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The quest to understand Alzheimer's disease and find new treatments

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Neurodegenerative disorders such as Alzheimer's disease (AD) and Parkinson's Disease are persistent progressive diseases and they are associated with abnormal accumulation and aggregation of disease-specific proteins and peptides and inclusion bodies in selected brain regions. AD is the most common type of dementia, associated with a decline in cognitive ability and premature death. AD has been puzzling the scientific community for decades, and it has been a major public health problem for which there is currently no disease-modifying treatment. This is mainly caused by the non- definitive hypothesis of the root cause of this disease. It has been proposed that the beta amyloid peptide (Aβ), abnormal tau protein or probably both play critical role in the AD development leading to the formation of senile plaques and neurofibrillary tangles, thus making them promising targets for next-generation drug therapies. To date, there has been a growing knowledge of the underlying cause of AD and multiple active clinical trials for potential treatments. In this presentation, recent progress in the understanding of the AD pathogenesis will be discussed, with emphasis on the *amyloid cascade hypothesis*, the aggregation mechanism and how to inhibit the formation of Aβ oligomers, because they are considered to be most toxic amyloid species. Our approach combines in vitro screening followed by in vivo evaluation of several bioactive antioxidants as novel aggregation inhibitors. The use of these dietary antioxidants could be a promising way to prevent amyloid toxicity, thus slowing disease progression or even successfully preventing the disease from advancing to dementia.

Biography

Anthony Tsarbopoulos is the Associate Professor at the National and Kapodistrian University of Athens (NKUA) Medical School, Greece. He is also the Director of the Bioanalytical Department at The Goulandris Natural History Museum. He received his BS degree in Chemistry from NKUA and his PhD in Analytical Chemistry from Michigan State University. He was a Senior Research Fellow at the Mayo Medical School, and then a Group Leader in the Structural Chemistry Department of Merck/Schering- Plough Research Institute (1988-1998). He has over 86 publications in refereed scientific journals with more than 2350 citations (h-index: 28), and over 155 presentations in international conferences.

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