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Advanced methodology for the development of preclinical diagnostics of Parkinson's Disease

Motor symptoms first appear at Parkinson's disease (PD) long after the onset of the degradation of the nigrostriatal dopaminergic (DA-ergic) system, at a loss of most specific neurons and depletion of neuroplasticity, which explains low efficiency of traditional treatment. Therefore, the development of the diagnostics at the preclinical stage is of the highest priority. Current methodology of this technology is based on a systemic character of PD and search in non-treated patients at the early clinical stage for biomarkers, such as the non-motor clinical symptoms and changes in the composition of body fluids (blood, CSF) and expression of specific genes and syntheses in blood cells. It is of particular importance if in addition to patients there is a search for peripheral biomarkers in experimental models of PD at preclinical stage. Fundamentally novel approach for the diagnostics of PD was recently developed in our laboratory using the original model of preclinical PD. It is based on the applying of the provocation test inducing a reversible enhancing a latent failure of the DA-ergic system and temporal appearance of motor disorders. The detection of peripheral biomarkers and positive provocation test in people under a prophylactic examination with no motor disorders would allow to include them in a risk group for final diagnosing of PD at the preclinical stage with positron emission tomography. Development of preclinical diagnostics of PD will give an opportunity of using neuroprotective pharmacotherapy for slowing down neurodegeneration and thereby prolongation of a period of comfort life of patients.

Biography

Michael Ugrumov is a academician of Russian Academy of Sciences and completed his MD at Institute of Evolutionary Physiology & Biochemistry (Leningrad), PhD at Institute of Developmental Biology, Professorship at University Medical School (Moscow). He is the Head of Laboratory of Neural and Neuroendocrine Regulations at Institute of Developmental Biology RAS, Vice-President of Russian Physiological Society. He is a member of European Academy of Science and Arts, Serbian Academy of Science and Arts, French National Academy of Pharmacy. He has published more than 200 papers in peer reviewed journals and served as an editorial board member of 8 International and Russian journals.

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