Effects of Cannabis Abstinence on Clinical Symptoms and Cognition in Individuals with Major Depression

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BACKGROUND & RATIONALE

•Major Depressive Disorder (MDD) affects 5% of the Canadian population and is the leading cause of disability worldwide [1].

•Individuals with mental illness (e.g. MDD) are prone to higher rates of cannabis use and cannabis use disorder (CUD) [2].

•Frequent cannabis users are up to four times more likely to develop depressive symptoms [3,4].

•The aim of this study is to determine the effects of 28-days of cannabis abstinence on a patient population with comorbid MDD and CUD, based on a contingency reinforcement paradigm [5,6].

OBJECTIVES:

Primary Objective: to examine whether a 28-day abstinence period from cannabis will produce any changes in depressive symptoms in patients with moderate MDD and comorbid CUD;

Secondary Objective: to identify any cognitive changes throughout the abstinence period;

Exploratory: to examine the effects of cannabis abstinence on anxiety, anhedonia, and sleep quality.

HYPOTHESES:

Primary Hypothesis: 28-days of cannabis abstinence will reduce depressive symptoms;

Secondary Hypothesis: 28-days of cannabis abstinence will improve cognition;

Exploratory Hypothesis: 28-days of cannabis abstinence will reduce symptoms of anxiety, anhedonia, and improve sleep quality.

METHODS

- 28-day cannabis abstinence paradigm in participants with comorbid MDD and CUD (N=30).
- Continued abstinence will be assessed with weekly urine toxicology tests (NarcoCheck THC PreDosage test).
- Behavioural coaching will be held to provide additional support and motivation towards abstaining.
- Successful abstinence will be rewarded with a $300 contingent reinforcement at Day 28. There will be a one-month follow-up session as well.

Primary Outcome: Depressive symptom scores on the Hamilton Depression Rating Scale (HDRS) and the Beck Depression Inventory (BDI-II).

Secondary Outcome: Cognitive measures including domains such as verbal learning (assessed using HVLT-R), response bias (PRT), working memory (SDR).

Exploratory Outcome: Anxiety symptom scores on the Beck Anxiety Inventory (BAI), anhedonia subscores on the HDRS, and sleep quality based on the Pittsburgh Sleep Quality Index (PSQI).

Statistical Analysis: A repeated measures ANOVA will be used to determine Abstinence Status (Abstainer vs. Relapser) x Time (Baseline and Day 28) effects on each of the above mentioned outcome measures.

STUDY DESIGN

Figure 1. Study Design

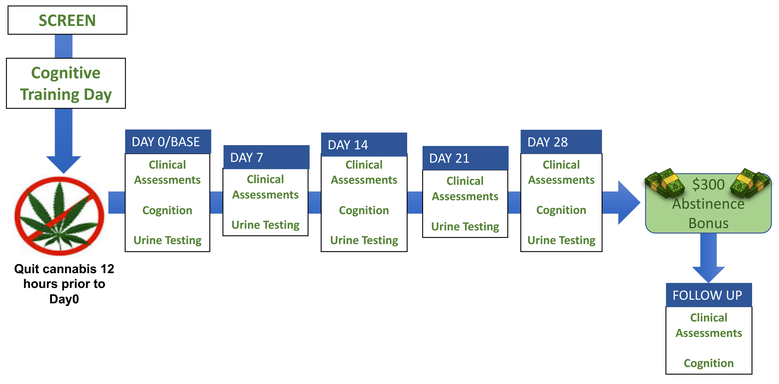


Figure 2. HVLT-R Sample

	Learning Trials			
	Trial 1	Trial 2	Trial 3	Delayed Recall
Drum				
Husky				
Guitar				
Pear				
Pug				
Piano				
Apple				
Beagle				
Orange				
Harmonica				
Poodle				
Banana				
	___/12	___/12	___/12	___/12

Delayed Recognition			
1. Bulldog*	Y N	5. Peach*	Y N
2. Window	Y N	6. POODLE	Y N
3. GUITAR	Y N	7. Hotel	Y N

Figure 3. NarcoCheck THC Test

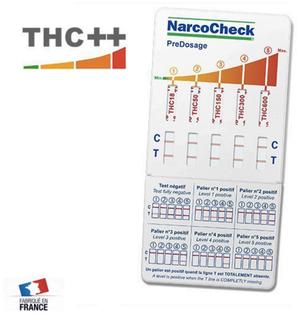
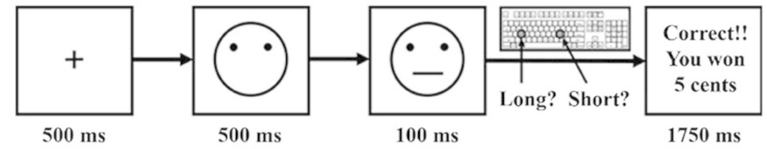


Figure 4. PRT Sample



SIGNIFICANCE

- The results of this study may better inform the psychological mechanisms that have lead cannabis use to be associated with depressive symptoms, e.g. reward learning deficits.
- Given pending legalization of cannabis in Canada, it is critical that researchers investigate specific effects that cannabis has on vulnerable populations such as MDD, to better prepare for potential impacts and minimize burdens on functional outcomes.

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