

Cannabis: Stigma Versus Science

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TODAY'S AGENDA:

- Introduction & Housekeeping
- Speaker Introduction
- Presentation
- Q&A
- Closing



WEBINAR HOST:

Keith Hine, MS, RD

VP of Healthcare, Sports & Professional Education
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WEBINAR PRESENTER:

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Holistic Cannabis Practitioner
Program Director, Cannabinoid Medical Sciences
John Patrick University School of Integrative & Functional
Medicine



CANNABIS: STIGMA VS. SCIENCE

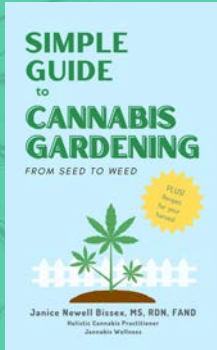
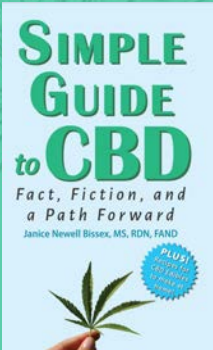
Janice Newell Bissex, MS, RDN, FAND
Holistic Cannabis Practitioner



Jannabis
WELLNESS

Disclosures

- Owner, Jannabis Wellness- consulting & hemp CBD products
- Program Director, Cannabinoid Medical Sciences, John Patrick University
- Editorial Board and Contributor to CRx Magazine (Great Valley Publishing)
- Author
 - Simple Guide to CBD
 - Simple Guide to Cannabis Gardening





My story...

From culinary nutritionist to holistic
cannabis practitioner

David E. Newell 1931-2017



Why should YOU care?

- > 122 million US adults have tried cannabis¹
- 35 million use cannabis > 1/mo²
- 53% 65yo+ experienced pain in the last month³
- Tenfold increase in cannabis use over 65yo¹
- 2025 sales estimated to be 23B⁴

Sanjay Gupta, MD - "Weed" documentary⁵

More importantly... someone you love may need this medicine some day.





Stereotypical view of
cannabis user



Cannabis users

WHO?

18-29 year olds	38%
30-49 year olds	51%
50-64 year olds	49%
65+ year olds	23%

WHY?

Relaxation	55%
Stress relief	40%
Anxiety	30%
Sleep	29%
Medical conditions	26%
Pain	15%

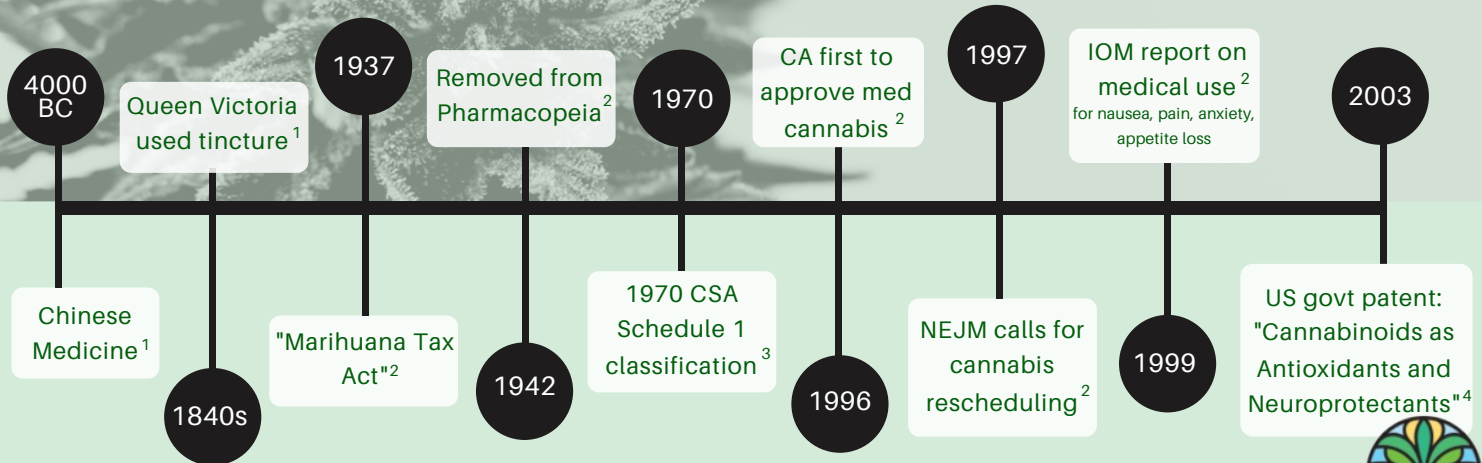


Medical cannabis use

- Survey of 27,000 in US/Canada
- Psychopharmacology, 2022
- 27% have used medical cannabis for:
 - pain (53%)
 - anxiety (52%)
 - sleep (46%)



History of cannabis as a medicinal herb



Cannabis VS Hemp

- Both from cannabis sativa L plant
- Hemp contains <0.3% THC
- Cannabis contains up to 30% THC
- Cannabis is federally illegal¹
 - 37 states + DC allow medical use
 - 21 states allow "recreational" use
- Hemp production legalized in 2018 but no FDA decision on Generally Recognized as Safe (GRAS) status²



Active components of cannabis^{1,2}



Cannabinoids

THC (psychotropic)

CBD (non-intoxicating)

CBG, THCa, CBDa, THCv, CBN, CBC



Terpenes

Myrcene, linalool, limonene, beta caryophyllene, pinene



Flavonoids

Catechins, quercetin, cannaflavin-A



Cannabidiol



- Pain relief
- Anti-inflammatory¹
- Anti-bacterial¹
- Anti-seizure²
- Anti-nausea
- Anti-depressant
- Anti-anxiety
- Neuroprotective^{3,4}
- Bone health^{5,6}



Tetrahydrocannabinol (THC)



- Psychotropic
- Pain relief
- Anti-inflammatory
- Anti-spasm
- Appetite stimulant
- Muscle relaxant¹
- Bronchodilator²





Entourage/ensemble effect

- Whole plant is greater than the sum of its parts
- Cannabinoids and terpenes work together synergistically
- Synthetic cannabinoids and isolates lack this synergy and result in more side effects



Endocannabinoid system

- Receptors (GPR55):
 - CB1 (brain, spinal cord, CNS, GI tract)
 - CB2 (immune cells, organs)
- Endocannabinoids:
 - Anandamide (“bliss molecule”)
 - 2-AG (neuroprotective)
- Enzymes:
 - FAAH breaks down anandamide
 - MAGL breaks down 2-AG



ECS regulates many pathways

Gastrointestinal, cardiovascular, pain perception, maintenance of bone mass, protection of neurons, hormonal regulation, metabolism control, immune function, inflammatory reactions, inhibition of tumor cells.

“relax, eat, sleep, forget and protect”
--Vincenzo Di Marzo



How cannabis & CBD relieve pain

- NASEM 2017 report- conclusive evidence for ↓ pain ¹
- Inhibits release of pro-inflammatory molecules ²
- Cannabis activates CB1 & CB2 receptors to ↓ pain signals ³
- CBD
 - Inhibits FAAH ↑ anandamide → CB1 activation
 - ↓ transmission of pain signals
 - Activates serotonin receptors to ↓ pain perception



Cannabis VS Opioids

- Not a gateway drug - rather an exit herb
 - 2016 study - giving cannabis to opioid users ↓ opioid use by 44% ¹
 - Legal marijuana states have a 25% ↓ in opioid mortality
 - 3 ways to use
 - For pain control - to ↓ opioid dosage
 - Use during withdrawal to manage symptoms
 - Preventative - in place of opioids to avoid addiction



CBD/Cannabis and mental health

- CBD reduces fear and drug memory processes in PTSD, phobias, addiction¹
- Anxiety and depression^{2,3}
 - ↑anandamide
 - ↑serotonin
 - ↑GABA inhibitory neurotransmitter
 - ↓cortisol stress hormone
 - ↑ hippocampal neurogenesis
- Synergy with SSRIs





31yo w severe IBS/anxiety

"I feel happier, calmer, more present, and, most importantly, my digestive system has drastically improved. My girlfriend and friends have even commented on these changes!"



Sleep issues

- Common causes: pain, anxiety, sleep apnea, hypersensitivity to light and sound, alcohol/caffeine, increased urination, hormonal issues
- Manage: CBD/THC/CBN, warm milk with cloves, deep breathing, white noise, darkened room, myrcene and linalool terpenes, hydration, forward fold, Mg, melatonin, chamomile, valerian, lavender



Cannabidiol in Anxiety and Sleep: A Large Case Series

Scott Shannon ¹, Nicole Lewis ², Heather Lee ³, Shannon Hughes ⁴

Affiliations + expand

PMID: 30624194 PMID: PMC6326553 DOI: 10.7812/TPP/18-041

[Free PMC article](#)

Abstract

Context: Cannabidiol (CBD) is one of many cannabinoid compounds found in cannabis. It does not appear to alter consciousness or trigger a "high." A recent surge in scientific publications has found preclinical and clinical evidence documenting value for CBD in some neuropsychiatric disorders, including epilepsy, anxiety, and schizophrenia. Evidence points toward a calming effect for CBD in the central nervous system. Interest in CBD as a treatment of a wide range of disorders has exploded, yet few clinical studies of CBD exist in the psychiatric literature.

Objective: To determine whether CBD helps improve sleep and/or anxiety in a clinical population.

Design: A large retrospective case series at a psychiatric clinic involving clinical application of CBD for anxiety and sleep complaints as an adjunct to usual treatment. The retrospective chart review included monthly documentation of anxiety and sleep quality in 103 adult patients.

Main outcome measures: Sleep and anxiety scores, using validated instruments, at baseline and after CBD treatment.

Results: The final sample consisted of 72 adults presenting with primary concerns of anxiety ($n = 47$) or poor sleep ($n = 25$). Anxiety scores decreased within the first month in 57 patients (79.2%) and remained decreased during the study duration. Sleep scores improved within the first month in 48 patients (66.7%) but fluctuated over time. In this chart review, CBD was well tolerated in all but 3 patients.

Conclusion: Cannabidiol may hold benefit for anxiety-related disorders. Controlled clinical studies are needed.



- 72 patients in outpatient psych clinic
- CBD 25mg/d in capsule
 - After breakfast for anxiety
 - After dinner for insomnia
- Sleep scores improved in 67%
- Anxiety scores improved in 79%



13yo w ASD, ADHD, anxiety



Mom: "It makes him feel calmer (less anxious) and more focused and helps him sleep. We recently ran out of melatonin (he has taken it at bedtime for years since his ADHD med makes it hard to fall asleep). I ordered more, but in the few days before it arrived he was still able to fall asleep and have restful nights. PLUS it was a huge relief to him in decreasing his pain after back surgery in 2020."



Can cannabis help patients with cancer?

- Cannabis therapy can target symptoms associated with cancer treatment including chemotherapy induced nausea and vomiting (CINV), anorexia/weight loss, fatigue, sleep disturbance, anxiety, neuropathy, and pain
- Emerging evidence suggests a role for phytocannabinoids in the fighting of cancer



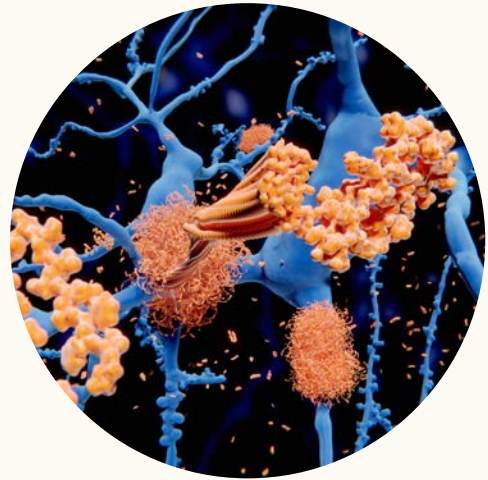
How can cannabis fight cancer?

- Phytocannabinoids, including THC and CBD, have anticancer properties^{1,2,3}
- Decreased tumor growth (antiproliferation)
- Tumor cell apoptosis (cell death)
- Reduce metastases and cancer cell migration
- Inhibits angiogenesis (new blood vessel growth) to cancer cells



Alzheimer's and memory issues

- Neuroprotectant¹
- Protects myelin insulation of nerve fibers
- Decrease beta-amyloid development²
- Vasorelaxant
 - ↓ damage after stroke³
- Alzheimer's patients given small dose of THC gained weight
 - 65% ↓ in agitation⁴





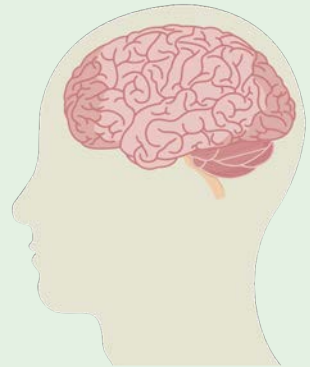
90yo w Alzheimer's

"Easing the anxiety and agitation that accompany Alzheimer's is a constant challenge. After trying several prescription drugs, we have found the HydroPCR Hemp Oil to soften my mother's agitation quickly and effectively, without the negative side effects common with other medications."



Cannabis and Concussions

- 66 TBI patients- 1:1 THC:CBD tincture¹
 - **80%** of patients experienced ***significant improvement*** in activity level and symptoms
 - Symptoms that improved the most
 - **Mood- 83%**
 - **Sleep- 76%**
 - **Headaches- 74%**



Effect of marijuana use on outcomes in traumatic brain injury

Brian M Nguyen¹, Dennis Kim, Scott Bricker, Fred Bongard, Angela Neville, Brant Putnam, Jennifer Smith, David Plurad

Affiliations + expand

PMID: 25264643

Abstract

Traumatic brain injury (TBI) is associated with significant morbidity and mortality. Several studies have demonstrated neuroprotective effects of cannabinoids. The objective of this study was to establish a relationship between the presence of a positive toxicology screen for tetrahydrocannabinol (THC) and mortality after TBI. A 3-year retrospective review of registry data at a Level I center of patients sustaining TBI having a toxicology screen was performed. Pediatric patients (younger than 15 years) and patients with a suspected nonsurvivable injury were excluded. The THC(+) group was compared with the THC(-) group with respect to injury mechanism, severity, disposition, and mortality. Logistic regression was used to determine independent associations with mortality. There were 446 cases meeting all inclusion criteria. The incidence of a positive THC screen was 18.4 per cent (82). Overall mortality was 9.9 per cent (44); however, mortality in the THC(+) group (2.4% [two]) was significantly decreased compared with the THC(-) group (11.5% [42]; $P = 0.012$). After adjusting for differences between the study cohorts on logistic regression, a THC(+) screen was independently associated with survival after TBI (odds ratio, 0.224; 95% confidence interval, 0.051 to 0.991; $P = 0.049$). A positive THC screen is associated with decreased mortality in adult patients sustaining TBI.



Autism Spectrum Disorder

- Molecular Autism - 2018 study showed children with lower anandamide levels more likely to have autism¹
- Israeli study - 80% improvement in behavior, 40% decrease in anxiety with high CBD cannabis oil²
- CBD may help with anxiety, hyperactivity, attention deficit, and seizures²



Appetite/Weight Loss/Anorexia

- “Munchies”
- Ghrelin hormone increases appetite
- POMC (feeling of fullness) neurons in hypothalamus blunted by THC
- Hippocampus/olfactory bulb -
↑ pleasure
- Less anxiety and pain



Cannabis and eating disorders

- Underactive endocannabinoid¹ system found in AN and BN
- Dronabinol induced weight gain^{2,3}
- Potential adjunct to treatment



Diabetes

- Endocannabinoid system involved in lipid and glucose metabolism^{1,2}
- CBD significantly reduced incidence of diabetes in non-obese diabetic mice(86% vs. 30%)³
 - Also ↓ cytokine release
- NHANES: Cannabis use associated with 16% lower levels of fasting insulin and 17% lower insulin resistance⁴



Type II Diabetes research

- Review of 8 studies: cannabis use possibly protective against diabetes
 - Beta-caryophyllene terpene protective^{1 2}
- Study of 10+k adults - Cannabis users ↓ risk of diabetes than nonusers³
- Reduced stress + less pain from cannabis → healthier lifestyle
- Dr. Goldstein recommends CBD for its anti-inflammatory & antioxidant properties



CBD/Cannabis and GI issues

- Decrease inflammation¹
- Reduce hypermotility
- Anti-bacterial action
- Stimulate cells in GI lining²
- Calm anxiety
- Decrease GERD³



Inflammatory Bowel Disease (IBD)

- 2011 study: 30 Crohn's patients, 21 improved significantly w cannabis, decreased need for surgery and other meds
- 2013 study: 292 patients with IBD surveyed, over half reported trying cannabis for symptom relief
 - significant improvement in abdominal pain, appetite, nausea, diarrhea





Cannabis induces a clinical response in patients with Crohn's disease: a prospective placebo-controlled study

Timna Naftali¹, Lihi Bar-Lev Schleider, Iris Dotan, Ephraim Philip Lansky, Fabiana Sklerovsky Benjaminov, Fred Meir Konikoff

Affiliations + expand

PMID: 23648372 DOI: 10.1016/j.cgh.2013.04.034

Abstract

Background & aims: The marijuana plant *Cannabis sativa* has been reported to produce beneficial effects for patients with inflammatory bowel diseases, but this has not been investigated in controlled trials. We performed a prospective trial to determine whether cannabis can induce remission in patients with Crohn's disease.

Methods: We studied 21 patients (mean age, 40 ± 14 y; 13 men) with Crohn's Disease Activity Index (CDAI) scores greater than 200 who did not respond to therapy with steroids, immunomodulators, or anti-tumor necrosis factor- α agents. Patients were assigned randomly to groups given cannabis, twice daily, in the form of cigarettes containing 115 mg of Δ^9 -tetrahydrocannabinol (THC) or placebo containing cannabis flowers from which the THC had been extracted. Disease activity and laboratory tests were assessed during 8 weeks of treatment and 2 weeks thereafter.

Results: Complete remission (CDAI score, <150) was achieved by 5 of 11 subjects in the cannabis group (45%) and 1 of 10 in the placebo group (10%; $P = .43$). A clinical response (decrease in CDAI score of >100) was observed in 10 of 11 subjects in the cannabis group (90%; from 330 ± 105 to 152 ± 109) and 4 of 10 in the placebo group (40%; from 373 ± 94 to 306 ± 143 ; $P = .028$). Three patients in the cannabis group were weaned from steroid dependency. Subjects receiving cannabis reported improved appetite and sleep, with no significant side effects.

Conclusions: Although the primary end point of the study (induction of remission) was not achieved, a short course (8 weeks) of THC-rich cannabis produced significant clinical, steroid-free benefits to 10 of 11 patients with active Crohn's disease, compared with placebo, without side effects. Further studies, with larger patient groups and a nonsmoking mode of intake, are warranted. ClinicalTrials.gov,

- RCT - 21 patients
- Cannabis 2x/day
- Positive clinical response in 90%
- 45% complete remission- 3 weaned from steroids
- Report of improved appetite and sleep



Cannabidiol Isolated From *Cannabis sativa* L. Protects Intestinal Barrier From *In Vitro* Inflammation and Oxidative Stress

Veronica Cocetta,¹ Paolo Governa,² Vittoria Borbonetti,³ Mattia Tinazzi,¹ Gregorio Peron,¹ Daniela Catanzaro,¹ Massimiliano Berretta,⁴ Marco Biagi,⁵ Fabrizio Manetti,² Stefano Dall'Acqua,^{1,*} and Monica Montonoli^{1,6,*}

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Associated Data

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Abstract

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The relevance and incidence of intestinal bowel diseases (IBD) have been increasing over the last 50 years and the current therapies are characterized by severe side effects, making essential the development of new strategies that combine efficacy and safety in the management of human IBD. Herbal products are highly considered in research aimed at discovering new approaches for IBD therapy and, among others, *Cannabis sativa* L. has been traditionally used for centuries as an analgesic and anti-inflammatory remedy also in different gastrointestinal disorders. This study aims to investigate the effects of different *C. sativa* isolated compounds in an *in vitro* model of intestinal epithelium. The ability of treatments to modulate markers of intestinal dysfunctions was tested on Caco-2 intestinal cell monolayers. Our results, obtained by evaluation of ROS production, TEER and paracellular permeability measurements and tight junctions evaluation show Cannabidiol as the most promising compound against intestinal inflammatory condition. Cannabidiol is able to inhibit ROS production and restore epithelial permeability during inflammatory and oxidative stress



- In vitro model of intestinal epithelium
- "CBD is the most promising compound against intestinal inflammatory condition. Cannabidiol is able to inhibit ROS production and restore epithelial permeability during inflammatory and oxidative stress conditions"



Gut disorders & cannabis therapy

- These diseases cause severe inflammation in the gut
- Can take weeks to recover
- Cannabis is not a “quick fix” to intestinal damage
- 8-12 weeks to experience benefits in some GI cases
- Terpinolene, beta-caryophyllene, limonene, pinene
- Caution with edibles
 - may have triggering ingredients

*Cannabinoid therapy + stress mgmt, proper diet, exercise
= effective*



Modes of administration

- Sublingual tinctures
- Capsules
- Inhalation
- Edibles
- Topical Creams
- Transdermal
- Suppositories
- Raw juice





Finding a quality CBD product

A study by the FDA found that nearly 70% of CBD products were mislabeled with some containing zero CBD!

What to look for:

- Independent lab testing
 - cannabinoid profiles
 - pesticides/solvents, heavy metals
- Full / broad spectrum
- Organically grown
- Country of origin



Onset and Duration

Format/Method	Onset (minutes)	Duration (hours)
Inhaled (vapor or smoke)	1-3	1-3
Sublingual (drops, lozenges, spray)	15-30	2-4
Ingested (capsules, edibles, drinks)	30-90+	6-12
Topical (salves, roll-ons, creams)	30-60	2-4
Transdermal (patch, gels)	15-30	6-12
Suppositories	15-30	6-8



Dosing: Start low & go slow!



- Therapeutic ranges of CBD and THC are large
 - 2 to 50+mg dose range!
- Self titrate, keep journal to find minimum effective dose
- Hyper responders - alcohol use, meds, chemotherapy
- May take two weeks to see effect
- THC tolerance - take a break!



Potential downside of cannabis use

- Short term effects¹
 - Increased heart rate, distorted perception, loss of coordination, issues with memory and learning
- Cannabis Use Disorder (CUD)²
 - 8 to 12% of heavy users
 - More common with early age onset of use
 - Impairment affecting behavior, health, relationships
 - 4.2M in U.S. w CUD & 14.4M w alcohol use disorder³
 - Cannabinoid hyperemesis syndrome/cyclical vomiting
- Long term effect on cognition? Twin study⁴
- Psychotic disorders^{5,6,7}
 - Adolescent/heavy use may be risk for earlier onset
 - Correlation = causation??



Drug interactions

- May increase effect of some drugs
- Be cautious taking meds contraindicated with grapefruit when *ingesting* cannabis¹- CYP450 enzyme system
- Synergy with some meds (SSRIs)
- Tricyclics: possible enhanced sedation, hypotension, tachycardia²
- Alcohol- THC may increase CNS impairment³
- Check with cannabis practitioner



Potential side effects of CBD

- Vivid dreams
- Fatigue
- Low blood pressure
- Dry mouth
- GI issues

2018 WHO Report on CBD:
“Across a number of controlled and open label trials of the potential therapeutic effects of CBD it is generally well tolerated, with a good safety profile.”



Pharmaceutical cannabinoids

- **THC:** Marinol/Dronabinol, Syndros (liquid dronabinol), Cesamet/Nabilone
- **THC + CBD:** Sativex
- **CBD:** Epidiolex

- Single molecule versus whole plant
 - Lack of terpenes, flavonoids, etc.
- No entourage/ensemble effect



Why don't more MDs & RDNs recommend cannabis or CBD?



- 2013 survey by NEJM- Four of five MDs approve of medical cannabis¹
- 90 percent of MDs do not feel confident prescribing cannabis²
- 10 to 15 percent of med schools² include cannabis in curriculum
- What about RDNs?!



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"Cannabis is the single most versatile herbal remedy, and the most useful plant on earth. No other single plant contains as wide a range of medically active herbal constituents."

Dr. Ethan Russo
Cannabinoid Research Institute



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