Cannabis in the Workplace

Part 1

- General primer on cannabis
- Description of strains and species

Part 2

- Cannabis chemistry: Why cannabis works as medicine

Part 1: General Primer on Cannabis

- Cannabis evolved in northern Eurasia and has been a staple crop since the dawn of agriculture.
- Now believed cannabis was the first plant cultivated for food, fibre, oil and medicine.
- Humans are suspected of having cultivated cannabis for 12,000 years. Predates the cultivation of grapevines.
- Without cannabis, hemp rope would not have been available for ships and their sails and ropes would have been made with inferior material.

- Cannabis has long been relied on as a source of medicine.
- Cannabis was demonized in the twentieth century largely as a result of interests that conspired to outlaw cannabis for a variety of reasons.
- Chemical companies like DuPont saw cannabis as a threat to their interests.
- Hemp can be used to make pulp for paper, used as a feedstock for plastics and used as a biomass for the production of biodiesel and ethanol fuel.

- You cannot patent or own rights to a seed like you could an oil well or a patent for nylon.
- Since the war on cannabis began in the 1920’s in the US, it has only been within the last twenty years that the stigma began to disappear and people began to explore the use of cannabis as medicine.

Fundamental Misconceptions

- While THC is commonly focussed on as main ingredient in cannabis, it certainly is not the only one responsible for easing the suffering of millions.
- THC is just one of a few hundred compounds that exist in cannabis.
- It is focussed on as active ingredient as this compound is chiefly responsible for its psychoactive properties.

- Other compounds like Cannabidiol or CBD actually show much greater promise as medicine.
- CBD is not psychoactive and in fact counteracts the psychoactive effects of THC.
- Despite being listed as one, THC is not a hallucinogen. Many people incorrectly attribute visual hallucinations with the use of cannabis as a direct result of the THC content.
- For pharmacological purposes, cannabis is classed as a hallucinogen but this is always tempered with additional explanations.

- Hallucinations are more like “pseudo hallucinations”.
- Unlike recreational use, objective is not to achieve a level of intoxication but to restore function to allow people to more completely participate in their lives
- Misconception at the heart of ‘medical marijuana’.

- General rule of thumb is that one puff of a cannabis joint equals 5 mg of THC.
- Patient can slowly increase dose upwards each time they use cannabis until they learn their effective dose to achieve relief.
- Patients treating serious illness or symptoms can take significantly larger doses and develop a tolerance.
- Most important factor is the strain being used which is an indication of the chemistry at work.

- For some popular medical strains, CBD is considered the active ingredient and intoxication by THC is of little threat.
- The flower of mature female plants that are rich in cannabinoids and terpenes, leaves of plant only contain small amount of active ingredients.
- Cannabis is dioceous, meaning it produces male and female plants.
- The males are culled as soon as they are identified so the females remain unpollinated.

- Four species used to create what have become known as strains of cannabis.
- Indica, Sativa, Afghanica and Ruderalis
- We will focus on Indica and Sativa.
- Strains are classed as more Indica, more Sativa or hybrids in between.
- Defined by the effects on the user.
- Indicas are short, bushy, from mountains and produce thick, dense flowers usually rich in CBD and THC.

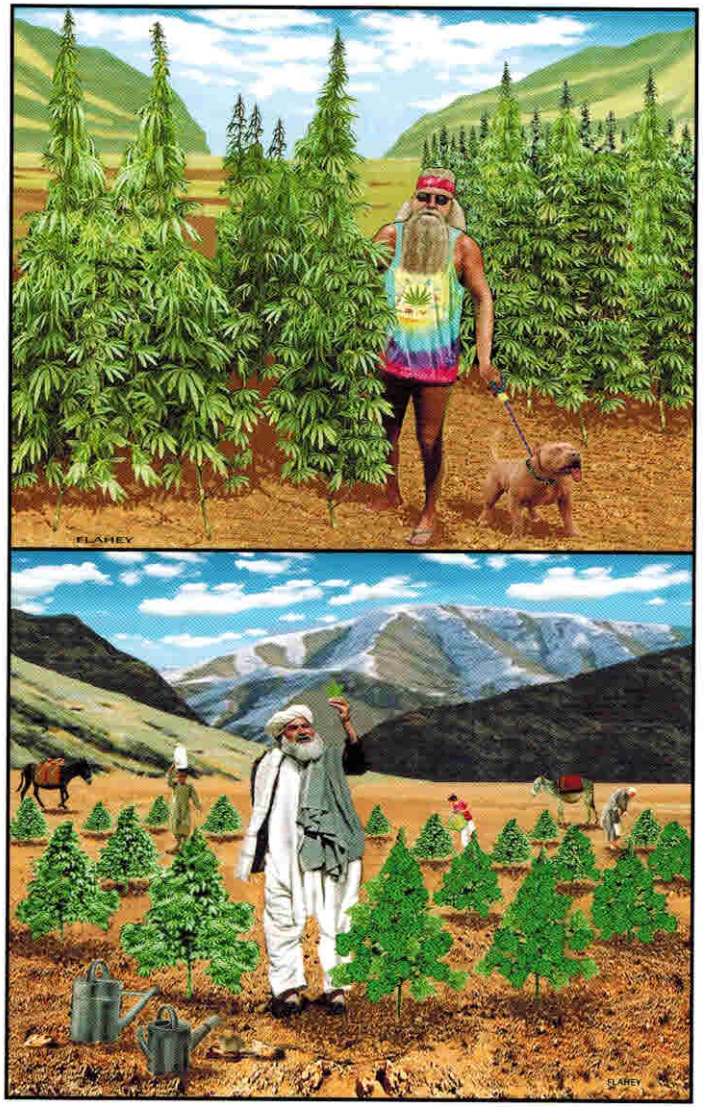
- Sativas are tall, thin, orginate in equatorial regions and produce slender bunches of less sparsely organized flowers. Low in CBD but can be high in THC.
- Absence of CBD is known to make Sativa varieties more “psychedelic”.

INDICA

- Relatively short in height with broad, dark green coloured leaves and compact, dense buds
- Usually associated with a more sedative and relaxing effect producing lethargy (a.k.a. couchlock)
- Recommended as a “nightcap” or for general night time use
- Usually considered relatively high in THC and CBD

SATIVA

- Relatively tall in height with narrow, light green coloured leaves and long and narrow, slender buds
- Usually associated with a more stimulating effect that promotes creative thought and high energy (this effect can occasionally produce panic attacks and paranoia in inexperienced users)
- Recommended for general daytime use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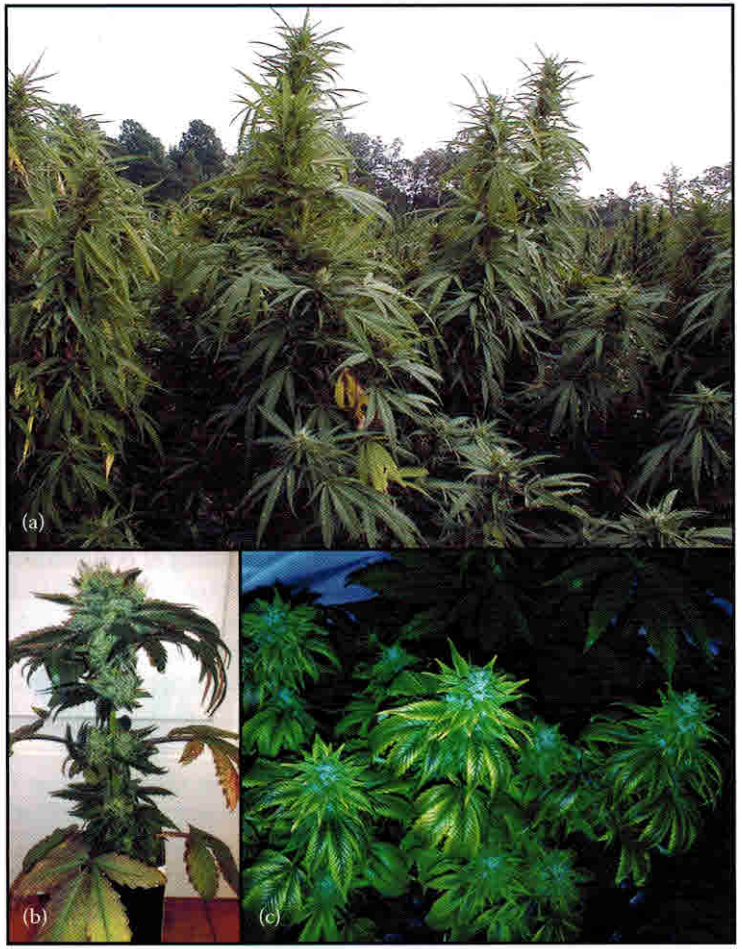
(a)
(b)
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FIGURE 12.17 A contrast of leaves of "sativa type" (left; narrow leaflets) and "indica type" (right; wide leaflets) marijuana plants. Photo by Transmitdistort (CC BY 3.0).

- The following rules can be said to apply when comparing “high CBD” varieties with Indicas or Sativas:

  High CBD strains (those created exclusively for medical use due to CBD content)
- A high degree of genetic variability: may be comprised of almost any species or other strains of cannabis including hemp
- Few physical traits can be generalized for these reasons
- Always very high in CBD when compared to Indicas and much more so when compared to Sativas

- May be equally high in THC content as in CBD content creating what are known as 1:1 ratio strains (i.e. Cannatonic)
- May be extremely low in THC (i.e. CBD Therapy @0.5% THC and 8% CBD)
- This level of THC doesn’t even qualify as “marijuana” in most countries
- These strains are usually designed and bred with specific ratios of THC to CBD in mind (i.e. 1:1, 2:1, 4:1, 16:1 etc.)

- While high CBD strains can be smoked or vaporized like any other cannabis, they are usually converted to cannabis oil for ingestion or topical use. Possibly even baked into an edible form for consumption.

- **Grandfather strains**
- The following five strains should give you a basic understanding of the medical qualities of modern medical cannabis. All five of these strains are credited with beginning a lineage that comprises a large proportion of cannabis grown today.

- **Haze**
- - Very tall, narrow leafleted pure tropical Sativa
- - Considered a psychedelic variety due to its high degree of psychoactivity
- - Mix of Columbian, Thai, Indian and Mexican landraces
- - Very stimulating, can cause anxiety and paranoia

- No “couchlock”, effect slowly disappears with no lethargy
- Medium analgesia with little to no sedation
- Distinct sweet odour absent of any “skunky” smell
- Potency averages around 20%THC with as much as 2% CBD
- Examples of famous Haze strains include Neville’s Haze, Super Silver Haze, Super Lemon Haze and Ghost Train Haze

Skunk #1

- Indica/Sativa hybrid with wide variability
- Likely the most common strain most people are to some degree familiar with due to its fragrant, skunky smell when being grown or smoked
- Possibly the most important strain contributing to todays wide variety of cannabis genetics
- Cross of Columbian Gold, Aculpulco Gold and Afghani
- Can be initially stimulating

- Potent but well tolerated psychoactivity, differs from Haze
- Excellent analgesia and muscle relaxant without the more sleepy Indica effect
- High levels of THC approaching 20% usually with little CBD present
- Some examples of strains descended from Skunk #1 are Island Sweet Skunk, Super Skunk, Sensi Skunk

Afghani

- Some botanists argue Afghani actually makes up a separate species of cannabis, some argue it is entirely an Indica
- Broad leafleted pure Indica strain
- Usually identified as a “hash plant” or a variety from which hashish is produced from in Afghanistan
- Psychoactivity is strong with a “narcotic body effect”
- Responsible for the “stoned” effect as opposed to the cerebral “high” effect associated with more Sativa strains

- Excellent analgesia with a general numbing effect with moderate doses
- Excellent muscle relaxation and sedation with little to no stimulating effect
- Usually contains around 17% THC but some can push up to 20% and is almost always low in CBD at around .5% or less
- Some examples of strains descended from Afghani are Northern Lights #1, L.A. Confidential, Purple Afghani and Shishkaberry

Hindu Kush

- Pure Indica with wide dark leaves reminiscent of Maple trees – short bushy stature
- Originates in the mountainous Hindu Kush region between Afghanistan and Pakistan
- Psychoactivity is not subtle but it is more accurately characterized by a strong Indica “stoned” effect
- Strong analgesic effect: this plant was supposedly originally selected for its ability to make strong physical labour more tolerable

- Good muscle relaxation with excellent sedative qualities and not very stimulating
- Most authentic Kush varieties test between 12-16% THC but some are known to push well above the 20% mark
- Can be relatively high in CBD at around 0.2 – 3%
- Some examples of descendents of this strain are Bubba Kush, Master Kush, Pink Kush and Cotton Candy

Chemdawg

- Highly hybridized and genetically variable strain of emerald green cannabis with narrow to wide leaves
- Famously unknown and widely debated genetic origins
- According to legend, was born out of 13 seeds discovered in a quantity of cannabis bought at a Grateful Dead concert in 1988
- Complex psychoactivity produced as a result of the synergistic effect additional compounds known as terpenoids provide, difficult to characterize beyond simply “strong”

- Very strong analgesic effect, almost anaesthetic like with moderate muscle relaxation
- Strong stimulating effect that can induce anxiety or paranoia in some
- Can have a very strong sedative effect but usually after an initial strong euphoric high
- Widely variable strong potency, usually between 17-25% with some examples topping 30% THC
- CBD content varies from 0.2 – 2%
- Some examples of the many descendants of Chemdawg are the infamous OG Kush, Sour Diesel and Chem 4

Identifying legitmate medical use

- Two different pieces of legislation that have provided documentation to Canadians to authorize the possession and use of cannabis as medicine
- Marijuana Medical Access Regulations (M.M.A.R.) governed the medical access of marijuana in Canada from 2001 until its effective replacement with the current Access to Cannabis for Medical Purposes Regulations (A.C.M.P.R.) in 2016

- Important to understand as a result of a court injunction issued in the case of Allard v. Canada, M.M.A.R. authorizations to possess (A.T.P.) do not expire despite the expiry date listed on them
- Probably “grandfathered” in law and will likely always be valid
- Current A.C.M.P.R. authorizations have expiry dates and holders of them must renew them on a periodic basis that differs from person to person

Indications of the use of cannabis

- Blood shot eyes may be an indication of THC crossing the blood-brain barrier, they may be an indication of something else
- Dilated pupils and glossy eyes may also indicate the use of cannabis, they may also indicate the use of alcohol
- Detecting its use is very difficult other than pungent smoky odours that may be prevalent

Health Canada Santé Canada

Address Locator: 0300A
Ottawa ON K1A 1B9

MMAD-89126-13
Client ID: [redacted]

AUTHORIZATION TO POSSESS DRIED MARIHUANA FOR MEDICAL PURPOSES

You have met the requirements to be issued an authorization pursuant to section 11 of the *Marihuana Medical Access Regulations* (MMAR). You are hereby authorized to possess dried marihuana for your medical purpose in accordance with your authorization. This document serves as proof of your authority to possess marihuana for medical purpose. You should have this document with you at all times when you are in possession of the substance in case you are required to show proof to the police.

HOLDER OF AUTHORIZATION INFORMATION

NAME: [redacted]

DATE OF BIRTH: [redacted]

ADDRESS:

GENDER: Male

MAILING ADDRESS: [redacted] anada

AUTHORIZATION #:

TERMS AND CONDITIONS

The maximum quantity of dried marihuana that you may possess at any time under this *Authorization to Possess* is: **210 grams.**

MEDICAL PRACTITIONER INFORMATION

NAME: Dr. Danial Marvin Isak Schecter

VALIDITY DATE: 26-Jun-2014

The date shown as the validity date represents the last day that you may use this licence to obtain medical marihuana from a licenced producer.

EXPIRY DATE

The expiry date for your licence is March 31, 2014. At that time this no longer provides you with authorization to possess marihuana; however, until the validity date noted above, you may use this licence to register with a Licensed Producer to purchase marihuana for medical purposes. The documents you receive from your licensed producer may be used as proof that you are authorized to possess dried marihuana for medical purposes.

ISSUED BY:

Louis Pitsch
A Director, Bureau du cannabis médical
A Director, Bureau of Medical Cannabis
Controlled Substances & Tobacco Directorate
Direction des substances contrôlées et de la lutte au tabagisme
Health Canada / Santé Canada

DATE OF ISSUE:
07-Oct-2013

Health Canada / Santé Canada

Access to Cannabis for Medical Purposes Regulations – Registration Certificate
Règlement sur l'accès au cannabis à des fins médicales – Certificat d'inscription

[redacted]

Effective Date/Date d'effet: 17 Nov 2017

[redacted]

You are now registered with Health Canada under the *Access to Cannabis for Medical Purposes Regulations* (ACMPR). This registration certificate is your proof of registration. Please ensure that you read and abide by the terms and conditions of registration and by the requirements of the ACMPR.

Vous êtes maintenant inscrit avec Santé Canada en vertu du *Règlement sur l'accès au cannabis à des fins médicales* (RACFM). Ce certificat d'inscription est votre preuve d'inscription. Veuillez vous assurer de lire et de respecter les conditions auxquelles cette inscription vous assujettit ainsi que les exigences du RACFM.

Registered Person – Personne inscrite	
Registration Number - Numéro d'inscription :	MCR-9297
Name of Registered Person - Nom de la personne inscrite :	[redacted]
Date of Birth of Registered Person – Date de naissance de la personne inscrite :	
Name of Responsible Individual(s) for the Registered Person (if applicable) - Nom de la/des personne(s) physique(s) responsable(s) de la personne inscrite (le cas échéant) :	
Daily Quantity - Quantité quotidienne :	4 g of Dried Marihuana / Marihuana séchée
Possession Limit - Limite de possession :	120 g of Dried Marihuana or its equivalent / Marihuana séchée ou son équivalent
Name of Health Care Practitioner who issued the Medical Document - Nom du praticien de la santé qui a fourni le document médical	Danial Marvin Isak Schecter, Medical practitioner
Designated Person – Personne désignée	
Name of Designated Person (if applicable) - Nom de la personne désignée (le cas échéant) :	*N/A*
Production Site – Lieu de production	[redacted]
Production area – Aire de production	
Production Site Address - Adresse du lieu de production :	5B 1Y4
Maximum Number of Plants Indoor - Nombre maximal de plants à l'intérieur :	
Maximum Number of Plants Outdoor - Nombre maximal de plants à l'extérieur :	4 marihuana plants / Plants de marihuana
Maximum Storage Quantity - Quantité maximale en stockage :	1500 g of Dried Marihuana or its equivalent / Marihuana séchée ou son équivalent
Storage Address - Addresse de stockage	[redacted] B 1Y4
Registration Expiry Date - Date d'expiration de l'inscription:	**14 Jul 2018**

Please note that production should be conducted in a discreet manner and in accordance with all other relevant federal, provincial and municipal laws.

Veuillez noter que la production devrait être effectuée d'une manière discrète et en conformité à la législation fédérale, provinciale et municipale applicable.

What are Cannabinoids?

- As of 2017, there are 113 known cannabinoids. 66 are known to occur in *Cannabis.*

- Cannabinoids can be classed as follows:

1. Endogenous cannabinoids produced by the body or endocannabinoids.

2. Phytocannabinoids produced by plants like cannabis

3. Synthetic cannabinoids as produced in a lab by design and not naturally existing.

Cannabinoids

- Some of these compounds occur in an acid form. This means they possess an additional carboxyl [2-carboxolic acid (2-COOH)] group until heated to a point at which they are effectively *decarboxolated*.

- This process converts the non-psychoactive THC-acid (THCA) into its now psychoactive form THC.

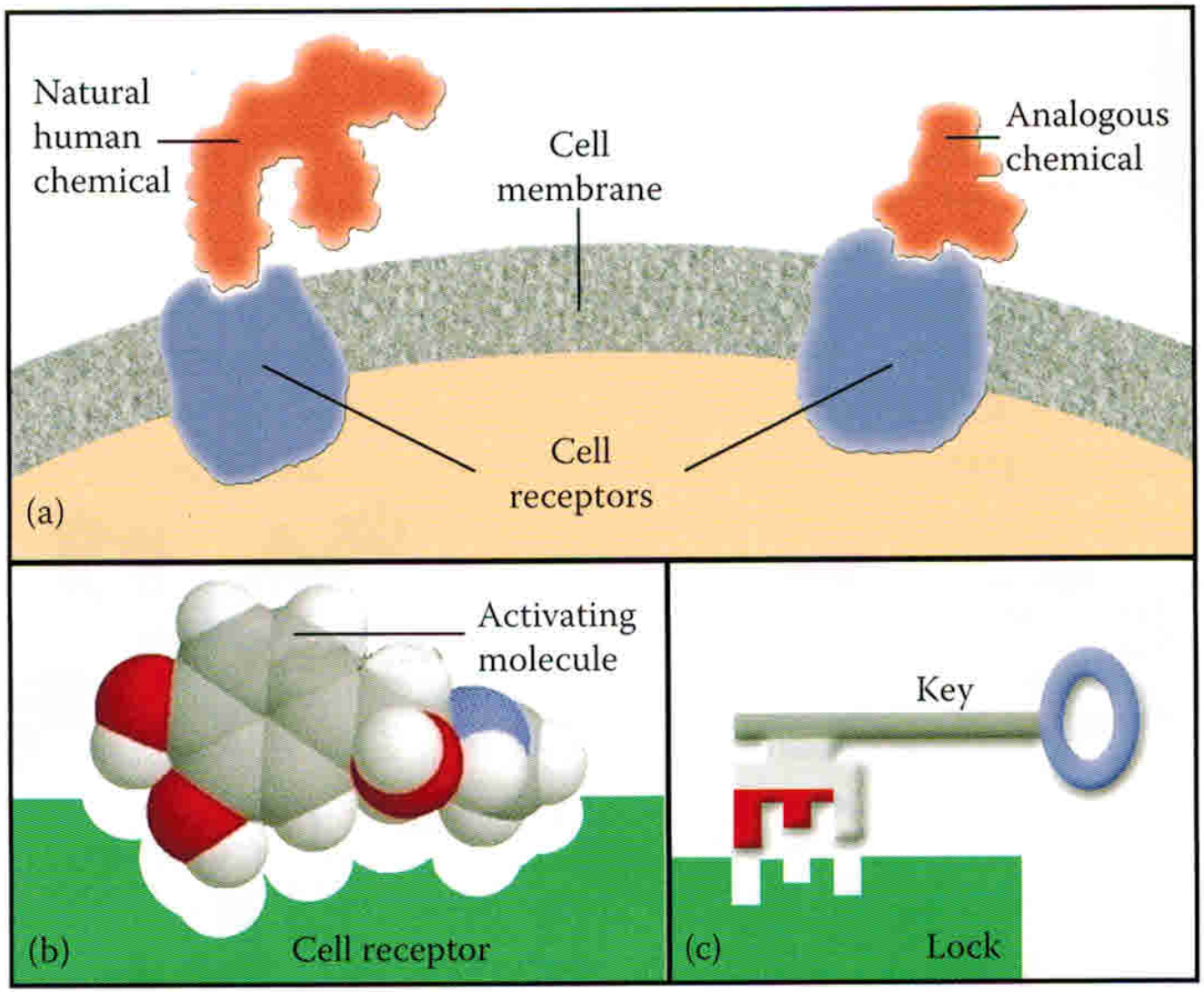
What are cannabinoid receptors?

- Cannabinoid receptors allow for cannabinoids to interact with the biochemistry of an organism by either partially or fully fitting into the receptor like a lock and key thereby having an *agonist* or *antagonist* effect.

- There are two main types of cannabinoid receptors: CB1 & CB2 (although others exist, we will not focus on them).

- Cannabinoid receptors CB1 & CB2 are called G protein coupled receptors or GPCRs.

Brain receptors as “lock and key”



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Cannabinoid Receptors

CB1 Receptor

- CB1 was discovered in 1988.
- CB1 is the most abundant GPCR in the brain and CNS.[1]
- It is the primary site of action for THC.[2]
- CB1 also occurs in other organs in fewer numbers (i.e. reproductive system, bones and the GI system or the enteric nervous system).[3]

Cannabinoid Receptors

CB2 Receptor

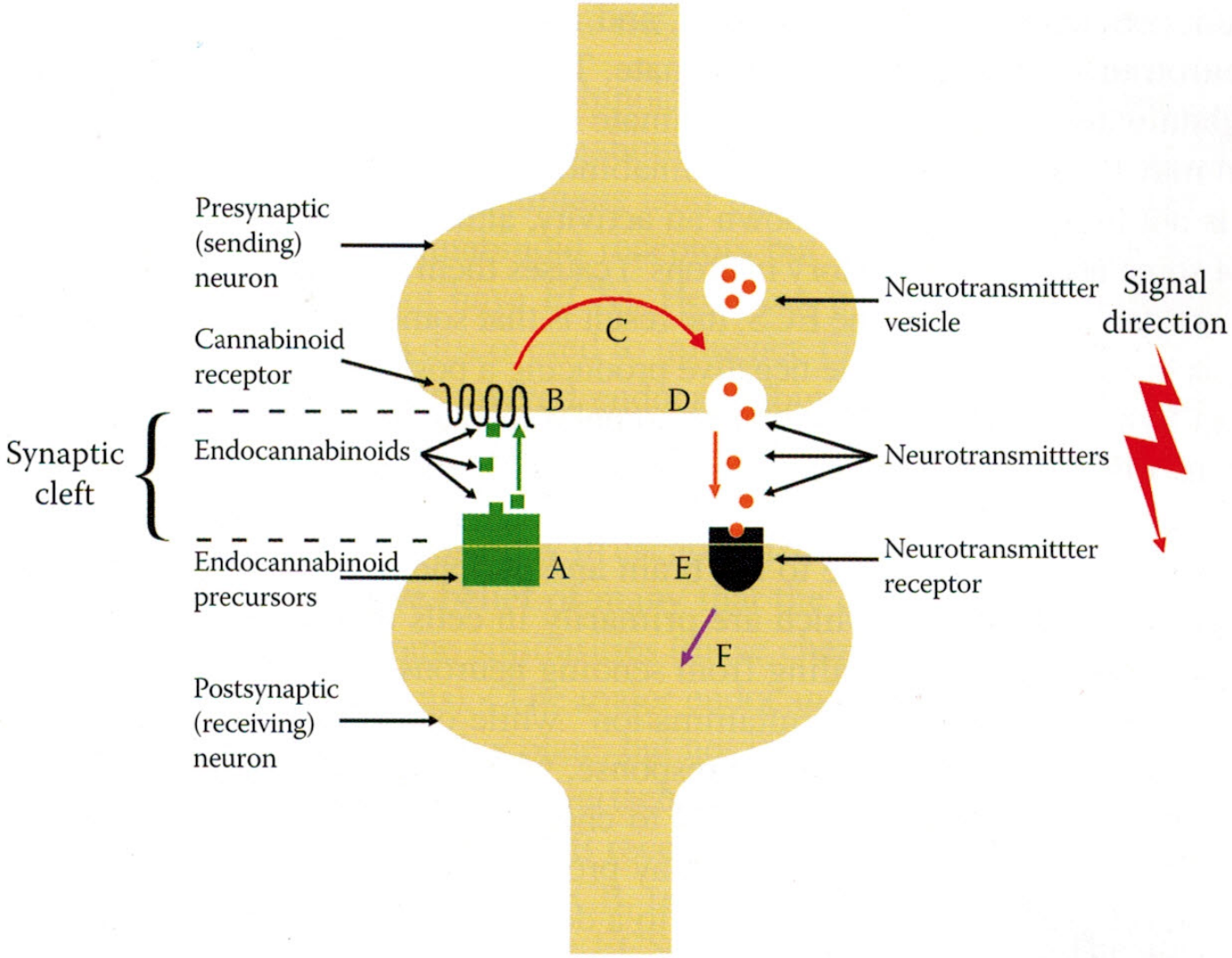
- CB2 receptor was discovered in 1993.[4]
- CB2 receptors are found in cells of the immune system throughout the body, the CNS and the brain.[5]
- CB2 receptors occur mostly in non neural tissue like the spleen, liver and to a lesser extent the pancreas.[6]

Cannabinoid Receptors

- Cannabinoid receptors have been compared to a dimmer switch, limiting or stimulating the amount of neurotransmitters released, thereby affecting how messages are received, sent and processed.

- Cannabinoid based medicines operate on the theory of manipulating this relationship through the supplementation the natural endocannabinoids (which may be deficient in some cases) thereby modulating the activity of neurotransmitters.[7]

Cannabinoid receptors as “dimmer switches”



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Endocannabinoids

Two main Endocannabinoids :

Anandamide (AEA)

Arachidonyl Glycerol (2-AG)

(others do exist but have not been widely researched)

Metabolic enzymes:

Fatty Acid Amide Hydrolase (FAHH)

Monoacylglycerol Lipase (MAGL)

Active metabolites

11-Hydroxy-THC (11-OH-THC)

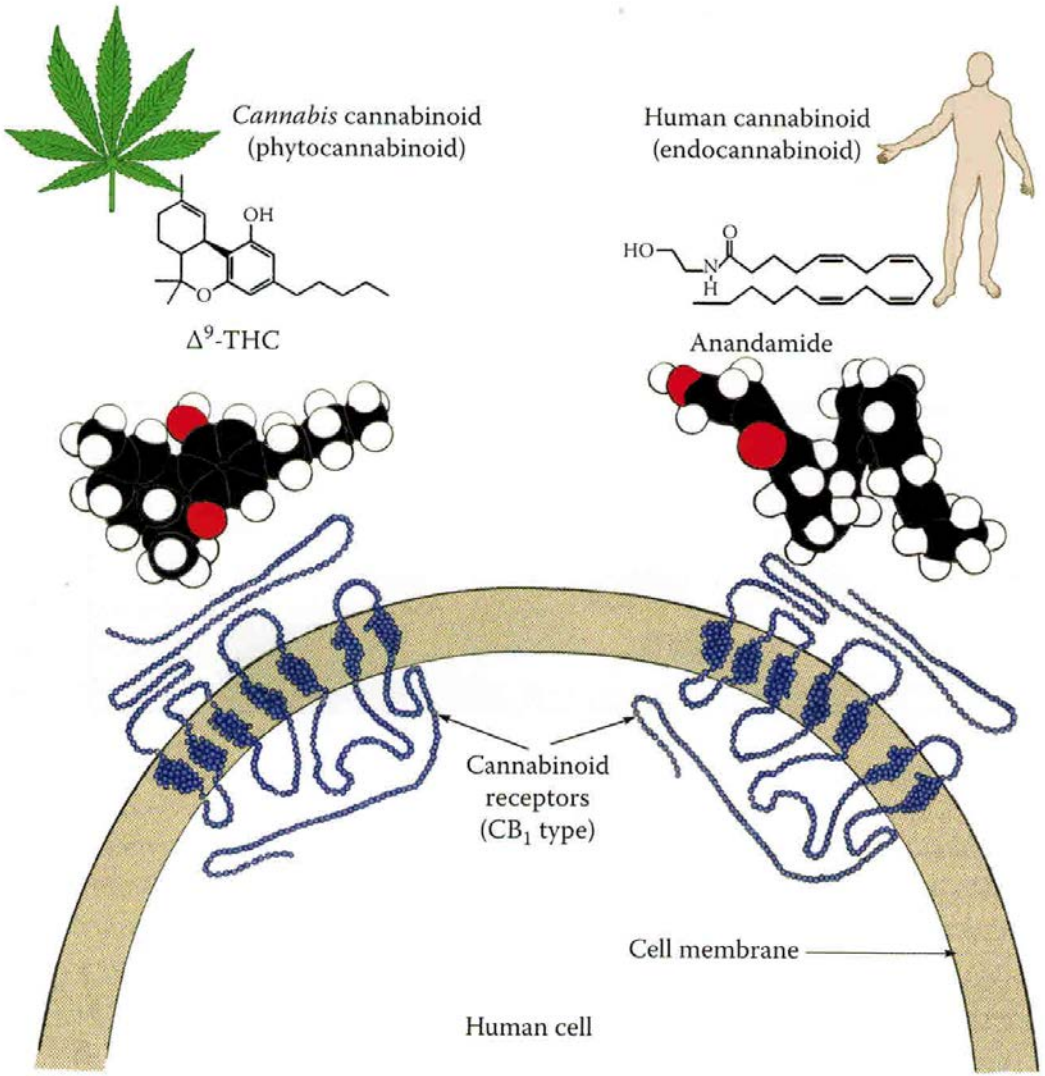
Anandamide

- Arachidonyl ethanolamide or simply AEA.
- First discovered in 1992.
- Derived from the Sanskrit word ananda, meaning “supreme joy” or “bliss”.
- Anandamide is synthesized on demand when and where needed by the brain[8] and occurs primarily in the CNS.[9]

Anandamide

- Anandamide is a partial agonist and activates both the CB1 and CB2 receptors.[10]
- Anandamide is hydrolyzed (broken down) by the Fatty Acid Amino Hydrolase (FAAH) enzyme.
- THC works on the brain to create a psychoactive effect because it mimics Anandamide and its 3D structure closely.[11]
- In this way, THC serves as a partial agonist of receptors designed to work with Anandamide.[12]

How similar cannabinoids activate the same receptor



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Brain's chemical

Plant's chemical

Anandamide

THC

2-Arachidonyl Glycerol (2-AG)

- 2-Arachidonyl Glycerol or 2-AG.
- First discovered in 1995.
- 2-AG is considered the secondary endocannabinoid.
- Like Anandamide, 2-AG is synthesized on demand by the body when and where needed, both in the brain and in the periphery nervous systems.[13]

2-Arachidonyl Glycerol (2-AG)

- Also like Anandamide, 2-AG is capable of activating both CB1 and CB2 receptors.
- 2-AG is a full agonist of both CB1 and CB2 receptors unlike Anandamide which is a partial agonoist.[14]
- 2-AG is hydrolyzed (broken down) in a process similar to that of Anandamide, but by a different enzyme called monoacylglycerol lipase (MAGL).

How does this translate to a real drug or treatment?

- An important new area of cannabinoid based medicines will involve the suppression of these enzymes in an attempt to preserve AEA or 2-AG to treat symptoms or disease processes.

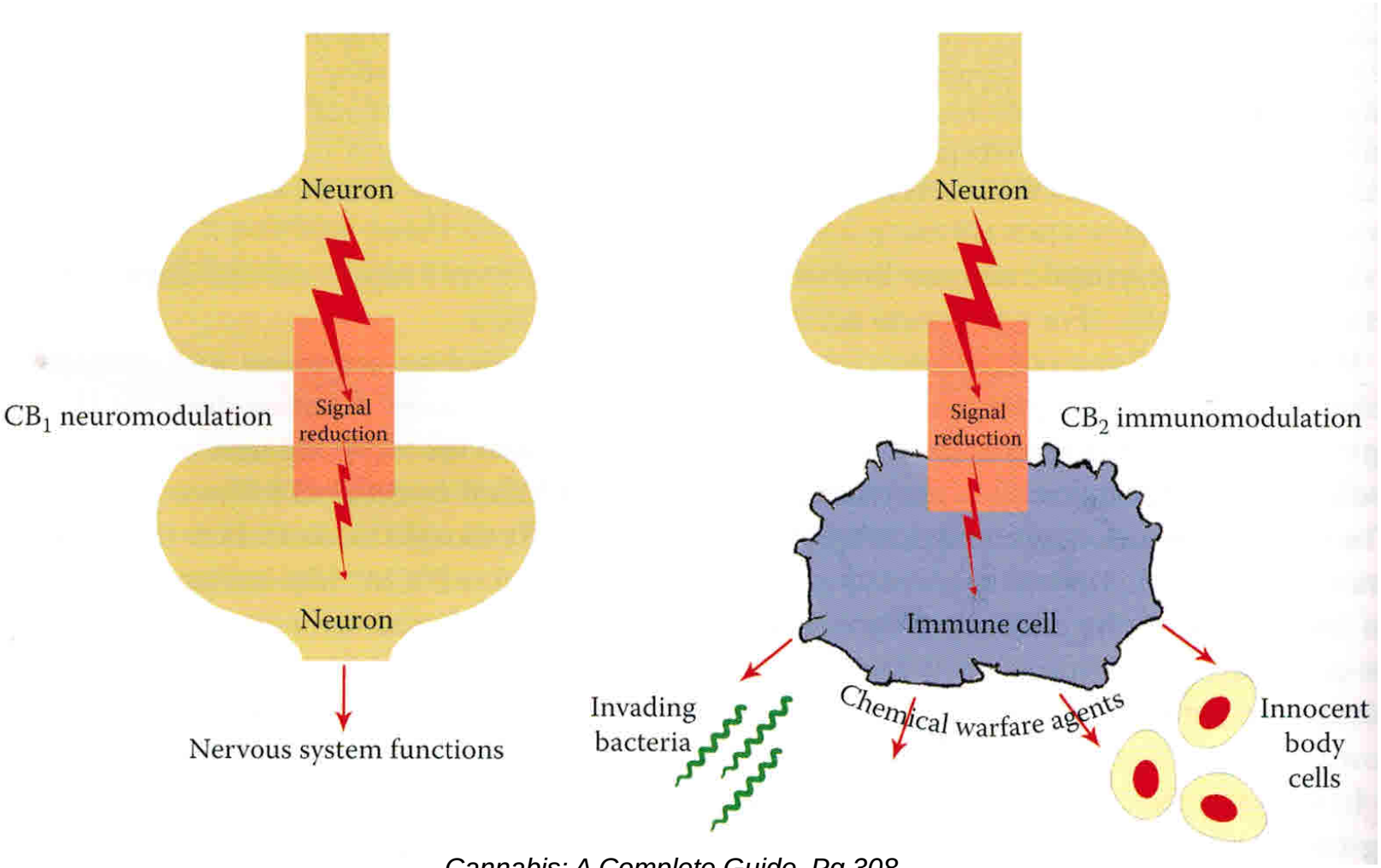
- i.e. : treating inflammation and scarring due to the acquired immune response and free radical induced inflammation as a result of improperly mediated TH1 & TH2 responses.

- These dysfunctional responses from the immune system could be a result of natural endocannabinoid deficiencies.

How does this translate to a real drug or treatment?

- It is theorized that the suppressing of these enzymes will result in the restoration of the natural endocannabinoid balance or “tone”.
- Restoration of the natural endocannabinoid tone would result in properly mediated TH1 and TH2 responses.
- Restoration of the natural tone would allow for the proper “attenuation” of synaptic responses in the central nervous system (CNS).
- This would help control pain and/or other co-morbid CNS symptoms.

How cannabinoids modulate bodily functions through activation of CB1 or CB2 receptors



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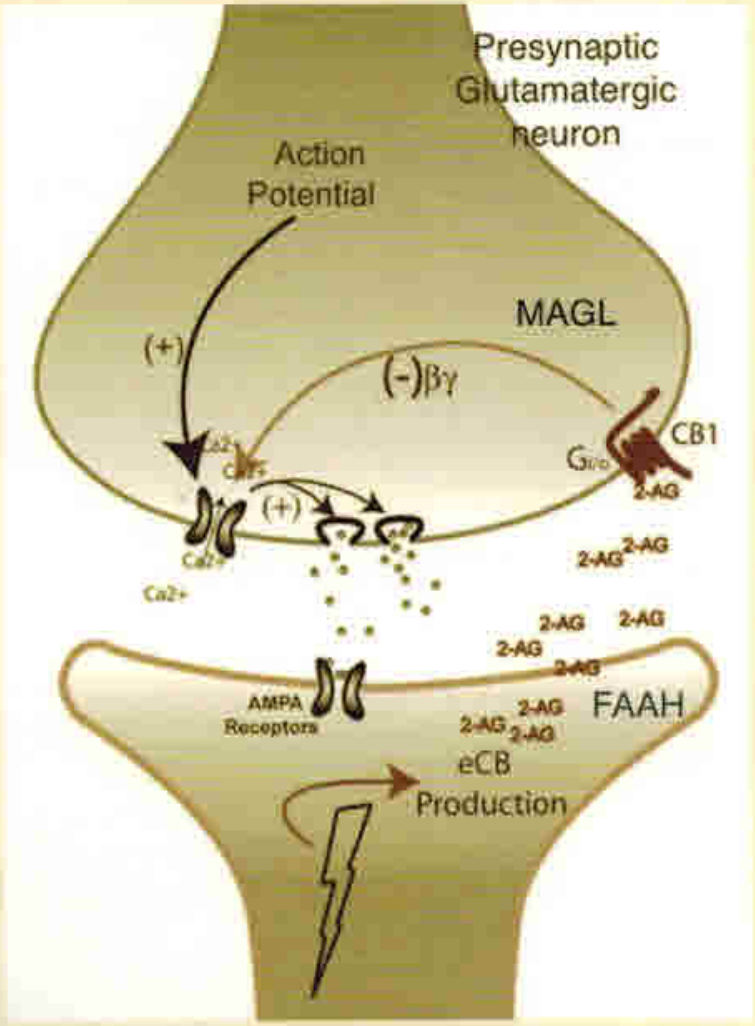

A synaptic junction. Upon an action potential arriving at the pre-synaptic terminal ending, glutamate is released into the synapse. Glutamate acts on AMPA receptors on the adjacent dendrite resulting in depolarization of the post-synaptic membrane. The subsequent influx of Ca++ results in the production of 2-AG, which is released into the synapse and serves as a retrograde messenger acting on inhibitory pre-synaptic CB1 receptors on the glutamate-containing neuron to turn off subsequent glutamate release. The action of 2-AG is terminated by its degrading enzyme, monoacylglycerol lipase (MAGL), located in the pre-synaptic neuron.

-Example of endocannabinoids affecting glutamate release through retrograde feedback

-Selective Serotonin Reuptake Inhibitors (SSRIs) work by flooding the synaptic cleft with dopamine thereby downregulating the number of dopamine receptors available on the synapses in the brain

-In theory, the dopamine imbalance could be restored and the receptor sites downregulated by the appropriate cannabinoid based medications that would provide feedback through the synapse (as with the example at left with glutamate release)

- This feedback loop would “attenuate” the signal between the synapses by stimulating more dopamine release, reducing the number of dopamine receptor sites and accomplishing the same objective WITHOUT blocking the reuptake of dopamine between brain cells

Phytocannabinoids from *Cannabis*

- Delta-9 Tetrahydrocannabinol (Δ9-THC)
- Delta-8 Tetrahydrocannabinol (Δ8-THC)
- Cannabidiol (CBD)
- Cannabigerol (CBG)
- Cannabichromene (CBC)

Phytocannabinoids from *Cannabis*

- Cannabinodiol (CBND)
- Cannabielsoin (CBE)
- Cannabicyclol (CBL)
- Cannabinol (CBN)
- Cannabitriol (CBT)
- Cannabivarin (CBV)

Cannabinoids - THC

- Delta-9 Tetrahydrocannabinol
  (Δ9-THC or simply THC).

- First discovered in 1964.

- THC is always attributed as being “the active ingredient” of cannabis due to its psychoactive effects.

What are the known effects of THC?

- Painkiller[15]
- Anti-emetic (nausea)[16]
- Muscle relaxant[17]
- Anti-cachexia/anorexic (wasting)
- Anti-neoplastic[18]
- Anti-epileptic (convulsant)[19]
- Anti-ischemic

Known effects of THC

- Anti-migraine[20]
- Anti-asthmatic[21]
- Anti-insomnia
- Anti-withdrawal[22]
- Anti-bacterial[23]
- Anti-oxidant and neuroprotectant[24]
- Anti-inflammatory[25]

Cannabidiol

- Cannabidiol (CBD).
- Cannabidiol was originally discovered in 1940 and was the first phytocannabinoid classified.
- Not psychoactive like THC.
- Considered by most to hold the most potential for entering the pharmacopoeia in common practice for the symptomatic control and/or treatment of certain illnesses.
- Known antagonist of the psychoactive effects of THC.

Known Effects:

- Anti-inflammatory[26]
- Anti-bacterial[27]
- Anti-viral[28]
- Anti-ischemic[29]
- Anti-epileptic[30]

Known Effects:

- Anti-anxiolytic (anxiety)[31]
- Anti-psychotic[32]
- Analgesic (painkiller)[33]
- Anti-emetic[34]
- Immune modulatory[35]
- Muscle relaxant[36]
- Neuroprotectant[37]

Known Effects:

- Anti-arthritic[38]
- Anti-cancer[39]
- Anti-diabetic[40]
- Anti-intestinal bowel disease (IBD)[41]

11-Hydroxy Delta 9 Tetrahydrocannabinol

- 11-Hydroxy-Δ9THC or simply 11-Hydroxy-THC.
- Result of metabolization of THC after the first pass through the liver.
- 11-OH-THC is at least as psychoactive if not greater than Delta-9 THC.
- After the oral ingestion of THC, blood plasma levels of an active metabolite of THC known as 11-Hydroxy-Delta 9 THC are three times as high as after smoking cannabis.
- This accounts for the greater, more prolonged effect of ingesting cannabis.

Terpenes

What are terpenes?

- More accurately labelled as terpenoids.
- Aromatic hydrocarbons that occur in most of the known plant kingdom.
- Highly volatile and easily lost to evaporation.
- Terpenoids are converted to terpenes in the process of curing a plant when these compounds are oxidizing.

- Psychologically active themselves.
- Terpenes can modify the action of other cannabinoids. i.e. - modifying the blood-brain barrier and allowing for compounds like THC to cross it more easily allows for increased effects from it like psychoactivity.
- Suspected of providing the majority of subjective differences associated with how different strains or species of cannabis can affect users of it.
- **Cannabis is known to contain over 200 terpenes.**

Examples of medically active terpenes

Limonene

- Terpene that is largely responsible for the smell of lemons and citrus fruit in general
- Limonene is an excellent example of a terpene that serves multiple functions.

a) Mediates the effects of primary cannabinoids like THC by allowing THC to more easily penetrate the blood-brain barrier increasing the effects of THC on the CB1 receptors in the brain.

b) Might be a candidate for reclassification as a cannabinoid as it may bind to the CB1 receptor itself and further modulating the affinity of THC for its own receptor.

- Limonene is also known to be an immune stimulant, an anti-bacterial and an anti-depressant.

Examples of medically active terpenes

Beta-Caryophylene

- Found in black pepper and hops.
- Known to protect lining of GI tract.
- Anti malaria
- Anti-inflammatory
- Demonstrated affinity for CB2 receptor.
- Latter two properties make it an excellent candidate for the use and treatment of inflammatory conditions like Crohn’s Disease and Rheumatoid Arthritis.

Examples of medically active terpenes

Alpha-Pinene

- Alpha-Pinene is one of the two most common terpenes found in the plant world.
- Largely responsible for the pine tree scent found in plant world.
- Used in many well known cleaning products that suggest its presence by the smell of pine.
- Can be extracted from the pine tree in addition to cannabis.
- Capable of effectively reducing or eliminating the short term memory impairment classically induced by THC.
- It is also an anti-inflammatory, anti-bacterial and bronchodilator.

- Synthetic cannabinoids reading

“Bath Salts”

http://canntelligence.com/2017/07/04/misconceptions-the-story-of-synthetic-marijuana/

Fatal French Drug Trial

http://www.sciencemag.org/news/2016/01/more-details-emerge-fateful-french-drug-trial/