



## Use of CBD-THC oil to manage cognitive, emotional, and behavioral problems of nursing home patients with Alzheimer, multiple sclerosis, and Parkinson's

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### Abstract

**Objective:** The non-euphoric cannabidiol (CBD) has been found to have neuroprotective impact. We report clinical findings on 3 patients.

**Method:** Three nursing home patients with severe disabilities due to advanced chronic neurodegenerative diseases were administered 1ml cannabidiol (CBD)-tetrahydrocannabinol (THC) oil twice daily: the CBD and THC were in a 1:1 proportion.

**Results:** The following behavioral changes were noted after two or more weeks. An elderly lady with Alzheimer became less confused, disoriented, disruptive, aggressive, and more alert, cooperative, and socially pleasant. Her sleep has improved. A verbally combative lady in her early 50s, bedridden due to advanced multiple sclerosis, was screaming in her depressed anger, was usually rude to nursing staff, but at some other times unresponsive and apathetic, has become more alert, talkative, and verbally more considerate and appreciative. An elderly gentleman with stage 4 Parkinson's became less agitated, fell less often, expressed himself verbally in a more coherent manner, was more cooperative, his cognitive functioning has improved, his gait has somewhat improved, and his tremor/shaking became slightly less intense.

**Conclusion:** More clinical research on CBD oils in patients with neurodegenerative disease is urgently needed to improve the quality of life and daily functioning of these patients.

**Keywords:** cannabidiol, clinical, functioning, patients, neurodegenerative

### 1. Introduction

Human bodies produce several endocannabinoids that bind to and activate cannabinoid receptors (CB). These CB receptors and endocannabinoids together are referred to as the endocannabinoid system. Cannabinoids derived from cannabis plants or synthetic cannabinoids produced in laboratories mimic the effects of endocannabinoids. The endocannabinoid system is of major importance for normal functioning of human body. This system is found in mammals, birds, amphibians, fish, and some other organisms [1]. Of the phytocannabinoids, the cannabidiol (CBD) and tetrahydrocannabinol (THC) are of much interest for current medical research. A review by Campos's team [2] concluded already in 2016 that, in particular, "CBD exhibits a broad spectrum of potential therapeutic properties in animal models and humans, including anxiolytic, antidepressant, neuroprotective, anti-inflammatory, and immunomodulatory." The CBD oil has been statistically found to be an effective treatment for the Dravet syndrome, i.e., otherwise intractable epilepsy [3], schizophrenia [4, 5], severe autism [6, 7], and some other medical conditions. It has been clinically observed to reduce chronic pain [8, 9] and to reduce the patients' dependence on opioid analgesic medications [10, 11]. The review by Campos's team [2] suggests therapeutic potential for chronic neurodegenerative diseases such as multiple sclerosis or Alzheimer.

### 2. Material and Method

Our case histories focused on behavioral, emotional, and cognitive changes observed in severely disabled patients in a nursing home who were all placed on the CBD-THC oil in the 1 to 1 ratio, administered at 1ml in the morning and another 1 ml at bedtime.

At this ratio, the CBD-THC oil is clinically known to be non-addictive and not associated with a "high" or frequent undesirable side-effects.

### 3. Results of our case studies

#### 3.1 Case study 1 – Alzheimer Disease

An elderly female patient with severe Alzheimer disease (AD) roamed in the hallways of the nursing home at night in a dysphoric mood. She felt unable or unwilling to sleep at night. She was confused, disoriented, cantankerous, uncooperative, and argumentative. Her behaviour was disrupting the routines established for other residents of the nursing home.

She often aggressively demanded food, not remembering she has just finished her meal or a snack a few minutes ago. When informed she had just finished eating, she refused to believe it. After being on the CBD-THC oil for about 2 weeks, she started feeling better, was more cooperative, slept well at night, and her social behaviour was more accommodating and pleasant.

### 3.2 Case study 2 – Multiple Sclerosis

A lady in her early 50s, diagnosed with advanced multiple sclerosis (MS), already bedridden due to her illness, in unrelenting pain or discomfort, was verbally aggressive to nursing staff. She often swore, appeared very dysphoric, angry, and was verbally combative. Her loud screaming often disturbed other residents of the nursing home. On some other occasions, she completely stopped talking, was unresponsive, and no longer reacted to persons around her, ignoring everybody's presence. Her prevailing mood could be characterized as depressed anger.

Her mood has improved remarkably after several days on the CBD-THC oil. She was more cognitively alert, no longer displayed the depressed anger, became talkative, and more adequately cooperative.

### 3.3 Case study 3 – Parkinson's Disease

A gentleman in early 80s was afflicted with Parkinson's disease that progressed to stage 4 on the Hoehn and Yahr scale [12]. He needed assistance with activities of daily living, could no longer live independently, and needed a walker to ambulate. His symptoms included intense shaking and tremor, frequent falls due to severely impaired balance, and behavior problems in his interactions with nursing staff. He often seemed agitated, but able to move only very slowly.

After several weeks on the CBD-THC oil, his mood was noticeably improved, he appeared more alert, was more coherent in his verbal responses, his judgement has improved, was more cooperative, his shaking/tremor somewhat decreased, his mobility and gait have improved, he was able to ambulate somewhat faster with his walker, and fell less often.

## 4. Discussion

All three case histories describe successful therapeutic attempts to reduce the subjective discomfort and interpersonal difficulties of the Alzheimer, multiple sclerosis, and Parkinson's patients. The findings are theoretically consistent with those of other authors with respect to decrease in depressive mood and in anxiety levels [13,14].

It is not clear at this point what would constitute an optimal daily dose or most beneficial CBD to THC ratio for these patients.

Polypharmacy in the elderly is a regrettable and prevalent phenomenon, even in some developing countries. For example, Perreira's team found in an epidemiological study that 32% of elderly persons (age > 59 years) in Florianopolis area of Brazil were on 5 or more medications [15]. Given the anxiolytic, antidepressant, neuroprotective, anti-inflammatory, and immunomodulatory properties of CBD oils [2], they may help to reduce the number of prescribed medications for the elderly.

## 5. Conclusion

Further research is urgently needed to help patients with neurodegenerative diseases. For humanitarian reasons, studies in this field should be fast-tracked by research ethics committees at universities and in hospitals and promoted by government agencies.

## 6. Acknowledgment

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## 7. References

1. Grotenhermen F. Cannabinoids and the Endocannabinoid System. *Cannabinoids*. 2006; 1(1):10-14.
2. Camposa AC, Fogac MV, Sonogoa AB, Guimaraes FS. Cannabidiol, neuroprotection and neuropsychiatric disorders. *Pharmacological Research*. 2016; 112:119-127.
3. Devinsky O, Cross JH, Laux L, Marsh E, Miller I, Nabbut R, *et al*. Trial of Cannabidiol for Drug-Resistant Seizures in the Dravet Syndrome. *New England Journal of Medicine*. 2017; 376(21):2011–2020.
4. Leweke FM, Piomelli D, Pahlisch F, Muhl D, Gerth CW, Hoyer C, *et al*. Cannabidiol enhances anandamide signaling and alleviates psychotic symptoms of schizophrenia. *Translational Psychiatry*. 2012; 2:e94.
5. Renard J, Norris C, Rushlow W, Laviolette SR. Neuronal and molecular effects of cannabidiol on the mesolimbic dopamine system: Implications for novel schizophrenia treatments. *Neuroscience and Biobehavioral Reviews*. 2017; 75:157-165.
6. Aran A, Cassuto H, Lubotzky A, Wattad N, Hazan E. Brief Report: Cannabidiol-Rich Cannabis in Children with Autism Spectrum Disorder and Severe Behavioral Problems - A Retrospective Feasibility Study. *Journal of Autism and Developmental Disorders*. 2019; 49(3):1284-1288.
7. Aran A, Eylon M, Harel M, Polianski L, Nemirovski A, Tepper S, *et al*. Lower circulating endocannabinoid levels in children with autism spectrum disorder. *Molecular Autism*. 2019; 10:2.
8. Cernovsky Z, Elias R. Case Reports of Successful Management of Pain by One to One Ratio of Cannabidiol with Tetrahydrocannabinol. *Archives of Psychiatry and Behavioral Sciences*. 2018; 1(2):34-36.
9. Elias R, Raheb M, Mekhaieel D, Cernovsky Z, Sidhu G, Warren D, *et al*. Use of Pharmaceutical Analgesics Versus Cannabis or Cannabidiol-Tetrahydrocannabinol Oils to Reduce Pain. *Archives of Psychiatry and Behavioral Sciences*. 2018; 1(2):37-40.
10. Sidhu G, Elias R, Warren D, Raheb M, Mekhaieel D, Cernovsky Z, *et al*. Pilot Study of Patients Who Attempt to Stop Opiate Substitutes with Cannabidiol/Tetrahydrocannabinol. *Archives of Psychiatry and Behavioral Sciences*. 2019; 2(1):22-24.
11. Cernovsky ZZ, Litman LC. Case Studies of Analgesic Cannabinoid Use by Persons with Chronic Pain from Car Accidents. *Open Science Journal of Psychology*. 2019; 6(1):1-4.
12. Hoehn M, Yahr M. Parkinsonism: onset, progression and mortality. *Neurology*. 1967; 17(5):427-42.
13. Zuardi AW, Cosme RA, Graeff FG, Guimaraes FS. Effects of ipsapirone and cannabidiol on human experimental anxiety. *Journal of Psychopharmacology*. 1993; 7:82-88.

14. Linge R, Jimenez-Sanchez L, Campa L, Pilar-Cuellar F, Vidal R, Pazos A, *et al.* Cannabidiol induces rapid-acting antidepressant-like effects and enhances cortical 5-HT/glutamate neurotransmission: role of 5-HT receptors. *Neuropharmacology*. 2015; 103:16-26.
15. Pereira KG, Peres MA, Iop D, Boing AC, Boing AF, Aziz M, *et al.* Polypharmacy among the elderly: a population-based study. *Revista Brasileira de Epidemiologia. Brazilian Journal of Epidemiology*. 2017; 20(2):335-344.