Neurocognitive and Neurological Interactions of Cannabis in Schizophrenic Patients

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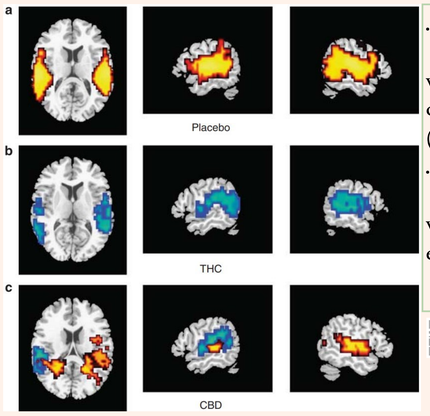
Introduction

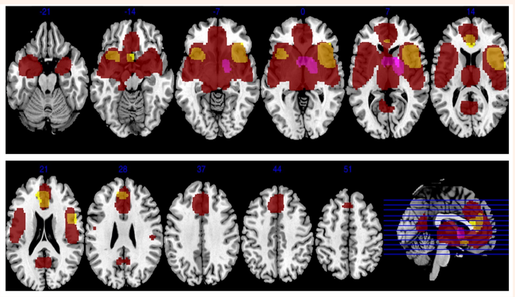
This is a systematic review for understanding the neurological and neurocognitive effects on individuals diagnosed with schizophrenia. As those with schizophrenia have positive symptoms of hallucinations and delusions with negative symptoms that reflect in their emotions, they are more prone to the side effects of recreational / self medicating drug use that may increase their symptomology. These patients may also self medicate because both generations of antipsychotics have no significant effect on their symptomology. In this review I will be referring to "healthy individuals" (those without schizophrenia) as neurotypicals.

THC & CBD Effects on Neurotypicals Neurocognition & Neurology



- ***THC (Δ-9-Tetrahydrocannabinol)***
  - Increased activation in both auditory and visual processing, effect was acute induction of psychosis positive symptoms of *PANSS* (Positive And Negative Syndrome Scale) test.
- ***CBD (Cannabidiol)***
  - Decreased activation in both auditory and visual processing, effect of antipsychotic properties for positive symptoms of *PANSS* test.

Gray Matter Differences in Schizophrenia vs Neurotypicals



- Gray matter decrease (red)
- Gray mater increase (purple)

Objective

- To understand what components of cannabis effect neurocognition and neurology in schizophrenic patients.
- Identify if a component in cannabis has potential use for treatment of Treatment Resistant Schizophrenic patients.

Results of Schizophrenia Patients

Cannabis & Neurocognitive & Neurological Interactions

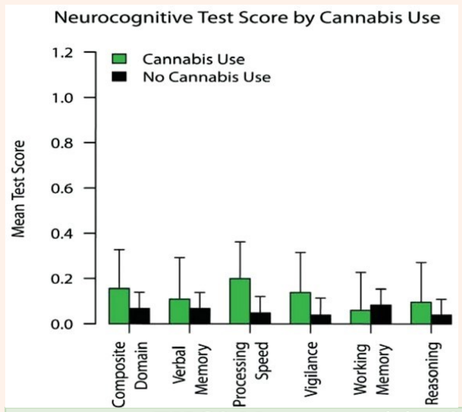
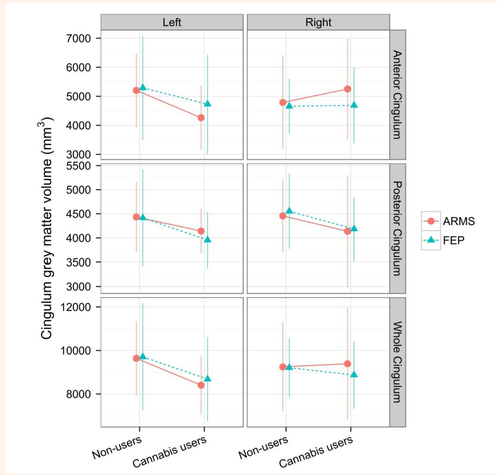


Figure 1 A: Schizophrenic cannabis users showed a significant increase in neurocognitive skills except for working memory which was consistent results of other studies.

Figure 1 B: Schizophrenic cannabis users were prone to a decrease in grey matter volume compared to non-users.



THC & Neurocognitive & Neurological Interactions

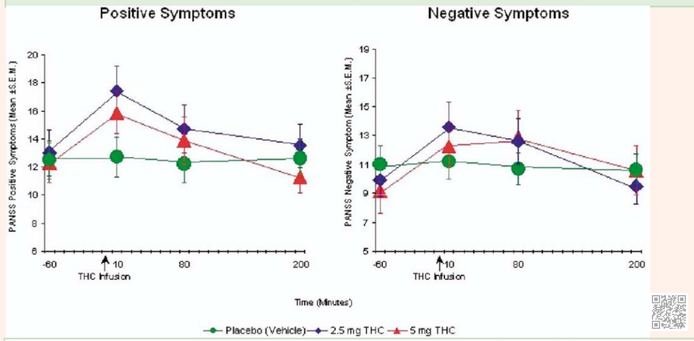


Figure 2 A: Neurocognition was effected by THC significantly by increasing positive and negative symptoms of psychosis, calculated by PANSS testing.

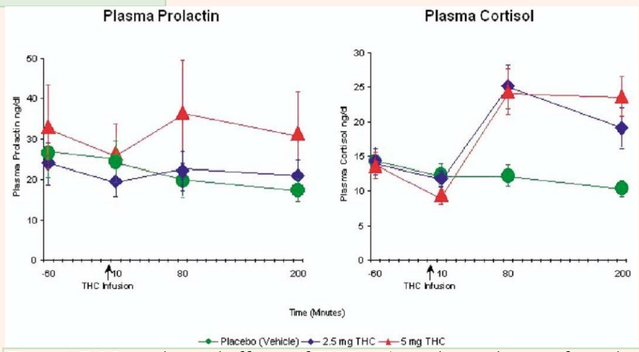
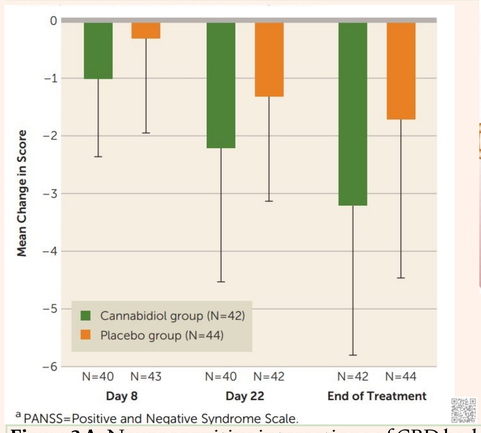


Figure 2 B: Neurological effects of THC at 5 mg showed a significantly increased levels of prolactin (in association to increased dopamine production) and cortisol.

CBD & Neurocognitive & Neurological Interactions



[a] PANSS=Positive and Negative Syndrome Scale.

Figure 3 A: Neurocognitive interactions of CBD had significant decrease in PANSS scores for positive symptoms of psychosis. No significant difference was found in the PANSS scores of negative symptoms.

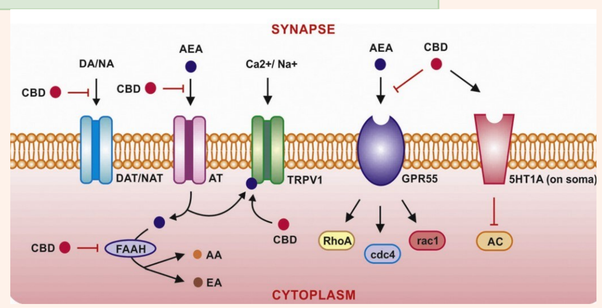


Figure 3 B: The neurological interactions of CBD creates an antipsychotic effect. This is the inferred mechanism of how CBD may create this effect.

Summary

To conclude, THC and CBD have differing effects neurocognitively and neurologically for Schizophrenic patients. Where THC creates an increase in psychosis symptomology and CBD creates an antipsychotic effect. Due to CBD's antipsychotic effects this gives potential for antipsychotic treatment for Treatment Resistant Schizophrenic patients.