Researchers at the University of South Florida have developed a new methodology to synthesize a collection of proteins. Using this methodology, a novel molecule that effectively inhibits and removes Aβ protein aggregates seen in Alzheimer’s disease (AD) was identified.

It is of high significance to identify novel inhibitors of Aβ protein aggregates for the treatment of AD. A collection of many molecules allows the identification of molecules (or ligands) that specifically recognize other proteins of interest. These ligands are invaluable tools because they can then be used as biomarkers in imaging or used as potential drug candidates. However, the progress of unnatural ligand libraries are behind due in part to no effective approach to achieve a vast collection and the limited availability of starting compounds.

USF researchers have developed an unnatural ligand library that allows many ligands to be synthesized at high efficiency and ease. Using this approach, a small molecule was identified that targeted the Aβ aggregation seen in AD. This small molecule specifically disassembled Aβ40 aggregation and also removed the toxicity of Aβ42 aggregates in neuroblastoma cells. Due to the lack of current drug treatments that target the pathology of AD, this novel approach and compound has great potential for the early diagnosis, prevention and cure of AD.

**ADVANTAGES:**

- Novel approach shortens the time of protein synthesis
- Molecule prevents protein aggregation
- Preferentially targets Aβ protein in Alzheimer’s disease

**Drug Candidate for Alzheimer’s Disease**

The novel molecule HW-155-1 effectively inhibits Aβ40 protein aggregation at different dosages.

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