Perceiving Parkinson's

Nicotine, Caffeine, And Marijuana Compounds (Day 84)

There are numerous supplemental therapies out there with the potential to improve symptoms in Parkinson's. The scientific data on most of these therapies is in its early days, but anecdotally, some people swear by them. We shall now discuss three of the most widely available of these supplemental therapies - nicotine, caffeine, and marijuana compounds.

Nicotine

Many large epidemiological or "association" studies show that smokers are **30%** less likely to develop Parkinson's compared to people who have never smoked. Cigarette tobacco contains thousands of chemicals, each of which could be responsible for a protective effect, but the evidence from animal studies points to the active compound being **nicotine**, a stimulant primarily harvested from the leaves of the cultivated tobacco plant, *Nicotiana tabacum*. It is not known how nicotine might protect against Parkinson's; perhaps it alters the gut microbiota and lessens gut inflammation, or increases the production of detoxifying enzymes, or stimulates dopamine release by the brain. Nobody knows.

The cultivated tobacco plant, *Nicotiana tabacum*.

To date, only one observational study has shown evidence that nicotine can improve motor symptoms in people with Parkinson's. In 2007, the French neurologist Gabriel Villafane and colleagues published a very small study in which six people with Parkinson's were subjected to extremely high doses of nicotine, delivered using a transdermal patch, over 17 weeks. The participants experienced **improved motor symptoms**, allowing them to reduce their dopaminergic oral medications. Unfortunately, most of the participants also developed frequent nausea and vomiting over the course of the study.

Since transdermal patches are widely available and easy to wear, nicotine transdermal therapy is an appealing potential method for improving Parkinson's. Still, better evidence is needed. Fortunately, the results of a large randomized controlled study, the NIC-PD study, may be released this year - keep an eye out for the results of that study.

Caffeine

Many large epidemiological studies also show that coffee drinkers are **30%** less likely to develop Parkinson's compared to people who do not drink coffee. Since decaffeinated coffee has no protective effect, the active compound may be **caffeine**, a stimulant primarily harvested from the "beans" of the plants *Coffea arabica* and *Coffea canephora*. Like nicotine, it is not known how caffeine might protect against Parkinson's; perhaps it alters the gut microbiota and lessens inflammation, or prevents programmed cell death, or prolongs dopamine release by the brain. Nobody knows.

Most of the world's coffee production comes from this plant, *Coffea arabica*.

There is some evidence that caffeine can improve motor symptoms in people with Parkinson's. The best study was a randomized controlled trial published in 2012 by the Canadian neurologist Ronald Postuma and colleagues, in which 61 people with Parkinson's were randomized to caffeine supplements or placebo for six weeks. The participants in the caffeine supplement group experienced **improved motor symptoms**, with no increase in action tremor (which might be expected in people taking a stimulant such as caffeine). Adverse effects were the same in both groups.

Since coffee is one of the most widely consumed drinks on the planet, caffeine therapy is an extremely appealing potential method for improving Parkinson's. Yet again, better evidence is needed. Larger randomized controlled studies are underway.

Marijuana Compounds

Natural marijuana is derived from the dried flowers, leaves, stems, and seeds of the plant *Cannabis sativa* and has been used to treat disease since ancient times. Natural marijuana contains over 100 unique compounds, the two major ones being cannabidiol (CBD) and tetrahydrocannabinol (THC); **CBD** contains anxiolytic properties, whereas **THC** contains analgesic and muscle relaxing properties.

Natural marijuana is derived from this plant, *Cannabis sativa*.

The evidence for marijuana compounds in Parkinson's is still in its infancy. To date, the best study was an observational study performed in 2014 by the Israeli researcher Itay Lotan and colleagues, in which 22 people with Parkinson's were tested at baseline and 30 minutes after smoking marijuana. The participants in this study experienced **improved motor symptoms** as well as **improved sleep and pain** scores. No significant adverse effects were observed.

One major problem with Lotan's study is that while immediate improvements were noted, it was far too short to describe the potential side-effects associated with long-term, repeated exposure to marijuana compounds. When levodopa first arrived in the 1960s, it seemed like magic in many people with Parkinson's, but after several years of repeated exposure to levodopa, the motor fluctuations and dyskinesias emerged. Now, marijuana compounds also seem like magic in some people with Parkinson's, yet other studies suggest that long-term, repeated exposure to marijuana compounds is associated with **reduced cognitive functioning** (reduced attention, processing speed, and memory) and **schizophrenia-like illnesses** (psychoses, lack of motivation, and inability to feel pleasure in normally pleasurable activities). Until these long-term risks are further delineated, it is unlikely that marijuana compounds will be routinely prescribed for people with Parkinson's.

To sum up, nicotine, caffeine, and marijuana compounds each hold their own amount of promise as a treatment for Parkinson's. The scientific evidence for these therapies continues to build, but it has not yet reached a point where any of them can be strongly recommended. With time, that may change.

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References

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