Secreted Beta-Amyloid Precursor Protein Cleavage Fragment as Diagnostic Marker of Neurodegenerative Disease

Technology #2015

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Alzheimer’s Disease (AD) Detection requires Earlier Diagnosis for Treatment and Therapy Alzheimer’s disease is the leading cause of neurodegenerative dementia, affecting over 35 million persons worldwide. The costs of care for this disease are enormous with direct healthcare costs estimated at $25 billion as well as indirect caregiver costs at $36.5 billion due to lost productivity. Unfortunately, few diagnostic tests currently exist which can detect early onset of this disease in order to provide better care and therapy. The diagnostic gold standard of Alzheimer’s disease currently requires brain tissue either through invasive intracranial procedure or post-mortem autopsy. New non-invasive diagnostic markers are thus needed for earlier diagnosis of this fatal disease in order to provide increased lead-time for treatment and therapy.

Diagnostic Marker for Alzheimer’s Disease through Non-Invasive Antibody Detection This technology demonstrates a novel diagnostic marker for Alzheimer’s disease through antibody detection of beta-amyloid precursor protein (bAPP) cleavage fragments in human cerebrospinal fluid (CSF). Alzheimer’s and other neurodegenerative diseases have been shown to be characterized by the increased expression bAPP in the brain. The methods are useful for detecting the presence of sAPPbeta, a secreted beta-secretase (BACE1) cleavage fragment of the bAPP in a biological sample or for detecting and/or quantifying beta-secretase (BACE1) activity in a biological sample. Primarily, the technology involves antibodies which are specifically selective for sAPPbeta. By quantifying levels of sAPPbeta which correlate with extent of neurodegenerative disease, a diagnostic test for Alzheimer’s can be performed. In addition, use of this assay can be also useful in other neurodegenerative diseases including amyotrophic lateral sclerosis (Lou Gehrig’s Disease), Binswanger’s Disease, corticobasal degeneration (CBD), dementia lacking distinctive histopathology (DLDH), frontotemporal dementia (FTD), Huntington’s chorea, multiple sclerosis, myasthenia gravis, Parkinson’s disease, or progressive supranuclear palsy (PSP).

Applications:
• Clinical diagnostic marker for Alzheimer’s Disease and other neurodegenerative diseases (see above)
• Research assay for sAPPbeta

Advantages:
• Noninvasive diagnostic test
• Directly measures cleavage product of bAPP which is strongly linked with Alzheimer’s disease


Licensing Status: Available for Licensing and Sponsored Research Support
Inventors

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