Epilepsy

Excerpt from www.epilepsy.ca:

- Epilepsy is a physical condition characterized by sudden, brief changes in how the brain works. It is a symptom of a neurological disorder - a disorder that affects the brain and shows itself in the form of seizures.
- Epilepsy is a disorder, not a disease; it is not contagious.
- Approximately 0.6% of the Canadian population has epilepsy. This includes those who take anticonvulsant drugs or who had a seizure within the past 5 years.
- Due to the stigma surrounding epilepsy and the prejudice with which society has historically treated people with epilepsy, many with the disorder are reluctant to admit it or to seek treatment. Thus the prevalence of epilepsy is likely much higher.
- Each day in Canada, an average of 42 people learn that they have epilepsy.
- Each year an average of 15,500 people learn they have epilepsy; 44% are diagnosed before the age of 5, 55% before the age of 10, 75-85% before age 18 and 1% of children will have recurrent seizures before age 14. 1.3% are over the age of 60. This means that about 60% of new patients are young children and senior citizens.
- In approximately 50% of cases of childhood epilepsy, seizures disappear completely.
- In 50 - 60% of cases, the cause of epilepsy is unknown. In the remainder, the following causes are most common:
- brain tumour and stroke
- head trauma of any type. The more severe the injury, the greater the chance of developing epilepsy
- injury, infection, or systemic illness of the mother during pregnancy
- brain injury to the infant during delivery may lead to epilepsy
- aftermath of infection (meningitis, viral encephalitis)
- poisoning, from substance abuse of alcoholism
- Events that may trigger seizures include:
- Stress
- Poor nutrition
- Missed medication
- Flickering lights

- Skipping meals
- Illness, fever and allergies
- Lack of sleep
- Emotions such as anger, worry, fear and others
- Heat and/or humidity

- The major form of treatment is long-term drug therapy. Drugs are not a cure and can have numerous, sometimes severe, side effects.
- Brain surgery is recommended only when medication fails and when the seizures are confined to one area of the brain where brain tissue can be safely removed without damaging personality or function.

Excerpt from www.gwpharm.com:

Approximately 50 million people worldwide are chronically affected by epilepsyia serious neurological disorder typically manifesting as spontaneous convulsions and/or a loss of consciousness. Epilepsy carries long term health implications such as cognitive deficits, mental health problems and physical (sclerotic) damage to affected areas, particularly in children. Epilepsy symptoms are caused by the appearance of abnormal electrical seizure discharges and are characterised by episodic high frequency neuronal firing within various brain areas. Seizures are frequently a result of excitatory and inhibitory synaptic imbalances and usually begin (and may remain confined) to a specific area and/or spread to other regions of the brain. The specific cellular, molecular and genetic mechanisms underlying the many forms of this disorder are still poorly understood, particularly in the infant, paediatric and juvenile populations where it is most prevalent (10.5m global casesii) and may vary significantly from individual to individual.

Furthermore, anticonvulsant therapies are associated with significant cognitive side-effects, toxicity, unknown effects on brain development and a serious lack of seizure control at therapeutic dosesiii. The development of both in vitro and in vivo animal models of epilepsy permits the reproduction of specific seizure discharge features seen in human clinical cases, allows for a better understanding of the disease state and aids the development and screening of more effective anticonvulsant agents.
CB1 receptors (activated by D9-THC or the principal endogenous endocannabinoids, 2-arachidonoyl glycerol (2-AG) and anandamide), are found in many mammalian neuronesiv, which strongly supports a role for endocannabinergic transmission in higher brain functions.

In the CNS, the endogenous CB1 receptor ligands, anandamide and 2-AG typically act in a retrograde (presynaptic site of action) neuromodulatory manner, the release of which is mediated via two distinct pathways; calcium entry following neurone depolarisation, and metabotropic glutamate receptor (mGluR) activation. The CB1 receptor also modulates postsynaptic membrane conductances which are thought to be a result of the CB1 dependent modulation of intracellular cAMP levels. Additionally, anandamide has postsynaptic ion channel effects, mediated independently of CB1 or CB2 receptors and, of considerable relevance to epilepsy, has been shown to modulate

both fast (gamma) and slow (theta) rhythmic, oscillatory firingiv. It is clear that existing links between cannabinoids/endocannabinergic transmission, epilepsy and development present a compelling case for a detailed investigation of cannabinoids in immature in vitro models of epilepsy.

GW is currently investigating the potential for cannabinoids as anti-epileptic treatments in collaboration with Otsuka. This research is being conducted in partnership with researchers at the University of Reading. One of the techniques used by the team is to examine the antiepileptiform potential of cannabinoids using in vitro multielectrode array (MEA) extracellular electrophysiologic techniques on brain slices. A low magnesium ion saline solution or a 4AP (4-aminopyridine; a pro-convulsant) containing medium can trigger burst discharges that are synchronised throughout large cell populations in hippocampal or periform cortical slice cultures. These appear essentially identical to those evoked in vivo. By studying the impact of cannabinoid addition on the amplitude of the epileptiforms produced, researchers are able to recognise if our compounds could perform as an anti-epileptic drug in vivo.

Title	**Anticonvulsant nature of marihuana smoking.**
Author(s)	**Consroe PF, Wood GC, Buchsbaum H**
Journal, Volume, Issue	Journal of the American Medical Association 1975;234(3):306-307
Major outcome(s)	Cannabis was able to control seizures in conjunction with phenobarbital and diphenylhydantoin.
Indication	Epilepsy
Medication	Cannabis
Route(s)	Inhalation
Dose(s)	2-5 cannabis cigarettes per day plus standard medication
Duration (days)	years
Participants	1 patient with epilepsy
Design	Uncontrolled case report

Abstract

Marihuana smoking, in conjunction with therapeutic doses of phenobarbital and diphenylhydantoin, was apparently necessary for controlling seizures in one 24-year-old epileptic patient.

Title	**Chronic administration of cannabidiol to healthy volunteers and epileptic patients.**
Author(s)	**Cunha JM, Carlini EA, Pereira AE, Ramos OL, Pimentel C, Gagliardi R, Sanvito WL, Lander N, Mechoulam R**
Journal, Volume, Issue	Pharmacology 1980;21(3):175-185
Major outcome(s)	4 of the 8 CBD subjects remained almost free of convulsive crises and 3 other patients demonstrated partial improvement
Indication	Epilepsy
Medication	Cannabidiol
Route(s)	Oral
Dose(s)	200-300 mg per day plus standard medication
Duration (days)	4.5 months
Participants	15 patients with epilepsy
Design	Controlled study
Type of publication	

Abstract

In phase 1 of the study, 3 mg/kg daily of cannabidiol (CBD) was given for 30 days to 8 health human volunteers. Another 8 volunteers received the same number of identical capsules containing glucose as placebo in a double-blind setting. Neurological and physical examinations, blood and urine analysis, ECG and EEG were performed at weekly intervals. In phase 2 of the study, 15 patients suffering from secondary generalized epilepsy with temporal focus were randomly divided into two groups. Each patient received, in a double-blind procedure, 200-300 mg daily of CBD or placebo. The drugs were administered for along as 4 1/2 months. Clinical and laboratory examinations, EEG and ECG were performed at 15- or 30-day intervals. Throughout the experiment the patients continued to take the antiepileptic drugs prescribed before the experiment, although these drugs no longer controlled the signs of the disease. All patients and volunteers tolerated CBD very well and no signs of toxicity or serious side effects were detected on examination. 4 of the 8 CBD subjects remained almost free of convulsive crises throughout the experiment and 3 other patients demonstrated partial improvement in their clinical condition. CBD was ineffective in 1 patient. The clinical condition of 7 placebo patients remained unchanged whereas the condition of 1 patient clearly improved. The potential use of CBD as an antiepileptic drug and its possible potentiating effect on other antiepileptic drugs are discussed.

Title	**Marijuana: an effective antiepileptic treatment in partial epilepsy? A case report and review of the literature.**
Author(s)	**Mortati K, Dworetzky B, Devinsky O.**
Journal, Volume, Issue	Rev Neurol Dis. 2007 Spring;4(2):103-6.
Major outcome(s)	Significant improvement of epilepsy with the use of cannabis.
Indication	Epilepsy
Medication	Cannabis
Route(s)	Inhalation
Dose(s)	
Duration (days)	
Participants	1 patient with cerebral palsy and epilepsy
Design	Uncontrolled case report
Type of publication	Medical journal
Address of author(s)	Departments of Neurology, New York University School of Medicine, New York, NY.

Abstract

Although more data are needed, animal studies and clinical experience suggest that marijuana or its active constituents may have a place in the treatment of partial epilepsy. Here we present the case of a 45-year-old man with cerebral palsy and epilepsy who showed marked improvement with the use of marijuana. This case supports other anecdotal data suggesting that marijuana use may be a beneficial adjunctive treatment in some patients with epilepsy. Although challenging because of current federal regulations, further studies are needed to examine the role of marijuana in the treatment of this disorder.

Title	**Treatment with CBD in oily solution of drug-resistant paediatric epilepsies.**
Author(s)	**Pelliccia A, Grassi G, Romano A, Crocchialo P**
Journal, Volume, Issue	2005 Congress on Cannabis and the Cannabinoids, Leiden, The Netherlands: International Association for Cannabis as Medicine, p. 14.
Major outcome(s)	Improvement of epilepsy without side effects
Indication	Epilepsy
Medication	Cannabidiol
Route(s)	Oral
Dose(s)	
Duration (days)	
Participants	18 children with epilepsy
Design	Open study
Type of publication	Meeting abstract
Address of author(s)	II Facoltà di Medicina,Università “La Sapienza”, 00100 Rome, Italy, Istituto Sperimentale Colture Industriali, Sezione di Rovigo, Italy, American University of Rome, 00100, Italy
Full text	

Abstract

Introduction: As shown by Turkanis et al. (Epilepsy, 1979), cannabidiol (CBD), similarly to d9- tetrahydrocannabinol (d9-THC) and Phenytoin (PHT) increases the “afterdischarge” and seizures threshold, mainly at the limbic level, without exhibiting the side effects induced by drugs such as PHT. Studies on rats were conducted that confirmed the anticonvulsant effects of both CBD (Chiu et al., 1979) and of d 9-THC (Cosroe and Mechoulam, 1987). However, in spite of other studies having confirmed the anticonvulsant effect of cannabinoids, up to date no trials were conducted on man and, the less so, on the child.

Methods: We collected data on a population of children who presented with traditional antiepileptic drugs-resistant seizures, treated with a 2.5% corn oily solution of CBD as part of an open study, by modulating administration and titration schedules on a case by case basis, according to clinical response.

Results: On June 2002 we started to treat an eleven year-old girl affected with ahighly drug-resistant Lennox-Gastaut syndrome, with CBD, a substance not included inthe list of illicit drugs, in a 2.5% corn oily solution, administered at gradually increasing doses up to the present 20 drops daily. Results have been encouraging: the girl, since she assumes CBD, did not need any longer to be admitted to hospital for her epileptic

seizures, while her attacks decreased both in frequency and intensity, in addition her awareness, postural tone and speaking ability improved, as to allow us to gradually decrease her barbiturate intake. Along the same line, CBD was proposed to another patient, a 17 year-old boy with an equally drug-resistant Lennox-Gastaut syndrome: although he reached the dose of only 30 drops daily, he also exhibited a slight improvement of the crises and, first and foremost, a clear-cut attention-behavioural improvement, and even in his case a suspension of the barbiturate treatment was initiated. During the last year, 16 more children were started on CBD, all of them affected with symptomatic drug-resistant epilepsy; however, only 9 out of these are currently on treatment, since the parents of the remaining children, although appreciating the improvement of their offspring, not only concerning the fits but also the awareness and the muscular tone, preferred to discontinue due to the economic overcharge induced by the treatment (approximately 300 EURos per month).

Conclusions: So far obtained results in our open study appear encouraging for various reasons: 1) no side effects of such a severity were observed as to require CBD discontinuation; 2) in most of the treated children an improvement of the crises was obtained equal to, or higher than, 25% in spite of the low CBD doses administered; 3) in all CBD- treated children a clear improvement of consciousness and spasticity (whenever present) was observed.

http://www.cannabis-med.org/studies/ww_en_db_study_show.php?s_id=173

Curr Opin Investig Drugs. 2005 Jul;6(7):680-5.

Cannabinoids as potential anti-epileptic drugs.

Smith PF.
Source

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Abstract

Cannabinoids have long been recognized as having the potential for both anticonvulsant and proconvulsant effects. The increased understanding of the cannabinoid receptors and their endogenous ligands over the last decade has provided a potential mechanism of action for these apparently paradoxical effects. Although the anticonvulsant effects of cannabinoids appear to be mediated by their action at presynaptic cannabinoid receptors, which inhibit the release of excitatory neurotransmitters such as glutamate, it is clear that they are also capable of producing proconvulsant effects through the activation of cannabinoid receptors on terminals releasing inhibitory neurotransmitters, such as gamma-amino-butyric acid. In the brain, the activation of cannabinoid receptors is carefully controlled by the rapid synthesis and degradation of endocannabinoids in a way that targets the endogenous ligands to specific sets of cannabinoid receptors. The potential problem in delivering a cannabinoid drug to treat epilepsy is the inability to control its actions at different cannabinoid receptors regulating the release of different neurotransmitters. Since the action of cannabinoids is complex, and there is a dearth of clinical trial data, it is currently unclear whether cannabinoids might be both efficacious and safe in the treatment of epilepsy.

PMID: 16044663 [PubMed - indexed for MEDLINE]

The Endogenous Cannabinoid System Regulates Seizure Frequency and Duration in a Model of Temporal Lobe Epilepsy

• Melisa J. Wallace, Robert E. Blair, Katherine W. Falenski, Billy R. Martin and Robert J. DeLorenzo

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Abstract

Several lines of evidence suggest that cannabinoid compounds are anticonvulsant. However, the anticonvulsant potential of cannabinoids and, moreover, the role of the endogenous cannabinoid system in regulating seizure activity has not been tested in an in vivo model of epilepsy that is characterized by spontaneous, recurrent seizures. Here, using the rat pilocarpine model of epilepsy, we show that the marijuana extract Δ^9-tetrahydrocannabinol (10 mg/kg) as well as the cannabimimetic, 4,5-dihydro-2-methyl-4(4-morpholinylmethyl)-1-(1-naphthalenyl-carbonyl)-6H-pyrrolo[3,2,1-i,j]quinolin-6-one [R(+)WIN55,212 (5 mg/kg)], completely abolished spontaneous epileptic seizures. Conversely, application of the cannabinoid CB_1 receptor (CB_1) antagonist, N-(piperidin-1-yl-5-(4-chlorophenyl)-1-(2,4-dichlorophenyl)-4-methyl-1H-pyrazole-3-carboxamidehydrochloride (SR141716A), significantly increased both seizure duration and frequency. In some animals, CB_1 receptor antagonism resulted in seizure durations that were protracted to a level consistent with the clinical condition status epilepticus. Furthermore, we determined that during an short-term pilocarpine-induced seizure, levels of the endogenous CB_1 ligand 2-arachidonylglycerol increased significantly within the hippocampal brain region. These data indicate not only anticonvulsant activity of exogenously applied cannabinoids but also suggest that endogenous cannabinoid tone modulates seizure termination and duration through activation of the CB_1 receptor. Furthermore, Western blot and immunohistochemical analyses revealed that CB_1 receptor protein expression was significantly increased throughout the CA regions of epileptic hippocampi. By demonstrating a role for the endogenous cannabinoid system in regulating seizure activity, these studies define a role for the endogenous cannabinoid system in modulating neuroexcitation and suggest that plasticity of the CB_1 receptor occurs with epilepsy.

Previous Section
Next Section

Characterized by spontaneously recurrent seizures, epilepsy is one of the most common neurological conditions (Hauser and Hesdorffer, 1990). Understanding the factors that contribute to seizure initiation and termination has important implications for our ability to treat epilepsy and for the potential development of novel anticonvulsant agents. Previous evidence has suggested that the endogenous cannabinoid system may be a

novel locus of anticonvulsant activity in the brain (Karler et al., 1974; Wallace et al., 2001). Using the maximal electroshock model of short-term seizure, our laboratory determined that cannabinoid compounds block seizure spread via a cannabinoid CB_1 receptor-dependent mechanism (Wallace et al., 2001, 2002). Further study revealed that application of a CB_1 receptor antagonist lowered the electroshock seizure threshold (Wallace et al., 2002), indicating that elimination of endogenous cannabinoid tone at the CB_1 receptor may increase seizure susceptibility.

The CB_1 receptor is the most highly expressed G-protein-coupled receptor in brain (Herkenham et al., 1990) and has been implicated in regulation of neuronal excitability (Wilson and Nicoll, 2001; Ohno-Shosaku et al., 2002). The endogenous cannabinoids, arachidonylethanolamine and 2-arachidonylglycerol (2-AG) (Devane et al., 1992; Mechoulam et al., 1995), are synthesized "on demand" in response to sustained neuronal depolarization and elevated intracellular calcium levels (Stella et al., 1997); both of these events occur with seizure activity (Hauser and Hesdorffer, 1990; Raza et al., 2001). The neuronal hyperexcitability that accompanies seizure discharge may stimulate endogenous cannabinoid synthesis and subsequently result in CB_1 receptor activation. In light of cannabinoid effects on neurotransmission, increased CB_1 receptor activation could influence seizure activity. However, no studies have evaluated the role of the endogenous cannabinoid system in an intact model of epilepsy.

This study was initiated to evaluate the role of the CB_1 receptor and the endogenous cannabinoid system in regulating seizure activity in a long-term model of epilepsy. We used the pilocarpine model of temporal lobe, partial-complex epilepsy; a rat model of acquired, refractory epilepsy that produces spontaneous recurrent seizures for the lifetime of the animal (Mello et al., 1993; Rice and DeLorenzo, 1998). The pilocarpine model has been shown to closely resemble human refractory partial-complex epilepsy (Mello et al., 1993; Raza et al., 2001). In this study, seizure frequency and duration were determined by continuous electrographic and video recording of each epileptic animal (Rice and DeLorenzo, 1998). The CB_1 receptor agonists R(+)WIN55,212 and Δ^9-tetrahydrocannabinol (THC) were evaluated for anticonvulsant efficacy. In addition to agonist effects on seizure activity, the effect of CB_1 receptor antagonism on seizure frequency and duration was evaluated using the specific antagonist SR141716A. Hippocampal levels of 2-AG during short-term, pilocarpine-induced seizures were measured to determine whether a correlation exists between endogenous cannabinoid synthesis and seizure activity. In addition, Western blot and immunohistochemical analyses were used to evaluate hippocampal CB_1 receptor protein expression in the brains of chronically epileptic and sham control rats. The findings presented suggest an anticonvulsant role for the endogenous cannabinoid system and demonstrate that long-term plasticity of the CB_1 receptor occurs with epilepsy.

http://jpet.aspetjournals.org/content/307/1/129.long

Effects of cannabinoids and endocannabinoid hydrolysis inhibition on pentylenetetrazole-induced seizure and electroencephalographic activity in rats

- Luciano R. Vilela[a], Daniel C. Medeiros[b], Gustavo H.S. Rezende[b], Antônio Carlos P. de Oliveira[c], Marcio F.D. Moraes[b], Fabrício A. Moreira[c,]

Summary

Cannabinoids and drugs that increase endocannabinoid levels inhibit neuronal excitability and restrain epileptic seizures through CB1 receptor activation. Nevertheless, the results have not been entirely consistent, since pro-convulsant effects have also been reported. The present study aimed to further investigate the effects of cannabinoid-related compounds on seizures induced by pentylenetetrazole (PTZ) in rats. Video-EEG recordings were used to determine both electrographic and behavioral thresholds to ictal activity. The animals received injections of WIN-55,212-2 (0.3–3 mg/kg, non-selective) or ACEA (1–4 mg/kg, CB1-selective), two synthetic cannabinoids, or URB-597 (0.3–3 mg/kg), an anandamide-hydrolysis inhibitor (FAAH enzyme inhibitor), followed by PTZ. Both WIN-55,212-2 (1 mg/kg) and ACEA (1–4 mg/kg) reduced the threshold for myoclonic seizures and enhanced epileptiform EEG activity, typical pro-convulsive effects. On the contrary, URB-597 (1 mg/kg) had an anti-convulsive effect, as it increased the threshold for the occurrence of minimal seizures and reduced EEG epileptiform activity. None of the drugs tested altered the tonic–clonic maximal seizure threshold. These data suggest that the effects of CB1 signaling upon seizure activity may depend on how this receptor is activated. Contrary to direct agonists, drugs that increase anandamide levels seem to promote an optimal tonus and represent a promising strategy for treating myoclonic seizures.

http://www.sciencedirect.com/science/article/pii/S0920121113000065

Cannabinoids for Epilepsy

Gloss D, Vickrey B
Published Online:
June 13, 2012
Epilepsy is a disorder of recurrent unprovoked seizures. More than half of seizures can be controlled by anti-epileptic medications. For the remaining patients, they may wish to try other agents. Marijuana, or cannabinoids, may be one such agent. This review assesses the efficacy of marijuana, or cannabinoids, as a treatment for control of epilepsy. No reliable conclusions can be drawn at present regarding the efficacy of cannabinoids as a treatment for epilepsy. Further trials are needed.

Hide
Abstract (click to read)
Background:
Marijuana appears to have anti-epileptic effects in animals. It is not currently known if it is effective in patients with epilepsy. Some states in the United States of America have explicitly approved its use for epilepsy.

Objectives:
To assess the efficacy of marijuana, or one of marijuana's constituents in the treatment of people with epilepsy.

Search strategy:
We searched the Cochrane Epilepsy Group Specialized Register (May 15, 2012), the Cochrane Central Register of Controlled Trials (CENTRAL issue 4 of 12, The Cochrane Library 2012),MEDLINE (PubMed, searched on May 15, 2012), ISI Web of Knowledge (May 15, 2012), CINAHL (EBSCOhost, May 15, 2012), and ClinicalTrials.gov (May 15, 2012). In addition, we included studies we personally knew about that were not found by the searches, as well as references in the identified studies.

Selection criteria:
Randomized controlled trials (RCTs), whether blinded or not.

Data collection and analysis:
Two authors independently selected trials for inclusion and extracted data. The primary outcome investigated was seizure freedom at one year or more, or three times the longest interseizure interval. Secondary outcomes included: responder rate at six months or more, objective quality of life data, and adverse events.

Main results:
We found four randomized reports which included a total of 48 patients, each of which used cannabidiol as the treatment agent. One report was an abstract, and another was a letter to the editor. Anti-epileptic drugs were continued in all. Details of randomisation were not included in any study. There was no investigation of whether control and treatment groups were the same or different. All the reports were low quality.

The four reports only answered the secondary outcome about adverse effects. None of the patients in the treatment groups suffered adverse effects.

Authors' conclusions:
No reliable conclusions can be drawn at present regarding the efficacy of cannabinoids as a treatment for epilepsy. The dose of 200 to 300 mg daily of cannabidiol was safely administered to small numbers of patients, for generally short periods of time, and so the safety of long term cannabidiol treatment cannot be reliably assessed.

http://summaries.cochrane.org/CD009270/cannabinoids-for-epilepsy

- Performing your original search, ***epilepsy cannabinoids***, in PubMed will retrieve ***175*** records.

Pharmacol Biochem Behav. 1982 Apr;16(4):573-8.

Effects of marihuana cannabinoids on seizure activity in cobalt-epileptic rats.

Colasanti BK, Lindamood C 3rd, Craig CR.

Abstract

Rats rendered chronically epileptic by bilateral implantation of cobalt into frontal cortices were simultaneously prepared with permanent electrodes for longitudinal recording of the electroencephalogram (EEG) and electromyogram (EMG). Delta-8-tetrahydrocannabinol (delta-8-THC; 10 mg/kg), delta-9-tetrahydrocannabinol (delta-9-THC; 10 mg/kg), cannabidiol (CBD; 60 mg/kg), or polyvinylpyrrolidone (PVP) vehicle (2 ml/kg) was administered IP twice daily from day 7 through 10 after cobalt implantation, at which time generalized seizure activity in non-treated cobalt-epileptic rats was maximal. Relative to PVP-treated controls, CBD did not alter the frequency of appearance of seizures during the course of repeated administration. In contrast, both delta-8-THC and delta-9-THC markedly reduced the incidence of seizures on the first and second days of administration. Interictal spiking during this period, on the other hand, was actually enhanced. On the third and fourth days, tolerance to the effect on seizures was evident, with a return of seizure frequency of THC-treated rats to values not significantly different from those of controls. Unlike the effect on seizures, no tolerance developed to the marked suppression of rapid eye movement (REM) sleep induces by delta-8-THC and delta-9-THC. REM sleep remained reduced in the treated animals during the first 2 days after termination of THC administration. In contrast, REM sleep time was unaffected by repeated administration of CBD. These results suggest that delta-8-THC and delta-9-THC exert their initial anticonvulsant effect by limiting the spread of epileptogenic activity originating from the cobalt focus.

PMID: 6280204 [PubMed - indexed for MEDLINE]

Epilepsy Behav. 2013 Dec;29(3):574-7. doi: 10.1016/j.yebeh.2013.08.037.

Report of a parent survey of cannabidiol-enriched cannabis use in pediatric treatment-resistant epilepsy.

Porter BE[1], Jacobson C.

Author information

Abstract

Severe childhood epilepsies are characterized by frequent seizures, neurodevelopmental delays, and impaired quality of life. In these treatment-resistant epilepsies, families often seek alternative treatments. This survey explored the use of cannabidiol-enriched cannabis in children with treatment-resistant epilepsy. The survey was presented to parents belonging to a Facebook group dedicated to sharing information about the use of cannabidiol-enriched cannabis to treat their child's seizures. Nineteen responses met the following inclusion criteria for the study: a diagnosis of epilepsy and current use of cannabidiol-enriched cannabis. Thirteen children had Dravet syndrome, four had Doose syndrome, and one each had Lennox-Gastaut syndrome and idiopathic epilepsy. The average number of antiepileptic drugs (AEDs) tried before using cannabidiol-enriched cannabis was 12. Sixteen (84%) of the 19 parents reported a reduction in their child's seizure frequency while taking cannabidiol-enriched cannabis. Of these, two (11%) reported complete seizure freedom, eight (42%) reported a greater than 80% reduction in seizure frequency, and six (32%) reported a 25-60% seizure reduction. Other beneficial effects included increased alertness, better mood, and improved sleep. Side effects included drowsiness and fatigue. Our survey shows that parents are using cannabidiol-enriched cannabis as a treatment for their children with treatment-resistant epilepsy. Because of the increasing number of states that allow access to medical cannabis, its use will likely be a growing concern for the epilepsy community. Safety and tolerability data for cannabidiol-enriched cannabis use among children are not available. Objective measurements of a standardized preparation of pure cannabidiol are needed to determine whether it is safe, well tolerated, and efficacious at controlling seizures in this pediatric population with difficult-to-treat seizures.

PMID:
24237632
[PubMed - indexed for MEDLINE]

http://www.ncbi.nlm.nih.gov/pubmed/24237632