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Cannabis use in autism spectrum disorders

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Abstract: New research insights shedding light on cannabinoids and terpenes have expanded therapeutic options and considerations for the autism (ASD) patient population. We present the rationale for cannabinoid and terpene formulations in clinical practice. We formulated a cannabinoid enriched blend of cannabigerol (CBG), cannabinal (CBN) and Cannabidivarin (CBDV) and will provide clinical insights on its anecdotal efficacy in patients with ASD. CBG appears to be a very potent agonist at the α -2 adrenoceptor. Pharmacologic receptor agonists for α -2 are used to treat a variety of neuropsychiatric conditions including ADHD. In addition, contrary to CBD, CBG appears to have antagonistic effects on the 5-HT_{1A} serotonin receptor system. Antagonists for this receptor are pharmacologically used in cases of schizophrenia. CBG exhibits stronger affinity to the PPAR γ receptor than D δ -THC and CBD, a promising target for metabolic disorders as well as (neuro-)inflammation. Finally, CBG has been studied for the tissue recovery rate in colitis, making it an attractive choice for the 90%+ rate of gastrointestinal dysbiosis in ASD. CBN was found to have higher antioxidant activity than D δ -THC and CBD, likely due to its more rigid and stiffer structure favoring a more spatial arrangement for free radical scavenging processes. CBDV shows a micromolar potency as inhibitor of diacylglycerol lipase α (DAGL α), the main 2-AG biosynthetic enzyme, possibly suggesting that it could indirectly affect cannabinoid receptor signaling via modulation of 2-AG tone, hence creating interest to further explore its therapeutic potential in recent reviews for its role in epilepsy and ASD.