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Parkinson's Disease Overview: Alternative Potential Curcumin Treatment, Current Treatment and Prevalence Among Ethnic Groups

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Parkinson ’s disease is a neurodegenerative disease characterized by the progressive loss of dopaminergic neurons in the Substantia Nigra of the Basal Ganglia and subsequent loss of dopamine in the brain. Dopamine plays a crucial role in motor coordination, memory and cognition; it’s decrease in PD therefore leads to dyskinesia, cognitive deficits, and depression. Formation of alpha-synuclein protein aggregates (Lewy bodies) causes further damage to the CNS. Various allopathic treatments are able to treat the symptoms of PD but are relatively ineffective at treating advanced stage PD. Current treatment options include dopamine precursors, inhibitors of dopamine metabolism, upregulators of autophagy, adenosine A2A antagonists and surgical intervention is a last resort. However, due to the progressive decrease in treatment efficacy as the disease progresses, an exploration of alternative treatments must be explored. Moreover, current epidemiological studies on the prevalence of PD among different ethnic groups indicate a disparity between Caucasians, Asians and African- Americans Notably, prevalence of PD in certain Southeastern Asian countries such as India is statistically lower than the occurrence in other countries. One common factor is the consumption of turmeric (Curcuma longa). Turmeric, an orange tuberous rhizome, has been used for centuries as a spice in curry dishes, as a dye for fabrics and in traditional medicine. Turmeric contains curcumin, a potent antioxidant, which has been presented as a hopeful candidate for neurodegenerative diseases. Curcumin has a range of neuro-protective properties including the ability to chelate with toxic metals and scavenge reactive oxygen species. In animal induced Parkinsonism studies, curcumin has shown significant protection of dopaminergic neurons. This was seen in both behavioral tests as well as nigro-striatal brain section imaging. From these experimental studies, we postulate that a combination of curcumin-based traditional medicine with allopathic medicine will improve the prognosis for Parkinson's disease. More research is needed in this area to determine if curcumin is primarily involved in prevention due to its neuroprotective effects vs its ability in neuroplasticity and damage recovery in treating PD. The pharmaceutical potential of curcumin in prevention and treatment of PD also needs to be further explored.

Key words: Curcumin, Parkinsons disease, dopaminergic