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CANNABINOID CHRONICLES

Medical Cannabis News and Information

A Handful of Lesser-Known Cannabinoids - CBN, CBC & CBG

Cannabinoids, first identified in the 1940's, are a class of diverse chemicals that produce various physiological and behavioural effects by interacting with an organism's cell membrane at specific cannabinoid receptor sites. There are at least 67 known natural cannabinoids found in the cannabis plant, known as phytocannabinoids.

The most well-known cannabinoids are tetrahydrocannabinol (THC) and cannabidiol (CBD), and their effects have been studied for many years (with more to come). With research came awareness that whole plant cannabis products can result in fewer side effects and better efficacy (aka the "entourage effect"). As such, other lesser-known cannabinoids are garnishing more attention, three of which are cannabinol (CBN), cannabichromene (CBC) and cannabigerol (CBG).

CBN is the natural degradation product of THC and is found most often in aged cannabis products due to exposure to air or light. It is a CB1 receptor agonist (imparts an action), yet is has a three-fold affinity for the CB2 receptors, thus it may affect immune system cells more than the central nervous system. It is considered very mildly psychoactive.

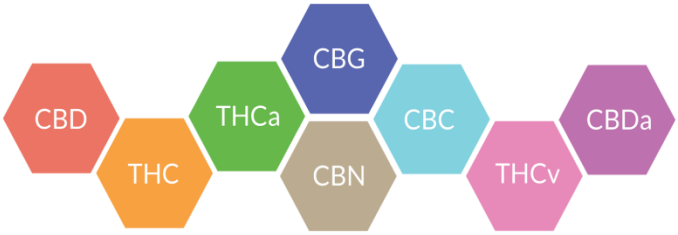
CBN is the major reason behind sleepiness attributed to cannabis. CBN has shown anti-bacterial activity when administered as a topical cream. CBN shares some characteristics with CBD; for example, it has both anticonvulsant and anti-inflammatory activity. Apparently it can also stimulate bone growth.

CBC is the fourth major cannabinoid, found predominantly in tropical cannabis strains. Until the mid-1970's, CBC was frequently misidentified as CBD. Similar to CBD, CBC decreases inflammation and provides analgesic effects. It exhibits strong antibacterial activity and mild antifungal activity, superior to THC and CBD in most instances. A study done in March 2010 showed that CBC, along with CBD and THC, has antidepressant effects. Another study showed that CBC helps promote neurogenesis (the formation and development of nerve cells). A study in *Neurochemistry International* suggested that CBC might stimulate the growth of brain cells. In a 2012 animal study, CBC was shown to normalize gastrointestinal hypermotility (diarrhea).

CBG is the precursor to all other cannabinoids in the cannabis plant and is present in only tiny amounts. CBG is quickly converted to other cannabinoids by enzymes in the plant, thus the low concentration of CBG in most strains. CBG has been shown to relieve intraocular pressure, which may be of benefit in the treatment of glaucoma. It can also be used to treat inflammatory bowel disease. CBG can also inhibit the uptake of GABA in the brain, which can decrease anxiety and muscle tension. CBG has a slight affinity for CB1 receptors, approximately the same as CBD. CBG acts as an analgesic (more than THC), it has antibacterial properties and it inhibits the growth of human oral skin cancer cells. A small body of evidence suggests it has anti-oxidant effects as well. Other pre-clinical studies suggest more diverse uses for CBG as a COX-2 inhibitor, similar to the popular group of pharmaceuticals known as non-steroidal anti-inflammatory drugs (NSAIDs); higher concentrations were needed but with fewer side effects.

Source: Russo, Ethan, and Franjo Grotenhermen, Editors (2006). *Handbook of Cannabis Therapeutics - From Bench to Bedside*. Binghamton, NY. The Haworth Press, Inc.

Image: http://hempedification.blogspot.ca/p/cannabinoids.html



International Association for Cannabinoid Medicines (IACM) Bulletin

Human: Cannabis reduced pain and opioid use in a clinical study

Cannabis reduced pain severity and opioid consumption in 274 treatment-resistant chronic pain patients. This is the result of an open clinical study conducted at the Pain Relief Unit of Hadassah-Hebrew University Medical Center in Jerusalem, Israel. The primary outcome was change in pain symptom score on the S-TOPS (Treatment Outcomes in Pain Survey - Short Form) questionnaire at 6 months follow-up.

274 subjects were approved for treatment; complete baseline data were available for 206 and complete follow-up data for 176 subjects. At follow-up, pain symptom score significantly improved from median 83.3 to 75.0. Pain severity score improved together with most social and emotional disability scores. Opioid consumption at follow-up decreased by 44%. Serious adverse effects led to treatment discontinuation in two subjects. Authors concluded that "the results suggest long-term benefit of cannabis treatment in this group of patients."

Source: http://www.ncbi.nlm.nih.gov/pubmed/26889611

Animal: Activation of the CB1 receptor improved the function of mitochondria after reduced blood supply

Ischemia of the brain (reduced blood supply) was caused in rats. A synthetic cannabinoid (ACEA), which activates the cannabinoid receptor 1, improved neurological behaviour, reduced infarct volume, and inhibited programmed cell death. Further investigation showed that the cannabinoid could induce mitochondrial biogenesis and improve mitochondrial function at the beginning of cerebral ischemia. Mitochondria are the "powerhouses" of the cells.

Source: http://www.ncbi.nlm.nih.gov/pubmed/26820679

Human: THC reduced chest pain, which was not caused by heart disease, in a small controlled study

THC (dronabinol) reduced pain intensity in patients suffering from functional chest pain. This is the result of a study with 13 patients conducted by researchers of Temple University Hospital in Philadelphia, US. Seven patients received 5 mg THC twice daily and six received a placebo. Chest pain, general health, and anxiety/ depression questionnaires were assessed at baseline and at 4 weeks. THC reduced pain intensity and odynophagia (painful swallowing, in the mouth or oesophagus). Depression and anxiety scores did not differ between the groups at baseline or after treatment.

Source: http://www.ncbi.nlm.nih.gov/pubmed/26822791

Human: CBD rich cannabis was beneficial in children with epilepsy in retrospective study

Cannabis rich in CBD showed promising therapeutic effects in 74 patients with epilepsy aged 1-18 years, who did not respond to other treatments. Several centres in Israel participated in this study published in the journal Seizure. Patients were resistant to standard anti-epileptic drugs and 66% also failed a ketogenic diet, vagal nerve stimulator implantation, or both. They all started medical cannabis oil treatment in 2014 and were treated for at least 3 months (average 6 months). The selected formula contained CBD and tetrahydrocannabinol at a ratio of 20:1 dissolved in olive oil. The CBD dose ranged from 1 to 20mg per kg body weight daily.

CBD treatment yielded a significant positive effect on seizure load. Most of the children (89%) reported reduction in seizure frequency. 13 participants reported 75-100% reduction, 25 reported 50-75% reduction, 9 reported 25-50% reduction, and 19 reported <25% reduction. Five patients reported aggravation of seizures which led to CBD withdrawal. In addition, the authors observed improvement in behaviour and alertness, language, communication, motor skills and sleep. Adverse reactions included somnolence, fatigue, gastrointestinal disturbances and irritability leading to withdrawal of cannabis use in 5 patients.

Source: http://www.ncbi.nlm.nih.gov/pubmed/26800377

Cannabis varieties differ by their terpene content

For this research, seven different cannabis plants were selected. Plants of different chemotypes were clearly differentiated by their terpene content, and characteristic terpenes of each chemotype were identified.

Source: http://www.ncbi.nlm.nih.gov/pubmed/26836472

Animal: Beta-caryophyllene shows anticonvulsant activity in experimental epilepsy

The terpene beta-caryophyllene reduced myoclonic seizures in mice, in which myoclonic and generalized seizures were induced by a chemical (pentylenetetrazole). Authors wrote that beta-caryophyllene "should be further evaluated in future development of new anticonvulsant drugs." Beta-caryophyllene is present in many plants including cannabis and spices such as pepper.

Source: http://www.ncbi.nlm.nih.gov/pubmed/26827298

Review on clinical studies with cannabis and cannabinoids 2010-2014

Available online at:

cannabis-med.org/index.php?tpl=page&id=301&lng=en&sid=1b35fdd1438521c70b7a145c6cf33ffb%0A

Visit our website at www.thevics.com

For more info visit: www.cannabis-med.org/

Transdermal Patch Available

A US company has produced a cannabis-based transdermal patch that can be applied directly to the skin where it can deliver a slow and steady dose of certain cannabinoids. 10 mg patches contain either CBD, THCA, CBN, or CBD:THC (1:1); 20 mg patches are THC-only.

Source: http://www.marysmedicinals.com/

Hemp Plastic Gaining Acceptance

Hemp plastic is a bioplastic (plastic derived from renewable biomass sources, such as vegetable fats and oils) made from industrial hemp, an herbaceous plant that produces one of the strongest and most durable of all natural textile fibers. Different types of hemp plastic range from standard plastics reinforced with hemp fibers (most common at the moment) to a 100% hemp plastic.

Hemp plastic is recyclable and can be manufactured to be 100% biodegradable. It can be five times stiffer and 2.5 times stronger than polypropylene (PP) plastic. Products reinforced with hemp fibers do not pose the health and safety risks associated with certain plastics that are reinforced with glass fibers. Hemp plastic has the ability of being implemented in standard injection molding machines with no modifications needed.

Bio-based plastics and composites are already being implemented in a wide range of applications. The automotive, packaging, and building industries are taking the lead; e.g. due to its extreme strength and durability, the automotive industry (like Henry Ford in the 1940's) uses it for most of the plastic panels in foreign cars.

Source: http://hempwaterbottles.tripod.com/what-is-hemp-plastic.html

Victoria's Proposed Regulations

The City of Victoria has recently announced a set of proposed regulations in an attempt to regulate the growing number of dispensaries, now roughly at 30.

Highlights of the proposed regulations:

- All dispensaries must apply for rezoning and be no closer than 200 m to schools or another dispensary.
- Nobody allowed less than 19 years of age.
- No advertising or promotion of use by minors.
- No sale of food products except tinctures, edible oils or capsules.
- Must post health and safety warning signs.
- No mail or delivery of products.
- No consumption on the premises.
- Hours of operation are limited between 7 am and 8 pm.
- No other business may be conducted on the premises.
- Annual police check on applicant & on-site manager.
- Must install and maintain an air filtration system (neighbour odour control).
- Must have a security plan, video surveillance, and a security and fire alarm system.
- A minimum of two persons must be on site always.
- Windows not blocked out.
- $4000 to $5000 annual license fee.

Unlike the City of Vancouver, Victoria does not feel that there is a need to distinguish between non-profit and for-profit operations.

Some of the proposals, such a restricting the form of oral cannabis by not allowing baked goods, or not permitting mail order or delivery, will restrict access and undoubtedly cause hardship to some. The former will most likely be challenged in light of the victory last year by Owen Smith in the Supreme Court of Canada that does not restrict patients to using dried cannabis only. It has been argued that baked goods can be made by the patient (or caregiver) using an edible oil infusion but not everybody has the facilities, physical ability or time to do so. One of the arguments against baked goods is the risk of overdosing, or that people will accidentally ingest the products and potentially overdose. Never a good thing but nobody has died from cannabis ingestion alone; education, safe foods standards, proper labelling, and proper storage could make it a non-issue.

Age restrictions, distance requirements, and no on-site consumption are all being challenged. In addition to a City of Victoria online survey closing March 4 (see below), contact them directly with your comments and thoughts. The survey can be found at:

http://fluidsurveys.com/s/medicalmarijuanaregulations/

Source: www.victoria.ca/EN/main/city/current-initiatives/regulating-medical-marijuana-related-businesses-in-victoria.html

Challenge to MMPR Successful

A constitutional challenge by Neil Allard and three other plaintiffs has been successful in Federal Court. The decision has struck down federal regulations restricting the rights of medical cannabis patients to grow their own cannabis and given the Liberal government six months to come up with new rules. Judge M. Phelan ruled Feb. 23rd in Vancouver that the Marijuana for Medical Purposes Regulations (MMPR) were an infringement on charter rights and declared they have no force and effect.

Lawyer Kirk Tousaw, co-counsel for Neil Allard who launched the court challenge, believes the ruling will have implications for those who wish to grow their own cannabis for recreational use.

"We proved that growing medical cannabis can be perfectly safe, and can be done completely in compliance with the law and people ought to have a right to do that without fear of being arrested and locked in cages for that activity."

A previous injunction to allow certain patients to continue growing at home remains in effect.

See: www.documentcloud.org/documents/2719593-2016-02-24-Allard-Reasons-for-Judgment-1.html

Source: www.cbc.ca/news/canada/british-columbia/medical-marijuana-federal-court-ruling-1.3461694

Cannabis Decreases Migraines

Patients diagnosed with migraine headaches saw a significant drop in their frequency when treated with medical cannabis, according to a new study from researchers at the Skaggs School of Pharmacy and Pharmaceutical Sciences at the University of Colorado.

The study, published January 2016 in the journal *Pharmacotherapy*, examined patients diagnosed with migraines and treated with medical cannabis between Jan. 2010 and Sept. 2014. It found the frequency of migraines dropped from 10.4 to 4.6 headaches per month, a number considered statistically and clinically significant.

Of the 121 patients studied, 103 reported a decrease in monthly migraines while 15 reported the same number and three saw an increase in migraines.

"There was a substantial improvement for patients in their ability to function and feel better," said the study's senior author Professor Laura Borgelt, PharmD, FCCP, BCPS.

The researchers found various forms of cannabis utilized. Inhaled marijuana appeared to be the favorite for treating acute migraines while edible cannabis, which takes longer to impact the body, helped prevent headaches.

Cannabinoids, which have anti-inflammatory and pain-relieving properties, also seem to affect critical neurotransmitters like serotonin and dopamine.

"We believe serotonin plays a role in migraine headaches, but we are still working to discover the exact role of cannabinoids in this condition," Borgelt said.

The study is one of the first to reveal a drop in migraine frequency due to medical cannabis. Borgelt said the results were "quite remarkable" but stressed the need for more controlled studies in the future.

Source: http://www.beyondthc.com/

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MS Society of Canada
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HepC BC
2642 Quadra Street, Victoria
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BC Cancer Agency
2410 Lee Ave, Victoria
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Kirk Tousaw, Barrister
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www.tousawlaw.ca

DrugSense
www.drugsense.org

BC Coalition of People With Disabilities
1-800-663-1278

Health Canada
http://www.hc-sc.gc.ca/dhp-mps/marihuana/index-eng.php

Drug Policy Alliance
www.drugpolicy.org

Media Awareness Project
www.mapinc.org

Together Against Poverty Society
302-895 Fort Street, Victoria
250-361-3521

"If the words "life, liberty and the pursuit of happiness" don't include the right to experiment with your own consciousness, then the Declaration of Independence isn't worth the hemp it was written on."

-- Terence McKenna (ethnobotanist and author, 1946 - 2000)