

## 2<sup>nd</sup> International Summit on **Clinical Pharmacy**

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#### **The effect of hippocampal and/or striatal injection of $\alpha$ -synuclein fibrils on novel object and novel place recognition**

Neurodegenerative disorders are commonly associated with disruptions in motor and/or cognitive functions. Dementia is a common symptom of Parkinson disease and cellular accumulations of  $\alpha$ -synuclein are a histological hallmark of that disorder. There are many animal models of Parkinson disease that utilize neurotoxins to destroy dopaminergic neurons that result in cognitive impairment but do not necessarily display  $\alpha$ -synuclein accumulation. There are also transgenic models that broadly express human  $\alpha$ -synuclein with resulting cognitive impairments. However, the differential effect of  $\alpha$ -synuclein fibrils in specific brain structures on cognitive functions in rats has not been elucidated. In a pilot study, male Sprague-Dawley rats were injected bilaterally in the hippocampus and/or dorsal striatum with  $\alpha$ -synuclein fibrils. Four to seven months later the animals were tested for cognitive function using novel object and novel place recognition paradigms. The results demonstrated a significant impairment of novel object recognition but not place recognition in rats injected in the dorsal striatum ( $P=0.01$ ) and a trend toward impairment of novel place recognition but not object recognition in animals injected in the hippocampus ( $P=0.06$ ). The results suggest that specific cognitive impairments in Parkinson disease may be related to the relative distribution of  $\alpha$ -synuclein in cortical structures.

#### **Biography**

David A Johnson is currently Professor of Pharmacology and Toxicology and the Division Head of Pharmaceutical Sciences of the Mylan School of Pharmacy and Graduate School of Pharmaceutical Sciences at Duquesne University, Pennsylvania. He received his PhD from the Massachusetts College of Pharmacy and Allied Health Sciences in 1990 majoring in Pharmacology with a minor in Neuroscience. Following the award of his degree, he was a Post-doctoral fellow in the laboratories of Dr. Bernard Lown at the Harvard School of Public Health and Dr. Richard J Wurtman at Interneuron Pharmaceuticals. His primary scholarly interests include cholinergic function in learning, memory and attention. He has authored over 50 publications in various areas of pharmacology, several book chapters and two patents. Most recently, he directed a clinical trial of the cognitive enhancing effects of an acetylcholine precursor and excitatory neuromodulators.

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