

3rd International conference on
Parkinson's, Huntington's and Movement Disorders

September 27, 2021 | Webinar



Sinerik Ayrapetyan

UNESCO, Armenia

The dysfunction of quantum-sensitive cgmp-dependent ca-efflux from the cells as a target for age-dependent nerve disorder therapy

The Na/K-pump-driven water efflux from the cells is a fundamental metabolic mechanism controlling cell membrane semipermeable properties, the dysfunction of which is a common consequence of cell pathology, including aging. In cell membrane two quantum-sensitive families of non-canonical ouabain receptors, that regulate Na/K pump activity by [Ca]²⁺, have been discovered: the first (α_3) activates cgmp-dependent-Ca efflux from the cells, while the second (α_2), which is less sensitive, activates camp-dependent-Na/Ca exchange in reverse mode. The dysfunction of α_3 receptor function leading to the increase of intracellular Ca contents, which is a strong inhibitor for Na/K pump activity, is suggested as a primary mechanism for generation of age-dependent nerve disorders. To check this hypothesis, the age-dependence of rat's brain cortex, subcortex and cerebellum tissues hydration, dose-dependent 3H-ouabain binding, 45Ca²⁺ uptake and efflux, intracellular cgmp and camp contents were studied. It was shown that the among the mentioned families of ouabain receptors, the α_3 receptors has age-dependent dysfunctioning character and its age-dependence decrease of ouabain receptors affinities is accompanied by cortex brain tissue dehydration, the increase of intracellular Ca contents, decrease of intracellular cgmp and camp contents. On the basis of the obtained data the cgmp-dependent Ca efflux from the cells is suggested as a

quantum-sensitive therapeutic target for aging-induced nerve disorder therapy.

Biography

Sinerik Ayrapetyan has received his PhD in cell biophysics in the Institute of Physiology of the Ukraine Academy of Sciences, Kiev during the period of 1966-1970. Currently, he is the coordinator of UNESCO chair at Life Sciences International Postgraduate Educational Center, Yerevan, Armenia and coordinated the activities of UNESCO/UNITWIN network on research and postgraduate education in Biophysics, Biotechnology and Environmental Health Control. His research includes the study of metabolic regulation of cell function in norm and pathology. He is serving as a Chief Editor for the Journal of "Bioequivalence and Bioavailability", "Biomedical Engineering Current Research", "Basic, Applied Pharmacy and Pharmacology" and "Pharmacology & Pharmaceutical Research". He is also an editorial member of several reputed journals like "Electromagnetic Biology and Medicine", "BBA General Subjects", "Clinical Investigations", "Genetic Engineering and Biotechnology" etc. Prof. Sinerik Ayrapetyan is a member of a number of international societies, such as International Society of Invertebrate Neurobiology (ISIN), International Society for neurochemistry (ISN), European Society for Neurochemistry (ESN), International Brain Research Organization (IBRO), International Union of Pure and Applied Biophysics (IUPAB), Bioelectromagnetics Society (BEMS), WHO International Advisory Committee on Electromagnetobiology. He has authored 7 international books and 115 research articles.

e: mhkurmane@gmail.com