

# NEUROPROTECTIVE POTENTIAL OF *DECALEPIS HAMILTONII*: A STUDY WITH TRANSGENIC A30P AND A53T $\alpha$ -SYNUCLEIN PARKINSON DISEASE MODEL OF *DROSOPHILA MELANOGASTER*

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Human neurodegenerative diseases such as Parkinson's disease (PD) and Alzheimer's disease (AD) are recognized clinically by dementia in aging populations. They are characterized by enhancement in oxidative stress and reduction in antioxidant defence mechanisms in neurons that result ultimately in neuronal death. Prevailing FDA approved drugs cannot cure or stop the progression of the disease. These drugs also cause many undesirable side effects. Since PD is a relentless disease without a cure, the need of the hour for these patients is to provide palliative care. Several promising drugs are being screened and the quest for discovery of new drugs continues. *Drosophila* serves as an ideal organism for high throughput screening of drugs due to possibility of generating neurodegenerative disease model and the rescue achieved by administering potential drug. Epidemiological data suggests that phytochemicals can protect the nervous system against degeneration. Based on the cytoprotective and neuroprotective properties of the extract from edible roots of *Decalepis hamiltonii* (Dh) in mammalian model and cells in culture, we investigated the neuroprotective potential of the extract by employing A30P and A53T  $\alpha$ -synuclein PD model of *Drosophila melanogaster*. The study revealed improvement in climbing ability, circadian rhythm of locomotor activity, antioxidant defences, protection against paraquat sensitivity and delay in the onset of PD like symptoms in Dh fed transgenic flies. In a separate line of investigations on *D. melanogaster*, we found that Dh feeding markedly enhances cognitive ability of aged flies and their offspring. To extend our investigations, we created transgenic human apolipoprotein E model of neurodegenerative disease to characterize and work with Dh. With the desirable properties, we foresee that the Dh cocktail could be a promising elixir of natural origin that can improve the life of patients suffering from neurodegeneration.

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