Application of Neuroprotective Beta Amyloid Core Peptides and Peptidomimetic Derivatives to the Treatment of Alzheimer's Disease

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Technology description

Despite a notable role for amyloid and amyloid plaques in Alzheimer's disease, treatments aimed at lowering the levels of beta amyloid or disrupting amyloid plaques have had little or no impact on the disease. Using a novel approach, a core hexapeptide fragment derived from beta amyloid has been shown to be protective at the synaptic, cellular and behavioral levels against beta amyloid toxicity and is being used in this invention as a platform for deriving stabilized versions and peptidomimetics for prevention and treatment of Alzheimer's disease. The hexapeptide core beta amyloid fragment is non-toxic, potent as a neuroprotective agent in the pM to nM range, and likely functions by competing against beta amyloid either directly at the receptor(s) level and/or indirectly via intracellular signaling.

Background:
Alzheimer's disease is the 6th leading cause of death and currently costs over $250 billion in health care in the US. By 2050, it is projected that the number of individuals with Alzheimer's disease in the US will nearly triple to nearly 14 million. To date, there is no cure for the disease, or treatment to slow down its progress. The underlying pathology of Alzheimer's disease is well understood, involving beta amyloid forming dense plaques and abnormal tau protein disrupting nerve cell morphology and function, but attempts to reduce the pathology have not had an impact on the disease. Nonetheless, substantial evidence exists implicating elevated levels of soluble (diffusible) beta amyloid in neuronal toxicity, in conjunction with induction of abnormal tau, during the course of the disease. This invention is directed at blocking and/or reversing the effects of high levels of beta amyloid via the action of novel neuroprotective agents derived from beta amyloid itself.

Application area

• Prevention and treatment of Alzheimer’ s Disease

Advantages

- Offers the smallest necessary peptide sequence
- Preventative and therapeutic
- Non-cytotoxic
- Does not rely on creating an immune response

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