

Oxidative Stress and Neurodegeneration in Brain from Subjects with Alzheimer Disease: Role of Amyloid Beta-Peptide (1-42) and Insights from Redox Proteomics

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Alzheimer disease (AD) is the leading cause of dementia. Our laboratory reported that oxidative stress is present in brain of subjects with AD and arguably its earlier form, mild cognitive impairment (MCI). We have used proteomics to identify which proteins are oxidized in brain of subjects with AD and MCI, some of which are the same, suggesting that these proteins are involved in the progression of this dementing disorder. Mechanistic studies demonstrate that the single methionine residue of A β (1-42) is critical to the oxidative stress associated with this peptide that accumulates in AD and MCI brain. The seminar will report the first in vivo demonstration in mammalian brain that the methionine residue 35 of A β (1-42) is essential for oxidative stress, and we posit that a similar mechanism occurs in AD and MCI brain.