

Leigh's Disease/Mitochondrial Disease

By <https://thecannapedia.org>

In April 2015, the state of Georgia legalized the use of medical marijuana in the treatment of eight diseases - including Mitochondrial disease.

Use of Cannabis in Treating Mitochondrial Disease

Most current data on the use of cannabis in mitochondrial patients is primarily anecdotal, but cannabis appears to provide symptomatic relief with improved seizure control and pain relief in treated individuals. Some patients also report relief of gastrointestinal symptoms as well.

In a recent German study, researchers showed that exposure to cannabis can improve mitochondrial function in rodent models. This study suggests that marijuana (or the activation of the brain's cannabinoid system) triggers the release of antioxidants, which act as a cleansing mechanism, a process known to remove damaged cells and improve the efficiency of mitochondria. This animal-based study is preliminary, and results may or may not translate into humans. But these are some of the promising findings:

- Cannabinoids as regulators of mitochondrial activity, as anti-oxidants and as modulators of clearance processes **protect neurons on the molecular level**. On the **cellular level**, the cannabinoid system regulates the expression of brain-derived neurotrophic factor and neurogenesis. **Neuroinflammatory processes** contributing to the progression of normal brain ageing and to the pathogenesis of neurodegenerative diseases **are suppressed by cannabinoids**, suggesting that they may also influence the ageing process on the system level. [1]

These discoveries shed new insight on how natural marijuana cannabinoids hold the capacity to literally halt brain inflammation responsible for causing cognitive decline, neural failure, and brain degeneration, offering new hope to patients with Alzheimer's disease, Parkinson's disease, Huntington's disease, premature brain aging, and more. Certainly, mitochondrial disease, particularly the subset associated with neurodegenerative symptoms, likely would benefit as well.

- I've been trying to find a drug that will reduce brain inflammation and restore cognitive function in rats for over 25 years; cannabinoids are the first and only class of drugs that have ever been effective. I think that the perception about this drug is changing and in the future people will be less fearful. – Gerry Wenk, Professor of neuroscience, immunology and medical genetics at Ohio State University [2]

Dosing and Safety Information

- Dosing of cannabis is based on a given patient's weight and type of cannabinoid used and is typically administered at least several times a day. The cannabinoids most therapeutic in mitochondrial disease patients would be CBD, THC and THCa.
- Side effects, as reported by parental feedback, include drowsiness and fatigue, agitation and diarrhea, with similar findings reported in the study presented at the AAN. Dosing must be monitored carefully because 10% of patients on high dose THC can experience seizures.
- Cannabinoids can be administered via a number of delivery systems, depending on the product and purpose of the medication for the individual patient. Administration methods include [smoking](#) or [vaporizing](#), [eating](#) (edibles), oils (olive, MCT/coconut, safflower), tinctures (alcohol and vegetable glycerin), [suppository](#), and topicals in the form of a patch, gel, salve/cream.

Procuring a Safe Cannabis Product

With medical Cannabis primed to be the next billion dollar business in America, this “green rush” has attracted more than its share of unscrupulous companies/people who are driven by financial gains and not by the best interest of consumers.

Patients/parents/caregivers, therefore, must do their due diligence and ask questions before using any cannabis product.

The key to obtaining a legitimate vendor is - know your supplier.

Know the lab that is testing the cannabis product, and know which laboratory tests are needed to ensure a safe product.

Here is a list of common tests you should examine before buying a product:

- Potency Testing - how concentrated is the product?
- Microbial Testing - crucial for patients with weak immune systems. The tests will show if any fungus, mold, bacteria, yeast are present in the cannabis product.
- Residual Solvent Testing - do any residual solvents (Ethanol, Butane, Hexane, and other compounds) remain present in the product?
- Polycyclic Aromatic Hydrocarbons (PAH) - These substances are classified as carcinogens and genotoxic mutagens. In a recent European study, only 31% of tested CBD oils contained acceptable levels of PAH[3] - so make sure to look for these!
- Heavy Metal Testing - if grown outdoors, does the product have residual arsenic, mercury or lead? Because of its phytoremediation properties (process whereby plants remove toxic agents from the environment), Hemp absorbs everything from the soil, including any heavy metals such as arsenic, mercury, or lead. However, if your grower uses organic soil and only grows indoors or in a greenhouse, this test is not needed.

In addition, consumers need to become educated on the interpretation of those testing results.

Summary

Cannabis and various cannabinoids have medicinal effects for a broad range of clinical symptoms and disorders, including mitochondrial disease, as supported by both anecdotal reports and recent studies. The laws surrounding cannabis use are complex and vary from state to state. Ultimately, passage and implementation of federal laws regulating the production and distribution of cannabis products is needed to eliminate these issues. Since this process is in its infancy, patients and parents will need to exercise due diligence in obtaining medical cannabis.

Support Groups

Sebastien Cotte is both a parent and avid patient advocate, working with Dr. Kendall on this topic. Mr. Cotte and Dr. Kendall have co-authored several blogs about cannabis, both posted on Facebook and on Dr. Kendall's website. Cotte has been instrumental in getting the medical cannabis laws passed in Georgia and recommends the following Facebook groups for ongoing information about laws and regulations regarding Cannabis as well as additional support:

[Pediatric Cannabis Therapy CBD 4 Children with Epilepsy](#) (also open to adults)