



# Welcome to Medical Cannabis Education Day

Hosted by the  
Hawai'i State Department of Health  
Office of Medical Cannabis Control and Regulation

Disclaimer: The information provided in this webinar is for educational and informational purposes only and is provided as part of OMCCR's public education mandate. It is intended to keep qualifying medical cannabis patients informed about the safe and responsible use of medical cannabis. You should consult a medical doctor to address any health concerns specific to you. While we strive to ensure accurate and up-to-date content, the information may not reflect the most current legal standards or scientific research. The views expressed in this webinar do not necessarily reflect the opinions or policies of the State of Hawaii or the Department of Health.



**December 7, 2024**

# Navigating Cannabis Choices and Safe Practices



Clifton Otto, MD, MSEd  
December 7, 2024

# Disclosures

Certifying Physician for Hawaii's  
Medical Cannabis Program

NOT a member or consultant for any  
dispensary

No other financial interests to disclose  
Not being compensated for this talk

# Disclaimer

This presentation is for educational purposes only and not intended as medical or legal advice.

Please consult with licensed professionals for medical and legal advice regarding the medical use of Cannabis in Hawaii.

# My Background



Cannabinoid Medicine Specialist  
American Academy of Cannabinoid Medicine

Hawaii Dispensary Task Force member  
Physician Member - 2014

Akamai Cannabis Consulting - 2013  
Certifying Physician

Wyeth-Ayerst Pharmaceuticals  
Reference Standard Chemist, 1994-1995

University of Hawaii at Manoa  
Natural Products Chemist, 1992-1994

# Friend with colon cancer ...

Pain relief

Nausea  
reduction

Appetite  
stimulation



# Patient Experience



**300 mg THC per bar**

**10 squares = 30 mg per square**

**40 servings per bar = 4 servings per square**

# Harm Reduction Approach



- Find Help
- Practitioner Training
- Public Messages
- Grants
- Data
- Programs

[Home](#) » [Find Help](#) » Harm Reduction

## Find Help

Find Support

What is Mental Health?

¿Qué es la salud mental?

FindTreatment.gov

Disaster Distress Helpline



## Harm Reduction

<https://www.samhsa.gov/find-help/harm-reduction>



# Harm Reduction Approach

## SAMHSA Supporting Principles

Respect autonomy

Practice acceptance and hospitality

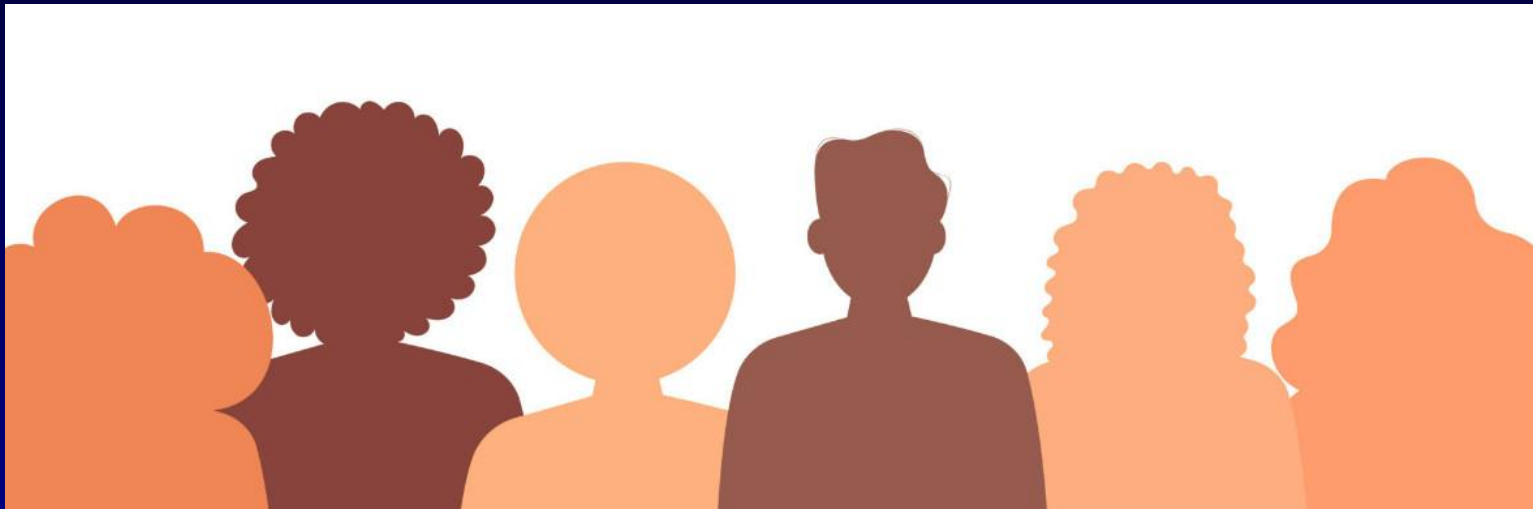
Provide support

Connect with community

Provide many pathways to well-being

<https://www.samhsa.gov/find-help/harm-reduction>

# Medical Cannabis Patients



Want to be functional  
Use primarily at night  
Using as little as possible

# Certifying Providers



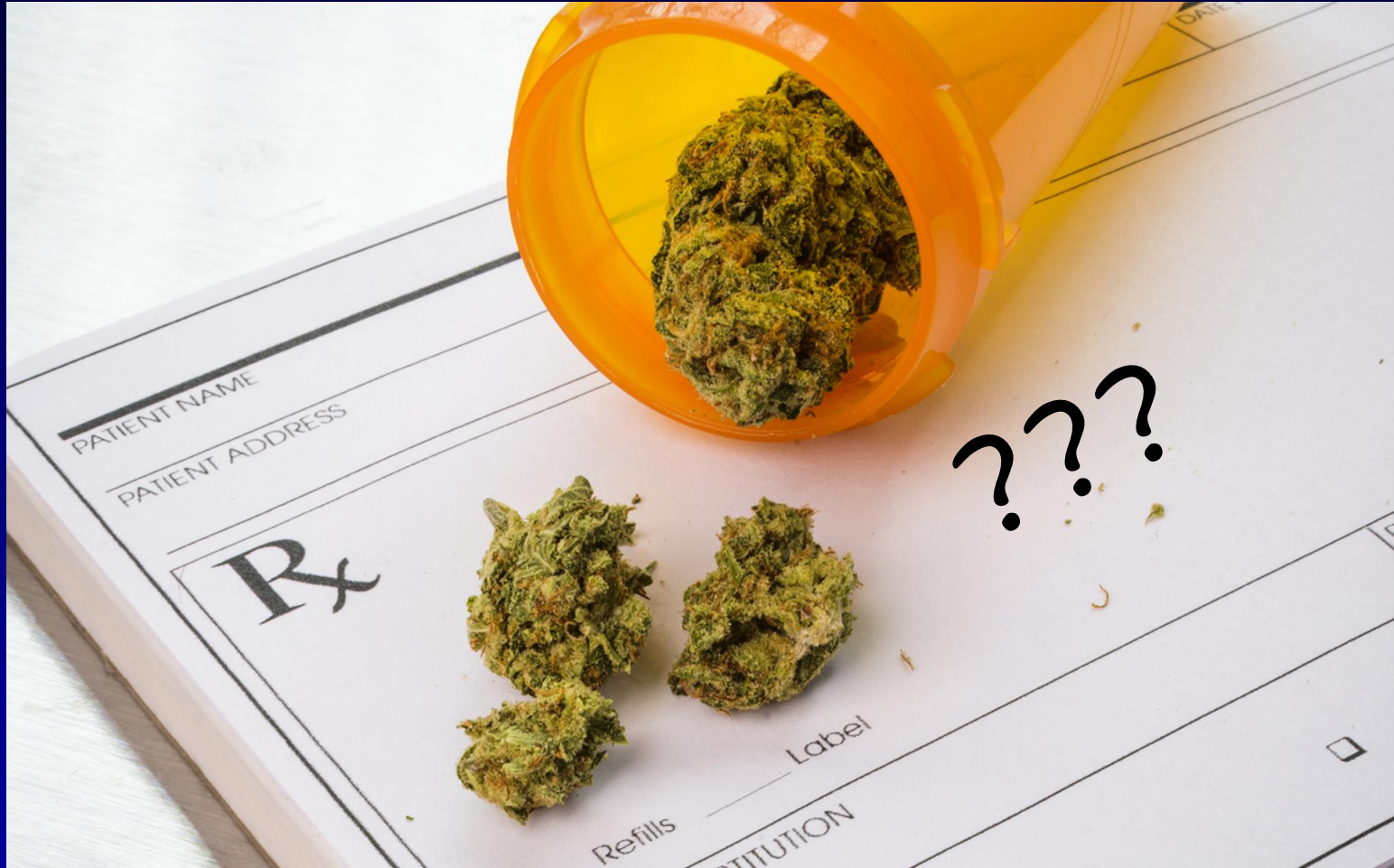
Physicians and APRNs

State Licensure

State controlled substance  
prescribing registration

DEA controlled substance  
prescribing registration

# Certifying Providers



Not prescribing, recommending, or providing access.

# Certifying Providers

The screenshot shows the top portion of the AACM website. At the top left is the AACM logo, which includes a caduceus symbol and the text "AACM American Academy of Cannabinoid Medicine". To the right of the logo is the contact information: "(805) 961-9988 || Fax: (805) 961-9966". Below the contact info are social media icons for Facebook and Twitter, followed by a search bar with the placeholder text "Search..." and a magnifying glass icon. A dark navigation bar contains the menu items: "MEMBERSHIP", "MEDICAL PROVIDERS", "PRACTICE STANDARDS", and "MORE". The main banner area features the AACM logo and name in large white text, with the tagline "Promoting high ethical and practice standards in the clinical application of cannabis and cannabinoids" in a smaller, italicized font below it. A faint, large watermark of the AACM logo is visible in the background of the banner.

Certify the Certifying Providers

# Certification Evaluation



Medical History and Drug Interactions review

Risks and Benefits

Products and Dosages

Self-treatment Plan and Access to follow-up

Written Certification and Registration submission

# Certification Evaluation

## CONSIDERATIONS

Individual Constitution  
Physical-Emotional Fluctuations  
Severity and Progression of disease  
Type of Material  
Route of Administration  
Dosage and Frequency  
Medical Team

# Certification Evaluation

## ROUTES OF ADMINISTRATION

Inhalation

Ingestion

Topical

Rectal / Vaginal




# Types of Products



# Types of Products



## Oshiri Lozenge

  
 US 20190008823A1

(19) **United States**  
 (12) **Patent Application Publication** (10) **Pub. No.: US 2019/0008823 A1**  
**Changoer et al.** (43) **Pub. Date: Jan. 10, 2019**

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(54) **SUPPOSITORIES COMPRISING CANNABINOIDS**

(71) Applicant: **AXIM Biotechnologies, Inc.**, New York, NY (US)  
 (72) Inventors: **Lekhram Changoer**, Ridderkerk (NL); **George Anastassov**, New York, NY (US)

(21) Appl. No.: **16/122,079**  
 (22) Filed: **Sep. 5, 2018**

**Publication Classification**

(51) **Int. Cl.**  
*A61K 31/352* (2006.01)  
*A61K 9/02* (2006.01)  
*A61K 47/10* (2006.01)  
*A61K 9/00* (2006.01)

(52) **U.S. Cl.**  
 CPC ..... *A61K 31/352* (2013.01); *A61K 9/02* (2013.01); *A61K 9/0031* (2013.01); *A61K 47/10* (2013.01); *A61K 9/025* (2013.01)

(57) **ABSTRACT**  
 This invention relates to a suppository composition comprising cannabinoids. The suppository composition is formulated for easy absorption through mucosal membrane. The suppository as provided herein is useful for administration of cannabinoids in patients with nausea, vomiting, other conditions preventing swallowing, or conditions wherein suppository administration is required. Methods to manufacture the suppository composition are provided. Methods to treat pain, nausea, post-operative ileus and/or inflammatory bowel diseases using the suppository according to this invention are also provided.

**Related U.S. Application Data**

(63) Continuation of application No. 15/787,978, filed on Oct. 19, 2017, now Pat. No. 10,092,538.  
 (60) Provisional application No. 62/411,067, filed on Oct. 21, 2016.

# Home Cultivation



Reduced costs, control over production and cultivar selection.

# Home Cultivation



Lab testing available for patients.

# Goal of Self-Treatment



... most benefit  
with the lowest risk  
using the least material

# Health Effects



## Cannabis and Public Health

EXPLORE TOPICS ▾

FEBRUARY 16, 2024

## Cannabis Health Effects

### KEY POINTS

- Cannabis use may have a wide range of health effects on the body and brain.
- There are several risk factors and negative health outcomes associated with cannabis use.



<https://www.cdc.gov/cannabis/health-effects/index.html>

# Health Effects



Cannabis and Public Health

Cannabis Use Disorder  
Brain Health  
Heart Health  
Driving  
Lung Health  
Mental Health  
Unintentional Poisoning

<https://www.cdc.gov/cannabis/health-effects/index.html>

# Health Risks

International Journal of Legal Medicine  
<https://doi.org/10.1007/s00414-023-03041-x>

SHORT COMMUNICATION

## Cannabis education: how providers and patients can engage in discussion

Kenneth Finn<sup>1,2</sup> · Brock K. Bakewell<sup>3</sup> 

Received: 26 April 2023 / Accepted: 7 June 2023

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# Health Risks

Cardiac History  
Pulmonary History  
Neurological History  
Psychiatric History  
Pregnancy  
Adolescent Use  
Use in the Elderly  
Drug Interactions  
Driving  
Perioperative Use

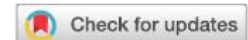
# Inhalation

www.nature.com/scientificreports

**SCIENTIFIC  
REPORTS**



nature research

SCIENTIFIC REPORTS | (2020) 10:7160 | <https://doi.org/10.1038/s41598-020-63120-6>



**OPEN**

## Comprehensive characterization of mainstream marijuana and tobacco smoke

Brian M. Graves<sup>1,4</sup>, Tyler J. Johnson<sup>1,4</sup>, Robert T. Nishida<sup>1,2,4</sup> , Ryan P. Dias<sup>3</sup>, Benjamin Savareear<sup>3</sup>, James J. Harynuk<sup>3</sup>, Mohsen Kazemimanesh<sup>2</sup>, Jason S. Olfert<sup>2</sup> & Adam M. Boies<sup>1</sup> 

<https://www.nature.com/articles/s41598-020-63120-6>

# Inhalation

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Article

<http://pubs.acs.org/journal/acsodf>

DOI: 10.1021/acsomega.7b01130  
ACS Omega 2017, 2, 6112–6117

## Toxicant Formation in Dabbing: The Terpene Story

Jiries Meehan-Atrash, Wentai Luo, and Robert M. Strongin\*<sup>ID</sup>

Department of Chemistry, Portland State University, 1719 SW 10th Avenue, Portland, Oregon 97201, United States

Supporting Information

**ABSTRACT:** Inhalable, noncombustible cannabis products are playing a central role in the expansion of the medical and recreational use of cannabis. In particular, the practice of “dabbing” with butane hash oil has emerged with great popularity in states that have legalized cannabis. Despite their growing popularity, the degradation product profiles of these new products have not been extensively investigated. The study herein focuses on the chemistry of myrcene and other common terpenes found in cannabis extracts. Methacrolein, benzene, and several other products of concern to human health were formed under the conditions that simulated real-world dabbing. The terpene degradation products observed are consistent with those reported in the atmospheric chemistry literature.



<https://pmc.ncbi.nlm.nih.gov/articles/PMC5623941/>

# Inhalation

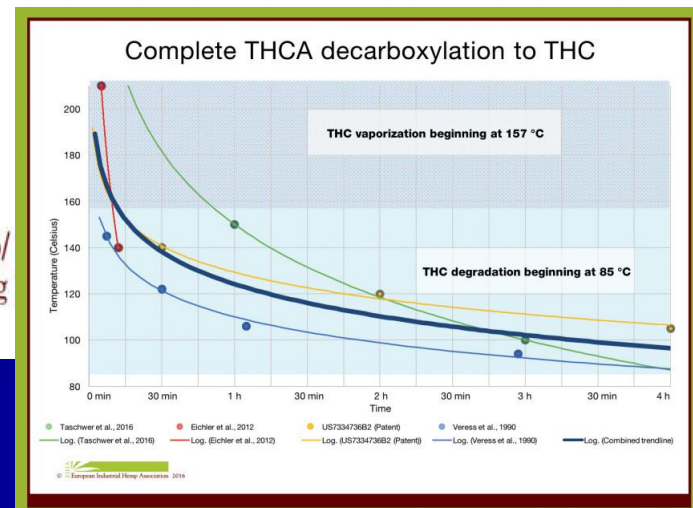
## European Industrial Hemp Association (EIHA) paper on: Decarboxylation of Tetrahydrocannabinolic acid (THCA) to active THC

Authors: Kerstin Iffland, Michael Carus and Dr. med. Franjo Grotenhermen,  
nova-Institut GmbH

Hürth (Germany), October 2016

Download this paper and further documents at: [www.eiha.org](http://www.eiha.org)

Responsible under press legislation (V.i.S.d.P.): Michael Carus | EIHA co/  
Industriestraße 300 | 50354 Hürth | Germany | [michael.carus@eiha.org](mailto:michael.carus@eiha.org)



<https://eiha.org/media/2014/08/16-10-25-Decarboxylation-of-THCA-to-active-THC.pdf>

# Dry Herb Vaporizers



# Dry Herb Vaporizers

JPS/05-082(20574)

Author Proof

## Evaluation of a Vaporizing Device (Volcano<sup>®</sup>) for the Pulmonary Administration of Tetrahydrocannabinol

ARNO HAZEKAMP,<sup>1</sup> RENEE RUHAAK,<sup>1</sup> LINEKE ZUURMAN,<sup>2</sup> JOOP VAN GERVEN,<sup>2</sup> ROB VERPOORTE<sup>3</sup>

<sup>1</sup>Division of Pharmacognosy, Institute of Biology, Leiden University, Leiden, The Netherlands

<sup>2</sup>Centre for Human Drug Research, Leiden, The Netherlands

<sup>3</sup>Division of Pharmacognosy, Section Metabolomics, Institute of Biology, Leiden University, Leiden, The Netherlands

*Received 1 January 2005; revised 15 April 2005; accepted 25 October 2005*

*Published online ? ? ? ? in Wiley InterScience (www.interscience.wiley.com). DOI 10.1002/jps.20574*

**ABSTRACT:** [Xxx](#)<sup>Q2</sup>xx. © 2005 Wiley-Liss, Inc. and the American Pharmacists Association J Pharm Sci 9999:1–10, 2005

**Keywords:** delta-9-tetrahydrocannabinol; cannabis; vaporizer; aerosol; pulmonary drug delivery; formulation vehicle; controlled delivery

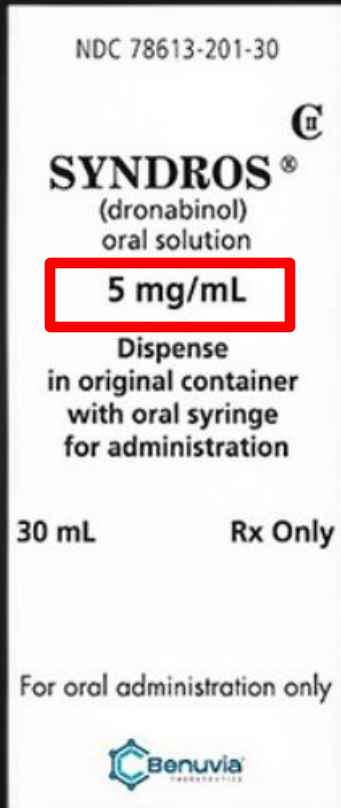
<https://onlinelibrary.wiley.com/doi/abs/10.1002/jps.20574>

# Marinol



FDA-approved, Schedule III, renewable prescription.

# Syndros



Store in a refrigerator between 2°C and 8°C (36°F and 46°F); excursions permitted up to 25°C (77°F). After the bottle is opened, SYNDROS can be stored at room temperature, between 68°F to 77°F (20°C to 25°C), for up to 42 days.

FDA-approved, Schedule II, non-renewable prescription.



# Sativex



Awaiting FDA-approval.

# Fixed dosage



Serving Size ???

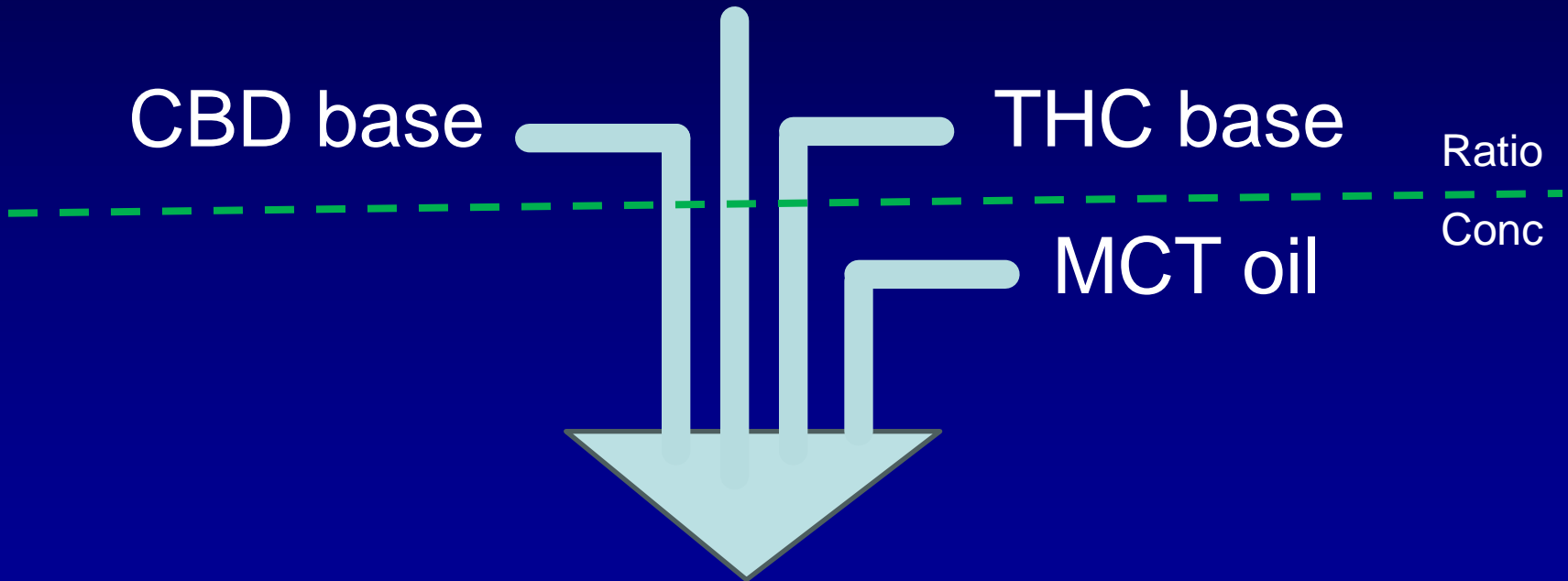


# Adjustable dosing




# Customized formulation

1:1 base



Mixed at POS

# Certificate of Analysis



Cannalife - LA  
7027 Haydenhurst Ave.  
Van Nuys, CA 91406

(818) 822-2416  
https://www.csabts.com  
LIC# CB-0000940-LIC

R&D Testing

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**Sims G**

Sample ID: 1912CSALA1373.8195  
Strain: Sims G  
Matrix: Plant  
Type: Trim  
Sample Size: 54 grams  
Batch Size:  
Batch#:

## CERTIFICATE OF ANALYSIS

Client:  
Northeast Hemp Commodities  
Lic #  
416 Exchange Street Suite #2  
Middlebury, VT 05753

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Summary		Pass
<b>11.27%</b>	<b>Pass</b>	<b>Not Tested</b>
Total Cannabinoids	Pesticides	Residual Solvents
<b>Pass</b>	<b>Pass</b>	<b>Pass</b>
Microbials	Mycotoxins	Heavy Metals

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**Cannabinoids** Pass

Testing method: HPLC-SOP 101

Analyte	LOD	LOQ	Results	Results
	mg/g	mg/g	%	mg/g
CB				█
CB				█
TH				█
CB				█
CB				█
TH				█
Δ <sup>9</sup> -THC	0.00004	0.0001	ND	ND
<b>Total</b>			<b>11.27</b>	<b>112.70</b>

**0.08%**

Total THC

**0.17%**

Total CBD

Date Tested: 12/17/2019  
Total THC = THC<sub>a</sub> + 0.877 \* Δ<sup>9</sup>-THC  
Total CBD = CBD<sub>a</sub> + 0.877 \* CBD  
LOQ = Limit of Quantitation; LOD = Limit of Detection; NT = Not Tested; ND = Not Detected.  
The reported result is based on a sample weight with the applicable moisture content for that sample.

**Terpenes** Complete

Testing method: HS-GC-FID - SOP 201

Analyte	LOD	LOQ	Results	Results
	mg/g	mg/g	%	mg/g
β-Myrcene	0.00012	0.0013	0.05	0.51
α-Bisabolol	0.00015	0.0013	0.03	0.25
β-Caryophyllene	0.00017	0.0013	0.02	0.25
Camphene	0.00072	0.0013	ND	ND
Caryophyllene Oxide	0.00017	0.0013	ND	ND
Eucalyptol	0.00017	0.0013	ND	ND
Geraniol	0.00013	0.0013	ND	ND
Guaiol	0.00018	0.0013	ND	ND
Isopulegol	0.00011	0.0013	ND	ND
Linalool	0.00015	0.0013	ND	ND
Ocimene	0.00013	0.0013	ND	ND
p-Cymene	0.0001	0.0013	ND	ND
Terpinolene	0.00016	0.0013	ND	ND
trans-Nerolidol	0.00058	0.0013	ND	ND
α-Humulene	0.00057	0.0013	ND	ND
α-Pinene	0.00015	0.0013	ND	ND
α-Terpinene	0.00012	0.0013	ND	ND
β-Pinene	0.00034	0.0013	ND	ND
γ-Terpinene	0.00012	0.0013	ND	ND
β-3-Carene	0.0004	0.0013	ND	ND
δ-Limonene	0.00016	0.0013	ND	ND
<b>Total</b>			<b>0.10</b>	<b>1.01</b>

Date Tested: 12/19/2019

---

**6.9%**

Moisture

Moisture Analyser SOP-103  
Date Tested: 12/16/2019

**0.360 aw**

Water Activity


Water Activity Meter SOP-152  
Date Tested: 12/16/2019

**Pass**


Foreign Matter

Visual Inspection SOP-400  
Date Tested: 12/19/2019

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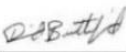
ISO 17025:2017 ACCREDITED LABORATORY  
Accreditation No. 73653



Mallory Speakman  
Laboratory Director - LA  
12/19/2019



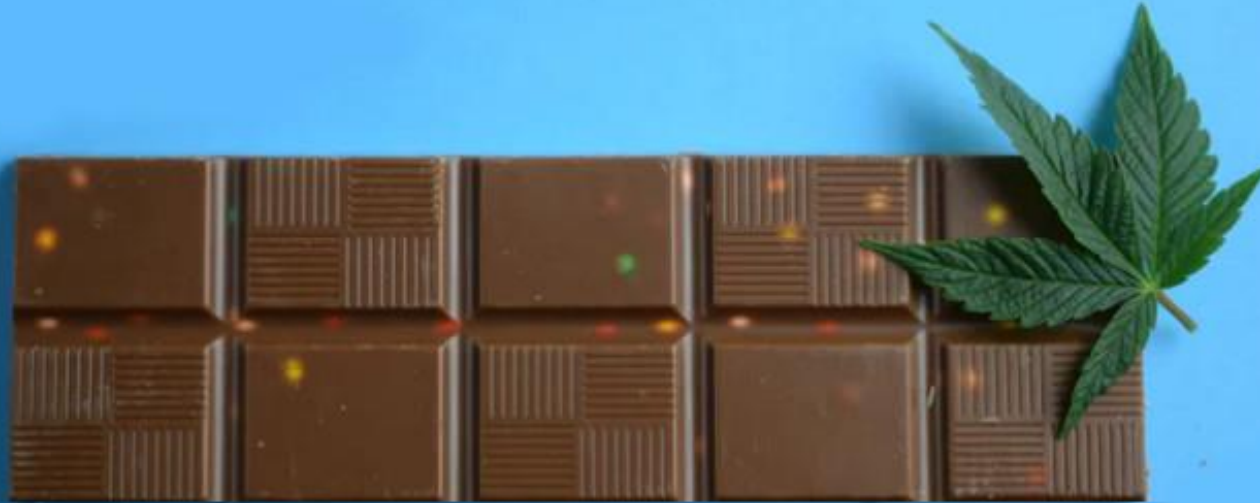
Anyra Engen  
Quality Review  
12/19/2019



Dave Butterfield  
COA Review  
12/19/2019

The values reported pertain only to the product tested, R&D Sample Only. Tested as-is/received from client. Unless otherwise stated all Laboratory Quality Control (LQC) samples performed within specifications established by the BCC in 16 CFR section 5730. Sample tested per CALIFORNIA CODE OF REGULATIONS, TITLE 16, DIVISION 42, BUREAU OF CANNABIS CONTROL.

# Product Labeling



**300 mg THC per bar**

**10 squares = 30 mg per square**

**40 servings per bar = 4 servings per square**

# Acute THC Toxicity

English Edition ▼ Invitations ●




## Medscape

FOR YOU   NEWS & PERSPECTIVE   DRUGS & DISEASES   CME & EDUCATION   VIDEO   DECISION POINT   VIDEO

Drugs & Diseases > Emergency Medicine

# Cannabinoid Poisoning

Updated: Jan 17, 2024 | Author: Linda Russo, MD; Chief Editor: Duane C Caneva, MD, MSc [more...](#)

 14   [Feedback](#)

Overview ▲

- **Practice Essentials**
- Pathophysiology
- Epidemiology

## Practice Essentials

Marijuana (leaves, stems, seeds) is derived from the hemp plants *Cannabis sativa* or *Cannabis indica*. The term marijuana became popular in the 1930s; it was originally a slang word for the psychoactive part of cannabis smoked by Mexican soldiers. Hemp refers to the roots, stalk, and stems of the plant, which can be used to make rope and twine.

<https://emedicine.medscape.com/article/833828-overview>  
<https://www.cdc.gov/cannabis/health-effects/poisoning.html>

# Acute THC Toxicity

Anxiety – Panic  
Increased heart rate  
Psychomotor impairment  
Lethargy  
Nausea / Vomiting  
Hypotension  
Hallucinations  
Agitation  
Acute Psychosis

<https://www.ncbi.nlm.nih.gov/books/NBK482175/>



# Acute THC Toxicity



British Journal of  
Pharmacology


British Journal of Pharmacology (2017) **174** 3790–3794 3790

## RESEARCH PAPER

# Antidote to cannabinoid intoxication: the CB<sub>1</sub> receptor inverse agonist, AM251, reverses hypothermic effects of the CB<sub>1</sub> receptor agonist, CB-13, in mice

**Correspondence** Professor David Baker, BartsMS, Blizard Institute, Barts and the London School of Medicine and Dentistry, Queen Mary University of London, 4 Newark Street, London E1 2AT, UK. E-mail: david.baker@qmul.ac.uk

**Received** 17 May 2017; **Revised** 21 June 2017; **Accepted** 3 August 2017

Gareth Pryce and David Baker 

*Blizard Institute, Barts and the London School of Medicine and Dentistry, Queen Mary University of London, London, UK*

<https://pmc.ncbi.nlm.nih.gov/articles/PMC5647190/>  
<https://pmc.ncbi.nlm.nih.gov/articles/PMC4621983/>

# Tolerance

Psychopharmacology (2011) 214:391–401

DOI 10.1007/s00213-010-2042-1

ORIGINAL INVESTIGATION

## **Tolerance and cross-tolerance to neurocognitive effects of THC and alcohol in heavy cannabis users**

**Johannes G. Ramaekers • Eef L. Theunissen •  
Marjolein de Brouwer • Stefan W. Toennes •  
Manfred R. Moeller • Gerhold Kauert**

Received: 13 July 2010 / Accepted: 1 October 2010 / Published online: 30 October 2010

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<https://pmc.ncbi.nlm.nih.gov/articles/PMC3045517/>

# Tolerance



# LOCAL RESEARCH !!!



# MAHALO



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