Methods of Synthesizing γ-AApeptides and Libraries to Inhibit Aβ Protein Aggregates

Researchers at the University of South Florida have identified γ-AApeptides, building blocks, libraries and peptide inhibitors to inhibit the toxicity of Aβ protein aggregates towards N2a neuroblastoma cells, as well as methods and compounds for treating Alzheimer’s disease.

One important goal in modern biomedical science is to identify molecular ligands that recognize peptides or proteins of interest with high specificity and affinity. These ligands can be used as biological tools, such as biomarkers for protein purification, detection and imaging. They may also be used as potential drug candidates for therapeutic development and to facilitate novel molecular probes. Unnatural peptidomimetic ligand libraries or databases are crucial regarding drug design as these libraries help to develop ligands that are diverse and exhibit enhanced stability against proteolysis. However, the progress regarding the development of ligand libraries is slow due to inefficient methods and a limited availability of starting compounds.

USF researchers have developed an efficient method of making and screening a γ-AApeptide library. This screening method can identify ligands to a target compound, which is helpful in the identification of new molecular probes and drug candidates. Furthermore, this technology also includes a method of protein synthesis that allows many ligands to be synthesized easily and efficiently. Also developed were methods of inhibiting the toxicity of Aβ aggregates towards N2a neuroblastoma cells, as well as methods and compounds for treating Alzheimer’s disease and other neurodegenerative diseases that exhibit Aβ protein aggregates.

ADVANTAGES:
- Aβ protein aggregate inhibition
- Protein synthesis time is shortened
- Multiple ligands can be synthesized
- Applicable towards multiple diseases

A Novel Drug Candidate to Treat Alzheimer’s Disease and Neuroblastomas

The Novel Molecule HW-155-1 Effectively Inhibits Aβ40 Protein Aggregation at Different Dosages

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