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Abstract

Neurocognitive and Neurological Interactions of Cannabis in Schizophrenic Patients

Understanding the impact of acute and long-term use of cannabis on the brain is crucial because of the high increase in recreational and prescribed use of cannabis. Cannabis may have different neurological and neurocognitive influences and effects on symptomology in schizophrenic individuals compared to neurotypicals. This means cannabis may have medicinal properties for schizophrenic patients as a potential substitute for antipsychotic drugs. However, the plant may also contain potential hazards to schizophrenic individuals self-medicating with cannabis. To understand how cannabis works with the schizophrenic brain, we must understand cannabis' influence on a neurotypical brain. With this knowledge, we can identify the areas of the brain that are influenced and if these systems' interactions with cannabis contribute to worsening schizophrenic symptoms. Methods of functional magnetic resonance imaging (fMRI), positive and negative symptoms scale (PANSS) testing, neurocognitive testing, toxicology testing to identify tetrahydrocannabinol (THC) levels in the blood, and other psychiatric evaluations were used to identify brain morphology, specific brain region activity, and symptom severity. Results show that THC affects the brain by decreasing brain activity, which can potentially increase positive symptoms of schizophrenia, specifically temporal lobe and cerebral cortex functioning. An increase in anxiety symptoms was also observed, which could be a co-occurring behavior due to the positive symptom increase. However, cannabidiol (CBD) showed increased brain activity and decreased schizophrenic symptoms, which can potentially provide antipsychotic effects. Schizophrenic patients who are using cannabis may consider only using CBD for its antipsychotic effects, as THC may increase the positive symptoms of schizophrenia.