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Dendrimer's –New hope in the treatment of Alzheimer's disease

The lack of effective treatment for Alzheimer's disease (AD) stems mainly from the incomplete understanding of AD causes. Currently there are several hypotheses which try to explain the early molecular mechanisms of AD pathogenesis. Nanomedicine as a biomedical and pharmaceutical application of nanotechnology for making nanocarriers like dendrimers has shown great potential for the treatment of many CNS diseases.

Dendrimers are polymeric molecules chemically synthesized with well defined shape size and nanoscopic physicochemical properties reminiscent of proteins.

Recently an increasing number of studies have been focused on the potential of dendrimers to prevent aggregation and fibrillation of proteins involved in neurodegenerative disorders such as AD. Some of dendrimers were demonstrated to cross blood-brain barrier, which legitimized research on these compounds as potential drugs for neurological disorders. Recent our studies have revealed that dendrimers possess the intrinsic ability to localize in cells associated with neuroinflammation (activated microglia and astrocytes) and thus can be used as drug carriers in neuroinflammation therapy.

Above/mentioned findings may be of high significance in the context of potential application of dendrimers as drug carriers or active compounds per se. According to the opinion the author's of this presentation, they are promising macromolecules for further investigations on their applicability in neurodegenerative disorders, for instance AD.

Biography

Jerzy Leszek is Professor of Psychiatry, Vice-Head of the Department of Psychiatry and Head of Alzheimer's Disease Lab at the Medical University in Wroclaw, Poland. He graduated at Medical University of Wroclaw in 1979, was awarded a doctorate in Wroclaw in 1981 and in 1999- examination for the degree of associate professor of psychiatry and since 2007 he is working as full professor of psychiatry at Wroclaw Medical University. He is author and co-author more than 280 papers (especially from old age psychiatry), some chapters to the books published in reputed Polish and international journals and serving as an editorial board member of several journals.

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