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Neuroprotection & Treatment of Parkinsonian Mice by *Mucuna pruriens* and *Withania somnifera*

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ABSTRACT: *Mucuna pruriens* (*Mp*) and *Withania somnifera* (*Ws*) are both traditional Ayurvedic herbs whose efficacy at treating neurodegenerative diseases and other neuronal deficits has been widely demonstrated. Both herbs act to strengthen the nervous system, enhance memory, slow brain-related aging and support the brain's ability to fight stressful situations. In particular, *Mp* contains L-dopa, the biological precursor to dopamine, which is currently used in allopathic medicine for the treatment of PD. Ws on the other hand, has potent free radical scavenging activity due to its high concentration of alkaloids and lactones. This enables Ws to protect the nigrostriatal region of the PD brain, which has been shown to be susceptible to oxidative damage and thought to be a major contributing factor to PD's pathology. In the maneb-paraquat (MB + PQ) model of PD in mice, Ws co-treatment improved PD-induced behavioral deficits, rescued dopaminergic neuron degeneration and had a potent antioxidant effect in the nigrostriatal region. Similar results were observed for *Mp* co-treatment with a PQ-induced model of PD. Further, the synergistic effect of both *Ws* and *Mp* was assessed in the PQ+MB model of PD and again, drastic improvements in all symptoms of PD were demonstrated. Finally, using an acute model of toxin-induced PD (MPTP) the efficacy of *Mp* was assessed in parallel with estrogen, a common allopathic treatment used for PD. It is clearly evident that traditional Ayurvedic herbs have the ability to treat, prevent and reverse the symptoms of the most debilitating neurodegenerative diseases and without the side-effects.

KEYWORDS: T Regulatory Cells; TB; Immune System.

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