Blocking formation of toxic plaques implicated in type 2 diabetes

September 10 2007

Amid growing evidence that the same abnormal clumping of proteins in Alzheimer's disease also contributes to type-2 diabetes, scientists in New York are reporting discovery of a potent new compound that reduces formation of those so-called amyloid plaques. Their study is scheduled for the Sept. 5 issue of the *Journal of the American Chemical Society*.

The report cites evidence correlating increases in amyloid formation in the pancreas with increases in severity and rate of progression of type-2 diabetes, which affects almost 20 million Americans and is rapidly rising worldwide. Deposits of the abnormal protein damage and destroy insulin-producing "islet" cells in the pancreas. Researchers have been seeking potential new medicines that block formation of an abnormal, misfolded protein called islet amyloid polypeptide (IAPP), which may play a key role in the cell destruction.

In the new study, Daniel Raleigh, Andisheh Abedini and Fangli Meng found that changing a single amino acid in human IAPP's structure transformed it from one of the most potent amyloid-forming substances into a powerful inhibitor of amyloid formation. In laboratory studies, they showed that the mutant IAPP significantly reduced the amount of amyloid formed.

n addition to opening the door for better IAPP inhibitors in type-2 diabetes, the findings provide potentially important insights into the formation and treatment of amyloid plaques in Alzheimer's disease, Parkinson's disease, and other conditions, the researchers say.

Source: American Chemical Society