

International Conference on Central Nervous System - Drug Effects & Novel Drug Development

September 5-7, 2012 DoubleTree by Hilton Philadelphia Center City, USA

Novel immunotherapy toward treatment of Alzheimer's disease

Beka Solomon

Tel Aviv University, Israel

The toxicity of amyloid aggregates composed from amyloid β and tau, the two hallmark proteins in Alzheimer's disease (AD), has been extensively studied individually. Recently new data suggest their possible interactions and synergistic effects in the development of the disease. Active and passive immunization show that antibodies against amyloid beta peptide ($A\beta$) are effective in reducing plaques pathology as well as attenuate cognitive deficits in animal models of the disease., however they are associated with adverse inflammatory reactions. Here we describe a new approach to reduce $A\beta$ formation based on blocking of the beta-cleavage site of amyloid precursor protein (APP) via antibodies against the β secretase cleavage site on APP called BBS1. Such antibodies affect tau pathology, besides their well established effect on intracellular $A\beta$ and amyloid load. For this purpose we treated the triple transgenic mice model of AD (3x Tg-AD) which mimics both hallmarks of the disease with mAb BBS1 intracerebroventricularly, using mini osmotic pumps for one month. The experimental data demonstrated reduction in total and phosphorylated tau levels. The treatment increased the cognitive capabilities and reduced the brain inflammation levels which accompany AD pathology. The data showing that tau pathology was significantly reduced by BBS1 antibodies suggest a close interaction between tau and $A\beta$ in the development of AD, and may serve as an efficient novel immunotherapy against both hallmarks of this disease.

Biography

Prof. Solomon was the first investigator to visualize and develop the potential for immunotherapy for Alzheimer's disease. She is Professor and Chair for Biotechnology of Neurodegenerative Diseases at Tel-Aviv University, Israel. She is a member of the editorial board of several peer-reviewed journals. She was awarded the prestigious Zenith Award of the Alzheimer Association, being the first recipient in Israel and recently received the Dana Foundation Award for Neuroimmunology. She was included in Scientific American's list of 50 of the world leading innovators for 2008. She received her Ph.D. from the Weizmann Institute of Science, Rehovoth, Israel.

beka@post.tau.ac.il, solomonbeka120@gmail.com