PB-1

ACETYLCORYNOLINE, A POTENTIAL ANTI-PARKINSONIAN PHYTOCOMPOUND IN PHARMACOLOGICAL AND TRANSGENIC CAENORHABDITIS ELEGANS MODELS OF PARKINSON'S DISEASE

Ru-Huei Fu[1,2], *Shih-Ping Liu*[2,3], *Ya-Hsien Lin*[1], *Wen-Lin Chang*[1], *Horng-Jyh Harn*[2], *Woei-Cherng Shyu*[1,2], *Shinn-Zong Lin*[1,2,4,*]

[1] *Graduate Institute of Immunology, China Medical University, Taichung, Taiwan*
[2] *Center for Neuropsychiatry, China Medical University Hospital, Taichung, Taiwan*
[3] *Graduate Institute of Basic Medical Science, China Medical University, Taichung, Taiwan*
[4] *China Medical University Beigang Hospital, Yunlin, Taiwan*

Parkinson's disease (PD), the second most common neurodegenerative disease, impairs motor skills and cognitive function. To date, the disease has no effective therapies. The identification of new drugs that show benefit in slowing the decline seen in PD patients is the focus of much current research. However, the lengthy time frame for the progression of neurodegeneration in PD increases both the time and cost of examining potential therapeutic compounds in mammalian models. An alternative is to first evaluate the efficacy of compounds in *Caenorhabditis elegans* models, which reduces examination time from months to days. Acetylcorynoline is the major alkaloid component derived from *Corydalis bungeana*, a traditional Chinese medical herb. It has been shown to have anti-inflammatory properties, but no studies have yet described the effects of acetylcorynoline on PD. The aim of this study was to evaluate the potential for acetylcorynoline to improve PD in *C. elegans* models. In the present study, we used a pharmacological strain (BZ555) that expresses green fluorescent protein specifically in dopaminergic neurons and a transgenic strain (OW13) that expresses human α-synuclein in muscle cells to study the antiparkinsonian effects of acetylcorynoline. Our results demonstrate that in PD animal models, acetylcorynoline significantly decreases dopaminergic neuron degeneration induced by 6-hydroxydopamine; prevents α-synuclein aggregation; recovers lipid content, food-sensing behavior, and dopamine levels; and prolongs life-span, thus showing its potential as a possible antiparkinsonian drug. Acetylcorynoline exerts its effects by decreasing *egl-1* expression to suppress apoptosis pathways and by increasing *rpn5* expression to enhance the activity of proteasomes.