

Cannabis and CBD use in ASD and SIB

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FAMILY SUPPORT INSTITUTE

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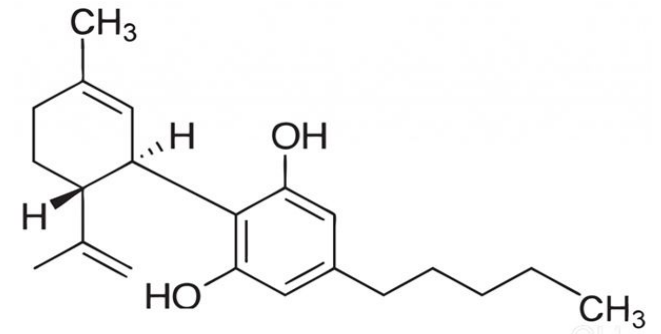
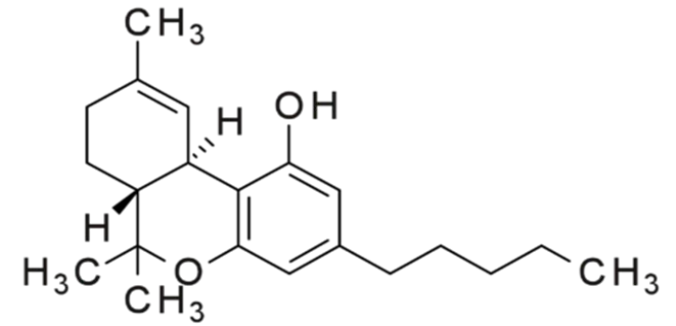
Land Acknowledgement



I would like to acknowledge that I am coming to you today from the traditional, ancestral, and unceded territory of the Coast Salish Peoples, including the territories of the Musqueam, Squamish, Stó:lō and Tsleil- Waututh Nations

Outline

- Introduction and background
- What are people saying?
- What does the science say?
- What's next, practical considerations, and helpful resources



Learning Objectives

1. Understand some of the cultural context around use of medical cannabis and CBD, especially for severe childhood epilepsy
2. Gain a basic understanding of the endocannabinoid system
3. Define what phytocannabinoids are and appreciate the differences between THC and CBD
4. Review the methods, results, strengths, and weaknesses of three recent studies of CBD-rich cannabis for autism spectrum disorder and behaviours like SIB
5. Briefly review the current trend in cannabis research in ASD

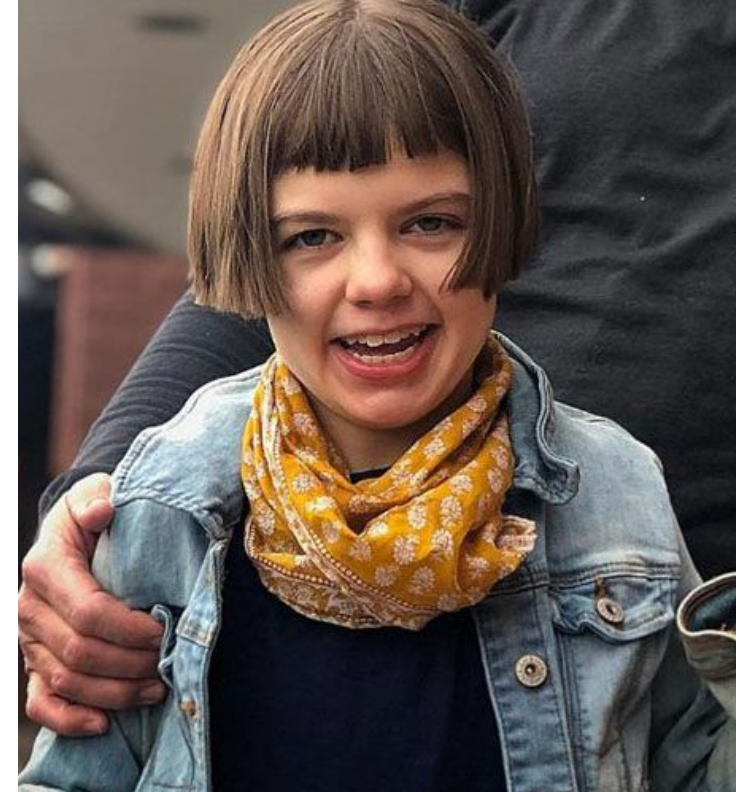
About Me

- Graduated with a BSc from UBC in 2019
- Research assistant at BC Children's Hospital 2017 – 2018, and 2019 – 2020
- Started MD journey in 2020



Why CBD, and why now?

- The story of Charlotte Figi, a then 6 year old girl with Dravet syndrome, a severe childhood epilepsy syndrome that is resistant to most known seizure medications
- Paige, Charlotte's mom, found previous research suggesting cannabidiol (CBD) in cannabis could help control Charlotte's seizures
- Paige found the cannabis strain "Hippie's Disappointment", high in CBD and very low in THC
- After taking oil from Hippie's Disappointment, there was a drastic reduction in Charlotte's seizures



Why CBD, and why now?

- The Stanley Brothers renamed Hippie's Disappointment to Charlotte's Web
- The story of Charlotte Figi spread, and demand for Charlotte's Web skyrocketed
- In 2018, Epidiolex (CBD) was FDA approved for use in children with the severe epilepsy syndromes Lennox-Gastaut and Dravet



So, what
does
cannabis do?



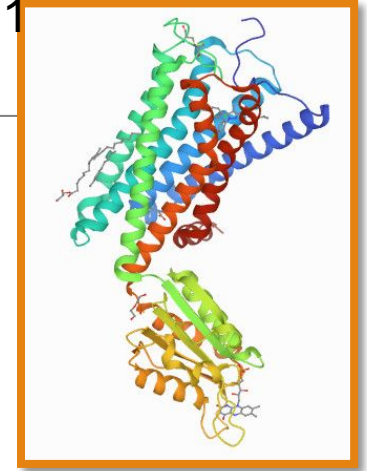
The Endocannabinoid System

- Widespread system in the body, made of lipid (fats) messenger molecules, their receptors, and various enzymes
- Cannabinoid receptors (CB) 1 and 2 only discovered in the early 1990s
- May be involved in pleasure, memory, thought, concentration, movement, anti-inflammation, but *not well understood*

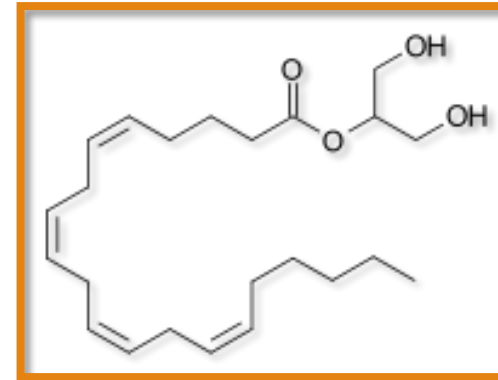
CB2



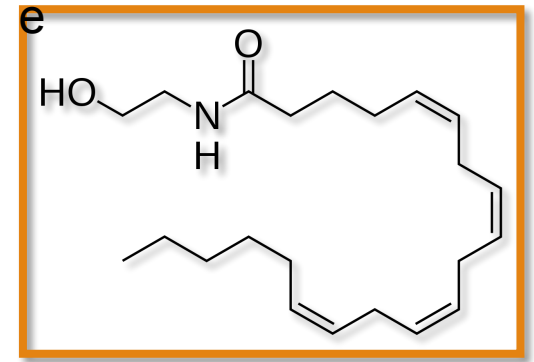
CB1



2-AG

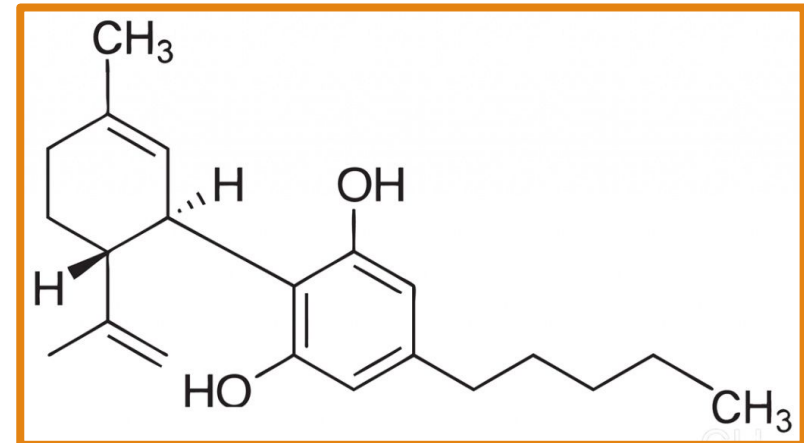
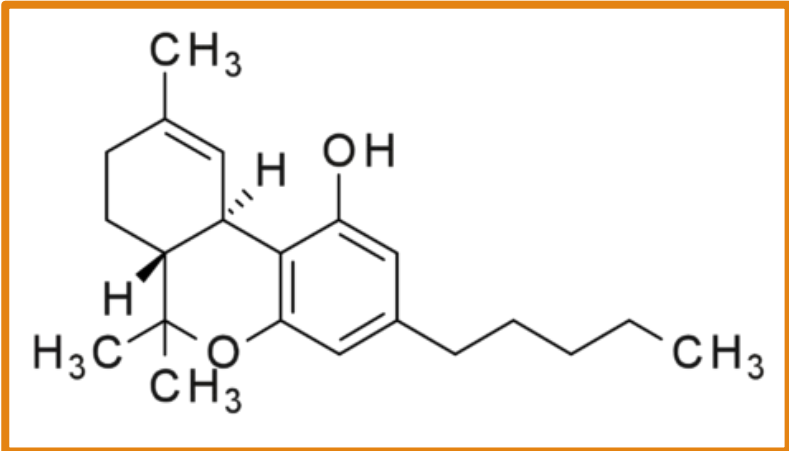


Anandamid



Phytocannabinoids

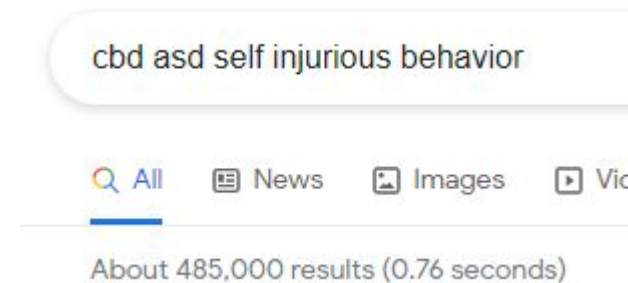
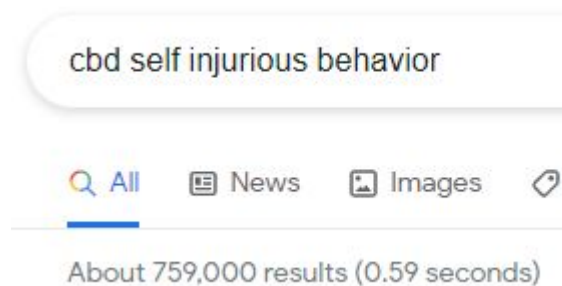
- 80+ cannabinoid molecules present in cannabis plant!
- **Δ^9 -tetrahydrocannabinol (THC)**
 - Causes the “high” of cannabis use
 - Currently accepted use in chronic pain, MS spasticity, chemo-related nausea
- **Cannabidiol (CBD)**
 - Does *not* cause a high, modulates endocannabinoid system indirectly
 - Proven anticonvulsant effects, potential antianxiety properties



So, what are
people
saying?



Just a simple Google search...



cbd asd self injurious behaviors

✕

🔍 All

🖼️ Images

📰 News

🛒 Shopping

📺 Videos

⋮ More

Settings

About 763,000 results (0.60 seconds)

Scholarly articles for **cbd asd self injurious behaviors**

... of **CBD**-enriched Cannabis sativa extract on **autism** ... - Fleury-Teixeira - Cited by 20
... regarding cannabis use in children with **autism** ... - Duvall - Cited by 8
... with **autism** spectrum disorder and severe **behavioral** ... - Aran - Cited by 70

pediatrics.aappublications.org › peds.2018-0558.full.pdf

Ethical Implications for Providers Regarding Cannabis Use in ...

by SW Duvall · 2019 · Cited by 8 — Children with **autism** spectrum disorder (**ASD**) are at risk for **self-injurious behaviors** that can be difficult to treat in the context of co-occurring low ...

clinicaltrials.gov › show › NCT04517799 ▾

Trial of Cannabidiol to Treat Severe Behavior Problems in ...

Aug. 18, 2020 — Children with **autism** spectrum disorders (**ASD**) may have severe behavior problems, including aggression, **self-injurious behaviors**, severe and ...

www.ncbi.nlm.nih.gov › pmc › articles › PMC6333745

Oral Cannabidiol Use in Children With Autism Spectrum ...

by D Barchel · 2018 · Cited by 63 — Objective: Children with **autism** spectrum disorder (**ASD**) commonly exhibit comorbid symptoms such as aggression, hyperactivity and anxiety.
[Introduction](#) · [Materials and Methods](#) · [Results](#) · [Discussion](#)

bmcpsy psychiatry.biomedcentral.com › articles ▾

Current state of evidence of cannabis utilization for treatment ...

by R Agarwal · 2019 · Cited by 16 — The core symptoms and co-morbidities associated with **autism** spectrum disorders (**ASD**) affect daily living and quality of life. Existing ...

CBD Oil and Autism: What Parents Need to Know

CBD oil is becoming an increasingly popular treatment option for a variety of health conditions – including autism. But is CBD oil a safe autism treatment for kids?

≡ WebMD

SIGN

Brain & Nervous System > Autism > News >



Can Medical Marijuana Help Kids With Autism?

BRAIN & NERVOUS SYSTEM > AUTISM > TREATMENT/THERAPY

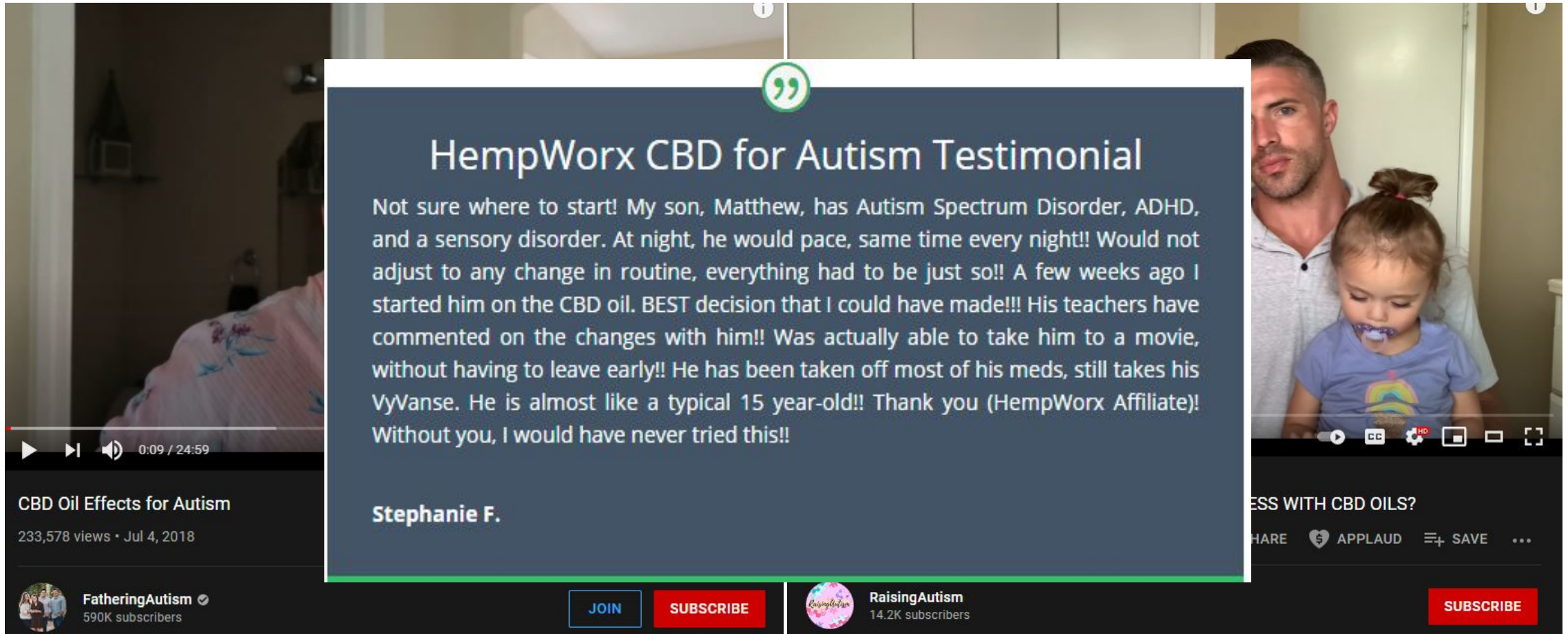
CBD Oil as a Treatment for Autism

By [Lisa Jo Rudy](#) | Medically reviewed by [Arno Kroner, DAOM, LAc](#) | Updated on May 14, 2020

The Verywells and WebMDs

- Other top hits online are from common sources like Verywell, WebMD, Autism Parenting Magazine, Spectrum news, etc.
- In general, they report that CBD can help with:
 - Anxiety and stress
 - Sleep
 - Problem behaviours, like aggression and self-injurious behaviours
 - Improves social ability
 - Seizures
- They say in some, CBD may have side effects like nausea, vomiting, and drowsiness

What are parent's experiences?



The image shows a YouTube video player with a testimonial overlay. The video title is "CBD Oil Effects for Autism" by the channel "FatheringAutism". The testimonial is titled "HempWorx CBD for Autism Testimonial" and is attributed to "Stephanie F.". The testimonial text describes how CBD oil helped her son, Matthew, who has Autism Spectrum Disorder, ADHD, and a sensory disorder, by allowing him to adjust to changes in routine and take off most of his medications. The video player interface includes a progress bar at 0:09 / 24:59, a share button, an applaud button, a save button, and a subscribe button for the "RaisingAutism" channel.

HempWorx CBD for Autism Testimonial

Not sure where to start! My son, Matthew, has Autism Spectrum Disorder, ADHD, and a sensory disorder. At night, he would pace, same time every night!! Would not adjust to any change in routine, everything had to be just so!! A few weeks ago I started him on the CBD oil. BEST decision that I could have made!!! His teachers have commented on the changes with him!! Was actually able to take him to a movie, without having to leave early!! He has been taken off most of his meds, still takes his Vyvanse. He is almost like a typical 15 year-old!! Thank you (HempWorx Affiliate)! Without you, I would have never tried this!!

Stephanie F.

FatheringAutism 590K subscribers

RaisingAutism 14.2K subscribers

233,578 views • Jul 4, 2018

0:09 / 24:59

SHARE \$ APPLAUD + SAVE ...

SUBSCRIBE

Advocacy Groups


- The promise and optimism of medical cannabis and CBD treatment for ASD has led to the formation of parent-led advocacy groups





What Does the Science Say?

Brief Report: Cannabidiol-Rich Cannabis in Children with Autism Spectrum Disorder and Severe Behavioral Problems—A Retrospective Feasibility Study

Adi Aran¹  · Hanoch Cassuto² · Asael Lubotzky¹ · Nadia Wattad¹ · Esther Hazan¹

Aran *et al.* 2019

- **Methods:** Restrospective chart review study of 60 kids with ASD disruptive behaviours. Treated with CBD-rich cannabis extract
- **Results:** 61% children reported to have considerable *improvement* in behaviour problems, 39% reported *improved* anxiety, 47% reported *improvement* in communication
- **Side effects:** aggravated sleep disturbance, restlessness, irritability, loss of appetite
- **Limitations:** Small sample, reliance on self-report, not blinded or controlled

Oral Cannabidiol Use in Children With Autism Spectrum Disorder to Treat Related Symptoms and Co-morbidities

Dana Barchel^{1†}, Orit Stolar^{2†}, Tal De-Haan¹, Tomer Ziv-Baran³, Naama Saban⁴, Danny Or Fuchs¹, Gideon Koren^{1,5} and Matitiah Berkovitch^{1}*

Barchel *et al.* 2019

- **Methods:** 53 kids recruited with ASD and administered cannabis extract at a ratio of 20:1 CBD to THC, followed-up for at least 30 days


- **Results:**

Domain	% of participants improved	% of participants with no change	% of participants with worsening
Hyperactivity (N=38)	68.4%	28.9%	2.6%
SIB/rage attacks (N=34)	67.6%	23.5%	8.8%
Sleep problems (N=21)	47.1%	29.4%	23.5%
Anxiety (N=17)	47.1%	29.4%	23.5%

- **Side effects:** most common reported were sleepiness and decreased appetite
- **Limitations:** Small sample size, short follow-up period, lack of blinding

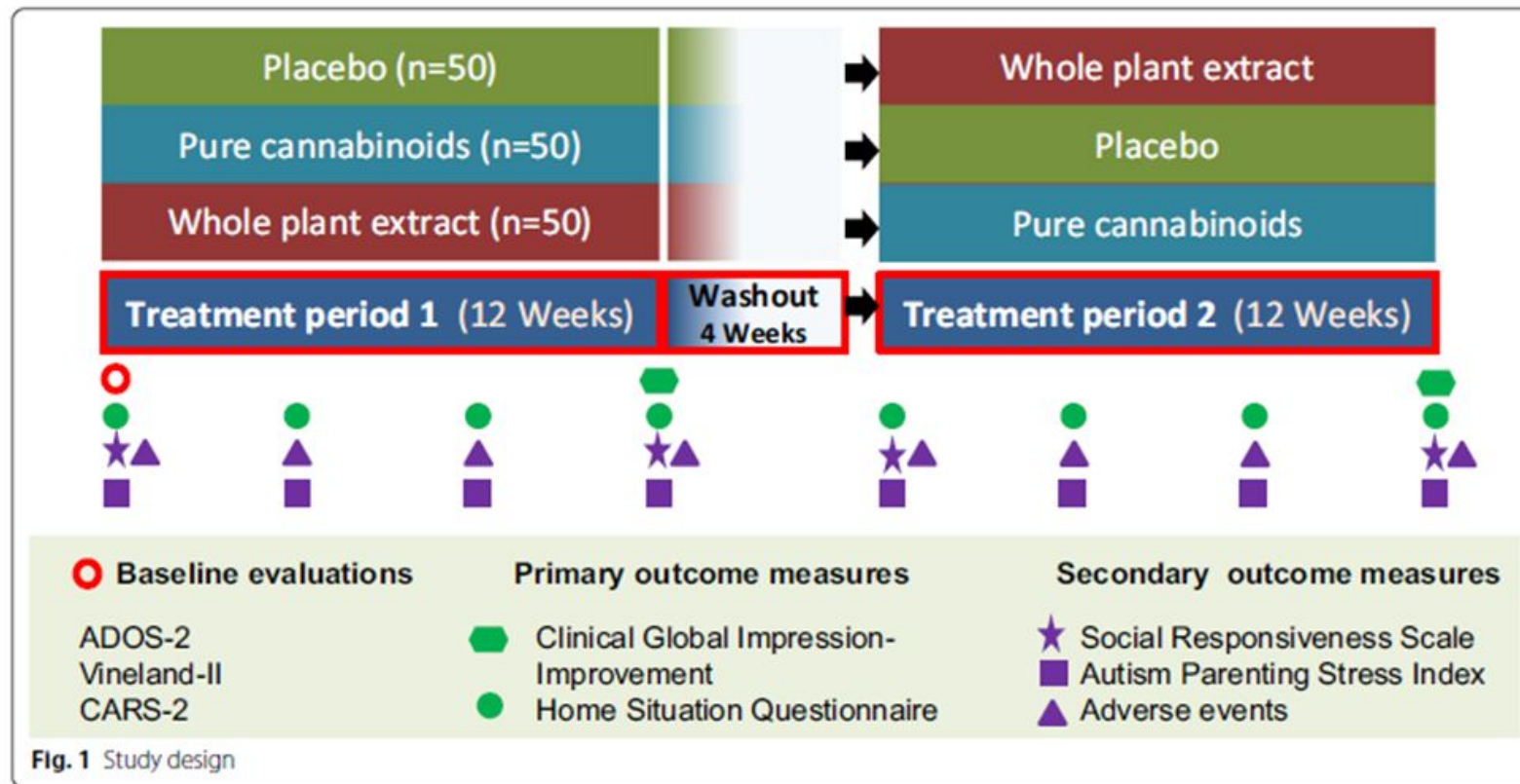
RESEARCH**Open Access**

Cannabinoid treatment for autism: a proof-of-concept randomized trial

Adi Aran^{1*} , Moria Harel¹, Hanoch Cassuto¹, Lola Polyansky¹, Aviad Schnapp¹, Nadia Wattad¹, Dorit Shmueli²,
Daphna Golan³ and F. Xavier Castellanos⁴

Aran *et al.* 2021

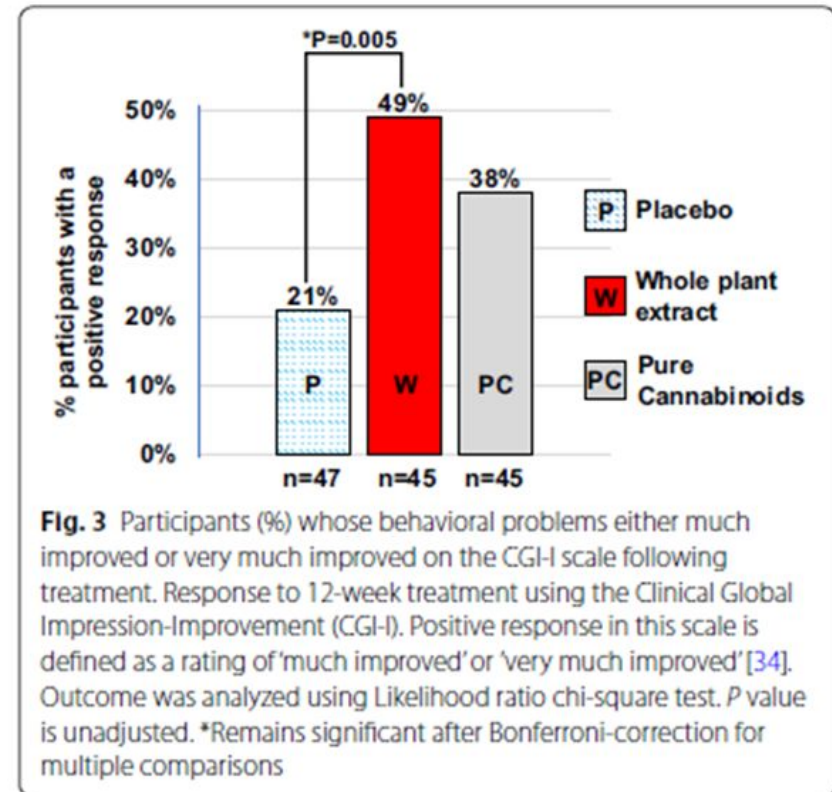
- **Methods:** Randomized, double-blind, placebo-controlled trial with kids and teens with ASD



Aran *et al.* 2021

- **Results:**

- 150 children, average age 11.8 years, were recruited and randomly assigned to one of the three groups
- No severe or serious adverse events
- Significantly more participants had behaviour improvement in the whole plant extract group than the placebo group, according to CGI-I
- No significant differences between groups on the HSQ-ASD
- Significant improvement in social communication in whole plant extract group compared to placebo



Aran *et al.* 2021: Progress, with limits

In this study, we have demonstrated for the first time in a placebo-controlled trial that cannabinoid treatment has the potential to decrease disruptive behaviors associated with ASD, with acceptable tolerability. This is specifi-

Aran *et al.* 2021: A Word of Caution

Funding

The study was funded by BOL Pharma, Revadim, Israel and the National Institute for Psychobiology in Israel (#203-17-18). The funding bodies were not involved in any way in the study design, collection, analysis and interpretation of data or in the writing of the manuscript.



What's Next?

RCTs, RCTs, RCTs...

Row	Saved	Status	Study Title
1	<input type="checkbox"/>	Recruiting	Cannabidiol Study in Children With Autism Spectrum Disorder
2	<input type="checkbox"/>	Not yet recruiting	Trial to Investigate the Safety and Efficacy of Cannabidiol Oral Solution (GWP42003-P; CBD-OS) in Children and Adolescents With Autism Spectrum Disorder
3	<input type="checkbox"/>	Recruiting	Cannabidiol for ASD Open Trial
4	<input type="checkbox"/>	Unknown †	Shifting Brain Excitation-Inhibition Balance in Autism Spectrum Disorder
5	<input type="checkbox"/>	Recruiting	Trial of Cannabidiol to Treat Severe Behavior Problems in Children With Autism
6	<input type="checkbox"/>	Completed	Cannabinoids for Behavioral Problems in Children With ASD

Resources

How to Evaluate Health Information on the Internet: Questions and Answers - [How To Evaluate Health Information on the Internet: Questions and Answers \(nih.gov\)](#)

Cannabis and autism, explained - [Cannabis and autism, explained | Spectrum | Autism Research News \(spectrumnews.org\)](#)

Agarwal R, Burke SL, Maddux M. Current state of evidence of cannabis utilization for treatment of autism spectrum disorders. BMC Psychiatry. 2019 Dec;19(1):328.

MacCallum CA, Russo EB. Practical considerations in medical cannabis administration and dosing. Eur J Intern Med. 2018 Mar 1;49:12–9.



Acknowledgements

Dr Anamaria Richardson

Dr Jane Hailey

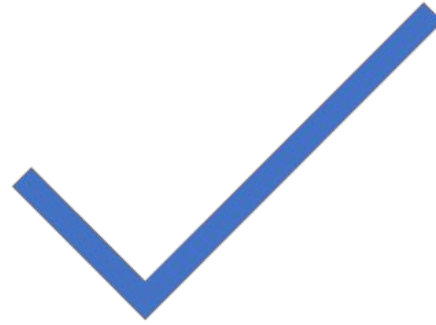
Dr Caroline MacCallum

SIB ThinkTank

Family Support Institute

All the research participants, their families, and everyone else driving this conversation forwards!





Thank you!

Questions? Email: sstephens@fsibc.com

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8. [CBD Oil as a Treatment for Autism \(verywellhealth.com\)](#)
9. [CBD Oil for Autism: Benefits and Usage Guide - Autism Parenting Magazine](#)
10. [CBD Oil and Autism: What Parents Need to Know | Parents](#)
11. [Cannabis and autism, explained | Spectrum | Autism Research News \(spectrumnews.org\)](#)

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13. [CBD OILS FOR AUTISM UPDATE | HAVE WE SEEN PROCESS WITH CBD OILS? – YouTube](#)
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19. [Medical Cannabis Services Canada | Greenleaf Medical Clinic \(greenleafmc.ca\)](#)