

DBT/ Regional Centre for Biotechnology

Identification of a novel amyloidogenic protein in Parkinson's disease

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New Delhi, March 12: Parkinson's disease (PD) is the second most common neurodegenerative disorder after Alzheimer's that affects more than 10 million people worldwide. PD symptoms develop slowly with the progression of age and patients suffer tremor, slow movements, shuffling gait and loss of memory.

Parkinson's disease is characterized by loss of dopaminergic neurons in the brain and the hallmark of this disease is associated with Lewy body pathology. Lewy body is composed of an aggregate of more than 500 proteins. Many of them are characterized as amyloids which have fibrillary structure. Many functional proteins are also entrapped with this aggregate and drive the disease pathology. The misfolded aggregates are neurotoxic and show prion behaviors. Despite many years' research, the mechanism of LB formation has not been well elucidated. Moreover, how all these LB proteins contribute to the Parkinson disease mechanism, is the interest of many researchers. Our group has identified the amyloidogenic potential of Otubain-1 (OTUB1) which is a constituent of LB. We have demonstrated that amyloid aggregates of OTUB1 are highly toxic to the neuronal cells. The extracellular amyloid aggregates also induce the expression of phosphorylated α -synuclein in cell culture condition and mouse model. Our study demonstrated OTUB1 as a regulatory protein in Parkinson's disease pathology.

The paper has been published in Journal of Biological Chemistry with details as below:

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