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Medicinal Cannabis: How Cannabinoïds Can Help Treating ADHD?

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This work is a review of the **Endocannabinoid System** (ECS) implication in ADHD. It reports two European cases, sample of the growing number of Medicinal Cannabis (MC) recommended/prescribed for the treatment of ADHD cases.

Scientific studies have demonstrated a relation between cannabinoïd receptors (CB1, CB2), endocannabinoids (Anandamide, 2-Arachidonylglycerol), the **Central Nervous System** and the **Neuro-immune System**[12]. CB1 receptors, abundant in the brain, interact with the **Dopaminergic System**[34567]. Genetic studies found a correlation between Cannabinoïds Receptors Gene and ADHD[8]. Regarding behaviour, CB1 are possible targets to reduce hyper-impulsivity[910], Tourette Syndrome tics[11], fears[1213], anxiety[1415] and improve emotional learning (synaptic plasticity[16]) and distractibility[1718]. The neuro-chemical mechanism of action is **Retrograde Signaling Inhibition**[19]**.** This is dopamine mediated. An increase in unbound cannabinoid levels leads to cannabinoïds replacing dopamine bound to dopamine transporters binding sites. With more dopamine available to slow down the speed of neurotransmission there are fewer, slower moving neural inputs and the cerebral cortex has a better opportunity to focus and attend to the neural stimulation.

Cannabinoïds are accepted by many cannabinoid medicine specialists for treating ADHD. Two patients, from **Luxembourg** (52, retired policeman) and **France** (35, engineer), had the opportunity to experiment MC therapy with Dutch products[20], available in pharmacies since 2005. Both report an improvement of their condition and chronic symptoms (distractibility, agitation, alcoholism, depression, anxiety, obsessive/suicide thoughts), without unacceptable side effects. CBD, no-psychoactive cannabidiol, was found necessary to reduce anxiety and adverse dronabinol effects[21] (**dronabinol/CBD ratio**: 1/1-3/1). MC therapy was considered complementary to psychotherapy.

Both clinical experience, particularly in California, and scientific data suggest that targeting ECS with exocannabinoïds is an exciting new alternative to treat ADHD. Many doctors, who have experience with patients, recommend cannabinoïds for ADHD[22]. **Further clinical studies** are required to investigate this new field.

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