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Saber Elaydi* (selaydi@trinity.edu), One Trinity Place, San Antonio, TX 78212. *A Discrete Mathematical Model for the Aggregation of β -Amyloid*. Preliminary report.

Alzheimer's disease (AD) is an age-related, progressive degenerative disorder characterized by the loss of synapses and neurons from the brain. Monomers of β -Amyloid aggregates to form Oligomers and oligomers aggregate to form fibrils. Our study is based on the assumption that soluble β A oligomers are the causative agents of AD, due to their toxicity to neuron cells in the brain.

We develop a five-dimensional discrete mathematical model for the aggregation of monomers into oligomers. The model establishes a theoretical mechanism to reduce the production of oligomers. We provide conditions for the stability of the aggregation of β -Amyloid. A formula for the number of monomers that is required for the producing oligomers has been established. A mechanism to prevent monomers from aggregating to oligomers is proposed for practitioners in the field of Alzheimer Disease. This provides health providers a method for the prevention of Alzheimer Disease. (Received September 26, 2017)