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EXPERT SPEAKERS HOPE
**NATIONAL NETWORKING
AID CONFERENCE FORUM
ON LYMPHOMA SUPPORT
CAREGIVERS EDUCATION**
SEPTEMBER 29 - 30, 2017
SURVIVORS TORONTO, ON
THERAPIES SIDE EFFECTS

Medical Marihuana for Patients in the Lymphoma Setting



Speakers:
Ruth Turner, RN, Con©
Rob Laister, PhD

Medical Marihuana for Patients in the Lymphoma Setting

Disclosure:

No endorsement or promotion of marihuana use is claimed by presenters. This presentation is purely for educational purposes.



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The use of Medical Marijuana for Patients in the Lymphoma Setting

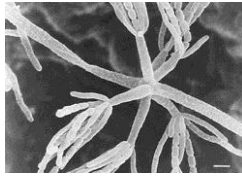
From a medical perspective, how do we define a drug?

Drug: a chemical substance used in the diagnosis, treatment or prevention of a disease/condition or as a component of a medication



Natural Products in the Hematology Clinic

Streptomyces
verticillus



Vinca minor
(Periwinkle)



Arsenic

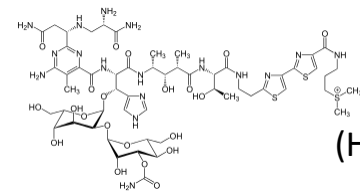
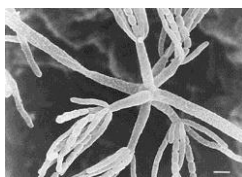


Streptomyces
peucetius



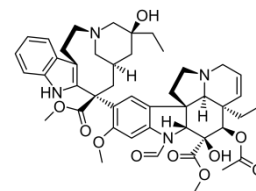
Natural Products in the Hematology Clinic

Streptomyces
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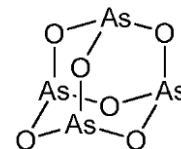
Bleomycin
(Hodgkin lymphoma)

Vinca minor
(Periwinkle)



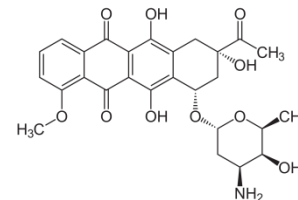
Vincristine
(NHL)

Arsenic



Arsenic trioxide
(acute leukemia)

Streptomyces
peucetius



Daunorubicin
(NHL)

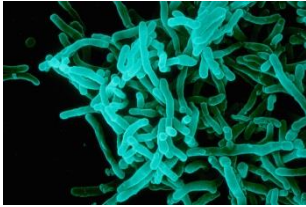


If it's natural, it should be safe ?

Puffer Fish



Corynebacterium
diphtheriae



Poison Dart Frog



Castor beans



If it's natural, it should be safe ?

Puffer Fish



Tetrodotoxin

Corynebacterium diphtheriae



Diphtheria toxin

Poison Dart Frog



Batrachotoxin

Castor beans

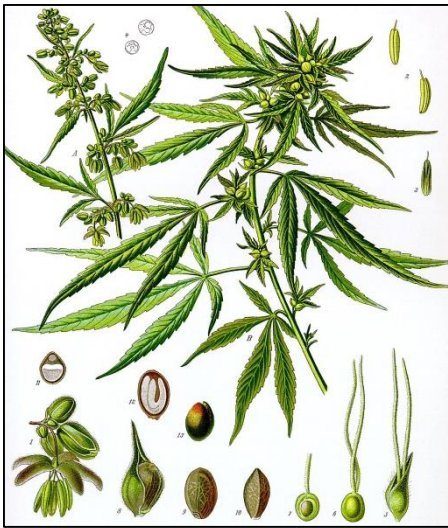


Ricin



A Brief History of Cannabis

- genus: Cannabis
- species: sativa(common), indica(common), ruderalis(uncommon)



- an annual flowering plant indigenous to Asia and India
- Uses of the plant include farming for hemp fiber, hemp oils, medicinal extracts and recreational drug use.
- Has been farmed for fiber for more than 10000 years.
- Burned seeds have been identified in burial grounds dating back to 3000BC.
- Used as a medicine (ex. an anesthetic during surgery) in ancient China (2700 BC) and India(1000 BC)

Elikottil, et al., 2009, J. Opioid Manag., 5, 341-357

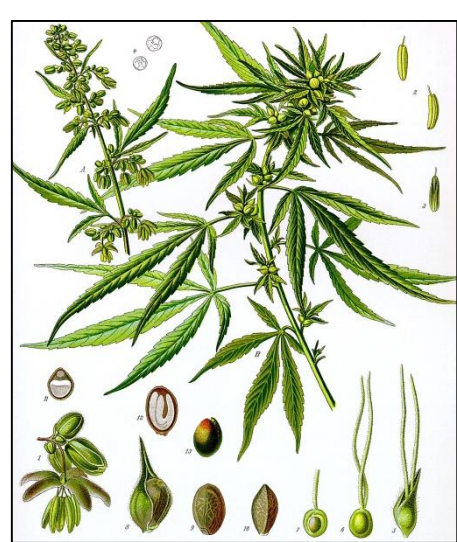


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A Brief History of Cannabis



-genus: Cannabis

-species: sativa(common), indica(common), ruderalis(uncommon)

-cannabis contains a number of chemicals with 60-100 active compounds having been identified(complex mixture)

-the female plant produces a resin containing the cannabinoid molecules



Active Ingredients in Natural Products



Carrots

– retinoids(vitamin A)



Avocados

– healthy fats



Oily fish

– omega 3-fattys acids



Grains

– fiber



Blueberries

– antioxidants

*these are complex mixtures with many active ingredients



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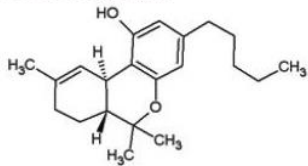


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Active Ingredients: Cannabis and the Cannabinoids

Tetrahydrocannabinol (THC)

Δ^9 -Tetrahydrocannabinol (THC)
Mw=314.22 (C₂₁H₃₀O₂)



- the major active compound in the cannabis plant
- possesses psychoactive properties (component responsible for the “high”)
- THC content in plants can vary widely

Cannabidiol (CBD)



- secondary cannabinoid in cannabis
- *Non-psychoactive* (does not get you high)
- Studies suggest that it modulates the effects of THC
- has been shown to reduce seizures in epilepsy patients
- may act as an anti-depressant



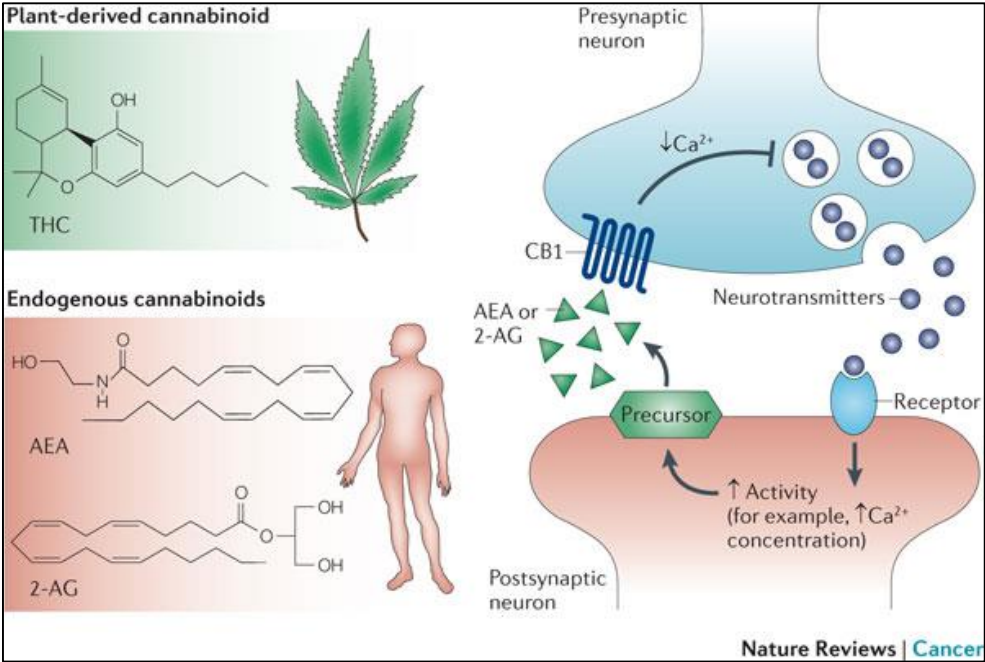
Pharmacology of Cannabis

What is Pharmacology?

Pharmacology: the study of the effects of a substance on the human body. (answer the question: how does it work?)



Pharmacology of Cannabis



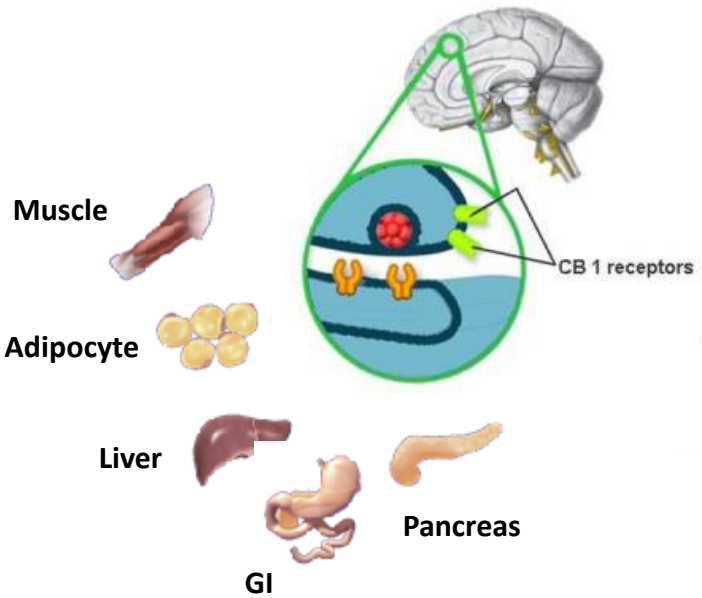
- Phyto-cannabinoids(plant derived) bind to and activate cannabinoid receptors
- After activation, post-synaptic neurons synthesize and release endocannabinoids (naturally occurring in your body)

Adapted from Velasco, et al., 2012, Nat Rev Cancer., 12, 436-444

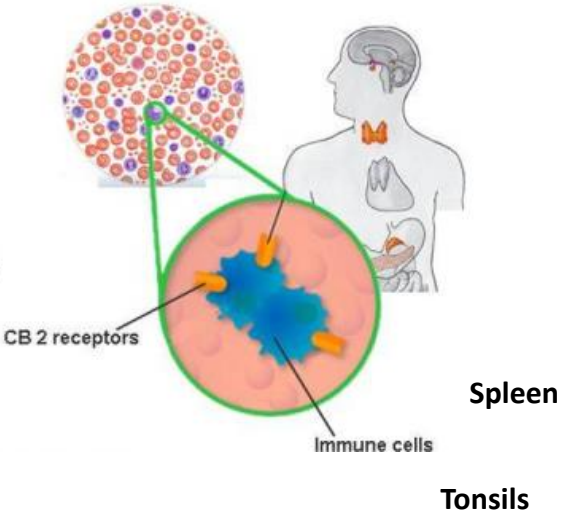


Pharmacology of Cannabis: Different Receptors - Different locations

CB1 receptors are mainly in the brain



**CB2 receptors in the periphery
Immune cells**



- The cannabinoid receptors are involved in modulating appetite, mood , pain sensation and memory



Properties of Cannabis species

- **Cannabis Sativa**

- **Energy**
- **Uplifting**
- **Focus**
- **Creativity**
- **Anti-depression**
- **High CBD:THC ratio**



- **Cannabis Indica**

- **Appetite**
- **Deep relaxation**
- **Sleep aid**
- **Pain**
- **Nausea**
- **Stress**
- **Muscle spasms**
- **High THC:CBD ratio**



Hybrids of both – various mixes/combinations depending on need



Properties of Cannabis species: which one is right for you?



➔ **Hybrids of both – various mixes/combinations depending on need**

- **THC and CBD work in concert, can't have one without the other**
- **Different strains have different ratios of THC to CBD**
- **Reputable cannabis distributors should be able to recommend a strain possessing the properties geared towards your particular needs**



Safety First!

-how much is too much?

Can you overdose on cannabis ?

-by all accounts, the science indicates that cannabis is very safe from a toxicology standpoint

-the LD50 (amount of a substance required to kill 50% of the test subject) as extrapolated from animal studies is 1500 pounds smoked in 15mins.



Safety First!

-Cannabinoid receptors vs opioid receptors

Can you overdose on cannabis ?

-the opioid receptors are located in the brain stem and control processes involved in controlling respiration

-the cannabinoid receptors do not perform these functions, so lethal overdoses that result from stopping breathing do not occur

The addictive potential of cannabinoids as compared to other drugs is considered to be extremely low.



Cannabinoids from different sources

- **Plant products(phytocannabinoids)**



- **3 prescription (synthetic) cannabinoids:**
 - **Dronabinol (Marinol),**
 - **Nabilone (Cesamet) &**
 - **Nabiximols (Sativex)**



Clinical Trials using cannabis: pain management

A Study of Sativex® for Pain Relief in Patients With Advanced Malignancy (SPRAY)	
This study has been completed.	ClinicalTrials.gov Identifier: NCT00674609
Sponsor: GW Pharmaceuticals Ltd.	First received: April 28, 2008 Last updated: June 13, 2013 Last verified: June 2013 History of Changes
Information provided by: GW Pharmaceuticals Ltd.	

Sativex :
Extracts from Cannabis sativa
27mg/mL THC
25mg/mL CBD

- Short term(2 week) comparison of Sativex, GW-2000-02 (purified THC) and placebo control to assess effects on pain management in cancer

Study to Compare the Safety and Tolerability of Sativex® in Patients With Cancer Related Pain	
This study has been completed.	ClinicalTrials.gov Identifier: NCT00675948
Sponsor: GW Pharmaceuticals Ltd.	First received: May 8, 2008 Last updated: June 13, 2013 Last verified: June 2013 History of Changes
Information provided by (Responsible Party): GW Pharmaceuticals Ltd.	

- Long term(up to 657 days) safety and tolerability study of cannabis extracts for patients with cancer related pain

Clinical Trials using cannabis: reducing harmful immune effects post transplant

Safety and Efficacy of Cannabidiol for Grade I/II Acute Graft Versus Host Disease (GVHD) After Allogeneic Stem Cell Transplantation	
<p>The recruitment status of this study is unknown because the information has not been verified recently.</p> <p><i>Verified September 2012 by Rabin Medical Center. Recruitment status was Recruiting</i></p> <p>Sponsor: Rabin Medical Center</p> <p>Information provided by (Responsible Party): Rabin Medical Center</p>	<p>ClinicalTrials.gov Identifier: NCT01596075</p> <p>First received: May 9, 2012 Last updated: September 9, 2012 Last verified: September 2012 History of Changes</p>

Cannabidiol for Graft Versus Host Disease (GVHD) Prophylaxis in Allogeneic Stem Cell Transplantation	
<p>The recruitment status of this study is unknown because the information has not been verified recently.</p> <p><i>Verified September 2012 by Rabin Medical Center. Recruitment status was Recruiting</i></p> <p>Sponsor: Rabin Medical Center</p> <p>Information provided by (Responsible Party): Rabin Medical Center</p>	<p>ClinicalTrials.gov Identifier: NCT01385124</p> <p>First received: June 28, 2011 Last updated: June 18, 2015 Last verified: September 2012 History of Changes</p>

- cannabidiol, a non-psychoactive cannabinoid has been shown to have anti-inflammatory and immunosuppressive effects
- These trials aim to test whether these properties make cannabidiol useful in reducing the severity of GVHD



Clinical Trials using cannabis: www.clinicaltrials.gov

ClinicalTrials.gov
A service of the U.S. National Institutes of Health

ClinicalTrials.gov is a registry and results database of publicly and privately supported clinical studies of human participants conducted around the world. Learn more about [clinical studies](#) and [about this site](#), including relevant [history](#), [policies](#), and [laws](#).

Now Available: Final Rule for FDAAA 801 and NIH Policy on Clinical Trial Reporting

[Find Studies](#) [About Clinical Studies](#) [Submit Studies](#) [Resources](#) [About This Site](#)

ClinicalTrials.gov currently lists **226,089 studies** with locations in all 50 States and in **192 countries**. Text Size ▾

Search for Studies

Example: "Heart attack" AND "Los Angeles"

Search Help

- How to search
- How to find results of studies
- How to read a study record

Locations of Recruiting Studies

Location	Percentage
Non-U.S. only	56%
U.S. only	39%
Both U.S. and non-U.S.	5%

Total N = 39,812 studies
(Data as of September 21, 2016)

- See more trends, charts, and maps

For Patients and Families

- How to find studies
- See studies by topic
- Learn about clinical studies
- Learn more

For Researchers

- How to submit studies
- Download content for analysis
- About the results database
- Learn more

For Study Record Managers

- Why register?
- How to register your study
- FDAAA 801 requirements
- Learn more

Learn More

- [Final Rule Webinar Series](#)
- [Tutorials for using ClinicalTrials.gov](#)
- [Glossary of common site terms](#)
- [For the press](#)
- [Using our RSS feeds](#)

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- Reliable source and up to date source for information on clinical trials using cannabinoids in cancer
- Many trials reported using dronabinol, nabilone and sativex in addition other cannabinoid products



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Approved Uses (main):

- **Not responded to conventional treatment:**
 - **Severe, refractory nausea & vomiting due to cancer chemotherapy**
 - **Loss of appetite & body weight in cancer patient's & patient's with HIV/AIDS**
 - **Pain & muscle spasms due to multiple sclerosis**
 - **Chronic non-cancer pain (neuropathy)**
 - **Severe refractory cancer associated pain**
 - **Insomnia & depressed mood associated with a chronic disease**
 - **Palliative & end of life care setting.**



Legal Status in Canada

- **Possession = criminal offence under *Controlled Drug & Substances Act***
- **Medical exception for up to 150gms (dried) (*Marihuana for Medical Purposes Regulations*)**
- **2015: Supreme Court expanded definition to include any form of cannabis (brownies, tea, oils)**



Legal Possession:

- **a 30 day supply
(if prescribed 4gm/day = 120gm)**
or
- **maximum of 150gm
of dried marihuana/
equivalent**
- **With a Medical Use
card only**



Illegal

- **Storefront ‘dispensaries’**
- **Compassion clubs**
- **Growing without a license**
- **Growing more than licensed for own purposes**
- **Growing for more than 2 people registered with Health Canada**
- **Advertising to the general public**



Access

- **Access by registering with & then purchasing from a licensed marijuana producer.**
- **Register direct with Health Canada**
 - ❖ **to produce a limited amount for your own medical purposes**
 - ❖ **designate someone else to produce it for you**



www.hc-sc.gc.ca/dhp-mps/marihuana/info/med-eng.php



Health
Canada

Santé
Canada

*Your health and
safety... our priority.*

*Votre santé et votre
sécurité... notre priorité.*

Medical Document Authorizing the use of Cannabis for Medical Purposes under the Access to Cannabis for Medical Purposes.



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Registration – government paperwork!

- **Name and address (to be shipped to)**
- **DOB**
- **Name, address, DOB of an individual responsible for you (family/friend)**
- **Prescription (original)**
 - **What is required – fresh, dried, cannabis oil**
 - **Dose prescribed**
 - **For how long (max: 1 year)**
- **Name, address, phone # and Medical license # of your prescribing physician**
- **Physician signature**



License:

License to Possess & Produce for own

medical use

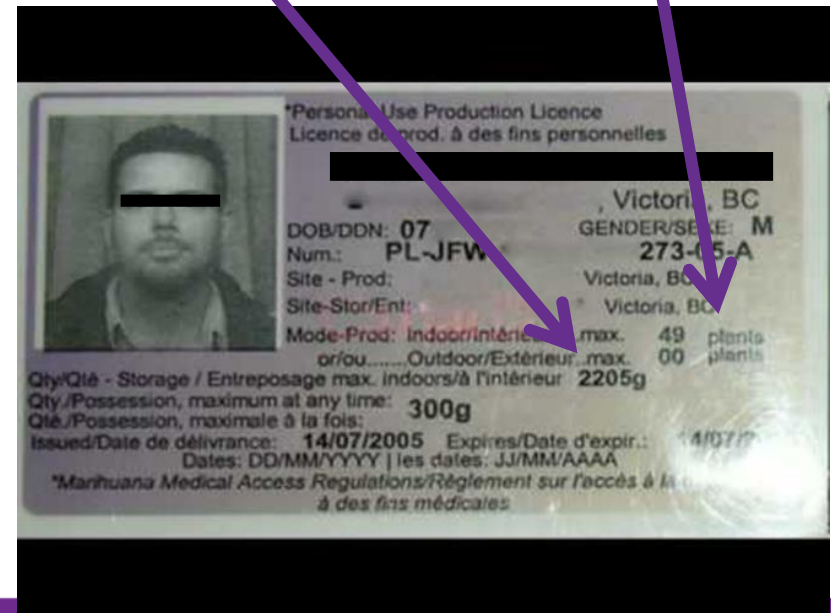
Possession Produce



License to Produce

Storage

Produce



Ontario licensed producers:

Ontario > 35



HYDROPOTHECARY



MariCann



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Who should not have access?

- **Under age of 25yrs**
- **Personal/strong family history of psychosis**
- **Current/past cannabis use disorder**
- **Active substance abuse disorder**
- **Heart disorder (angina, prior heart attach, arrhythmias)**
- **Respiratory disease (COPD)**
- **Pregnant, plan to become pregnant or breast feeding**



Safety Concerns: Dried Cannabis & Infection

- bacteria & mold can affect cannabis during processing**
- directly inhaled with smoking or vaping**
- risk of opportunistic infection in immunocompromised**
- aspergillus fumigatus most prevalent & can cause pulmonary & invasive disease**
- mortality rates up to 90%**



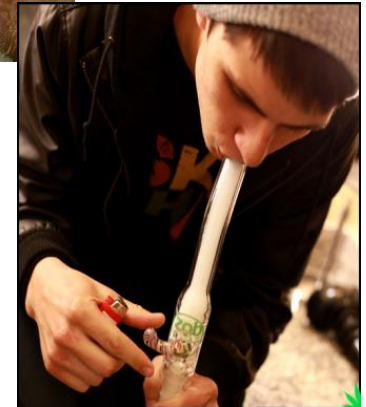
How much is enough?

- **Highly individual**
- **“Start low & go slow”**
- **1-3 grams / day**

Smoking / vaporizing

Peak effect 30 min

Duration of effect 2-4 hrs



Oral

Peak effect

30 min – 3 hours later

Duration of effect

- up to 24 hours

Topical

Limited information





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