

# **Harmaline, a booster of alpha-synuclein amyloidogenesis**

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## **Abstract**

As an amyloid disease, Parkinson's disease is characterized by the presence of Lowy bodies inside the nerve cells. The bodies are mainly composed of alpha-synuclein amyloid aggregates, which are formed due to the abundance of or the mutations of the protein. In previous studies, it has been shown that harmaline, a small molecule present in *Peganum harmala* (Syrian rue) and from harmala alkaloids and beta-carbolines groups, has a potential for the amelioration of Parkinson's disease through the inhibition of monoamine oxidase-I (MAO-I) enzyme. In the present study, employing various methods, including circular dichroism (CD) spectroscopy, thioflavin T (ThT) fluorescence assay, and atomic force microscopy (AFM), we showed that harmaline can increase the risk of Parkinson's disease through accelerating alpha-synuclein amyloid aggregation *in vitro*.

## **Keywords**

Amyloid, Parkinson's disease, Low bodies, alpha-synuclein, Harmaline