

RAGE-A β complexes play a crucial role in triggering inflammatory, autoimmune related cascade of cyclic events leading to AD-pathogenesis

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Alzheimer's disease (AD) is a progressive neurodegenerative disorder that gradually destroys a person's Memory & cognition. Research efforts derived from our lab from past ten years along with others across the globe, strongly suggests that: amyloid beta (A β) and the receptor for advanced glycation end products (RAGE) play a crucial role in AD pathogenesis. RAGE, facilitates the translocation of A β from the periphery into the brain, mediates A β -induced neurotoxicity, and enhances the release of pro-inflammatory cytokines triggering an inflammatory response. It has been shown that AGEs also regulate RAGE gene expression in blood vessels, and that the AGE-RAGE interaction enables a sustained and upwardly spiraling inflammatory component preventing the completion of normal tissue repair mechanisms. A β also binds with $\alpha 7$ subtype of the nicotinic acetylcholine receptor ($\alpha 7$ nAChR) which are crucial for memory and cognitive functions of the brain (Mruthinti et al., 2006). RAGE-A β complexes are more immunogenic compared to either RAGE or A β and their long-term presence potentiates A β aggregation, oxidative stress, inflammation, vascular dysfunction, and autoimmunity. We prepared a simple and safe water-based oral vaccine for AD, incorporating an in-vitro prepared RAGE-A β complex antigen. Our data clearly suggested that, RAGE-A β immunogen induced: a) significantly higher antibody IgG serum titers and b) improved their cognitive test scores in AD-Tg mice and Primates; compared to either A β or RAGE alone (Webster et al., 2012). We conclude that, an oral vaccine therapy using water based RAGE-A β complex immunogen may be more effective treatment for AD than vaccination with A β or RAGE alone.

Biography

Shyamala Mruthinti received B.Sc., M.A., M.S. and Ph.D. from Osmania and M. S. University of Baroda, India. She was hired as a Post-Doctoral Fellow & as an Assistant Professor in the Department of Immunology, Medical College of GA from 1987-1996. She joined Veterans Medical Administration in 1996 as Research Pharmacologist and received Career Development award and Merit Review award as Principle Investigator from 2000-2010 on AD research. She has 6 grants, 25 publications. She received "Outstanding-Performance & Research- Excellence-Awards" in 2010 from VA. She is the founding member of Immuno-Rx & currently CEO of Datta ImmunoChem. Inc.

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