Dryocrassin attenuates 6-OHDA-induced dopaminergic neuron degeneration and improves α-synuclein accumulation, implication for Parkinson's disease therapy

陳玥米 [1], 傅如輝 [1]
Yue-Mi Chen[1], Ru-Huei Fu[1]

Graduate Institute of Immunology, China Medical University, Taichung 40402, Taiwan[1]

Parkinson's disease (PD) is a degenerative disorder of the central nervous system that is characterized by progressive loss of dopaminergic neurons in the substantia nigra pars compacta and motor impairment. Aggregation of α-synuclein in neuron plays a key role in this disease. At present, therapeutics for PD provide moderate symptomatic benefit, but is not able to delay the development of this disease. Current efforts for the treatment of PD are to identify new drugs that show slow or arrest progressive course of PD by interfering with a disease-specific pathogenetic process in PD patients. Dryocrassin is the tetrameric phlorophenone component derived from *Dryopteris crassirhizoma* Nakai (Aspiadaceae), which has been used for the treatment of inflammatory diseases in traditional Chinese medicine. The purpose of the present study was to assess the potential for dryocrassin to ameliorate PD in different models. Our data reveal that dryocrassin prevents α-synuclein aggregation in the yeast and transgenic *Caenorhabditis elegans* model and also improves dopaminergic neuron degeneration, food-sensing behavior and life-span in 6-hydroxydopamine-induced *Caenorhabditis elegans* model, thus indicating its potential as a candidate antiparkinsonian drug. Dryocrassin may exert its effects by increasing mTOR expression to block autophagic response and promoting *rpn-6* expression to enhance the activity of proteasomes in SH-SY5Y cell model. These findings encourage further investigation on dryocrassin, as possible potent agent for PD treatment.