Medicinal Cannabis: How Cannabinoids Can Help Treating Attention Deficit / Hyperactivity Disorder (ADHD)?

L. B. 1, Strasbourg, F67000, France

N. W. 1, Hautbellain, L9943, Luxembourg

David Bearman, Patients Out of Time Advisory Board, Goleta, CA93117, USA

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 cannabinoid receptors (CB1, CB2), endocannabinoids (Anandamide, 2-Arachidonylglycerol), the Central Nervous System and the Neuro-immune System. CB1 receptors, abundant in the brain, interact with the Dopaminergic System2. Genetic studies found a correlation between Cannabinoids Receptors Gene and ADHD3. Regarding behaviour, CB1 are possible targets to reduce hyper-impulsivity4, Tourette Syndrome tics, fears, anxiety5 and improve emotional learning (synaptic plasticity6) and distractibility7. The neuro-chemical mechanism of action is Retrograde Signaling Inhibition8. 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.

Cannabinoids 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, 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 (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 exocannabinoids is an exciting new alternative to treat ADHD. Many doctors, who have experience with patients, recommend cannabinoïds for ADHD. Further clinical studies are required to investigate this new field.

1 Patients Members of the International Association for Cannabis as Medicine (IACM)
4 The Neuropharmacology of Impulsive Behaviour, T. Pattij et. al., Trends in Pharmacological Sciences Vol.29 N°4 (Special issue : Pharmacology in The Netherlands) 192-199
7 Cannabinoids Improve Symptoms of ADHD, Strohbeck-Kuehner et. al., Cannabinoids 2008;3(1):1-3