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CANNABINOID CHRONICLES

Medical Cannabis News and Information

Autism and Medical Cannabis

Autism and autism spectrum disorder (ASD) are both general terms for a group of complex disorders of brain development. These disorders, including Asperger's syndrome, are characterized, in varying degrees, by difficulties in social interaction, verbal and nonverbal communication, and repetitive behaviours.

Over the last five years, scientists have identified a number of rare gene changes, or mutations, associated with ASDs. A small number of these are sufficient to cause autism by themselves. Most cases of autism, however, appear to be caused by a combination of autism risk genes and environmental factors influencing early brain development. In the presence of a genetic predisposition to autism, a number of non-genetic, or environmental (i.e. exposure to certain drugs during pregnancy), stresses appear to further increase a child's risk.

Each individual with autism is unique. About 40% have average to above-average intellectual abilities. Others with autism have significant disabilities and are unable to live independently. About 25% of individuals with ASD are nonverbal but can learn to communicate using other means. ASD affect boys five times greater than girls. There are no known medical detections or cures for autism spectrum disorders.

As early as the 1960s, Bernard Rimland, a pioneer in childhood neurobiological disorders, used cannabis to reduce some children's aggression, anxiety, panic disorders, tantrums and self-injurious behaviour. With ASDs on the rise, some parents have taken to using cannabis, typically orally, to calm severely agitated and violent autistic children.

The relatively recent discovery of the endocannabinoid system (ECS) and how it plays a large role in mammalian homeostasis and good health has awakened the

community about the potential benefits of cannabinoids to possibly treat ASDs.

Alterations of genes encoding for neuroligins (family of cell surface proteins that facilitate neuron signalling and synaptic functions) are associated with autism. Mutations of one neuroligin, NL3, have been shown to inhibit tonic endocannabinoid secretion and disrupt endocannabinoid signalling, possibly contributing to the pathology of autism.

Fragile X syndrome (FXS) is the most commonly known cause of autism and the endocannabinoid system is specifically implicated in nearly all aspects of FXS. Preclinical research implicates both CB1 and CB2 receptors as targets to reduce cognitive deficits and anxiety in rodent models of FXS.

In ASD, as well as other conditions, the expression level of CB2 receptors increases in response to the inflammatory nature of the condition. Given that CB2 is believed to play a neuro-protective role, it is being investigated as a potential target for treatment of ASD. Elevated cytokine levels are also associated with ASD; cytokines are a number of substances that are secreted by certain cells of the immune system and have an effect on other cells. Endocannabinoids have been shown to play key roles in inhibiting cytokines via the CB2 receptor, and the majority of endocannabinoids

...cont'd on page 3



International Association for Cannabinoid Medicines (IACM) Bulletin

Canada: Liberal Party, which wants to legalize cannabis, wins election

Canada's Liberal Party won the election on 19 October with a parliamentary majority of 184 seats. The Liberal platform included, among other things, cannabis legalization. "We will legalize, regulate, and restrict access to marijuana," their manifesto states.

"Canada's current system of marijuana prohibition does not work. It does not prevent young people from using marijuana and too many Canadians end up with criminal records for possessing small amounts of the drug. Arresting and prosecuting these offenses is expensive for our criminal justice system. It traps too many Canadians in the criminal justice system for minor, non-violent offenses. At the same time, the proceeds from the illegal drug trade support organized crime and greater threats to public safety, like human trafficking and hard drugs. To ensure that we keep marijuana out of the hands of children, and the profits out of the hands of criminals, we will legalize, regulate, and restrict access to marijuana."

Source: <http://www.liberal.ca/realchange/marijuana/>

Animal: A CBD cream improved symptoms in a mouse model of multiple sclerosis

Researchers investigate the efficacy of a new formulation of cannabidiol (CBD) as a topical treatment in an experimental model of autoimmune encephalomyelitis, a model for multiple sclerosis. Results showed that daily treatment with topical 1 % CBD-cream may exert neuroprotective effects, diminishing clinical disease score, by recovering of paralysis of hind limbs. CBD had significant effects on parameters of inflammation.

Source: <http://www.ncbi.nlm.nih.gov/pubmed/26489494>

Cells: How cannabidiol may be beneficial in Parkinson's

Researchers investigated the neuroprotective effects of CBD (cannabidiol) against MPP (1-methyl-4-phenylpyridinium) and found that neuronal proteins and NGF receptors (trkA) are involved. They reported that these mechanisms "might contribute to its neuroprotection against MPP(+), a neurotoxin relevant to Parkinson's disease."

Source: <http://www.ncbi.nlm.nih.gov/pubmed/26556726>

Animal: CBD applied by the skin reduced pain and inflammation in arthritis

CBD gels were applied to rats suffering from arthritis, which resulted in reduction of joint swelling, pain, infiltration of immune cells and reduction of pro-inflammatory mediators.

Source: <http://www.ncbi.nlm.nih.gov/pubmed/26517407>

Human: The use of cannabis may reduce opioid consumption according to a case report

A 57-year-old man, who underwent liver transplantation and was taking high doses of hydromorphone for chronic abdominal pain before surgery, was able to reduce the opioid dose considerably within five months by the use of cannabis. Authors wrote that "concurrent benefits of initiating medical cannabis may include improvements in pain profile and functional status along with reductions in opioid-related side effects. This highlights the potential for medical cannabis as an adjunct medication for weaning patients from opioid use."

Dept. of Anesthesia, University of Toronto, Canada.

Source: <http://www.ncbi.nlm.nih.gov/pubmed/26507533>

Animal: How the endocannabinoid system may be involved in autism

Research in mice suggests that the activation of the CB1 receptor by the endocannabinoid anandamide, which involved the hormone oxytocin, controls the reward from social interaction. Authors wrote that "deficits in this signalling mechanism may contribute to social impairment in autism spectrum disorders and might offer an avenue to treat these conditions."

Source: <http://www.ncbi.nlm.nih.gov/pubmed/26504214>

Cells: CBD may improve the function of the blood brain barrier

In a cell model of the blood brain barrier (BBB) CBD prevented the increase in permeability caused by deprivation of oxygen and glucose. This effect was mediated by PPAR-Gamma-receptor and the 5-HT1A-receptor. Authors concluded that "these data suggest that activity at the BBB could represent an as yet unrecognised mechanism of CBD-induced neuroprotection in ischaemic stroke."

Source: <http://www.ncbi.nlm.nih.gov/pubmed/26497782>

Animal: THC and endocannabinoids act differently in an animal model of schizophrenia

Using a rat model of schizophrenia, researchers compared the effects on neuronal activity of systematic administration of THC with a substance (URB597), which inhibits the degradation of anandamide. They found different effects on the brain and concluded that such "information is important for understanding why marijuana and synthetic cannabinoid use may be contraindicated in schizophrenia patients while endocannabinoid enhancement may provide a novel therapeutic approach."

Source: <http://www.ncbi.nlm.nih.gov/pubmed/26510449>

Have a Safe and Happy Holiday Season

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



*We've done it folks!
We own our home!!
Thanks Everybody!!!*

Autism and Medical Cannabis cont'd

from page 1... decrease cytokine production via CB1/CB2 receptor mechanisms.

It may be that poor-functioning CB2 receptors play a key role in autism, and the body reacts by increasing the number of CB2 receptors in response.

A lot of the research conducted on ASD and cannabinoids so far has focussed on Dronabinol (aka Marinol, synthetic THC). Dronabinol has indicated potential for treatment in a single adolescent case study of autism.

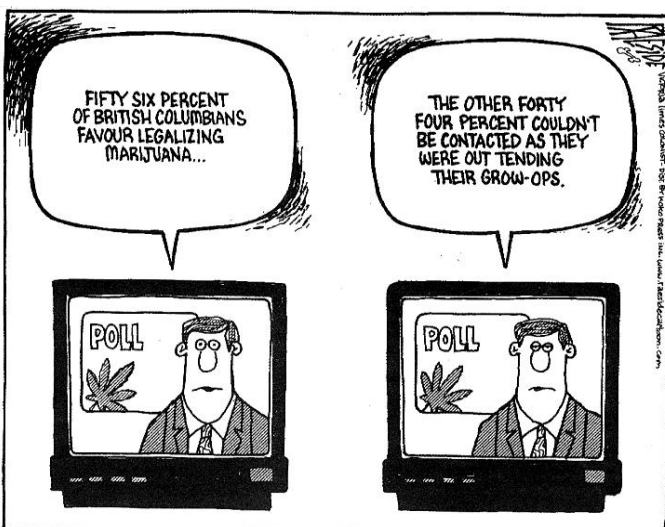
Additionally, CBD-only extracts have been used to help treat certain types of epilepsy. While some think that CBD-only medicines largely eliminate cognitive deficits associated with THC, it is important to remember that THC can also protect the brain. To this end, it is suggested to include THC in cannabis formulations; anecdotal reports suggest using CBD to THC ratios from as high as 24:1 down to 1:1.

The bottom line is that endocannabinoid system deficiencies appear to be associated with ASD, and the ECS is implicated as a potential target for treatment by supplementing with phytocannabinoids (plant-based) or pharmaceutical versions (i.e. Sativex).

As usual, far more research is needed.

Sources: *Backes, Michael (2014). Cannabis Pharmacy - The Practical Guide to Medical Marijuana.* NY, NY: Black Dog & Leventhal Pub.
www.autismspeaks.org/what-autism
www.medicaljane.com/2015/06/17/is-the-endocannabinoid-system-involved-in-the-progression-of-asd/

Image: <http://medicaljane.com/>



Thanks Raeside (how's the snow?) raesidecartoon.com

Where the Heck Are We?? cont'd

from page 4... to each other. The MMPR initially only applied to dried cannabis (maximum 150 gram possession) but a court decision (see below) expanded the scope. Redistribution in *all* capacities is not allowed. Dispensaries were completely overlooked again.

There is an injunction in place that legally allows a group of MMAR licensees to possess and to continue personal or designated-person cultivation until a court decision (Allard) is reached. The only people that this injunction applies to are individuals who held a valid ATP on March 21, 2014, and individuals who held a valid PPL or DPL on, or after, September 30, 2013, where there is also an associated valid ATP as of March 21, 2014. Redistribution in *all* capacities, other than from a designated grower to a specific patient, is not permitted.

A recent Supreme Court of Canada decision in June 2015 buoyed some hopes with respect to non-dried forms of cannabis. The ruling basically struck down the dried-cannabis only requirement in the MMPR and opened the door for patients to make their own by-products (from legal, or ALP, cannabis), and for ALPs to sell cannabis leaf and by-products to patients. For some reason, a lot of people thought that the ruling made edible cannabis products legal in Canada. Technically, however, it only applies to those who access legal cannabis through an ALP. This ruling also applies to MMAR ATP licensees covered under the Allard injunction.


A court decision in October 2015 represents a big step forward in the evolution of the law surrounding the right to produce and possess cannabis for medical purposes. The BC Supreme Court issued an injunction, covering four medical cannabis patients that permits them to continue to produce under the terms of their MMAR licensing, and does not contain the 150 gram possession limit set out in the MMPR.

To add to the confusion, storefront dispensaries in all forms have been popping up like, um, weeds. While some claim that they are legal and/or legally supplied, they're not (re-read above if in doubt, test tomorrow). So where are we? Someone suggested limbo. Recently Kimberly, BC, granted business licenses to three dispensaries; both Vancouver and Victoria are looking at some form of dispensary regulation; and Port Alberni has just approved in principle a set of zoning and licensing requirements similar to Vancouver that will permit dispensaries to operate.

Since only the federal government can change the laws surrounding cannabis, municipalities are regulating only the process, not the product. Legalization could change the landscape completely. Time will tell.

Sources: www.tousawlaw.ca/
www.hc-sc.gc.ca/dhp-mps/marihuana/index-eng.php

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Where the Heck Are We??

Perhaps it's wishful thinking with the Liberal federal election victory, but recreational cannabis use and production is still illegal in Canada. And even if Trudeau keeps his promise about cannabis legalization, it isn't going to happen overnight--the process could take years.

Medical cannabis, however, is still legal as it has been since June 2001, provided that you have a supportive physician and you purchase cannabis products through legal channels.

The first legal medical cannabis system overseen by Health Canada, the Marihuana Medical Access Regulations (MMAR), permitted not only possession of dried cannabis (Authorization to Possess, or ATP) but also the personal cultivation (Personal-Use Production Licence, or PPL) or designated-person cultivation (Designated-Person Production Licence, or DPL) of cannabis. Redistribution in *all* capacities was not allowed except between designated growers and the patients that they were growing for; designated growers could also be remunerated by the patients for their products. The federal government also hired (with taxpayer's money) a company to grow something resembling cannabis that was available at \$5/gram for MMAR licensees; seeds for cultivation were also for sale. Only dried cannabis was allowed, no fresh cannabis leaves or by-products. Dispensaries were completely overlooked in the process.

Revisions were made to the medical program in March 31, 2014, replacing the MMAR with the Marihuana for Medical Purposes Regulations (MMPR). Three major changes stood out: no more forms, a doctor prescription (good for a year) is enough for access; no more personal or designated grower cannabis cultivation; and cannabis for purchase is available only from Health Canada licensed cultivators (Authorized Licensed Producers, or ALP) via the mail. ALPs can also sellcontinued on page 3

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DrugSense
www.drugsense.org

**BC Coalition of People
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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
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***"I wanted to change the world. But I have found that the only thing
one can be sure of changing is oneself."***

-- Aldous Huxley (writer, 1894 - 1963)