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IIT Mandi makes new discovery for treating Alzheimerâ??s disease

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Show the possible role of signal peptide aggregation on Alzheimerâ??s disease



A research team from the Indian Institute of Technology (IIT) Mandi led by Dr Rajanish Giri, Associate Professor, School of Basic Sciences, IIT Mandi, have discovered an important biomolecular mechanism for the formation of protein clusters/aggregates that are often seen in Alzheimer's disease.

They have shown that signal peptide of the Amyloid Precursor Protein (APP) can co-aggregate with Amyloid beta peptide (*A*?42). This A?42, known for the pathogenesis of Alzheimer's disease, is a most common form of dementia that slowly destroys memory and other important mental functions.

Dr Giri said, "In Amyloid precursor protein, so far only A? region was known to form toxic aggregates. Here, we discovered that signal peptide of Amyloid precursor protein not only forms cell-killing aggregates but also enhances the aggregation of *A*?42 peptide, under in-vitro conditions."

The inter-institutional team comprising researchers from IIT Mandi, University of Cambridge, UK, and University of South Florida, USA, studied the aggregation pattern of a signal peptide of the APP. They found that the signal peptide of APP protein after being cut-off, now called APP1–17SP, is associated with Alzheimer's disease-associated peptide *A*?42 and forms aggregates with higher toxicity.

"The study will help in future research that could provide the relation of other signal peptides to disease pathogenesis," said Dr Giri on the future implications of this work.

Image caption- Dr Rajanish Giri, Associate Professor, School of Basic Sciences, IIT Mandi