

## Adverse Effects of Cannabinoid Use in Parkinson's Disease and Parkinsonism

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There are conflicting reports of the effect of cannabinoids (inhaled marijuana and oral cannabis extracts combining variable amounts of THC and CBD) on symptoms of Parkinson's disease and parkinsonism (multiple system atrophy, progressive supranuclear palsy, corticobasal syndrome). For example, there are some claims of improvement in tremor or drug-induced dyskinesic (involuntary) movements. However, there is little good scientific evidence to support these claims. Furthermore, all cannabinoids have adverse effects that may be detrimental to people with Parkinson's. Due to the widespread interest of our patients and their families in cannabinoids, the lack of good evidence that these agents are effective in controlling symptoms, and our concern that people are ignoring the wide array of possible side effects, which we believe largely outweigh the potential benefits in most patients, we provide a list of the adverse health effects of cannabinoids below:

### **Non-Neurological Effects of Cannabinoids:**

#### Inhaled Marijuana:

- Respiratory:
  - Bronchitis, asthma, cough
  - Increased risk of lung cancer
- Cardiovascular:
  - Heart attack
  - Stroke
  - Vasculitis
- Possible increased risk of cancers of the oral cavity, throat, esophagus

#### Inhaled and Oral Cannabinoids:

- Cardiovascular
  - Increased heart rate
  - **Decreased blood pressure\***
  - **Fainting\***
- Immune system:
  - Suppression (risk of infection)
  - Increased inflammation
- Reproduction
  - Potential harm to fetus
  - Decreased male fertility
  - Passes into breast milk
- Gastrointestinal
  - Nausea
  - Cannabis hyperemesis syndrome (vomiting)

### **Neurological Effects of Cannabinoids:**

#### Acute effects of Cannabinoids:

- Cognition: Impairments of
  - **Short term memory\***
  - **Attention\***
  - **Executive functioning\***
  - **Visual perception\***
- Mood:
  - **Anxiety\***, panic attacks
  - **Depression\***
  - Suicidal ideation
- Psychiatric / Behavioral:
  - **Hallucinations\***
  - **Fatigue\***
  - **Drowsiness\***
  - **Low motivation\***
  - **Psychosis\*** (e.g., paranoid thinking)
  - Feelings of intoxication
- Psychomotor:
  - **Impaired driving\***
  - Increased weakness
  - 'Zombie'-like state

#### Potential permanent effects of Cannabinoids:

- **Psychosis\***
- Developing schizophrenia or bipolar disorder
- **Dependence or addiction\***
- Stroke or brain hemorrhage

\* People with Parkinson's disease and parkinsonism commonly experience these symptoms even before using cannabinoids, and therefore may be more susceptible to these adverse effects.

#### Sources:

The therapeutic potential of cannabinoids for movement disorders. Kluger *et al.* Movement Disorders, 2015;30.

Adverse health effects of marijuana. Volkow *et al.* New England Journal of Medicine, 2014;370.

Systematic review: Efficacy and safety of medical marijuana in selected neurologic disorders. Koppel *et al.* Neurology, 2014;82.