# Assessment of the Neurological Effects of Withania somnifera and Resveratrol Using a Drosophila Model

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Drosophila melanogaster is an established model to study neurodegenerative diseases. During the early years of treatment, most patients with neurological disorders have a seamless response to tiny doses of medicine, but as the underlying condition worsens, treatment-related issues occur. After 3-5 years of medication, more frequent dosages are often required. This study aims to study the effects of Ashwagandha (Withania somnifera), a plant which has been shown to affect neurotransmitter levels and can be taken in smaller, less frequent doses while minimizing the unpleasant side effects of a pharmaceutical drug. Resveratrol is another plant-based compound and has been shown to improve cognitive function in people with Alzheimer's. It was hypothesized that the flies fed Ashwagandha and Resveratrol would outperform the flies fed in the control group on a climbing assay test and a modified associative learning test. The flies treated with the Ashwagandha had the most significant difference compared to the control when tested for motor function that measured negative geotaxis (p-value < .05). However, results did not show a statistical difference between the experimental and control groups for the modified associative learning test (p-value > .05). The results showed an improvement in motor function in the flies which supports the hypothesis that Ashwagandha has neuroprotective roles and can be of therapeutic utility. Treatment options for neurodegenerative illnesses are currently limited. However, because the Drosophila gene analyzed in this experiment is highly similar in humans, they can prevent neurodegeneration. Ashwagandha shows promise as a novel drug to treat diseases such as Parkinson's.

**Awards Won:**