A Brief Report on the Effects of Marijuana on Tourette’s Syndrome

Covering current cannabis legalization issues in Iowa for Tourette Sufferers

October 15, 2018

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A Brief Report on the Effects of Marijuana on Tourette’s Syndrome

An executive briefing
Prepared for Gigi Avino
By: Eric Hepperle

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Today’s date: 10/15/18
Introduction: About This Report

Purpose

My friend Gigi asked me to research the benefits of marijuana on Tourette’s syndrome in preparation to present these findings to the Iowa Supreme Court, where marijuana and cannabis, medical or otherwise, is currently still considered a Class D felony with a maximum 10 year prison sentence, except for a few exceptions, and then only in liquid CBD (cannabidiol) form with under 3% THC content.

Here is what my friend wrote me in Facebook messenger:

“I need scientific proof and the proof cited and physical materials that shows proof. I’m trying TO take it to the supreme court to gt it approved. PLEASE HELP ME CUZ GOD KNOWS I NEED IT. I HAVE TOURETTES SYNDROME, ADHD, FIBROMYALGIA, NEUROPATHY (SMALL CELL) THE PAINFUL ONE PLEASE help me argue up the supreme court to legalize it fr my tourette’s esp since it’s the ONLY thing that had ever worked fr tourette’s syndrome”

So, I decided to help my friend.

I did hours of research, spanning several weeks, fact-checking, writing and editing to finally produce this report you have before you. This document is a brief summary of what I learned during this project. It is not meant to be a comprehensive FAQ, but rather a resource where one who wants answers and seeks information can begin their search with a bit of a head-start. Herein I summarize the state of marijuana legality in Iowa and research that has been done to date on the usefulness of medical marijuana in helping treat the symptoms of Gilles de la Tourette Syndrome. This report should be used as a springboard to begin your own research. You will only get out of this what you are willing to put in.

Disclaimer

I am not a doctor nor am I a lawyer and nothing in here should be construed as either medical or legal advice. The entire document represents my own research, opinions, and conclusions. Please consult your trusted physician, attorney, and inner guidance on what, if anything, to do with this information. With guidance from Holy Spirit may you know the right course of action in your life.

Amen.

And now, let the journey begin...
Definitions & Terminology

For purposes of this report, all these terms mean the same thing:

- Cannabis
- Medical cannabis
- Medicinal cannabis
- Marijuana
- Medical marijuana
- Medicinal marijuana
- Weed
- Hash
- Hash oil

These are all synonyms for Tourette Syndrome:

- Tourette’s Syndrome
- Tourette’s
- TS
Quick Facts About Marijuana Use and Possession in Iowa

Here are some current facts about marijuana possession and use in Iowa, as of October 2, 2018:

- Iowa is one of the toughest states concerning marijuana crime according to the ACLU and NORML.
- First-time offenders in possession of ANY amount of cannabis/marijuana: up to 6 months in prison and $1000 fine, though diversion sentencing is an option.
- Possession of any amount of marijuana over ½ oz and under 50 kg is punishable by up to 5 years in prison and $7,500 fine.
- Possession of hash oil is punished more severely than for marijuana plants.
- Possession of pipes or other marijuana “paraphernalia” carries the same penalty as misdemeanor marijuana possession.
- A marijuana tax stamp violation is tacked onto every marijuana felony effectively doubling the sentence.

Extrapolating Iowa Marijuana Arrest Data

Following is a chart from the American Civil Liberties Union (ACLU) graphing racial disparity in arrest rates for marijuana possession in Iowa between 2001 and 2010. The data is extrapolated from the FBI Uniform Crime Reporting Program (tracked since 1965) and U.S. Census data.

For the purposes of this report we are not concerned with the racial disparity issue. However, we can use these statistics to work out about how many people were arrested for marijuana possession in Iowa in 2010.
According to the U.S. Census Bureau, [Iowa population in 2010](https://www.census.gov/quickfacts/facts/IA/102000), Iowa population in 2010 was around 3.05 Million. So, with a calculated arrest rate of 0.015 \((1,454/100,000)\) we can extrapolate that roughly 46,000 people were arrested for cannabis and marijuana possession in 2010, though the report doesn’t offer any data on how many were incarcerated for marijuana-related crimes.

Now, let’s calculate data for 2017. Here is a chart I pulled from [FBI.gov](https://www.fbi.gov) which shows the arrests for drug violations as a percentage:

<table>
<thead>
<tr>
<th>Drug abuse violations</th>
<th>United States total</th>
<th>Northeast</th>
<th>Midwest</th>
<th>South</th>
<th>West</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total</td>
<td>100.0</td>
<td>100.0</td>
<td>100.0</td>
<td>100.0</td>
<td>100.0</td>
</tr>
<tr>
<td>Drug abuse violations</td>
<td>100.0</td>
<td>100.0</td>
<td>100.0</td>
<td>100.0</td>
<td>100.0</td>
</tr>
<tr>
<td>Total</td>
<td>16.4</td>
<td>19.3</td>
<td>10.6</td>
<td>15.7</td>
<td>10.2</td>
</tr>
<tr>
<td>Heroin or cocaine and their derivatives</td>
<td>5.2</td>
<td>11.6</td>
<td>3.5</td>
<td>4.5</td>
<td>3.7</td>
</tr>
<tr>
<td>Marijuana</td>
<td>3.7</td>
<td>5.3</td>
<td>5.3</td>
<td>3.8</td>
<td>1.7</td>
</tr>
<tr>
<td>Synthetic or manufactured drugs</td>
<td>1.6</td>
<td>1.5</td>
<td>0.9</td>
<td>3.0</td>
<td>0.4</td>
</tr>
<tr>
<td>Other dangerous nonnarcotic drugs</td>
<td>4.0</td>
<td>2.0</td>
<td>4.3</td>
<td>4.3</td>
<td>4.5</td>
</tr>
<tr>
<td>Total</td>
<td>85.4</td>
<td>79.7</td>
<td>86.1</td>
<td>84.3</td>
<td>89.8</td>
</tr>
<tr>
<td>Heroin or cocaine and their derivatives</td>
<td>20.6</td>
<td>22.2</td>
<td>12.2</td>
<td>14.0</td>
<td>34.5</td>
</tr>
<tr>
<td>Marijuana</td>
<td>36.7</td>
<td>43.4</td>
<td>48.1</td>
<td>44.9</td>
<td>13.6</td>
</tr>
<tr>
<td>Synthetic or manufactured drugs</td>
<td>4.8</td>
<td>3.7</td>
<td>5.2</td>
<td>6.8</td>
<td>2.5</td>
</tr>
<tr>
<td>Other dangerous nonnarcotic drugs</td>
<td>23.3</td>
<td>9.4</td>
<td>20.6</td>
<td>18.7</td>
<td>39.1</td>
</tr>
</tbody>
</table>

Drug abuse arrests are estimated as 1,632,921. So, if we add the marijuana US total percentages for Sale/Manufacturing (3.7) and Possession (36.7) we get a total US marijuana crime percentage of 40.4. Applying that rate to the total arrests for all drug crimes we find there were about 660,000 total marijuana arrests in 2017 throughout the united states.

There were about 660,000 total marijuana arrests in 2017 throughout the united states.
A Note on Missing 2017 Marijuana Arrest Info on FBI UCR and How to Find It

Though some reports have stated that marijuana arrest data is missing from the 2017 edition, I have found that not to be the case. It is possible that the data wasn't originally available when NORML published that post, or maybe their article prompted later posting.

It is also quite likely that the information was published and available, but hard to find.

For instance, when this researcher was reviewing the FBI’s website and searching for the Uniform Crime Report for 2017, this was the first Google result for “uniform crime report 2017”, but marijuana data is nowhere on that page. In the “Offenses Known to Law Enforcement” section there are five main options: violent crime, property crime, clearances, offense tables. If you check any of those pages, marijuana information is not found anywhere. However, if you scroll to the bottom just before the footer, you will see a tiny box that says “What you won’t find on this page”. Included in that infobox is a link to arrest data. When you click that link you will find the information on marijuana arrests for 2017 at the bottom of the next page.

Where to find the U.S. marijuana “Arrest data” link.
Overview of Iowa Penalties for Marijuana Use, Possession, and Distribution

<table>
<thead>
<tr>
<th>Offense</th>
<th>Penalty</th>
<th>Incarceration</th>
<th>Max. Fine</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Possession</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Any amount (first offense)</td>
<td>Misdemeanor</td>
<td>6 months</td>
<td>$1,000</td>
</tr>
<tr>
<td>Any amount (second offense)</td>
<td>Misdemeanor</td>
<td>1 year</td>
<td>$1,875</td>
</tr>
<tr>
<td>Any amount (third offense)</td>
<td>Misdemeanor</td>
<td>2 years</td>
<td>$6,250</td>
</tr>
<tr>
<td>Offenders who are chronic abusers of marijuana may be sent to rehab.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Cultivation or Distribution</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>50 kg or less</td>
<td>Felony</td>
<td>5 years</td>
<td>$7,500</td>
</tr>
<tr>
<td>More than 50 - 100 kg</td>
<td>Felony</td>
<td>10 years</td>
<td>$50,000</td>
</tr>
<tr>
<td>More than 100 - 1000 kg</td>
<td>Felony</td>
<td>25 years</td>
<td>$100,000</td>
</tr>
<tr>
<td>More than 1000 kg</td>
<td>Felony</td>
<td>50 years</td>
<td>$1,000,000</td>
</tr>
<tr>
<td>Involving a minor</td>
<td>Felony</td>
<td>5* - 25 years</td>
<td>$100,000</td>
</tr>
<tr>
<td>To a minor within 1000 feet of a park, elementary or middle school, or school bus</td>
<td>Felony</td>
<td>10 years*</td>
<td>$100,000</td>
</tr>
<tr>
<td>* Mandatory minimum sentence</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Distribution includes possession with intent to distribute</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Hash &amp; Concentrates</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Penalties for hashish are the same as for marijuana except in one circumstance. Please see the marijuana penalties section for further details.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Paraphernalia</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Possession, distribution, or manufacture of paraphernalia</td>
<td>Misdemeanor</td>
<td>6 months</td>
<td>$1,000</td>
</tr>
<tr>
<td><strong>Miscellaneous</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Sponsoring, promoting, or assisting in a gathering where marijuana will be used, distributed, or possessed</td>
<td>Misdemeanor</td>
<td>1 year</td>
<td>$1,875</td>
</tr>
<tr>
<td>Possession with intent to sell large amounts can lead to an automatic driver’s license suspension.</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Iowa Marijuana Laws & Penalties Table (NORML.com)

According to [Rolling Stone’s State-by-State Guide to Weed in America](https://www.rollingstone.com), “Limited amounts of CBD oil are permitted for people suffering serious conditions such as intractable epilepsy, terminal illness, or untreatable pain. There are no state-licensed dispensaries currently operational, but the state has begun to consider applications.”

Today’s date: 10/15/18
Limited amounts of CBD oil are permitted for people suffering serious conditions such as intractable epilepsy, terminal illness, or untreated pain. There are no state-licensed dispensaries currently operational, but the state has begun to consider applications.

-- Rolling Stone (4/20/2018)

Iowa’s policy of hash oil is unclear, but here is what NORML says:

“The only circumstance where plant-form Marijuana is treated differently is for a charge of delivery or possession with intent to deliver one half ounce or less without remuneration. In that circumstance, plant-form marijuana is punished equivalent to the penalties for simple possession, whereas delivery, or possession with intent to deliver an equivalent amount of hashish, hash oil, or other derivatives are punished in accordance with the regular penalties for distribution.”
For Whom is Marijuana Legal In Iowa?

Governor Branstad signed Iowa’s first medical marijuana law (SF 2360) into effect on May 30, 2014. But, it was still illegal to buy medicinal marijuana products in-state, which caused a sort of catch-22. As Marijuana Doctors puts it,

“Iowa law requires that all CBD be derived from a source out-of-state, and demands a non-smoked administration of the CBD, allowing only oral or transdermal administration. So, to obtain medicine that is legal in Iowa, patients must get their CBD from another state. And if they do that, they run the risk of breaking federal law, which prohibits the transport of a ‘controlled substance’ across state lines — incredibly, marijuana remains classified as a Schedule I controlled substance. That means patients who meet medical marijuana qualifications in Iowa will be breaking the law either way. They’ll either get their medical cannabis in-state in violation of the law, or they’ll be transporting it between states.”

And for almost three years Iowans and those medical marijuana users unlucky enough to visit Iowa and get caught during this time were stuck in a legal quagmire. But, when Governor Branstad signed House File 524 into law a year later, things began looking more promising for advocates and patients of medicinal marijuana in Iowa. Lieutenant Governor Kim Reynolds became Iowa’s first-ever female governor less than two weeks later when Branstad resigned to accept the post of U.S. Ambassador to China. Iowa’s Medical Marijuana Advisory Board was formed in September 2017 when Governor Reynolds appointed an eight-member board comprised primarily of specialist physicians and a few law enforcement representatives. The purpose of the board and the main focus of HF524 is solve that catch-22 we mentioned earlier, by legalizing the manufacture and production of CBD oil within the state.

But, some advocates of medicinal marijuana feel that this “expansion” is not designed to be favorable to patients who could benefit from medicinal marijuana, but rather to those wanting to grow industrial hemp. To them, bills passed and pro-cannabis legalization statements by politicians including Governor Branstad and long-time Senator Charles Grassley are a disingenuous bait-and-switch. Blogger BleedingHeartland quotes Shelly Servadio -- Gulf War veteran, registered nurse, and co-found of the Iowa Hemp Association -- as saying,

“What the legislators passed was not a medicinal cannabis bill, or a medical marijuana bill. They passed an industrial hemp bill, which is really what the [Iowa] GOP platform states that they’ll do. And what they passed wasn’t based in science or medicine. It was based in the party platform. […] You can’t help HIV or cancer with only 3 percent THC. It’s not going to be a therapeutic benefit.”
What Conditions Do Iowa’s Medical Marijuana Law Allow Treatment For?

So, who is medical marijuana in Iowa supposed to be for then?

According to the Medical Cannabidiol Act, Section 124E.2, the conditions listed that 524 is approved to treat (only with CBD oil with < 3% THC) are:

1. **Cancer**, if the underlying condition or treatment produces one or more of the following:
   - Severe or chronic pain.
   - Nausea or severe vomiting.
   - Cachexia or severe wasting.
2. **Multiple sclerosis** with severe and persistent muscle spasms.
3. **Seizures**, including those characteristic of epilepsy.
4. **AIDS** or HIV as defined in Iowa Code section 141A.1.
5. **Crohn’s disease**.
6. **Amyotrophic lateral sclerosis** (ALS, AKA: Lou Gehrig’s Disease)
7. **Any terminal illness**, with a probable life expectancy of under one year, if the illness or its treatment produces one or more of the following:
   - Severe or chronic pain.
   - Nausea or severe vomiting.
   - Cachexia or severe wasting.
8. **Parkinson’s disease**.
9. **Untreatable pain**.

Does Iowa Allow Lawful Treatment of TS with Cannabis?

Thus, the Iowa law as it is written does not legalize medical cannabis use for Tourette’s patients explicitly. Patients using medical cannabis for Tourette’s symptom treatment would be liable for arrest, prosecution, and imprisonment and be subject possession, possession with intent to deliver, and failure to affix drug tax stamp charges.
Is Marijuana Beneficial for Tourette’s Sufferers?

My investigation and the subsequent brief report you are reading was prompted by essentially this question:

*Is there Scientific Evidence that Marijuana Use is Beneficial for Tourette’s Syndrome?*

The answer is **YES**.

The 2003 Müller-Vahl Study

This 2003 study published on the government website [PubMed.gov](https://pubmed.ncbi.nlm.nih.gov) (US National Library of Medicine National Institutes of Health) sought to determine whether, although shown to have beneficial effects on the treatment of Tourette's symptoms in previous studies, the repeated use of cannabis would have detrimental health side effects. The study lasted for 6 weeks with 24 participants, and scientists continued to monitor patients for another 5-6 weeks after the experiment ended. They found that “[No] detrimental effect was seen on learning curve, interference, recall and recognition of word lists, immediate visual memory span, and divided attention. Measuring immediate verbal memory span, we even found a trend towards a significant improvement during and after treatment.”

“[No] detrimental effect was seen on learning curve, interference, recall and recognition of word lists, immediate visual memory span, and divided attention. Measuring immediate verbal memory span, we even found a trend towards a significant improvement during and after treatment.”

-- Müller-Vahl, et. al. (2/14/2003)

Can the 2003 Study Results be Trusted?

Granted, any statistician can tell you that 24 people is too small of a sample population size to conclude anything definitively about the effects of a chemical substance on the human body. That is not enough people to be representative of a population of millions or billions. However,
there is a lot that goes into determining a good sample size and what minimum sample size (how many people you tested) to have a representative sample.

In the 2003 study referenced, the sample size was 24 because they only tested 24 patients. There are study quality questions and considerations that will help determine how accurate the study is, and how well it was designed. Some of those factors are precision, confidence interval, margin of error, significance level and more, but those discussions are beyond the scope of this report.

“It is estimated that 200,000 Americans have the most severe form of TS, and as many as one in 100 exhibit milder and less complex symptoms such as chronic motor or vocal tics.

-- NINDS (4/20/2018)

A Brief Discussion of Population and Sample Size

The World Population Clock website estimates there are almost 8 Billion people alive on Earth today. If all 8 Billion people are used as the total population, and if we say arbitrarily that 1% is a good representative sample, that would mean that testing 80 Million people (your sample size) would be required for a high level of confidence in your findings and conclusions.
According to the National Institute of Neurological Disorders and Stroke, “It is estimated that 200,000 Americans have the most severe form of TS, and as many as one in 100 exhibit milder and less complex symptoms such as chronic motor or vocal tics.” So, given that current US population figures are estimated between 327 and 329 million, to have a one percent sample size (using the lower number) would require 3.27 million people to be tested. This is neither practical nor feasible. However, there are other studies that point to the efficacy of medical cannabis in treating Gilles de la Tourette Syndrome.
More Studies on Efficacy of Marijuana in Treating Tourette’s

Here is a brief list of studies (and a summary of each) I found relevant to and that discuss the use and effectiveness of using medicinal marijuana/cannabis to treat Tourette’s Syndrome symptoms. The newest study is from October 2018 (this month) and the oldest is from 1988. The summaries are taken mostly verbatim from extracts in most cases. Where I am quoting an extract I use quotation marks; my own thoughts and words rarely use quotation marks.

List of Studies Testing Medical Marijuana Use for Treating Tourette Syndrome Symptoms

❖ Single center experience with medical cannabis in Gilles de la Tourette syndrome (Thaler, 2018, Oct. 1):
  ➢ "[Medical cannabis] seems to hold promise in the treatment of GTS as it demonstrated high subjective satisfaction by most patients however not without side effects and should be further investigated as a treatment option for this syndrome."

❖ Pure delta-9-tetrahydrocannabinol and its combination with cannabidiol in treatment-resistant Tourette syndrome: A case report (Pichler, 2018, June 30):
  ➢ “Following administration of a daily dosage of 10 mg delta-9-tetrahydrocannabinol combined with 20 mg cannabidiol (CBD), the [female patient with treatment-resistant Tourette syndrome] showed a rapid and highly significant improvement in the Yale Global Tic Severity Scale. ... It can be speculated whether the beneficial effects may rely on the pharmacological properties of cannabidiol.”
  ➢ http://journals.sagepub.com/doi/abs/10.1177/0091217418791455

❖ Speechlessness in Gilles de la Tourette Syndrome: Cannabis-Based Medicines Improve Severe Vocal Blocking Tics in Two Patients (Jakubovski, 2017, Aug. 10):
  ➢ “[C]annabis-based medicine appears to be effective in treatment-resistant TS patients with vocal blocking tics.”
  ➢ https://www.mdpi.com/1422-0067/18/8/1739/htm

❖ Preliminary Evidence on Cannabis Effectiveness and Tolerability for Adults With Tourette Syndrome (Elia Abi-Jaoude, 2017, May 3):
  ➢ “The authors retrospectively evaluated effectiveness and tolerability of cannabis in 19 adults with Tourette syndrome. Tics scores decreased by 60%, and 18 of the 19 participants were at least ‘much improved.’ Cannabis was generally well tolerated, although most participants reported side effects.”

❖ A Systematic Review of the Evidence for Medical Marijuana in Psychiatric Indications (Wilkinson, 2016):
  ➢ “No [randomized clinical trials] have thus far examined the efficacy of marijuana
for Tourette’s disorder, PTSD, or Alzheimer’s disease. Lower-quality studies examined the efficacy of marijuana, Δ9-tetrahydrocannabinol, and nabilone; the strength of evidence for the use of cannabinoids for these conditions is very low at the present time. The consequences of chronic cannabinoid exposure includes tolerance, dependence, and withdrawal. Early and persistent marijuana use has been associated with the emergence of psychosis. Marijuana impairs attention, memory, IQ, and driving ability."

➢ https://www.psychiatrist.com/jcp/article/Pages/2016/v77n08/v77n0818.aspx

❖ Cannabinoids for Medical Use: A Systematic Review and Meta-analysis (Whiting, 2015):

➢ “There was moderate-quality evidence to support the use of cannabinoids for the treatment of chronic pain and spasticity. There was low-quality evidence suggesting that cannabinoids were associated with improvements in nausea and vomiting due to chemotherapy, weight gain in HIV infection, sleep disorders, and Tourette syndrome. Cannabinoids were associated with an increased risk of short-term [adverse events].”


➢ “In conclusion, our data are in agreement with anecdotal reports and a pilot study suggesting that Δ9-THC treatment in patients suffering from TS has no detrimental effect on neuropsychological performance.”

➢ https://www.nature.com/articles/1300047

❖ Marijuana and Tourette’s syndrome (Sandyk, 1988):

➢ “Describes 3 male Ss (aged 15, 17, and 39 yrs) with Tourette’s syndrome (TS) who experienced incomplete response to conventional anti-TS drugs, but noted a significant amelioration of symptoms (e.g., motor tics, self-mutilatory behavior, hypersexuality) when smoking marihuana.”

➢ http://psycnet.apa.org/record/1989-23449-001

There are more studies that could be helpful in demonstrating the benefits of marijuana for treating Tourette’s Syndrome. Your local librarian can you help you determine whether free access to full texts of these studies are available in your area.
Conclusion

Overall, there have been very few studies and clinical trials done on the effectiveness of cannabis-derived medicines and medicinal marijuana, in smoked, topical, or oral ingestion forms, likely due to the historical legally prohibited status of these substances. Even fewer of these scientific tests have been targeted toward Tourette Syndrome treatment.

Preliminary trials and testing have shown that marijuana can be beneficial in reducing Tourette Syndrome symptoms including vocal tics, though mild side-effects may be experienced.

More randomized clinical trials and higher-quality studies will help to clarify whether the pros of treating TS with cannabis outweigh the cons.


APPENDIX i: References & Links:

In this appendix you will find links to articles on treating Tourette’s with marijuana. I pulled these results directly from a Google search. The first list numbers twenty is consists of the highest relevant results from a Google Scholar (https://scholar.google.com) and the second is a standard Google search yielding the top 98 relevant results. I hope this information and preliminary research steps can help you in your own research.

Top 20 Google Scholar Academic Results since 2017:

1 | Single center experience with medical cannabis in Gilles de la Tourette syndrome | https://www.sciencedirect.com/science/article/pii/S1353802018304292
3 | Preliminary evidence on cannabis effectiveness and tolerability for adults with Tourette syndrome | https://neuro.psychiatryonline.org/doi/abs/10.1176/appi.neuropsych.16110310
5 | Significant tic reduction in an otherwise treatment-resistant patient with Gilles de la Tourette syndrome following treatment with nabiximols | https://www.mdpi.com/2076-3425/7/5/47htm
6 | Pure delta-9-tetrahydrocannabinol and its combination with cannabidiol in treatment-resistant Tourette syndrome: A case report | http://journals.sagepub.com/doi/abs/10.1177/0091217418791455
7 | Cannabinoid-Based Medicines for the Treatment of Gilles de la Tourette Syndrome | https://www.sciencedirect.com/science/article/pii/B9780128007563001071
8 | Remission of Gilles de la Tourette Syndrome after Heat-Induced Dehydration | https://www.ncbi.nlm.nih.gov/pmc/articles/PMC6078428/
9 | Medical Cannabis and OMT | http://www.wvoma.org/resources/Medical%20Cannabis%20and%20OMT.pdf
10 | A Survey on the Medical Use of Cannabis in Europe: A Position Paper | https://www.karger.com/Article/Abstract/492757
12 | A systematic review of the effectiveness of medical cannabis for psychiatric, movement and neurodegenerative disorders | https://www.ncbi.nlm.nih.gov/pmc/articles/PMC5678490/
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- 17 | Neurological disorders in medical use of cannabis: an update | [https://www.ingentaconnect.com/content/one/ben/cnsnddt/2017/00000016/00000005/art00004](https://www.ingentaconnect.com/content/one/ben/cnsnddt/2017/00000016/00000005/art00004)
- 18 | A Brief Background on Cannabis: From Plant to Medical Indications. | [https://europepmc.org/abstract/med/30139415](https://europepmc.org/abstract/med/30139415)

Top 100 Relevant Google Search Results:

- 2 | Safety and Efficacy of Cannabis in Tourette Syndrome - Full Text View ... | [https://clinicaltrials.gov/ct2/show/NCT03247244](https://clinicaltrials.gov/ct2/show/NCT03247244)
- 3 | Marijuana & Tourette « Tourette Canada | [https://tourette.ca/marijuana-tourette/](https://tourette.ca/marijuana-tourette/)
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