Accurate diagnosis of Alzheimer’s Disease may have therapeutic implications. Current attempts to identify Alzheimer’s disease biomarkers are principally focused on cerebrospinal fluid studies yet, B- and T-lymphocytes of Alzheimer’s disease patients are involved in Amyloid-beta1-42 removal and in driving inflammation. As an alternative attempt to identify blood biomarkers of Alzheimer’s disease we focused our attention on Amyloid-beta1-42-specific T-cells. We analyzed cytokine production and Protein-Kinase C phosphorilation of in vitro Amyloid-beta1-42-stimulated T-cells in patients with Alzheimer’s Disease, Lewy Body Dementia, Inclusion Body Myositis, Cerebral Amyloid Angiopathy and in healthy controls. We show that a subset of memory T-cells characterised by bright expression of Phosphorylated-Protein-Kinase C delta and zeta is specific to Abeta1-42 and distinguishes Alzheimer’s Disease Inclusion Body Myositis (also characterised by Amyloid-beta1-42 deposition) from controls and other neurodegenerative pathologies where amyloid deposition consistent of different peptides or unshareprominent inclusion do not consist of amyloid. This marker could be tested to facilitate the diagnosis of Alzheimer’s disease and to discriminate from Lewy Body dementia and other neurodegenerative conditions.