

Problems with Marijuana Edibles and Adolescents: This Isn't Your Granddad's Weed




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2/7/00-11/20/19

JOHNNY'S 19 YEARS

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James Wigmore

- Forensic Toxicologist, Centre of Forensic Sciences, Toronto, 29 years
- Testified in over 700 criminal trials throughout Canada



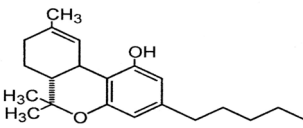
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Alcohol and Cannabis

- Active drug of alcoholic beverages is **ethanol** (ethyl alcohol)- no odour- congeners (**water soluble**)
- Active drug of cannabis **tetrahydrocannabinol (THC)** also has no odour, -terpenes (insect/animal repellent) easiest drug to detect by dogs (**fat soluble**)
- Both are alcohols (no nitrogen) unlike morphine, amphetamine, cocaine

$$\begin{array}{c}
 \text{H} & \text{H} & & \text{H} \\
 | & | & & | \\
 \text{H}-\text{C} & - & \text{C}-\text{O} & \text{H} \\
 | & | & & | \\
 \text{H} & \text{H} & &
 \end{array}$$



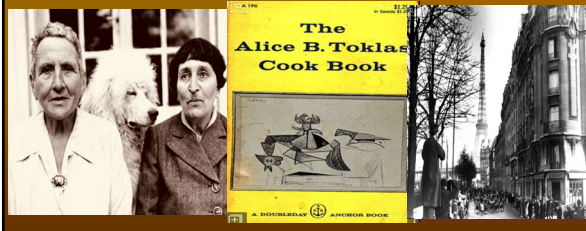
Δ-9-tetrahydrocannabinol (THC)

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Hash Brownies

- Alice B. Toklas, the companion of Gertrude Stein signed a contract to write a cookbook in 1952. She got recipes from her friends, one was for "Haschich Fudge". The book was initially published in the US without this recipe.



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Hash Brownies

- "Canibus" was not "sinsemilla", picked after it went to seed, **THC would be low**, not much butter or proper temperature



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THC vs CBD

- 2 major cannabinoids- yin and yang
- **THC** causes high, psychosis, (H is "high")
- other cannabinoids like **CBD (cannabidiol)** acts opposite to moderate THC, doesn't cause high, reduce anxiety (B is "better")
- Problem with skunk or sinsemilla marijuana= high THC, low CBD
- Hemp, high CBD, very low levels of THC



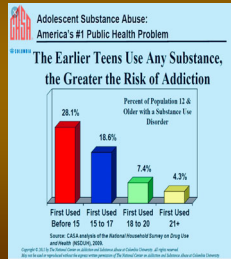
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Cannabis Use in Adolescent

- Cannabis use before age 17 and outcomes at ages 25-30 years in Australia

Young Adult Outcome	Monthly Cannabis Use	Weekly Cannabis Use	Daily Cannabis Use
High School Completion	62 %	47 %	37 %
Degree Attainment	62 %	49 %	38 %
Cannabis Dependence (Cannabis Use Disorder)	4.2X	8.7X	18.0X
Other Illicit Drug use	2.8X	4.7X	7.8X
Suicide Attempt	2.6X	4.2X	6.8X

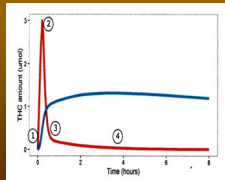


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Problems with Edible Cannabis More acute risk than smoking-

- Can't adjust dose- smoking feel effects in minutes- edible 90 minutes so encourages to take more
- Variable absorption through stomach- more uniform through lungs
- High concentration of 11-OH-THC produced
- More attractive and easier to use than "dried plant material" children overdoses



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Edible Cannabis Symptoms

(brownie given to 5 teachers-next drug facilitated sexual assault, affects memory, poor witness)

Gender/Age	Symptoms	Onset after Eating Brownie (min)	Duration of Symptoms (hrs)
Female, 25 years	Drowsiness, fatigue, weakness, dizziness, ataxia, numbness, tingling, dry mouth/throat, mouth irritation. (attended hospital)	90 minutes	3.0 hours
Female, 32 years	Drowsiness, fatigue, weakness, dizziness, ataxia, altered mood, altered taste, numbness, palpitations	90 minutes	8.0 hours
Female, 21 years	Drowsiness, fatigue, weakness, dizziness, ataxia, headache, giddiness, numbness, altered taste, increase appetite, itching	80 minutes	10.0 hours
Female, 22 years	Drowsiness, fatigue, weakness, dizziness, ataxia, headache, agitation, anxiety, numbness, tingling, muscle twitching, chills, dry mouth/throat, nausea, vomiting, shortness of breath, palpitations. (attended hospital)	90 minutes	4.0 hours
Female, 33 years	Drowsiness, fatigue, dizziness, ataxia, anxiety, giddiness, numbness, tingling, muscle twitching, altered taste, shortness of breath	30 minutes	6.5 hours
Male, 24 years	Drowsiness, fatigue, ataxia, agitation, dry mouth/throat, loss of appetite, excessive sweating, burning eyes, itching eyes	180 minutes	6.0 hours

Source: adapted from Fogelman et al (2009)

September 2014, five high school students ages 14 to 16 years became sick after eating cannabis brownies which was sold by classmate, 3 vomited and 2 became unconscious and hospitalized

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Cannabis Overdose in Children

Grade 5 student shares pot candy

By [Name], Staff Writer
Published: [Date]
Updated: [Date]

A Nova Scotia girl, 4, was hospitalized after eating 15 pieces of weed-laced chocolate.

Kids ingested marijuana edibles at Oshawa elementary school: police



Four-year-old girl eats 15 pieces of edible marijuana product, police say

By [Name], Staff Writer
Published: [Date]
Updated: [Date]

Warning: Kids Can't Tell The Difference Between Edibles And Junk Food

By [Name], Staff Writer
Published: [Date]
Updated: [Date]

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Cannabis Induced Psychosis

- Psychosis is a complicated mental disorder in which there is loss of contact with reality and associated with
- Delusions
- Hallucinations
- Paranoia
- Disorganized thinking
- Disorganized talking

Drug	Odds Ratio for Presenting to ER with Psychosis
LSD	3.1X
Amphetamines	3.0X
Cannabis	1.5X
Alcohol	0.54X

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Psychosis with Edibles

2 police officers ate 8 pieces of chocolate, thought would get mellow

Crime

I need backup! Officer up a tree!: Cops suspended after eating 'marijuana edibles' on duty



Toronto Cops Eat Edibles, Hallucinate, Climb a Tree, Call For Backup

Straight from a Seth Rogen movie Toronto Cops Eat Edibles On The Job



Can't Make This Up: 2 Toronto Cops Ingest Edibles, Hallucinate, Climb a Tree, Call For Backup

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Death Following Consumption of Edible Marihuana Product

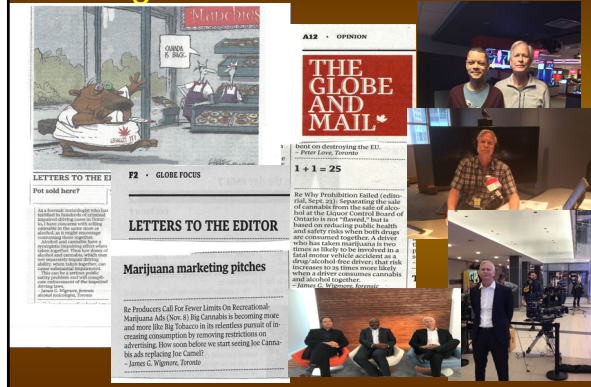
- 19 year old male novice user of cannabis consumed a small piece of cookie which contained 65 mg of THC
- 30 to 60 minutes later not feeling any effects, he ate rest of cookie
- Over next 2 hours, erratic speech, hostile behavior and jumped to his death off 4th floor balcony
- Postmortem blood THC was 7.2 ng/mL and THCCOOH was 49 ng/mL (limit in Canada is 2- 5 ng/mL)



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Legalization October 2018



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Cannabis Laws (more likely to be arrested)

Criminal penalties	
Under the Act, newly defined offences will target those acting outside of the legal framework, such as organized crime. Penalties will be set in proportion to the seriousness of the offence. Sentences would range from warnings and tickets for minor offences to criminal prosecution and imprisonment for more serious offences. New offences will also be created specifically targeting people who make cannabis available to youth.	
Offence	Penalties
Possession over the limit	<ul style="list-style-type: none"> • tickets for small amounts • up to 5 years in jail
Illegal distribution or sale	<ul style="list-style-type: none"> • tickets for small amounts • up to 14 years in jail
Producing cannabis beyond personal cultivation limits or with combustible solvents	<ul style="list-style-type: none"> • tickets for small amounts • up to 14 years in jail
Taking cannabis across Canada's borders	<ul style="list-style-type: none"> • up to 14 years in jail
Giving or selling cannabis to a person under 18	<ul style="list-style-type: none"> • up to 14 years in jail
Using a youth to commit a cannabis-related offence	<ul style="list-style-type: none"> • up to 14 years in jail
Further penalties related to a cannabis-impaired driving have also been included in the drug-impaired driving legislation, along with requirement rules for other drugs such as:	
<ul style="list-style-type: none"> • LSD • heroin • cocaine • pentobarbital (sleep medication) 	

- Sales and advertising are restricted like tobacco
- Impaired driving is restricted like alcohol



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Health Canada Warning and Plain Packaging (Cigarettes)

WARNING: Cannabis can be addictive. 1 in 11 people who use cannabis will become addicted.

WARNING: Cannabis can be addictive. Up to 1 in 2 people who use cannabis daily will become addicted.

WARNING: Regular use of cannabis can increase the risk of psychosis and schizophrenia. Higher THC content can increase the risk of psychosis and schizophrenia.

WARNING: Regular use of cannabis can increase the risk of psychosis and schizophrenia. Higher THC content can lower the age of onset of schizophrenia.

WARNING: Regular use of cannabis can increase the risk of psychosis and schizophrenia. Young people are especially at risk.

WARNING: Adolescents are at greater risk of harms from cannabis. Early and regular use increases the risk of psychosis and schizophrenia.

WARNING: Adolescents are at greater risk of harms from cannabis. Using cannabis as a teenager can increase your risk of becoming addicted.

WARNING: Adolescents are at greater risk of harms from cannabis. 1 in 6 people who start using cannabis in adolescence will become addicted.

Figure 2: Standardized Cannabis Symbol

THE COLOURS

RED (Primary Colour)
C1: R(255) G(0) B(0)
R(255) G(0) B(0)
HEX: FF0000

WHITE
C1: R(255) G(255) B(255)
R(255) G(255) B(255)
HEX: FFFFFFFF

BLACK
C1: R(0) G(0) B(0)
R(0) G(0) B(0)
HEX: 000000

Example of standard use

Default border not required used in standard use

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Advertising Restrictions

Health Canada warns cannabis companies against sponsoring music festivals and promoting pot

Health Canada 'concerned' by cannabis companies sponsoring music events

Willie Nelson's Marijuana Brand is Said to Be Coming to Canada

Q7: Will advertising be allowed?

Proposed restrictions on promotion are intended to protect youth from being persuaded through marketing or advertising to consume cannabis. At the same time, consumers need access to clear, objective information on which they can make informed decisions about consumption.

Therefore, the legislation would permit information-type promotion - in other words, factual, accurate information about cannabis products (ingredients, THC and CBD levels, etc.). Information that allows consumers to tell the difference between brands would also be permitted. In all cases, these types of promotion would only be allowed where they could not be seen by youth.

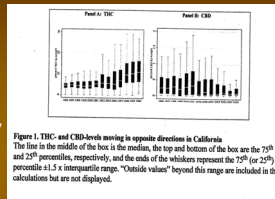
The proposed Act includes restrictions on several types of promotional activities, such as:

- Promotion considered appealing to youth;
- Promotion that includes false, misleading, or deceptive information;
- Promotion through sponsorship, testimonials, or endorsements; and
- Promotion using the depictions of persons, celebrities, characters, or animals.

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Not Your Grandad's Weed

- THC increasing
 - CBD decreasing
- Increase in availability
- *Commercialization***
- Long term use?



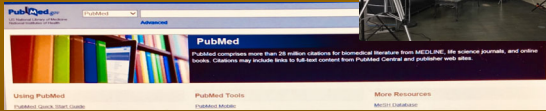
"People think marijuana is this harmless substance, and perhaps it is, in its undiluted form. All I know is that dabs are a completely different monster. My son finished school and was just about to start his internship when he was introduced to dabs. Pretty soon that's all he cared about."



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Website/Twitter/LinkedIn/YouTube

- Website: www.wigmoreonalcohol.com
- Twitter @JGWigmore
- LinkedIn- published articles
- YouTube "wigmoreonalcohol.com"



- **PubMed**- US National Library of Medicine, National Institute of Health, 27 Million studies- 25,000 on cannabis, "free pdfs" and only human studies
