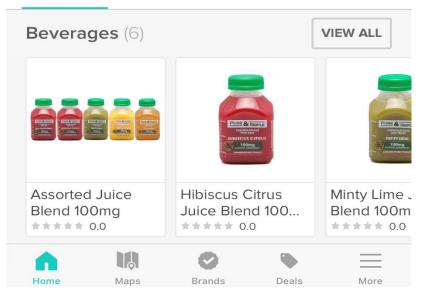
The rapid heating, gives the user a tr consistent perform finish. Oil Stix offer extract via superhighest quality st agents, no "planthat you are gett flavor that nature

> The goal at Keel and all of the ind batch of cannat selected to ensu potency. Expec Visit www.oilstb





PRODUCTS NEAR ME REVIEWS VIDEOS INSTA





"Infused Everything"





Layers of dark chocolate and white chocolate with real peppermint bits and 100mg THC



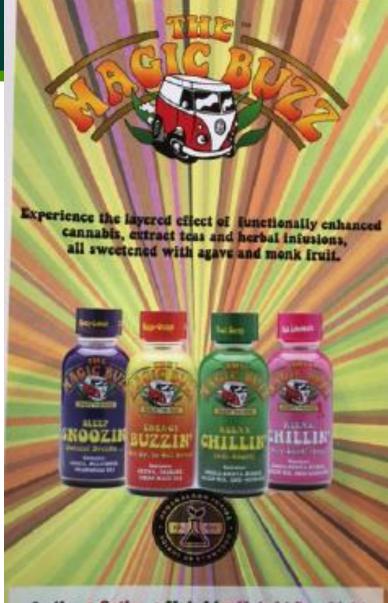
Edibles



WWW.NKMMJ.COM







Indica · Sativa · Hybrid · Hybrid Dec-Light

Single Zoz Serving 10mg Consistent, Measured Dose Infused with Organa Labs certified oil creating a pure, balanced and consistent product





APOTHECANNA SEXY TIME

APC

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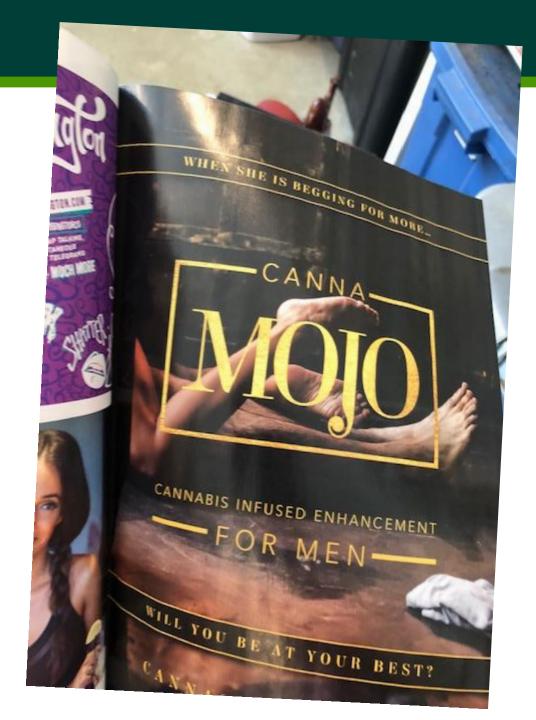
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Plant-based glide for your pleasure plus a jasmine-cannabis-coconut combination to awaken your body, mind and spirit. The ultimate aphrodisiac.



EVERYTHING!



WARNING: THERE MAY BE HEALTH RISKS ASSOCIATED WITH THE CONSUMPTION OF THIS PRODUCT. THIS PRODUCT CONTAINS MARIJUANA AND ITS POTENCY WAS TESTED WITH AN ALLOWABLE PLUS OR MINUS 15% VARIANCE PURSUANT TO 12-43.4-202(3)(A)(IV)(E), C.R.S. THIS PRODUCT WAS PRODUCED WITHOUT REGULATORY OVERSIGHT FOR HEALTH, SAFETY, OR EFFICACY. THE INTOXICATING EFFECTS OF THIS PRODUCT MAY BE DELAYED BY TWO OR MORE HOURS. THERE MAY BE ADDITIONAL HEALTH RISKS ASSOCIATED WITH THE CONSUMPTION OF THIS PRODUCT FOR WOMEN WHO ARE PREGNANT, BREASTFEEDING, OR PLANNING ON BECOMING PREGNANT. DO NOT DRIVE A MOTOR VEHICLE OR OPERATE HEAVY MACHINERY WHILE USING MARIJUANA.

THE RETAIL MARIJUANA PRODUCT CONTAINED WITHIN THIS PACKAGE COMPLIES WITH THE MANDATORY CONTAMINANT TESTING REQUIRED BY RULE R 1501.

THE SERVING SIZE OF ACTIVE THE IN THIS PRODUCT IS 10 MG, THIS PRODUCT CONTAINS 10 SERVING OF MARIJUANA, AND THE TOTAL AMOUNT OF ACTIVE THE IN THIS PRODUCT IS 100 MG.

THIS PRODUCT MAY CONTAIN MILK, TREE NUTS, PEANUTS, AND SOY.

STORE THIS PRODUCT IN A COOL, DRY PLACE.

THIS PACKAGE IS CHILD RESISTANT.

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> Push In Tab 1

Why The Lancet Study Really Matters



Lancet Study of "Skunk Weed"

Daily use sees a 5x increase in psychosis

> Weekend use sees a 3x increase

> 24% of psychosis cases in the study group caused by weed alone

Mental Health Consequences: Casual Use

- > Risk of depression: 1.4x (Casual?)
- Acute Anxiety
- Increased risk of anxiety disorders (Casual?)
- Worsened outcomes in bipolar disorder (Casual?)
- Risk of attempted suicide requiring hospitalization: 2x (Casual?)

Reviewed in Hall, 2014; Di Forti et al 2014, Giordano et al 2014

Cannabis & Psychosis

- Use of cannabis associated with 1.4x increased risk of psychosis
- Regular associated with a 2x risk of psychosis
- High potency cannabis, more frequent use, and genetic susceptibility (slc, comt, akt1) can increase risk to 8x
- Use before age 18 has 2.4x risk of dx of schizophrenia (dose response)

Reviewed in Hall, 2014; Di Forti et al 2014, Giordano et al 2014 Radhakrishnan et al Gone to Pot – A review of the Association between Cannabis and Psychosis

Physical Health Consequences: Acute

- Impaired memory
- Impaired motor coordination
- Slowed Reaction Time
- Increased Singular Focus
- Reduction in Perceptual Accuracy
- Increased heart rate
- Increased risk of angina, heart attack and stroke in those with and without previous heart attack
- Electrolyte imbalances
- Respiratory issues (difficulty for individuals to intake oxygen)

Physical Effects of Chronic Use

- Changes in physical structure of the brain
- Immune system decrease
- Reduced weight and height (adolescents)
- Increased risk of testicular cancer (dose response related)
- > Reduced Sperm Count

To Learn More...

Project SAM (Smart Approaches to Marijuana)

- > NIDA
- > SAMSHA
- SMART CO

Lots of others, but use a critical eye
 (I subscribe to lots of pro-cannabis and commercial cannabis sites and newsletters)

