2nd Annual Summit on STEM CELL RESEARCH, CELL & GENE THERAPY & **CELL THERAPY, TISSUE SCIENCE AND REGENERATIVE MEDICINE** 12th International Conference & Exhibition on

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Lithium effects on stem cells advance in stem cell application in clinical medicine

ithium (Li) salts have been widely used in psychiatry as mood stabilizing agents for 66 years. Li is found in variable amounts in foods, especially grains, vegetables, and in various geographical areas. Additionally drinking water provides a significant source of the element. Dietary intake in humans depends on location, type of foods consumed, and fluid intake. Traces of Li have been detected in human organs and tissues, leading speculation that the element is responsible for specific functions in the human body. It was not until the 20th century that studies performed in the 1970's and 1990's, primarily in chickens, cows, goats, and rats, maintained on Li deficient diets demonstrated higher mortality, and altered reproductive and behavioral abnormalities. Such deficiencies have not been detected in humans; however, studies performed on populations living in areas with lower Li levels in water supplies have been associated with higher rates of suicides, homicides, and the arrest rates for drug abuse and other crimes. Thus, Li appears to play a significant role in early fetal development evidenced by high Li levels during the early gestational period and perhaps social behavior. Biochemically, the mechanism of Li action involves multifactor and interconnected pathways with enzymes, hormones, vitamins, transcription, and growth and transforming factors involved. This body of evidence now appears sufficient to label Li as an essential element with the recommended RDA for a 70kg adult of 1mg/ day. Of extreme importance for the future is the increasing clinical data indicating Li can be used effectively for the treatment of acute brain injuries, e.g., ischemia and chronic neurodegenerative diseases such as Alzheimer's disease, Parkinson's disease, Tauopathies, and Huntington's disease. This conclusion is based on evidence showing Li as important in neurogenesis, neuronal repair, as well as protecting neurons from neurotoxicity.

Biography

Vincent S Gallicchio earned his PhD in Experimental Hematology at New York University Medical Center. He completed his hematology fellowship at Memorial Sloan Kettering Cancer Center and did post-graduate training at the University of Connecticut Health Science Center. He received his diploma in medicine from the "Vasile Goldis" University of Arad (Romania). He has served on the faculty of Yale Medical School and the University of Kentucky Medical Center before his current tenure as professor of biology, microbiology, and public health sciences at Clemson University, where he also serves as the Director of the Education & Research Center for Trace Elements that operates under the auspices of UNESCO. He has published more than 200 scientific articles many dealing with the biology of stem cells, regenerative & personalized medicine and the alternative medical uses of lithium, many book chapters, and full texts. He is a Fellow of the Association of Clinical Scientists, the Association of Schools of Allied Health Professions, and the Royal Society of the Arts. In 2003, at the 200th anniversary of RSA, because of his long-standing effort to educate and train biomedical laboratory scientists from England, he was recognized for his efforts by being presented to Her Majesty, Queen Elizabeth II at Buckingham Palace.

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