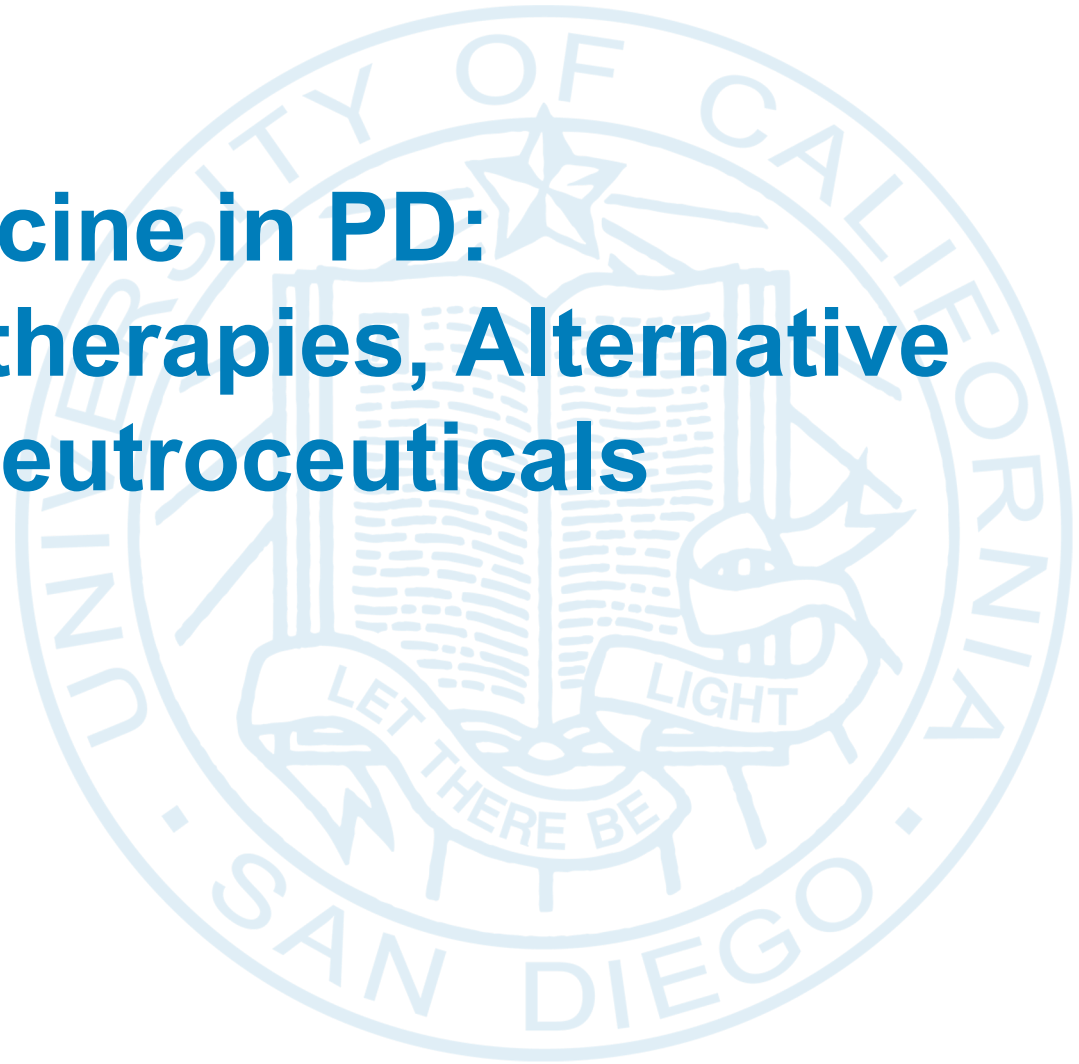


UC San Diego Health

Alternative Medicine in PD: Complimentary therapies, Alternative therapies, and Neuroceuticals

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December 1, 2021



Difference from Complimentary Therapies

- Google any form of Exercise in Parkinson's (27M+ hits)
- It works
- Discussions are ongoing regarding aerobic needs, intensity, but
- **JUST DO IT!!**

Other Complimentary Therapies

- Massage
 - Benefits sense of well-being as well as motor symptoms
- Tai Chi
 - Meta-analysis suggests it improves motor function, depression, and QOL.
- Yoga
 - 8 week intervention suggests may reduce fall risk, improve postural instability, and functional and freezing of gait.
- Acupuncture
 - Meta-analysis suggests, that, when used with conventional therapies, it is superior to conventional therapy alone
 - Song et al 2017. The impact of Tai Chi and Qigong mind-body exercises on motor and non-motor function and quality of life in Parkinson's disease: A systematic review and meta-analysis. *Parkinsonism Related Disord* 41:3-13.
 - Puymbroek et al 2018. Functional Improvements in Parkinson's Disease Following a Randomized Trial of Yoga. *Evid Based Complement Alternat Med.* (online)
 - Lee and Lim 2017. Clinical Effectiveness of Acupuncture on Parkinson's Disease. *Medicine (Baltimore)*. 96(3): e5836)

Alternative Medicinal Agents

- Cannabis/Medical Marijuana
- Macuna puriens
- (Vit E, CoQ10, creatine, Uric acid)
- Blueberries
- Ginkgo
- Eastern herbal medicine



Cannabis: Why all the fuss?

- Marijuana contains compounds which affect CB1 and CB2 receptors
- CB1 receptors (and likely CB2) are reduced in PD

Medical Marijuana

- Cannabidiol and THC (Both are Cannabinoids)
- Separation is difficult, expensive and unregulated
- Whether there are effects seems to depend highly on the ratio of these agents, which include potentially 100+ compounds
- THC is long-acting, and accumulates, causing cognitive, balance issues, mood changes, double vision, and dizziness
- Also can interact with medications (because is metabolized by the liver)
- Dependency is possible

Medical Marijuana

- Small studies (n= 5-22 patients)
- Cannabis: 1 case series (smoked), 22 pts with substantial improvement in tremor and slowness
- Cannabinoids (Nabilone) with some improvement in dyskinesia
- At least 6 studies of similar compounds with no change
- 3 FDA approved products (Not for PD): Epidiolex (for Lennox Gastaut/epilepsy), Dronabinol (for appetite stimulation in cancer); Sativex (pain)
- Studies existing: PDF website: <https://parkinson.org/Understanding-Parkinsons/Treatment/Medical-Marijuana>; Consensus Statement: Parkinson's Foundation Consensus Statement on the Use of Medical Cannabis for Parkinson's disease (May 2020)
- Kluger et al (2015). The Therapeutic Potential of Cannabinoids for Movement Disorders. *Mov Disord* 30(3): 313-327.

Difference from Cannabidiol (CBD) from Hemp



- Hemp comes from Cannabis species
- Hemp contains <0.3% THC (versus marijuana, 20-25% THC)
- Hemp has other industrial uses (hemp rope, textiles due to strength)
- Growth of hemp fast, relatively inexpensive, and carbon neutral

Cannabidiol (CBD) versus Medical Marijuana (THC) evidence

- Human cannabidiol studies all come from single synthetic, highly purified source (THC Pharma in Frankfurt, Germany)
- All showed suggested reduction in neuropsychiatric features (psychosis, depression, QOL) with no change in motor symptoms

Macuna puriens

- Bean from Africa/Asia
- Seeds contain levodopa
- Multiple studies suggest it works, similar to levodopa
- Can cause dyskinesias at higher doses, long term
- Again, it is not regulated- and effects depend on brand (which in itself is not necessarily reliable)- and can be variable
- Cilia et al (2017). Macuna Puriens in Parkinson's Disease: A double-blind, randomized, controlled crossover study. *Neurology* 89(5): 432-438



Nutraceuticals formally studied

- Vitamin E (up to 800 IU)
 - Coenzyme Q10 (up to 2400mg)
 - Inosine (boosts uric acid levels)
 - Creatine (up to 2 g)
-
- All done as multi-centered, randomized, placebo- controlled trials
 - All negative on the effects on PD (no effect)
 - Note that high dose vit E (>400IU) is associated with increased risk of mortality; high dose creatine (>1g) can lead to kidney problems

Blueberries: The super food

- Phytochemicals (Flavonoids)
 - Fruit flies live longer
 - Alpha-synuclein mice lose less dopamine
 - MPTP mice do better in behavioral tasks
 - 6-OHDA rats do better behaviorally and with less dopamine loss
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- Jung and Kim (2018). Beneficial Effects of Flavonoids Against Parkinson's Disease. *J of Medicinal Food* 21 (5): 421-435.

Ginkgo biloba

- Another Flavonoid
- Can interact with medications including MAO-B inhibitors as well as others such as warfarin

Bananas and Fava Beans

- Contain levodopa
- $\frac{1}{2}$ cup of fava beans contains 50-100mg of levodopa
- 1 banana= 1-3mg of dopamine (in the pulp); 20-120mg in the peel

- (Remember, at most $\frac{1}{4}$ gets to your brain)

Chinese herbal medicine

- Some show evidence of synergistic effects
- Xifeng dingchen, *Banisteriopsis caapi* extract (a jungle vine which may act as a natural MAOI) demonstrated short-term motor benefits when compared to placebo
- *Qingxinhuatan tang* (a combination of 9 different plants and roots with various properties including anti-inflammatory and anti-oxidant effects) improved general symptoms of PD
- Kim et al 2012. Herbal Medicines for Parkinson's disease: A systematic Review of Randomized Controlled Trials. PlosOne 7(5): e35695.

To Summarize

- Complimentary Therapies, particularly exercise, have demonstrated benefits
- Alternative Medicines, including Cannabis, have at best very small case studies to suggest there may be benefits to symptoms
- Alternative Medicines, like pharmaceuticals, do have side effects and potential harm
- Further study is needed on agents such as Cannabis, along with regulation of dosing, to determine how to use them