

Brookhaven National Laboratory, for samples Sr-90/Y-90 at the Moscow State University named after M.V. Lomonosov, for samples Ag-108, Kr-85, Eu-154, Ba-133, Eu-152 and Cs-137v at the German center PTB (Physikalisch-Technische Bundesanstalt). In the recent years a number of articles have been published presenting evidence that some beta decay rates are variable and this changeability may be connected with behavior of the solar neutrino flux (hypothesis of the  $\nu_e$  –induced beta decays).

We remind that the solar flares (SF) represent itself the most powerful of all the solar activity events. The energy released during the SF is about  $10^{28} - 10^{32}$  erg. It is now widely accepted that the magnetic field provides a main energy source of the solar activity including the SF's.

From point of view of many researchers such variations are connected with the decrease of the electron neutrino flux which is born in the deep solar interior. We investigate the motion of the neutrino flux in the solar matter and twisting magnetic field. Our consideration carries general character, that is, it holds for any standard model extensions with massive neutrinos. We find out the factors which influence on the electron neutrino flux, crossing a region of SF. When the SF is absent a terrestrial detector records the electron neutrino flux weakened at the cost both of vacuum oscillations and of the MSW resonance conversion only. On the other hand, the electron neutrino flux passed the SF region in preflare period proves to be further weakened in so far as it undergoes one (Majorana neutrino) or two (Dirac neutrino) additional resonance conversions, apart from the MSW resonance and vacuum oscillations.

We also consider the hypothesis of the  $\nu_e$  – induced decays which states that decreasing the beta decay rates of some elements of the periodic table is caused by reduction of the solar neutrino flux.

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## **POLYFUNCTIONAL PHYSIOLOGICAL EFFECT OF NITRIC OXIDE IN MODERN RESEARCH**

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The problem of the synthesis of nitric oxide (NO) has attracted the attention of biologists in 1916 in connection with the formation of the body of nitrates and nitrites. Analysis of the literature of the twentieth century suggests that a study of NO, cover a large area at the junction of biochemistry and molecular biology. Modern understanding of the regulation of cellular processes allow to allocate multifunctional physiological effects of nitric oxide, as the free radical is able to provide the activating and inhibitory effect on different metabolic processes in mammals and man.

Nitric oxide - a gas well known to chemists and physicists has recently attracted the attention of biologists and physicians. Intensive study of the biological effect of

NO started with the 80-ies, when R. Furchgot and J. Zawadzki showed that the expansion of blood vessels under the influence of acetylcholine occurs only in the presence of endothelial-epithelial-cells lining the inner surface of all blood vessels. Substance secreted by the endothelial cells in response to not only acetylcholine, but also on many other external factors, leading to vasodilatation, has been called "endothelial vasodilator factor". Later, it was proved that the substance is NO gas and the cells are specific enzyme systems capable of synthesizing it.

Studies conducted in 1986 - 1989, it was found that nitric oxide is synthesized in the vascular epithelium and spreads to the adjacent smooth muscles, causing them to relax. According to their chemical structure related to the nitrogen oxide neutral diatomic molecules. Due to the presence of an unpaired electron in the outer orbital of  $\pi$ -molecule NO is highly reactive and free radical properties.

To date evidence accumulated so much that is not yet understood, even overall pattern produced by them. In the body, nitric oxide is produced by oxidation of L-arginine amino acid with simultaneous synthesis of different amino acids under the influence of the citrulline enzyme NO-synthase. The enzyme was named synthase instead synthetase, since its operation is not required ATP energy. Nowadays we studied:

- a) macrophage NO-synthase, which has a cytotoxic effect or a microbicidal;
- b) endothelial NO-synthase, the main role, which is that NO is a potent vasodilator agent and is involved in the regulation of the cerebral circulation.

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### **ASSESSMENT OF ANTHROPOGENOUS INFLUENCE ON AMPHIBIOUSES OF THE MINSK DISTRICT DURING THEIR REPRODUCTION**

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Due to the active growth of the urban population, especially acute raises question of the conservation of biodiversity in urban areas. This is especially important for amphibians, which are very sensitive to the manifestation various kinds of human activities. Because of it, the decision of any questions related to their present range, as well as natural and anthropogenous conditions in which these animals change their morphological and genetic indicators is of great importance for the theoretical and practical biology. The purpose of research - to identify the impact of urbanization on amphibian populations Minsk region during their breeding – the most vulnerable period of their life cycle.

The material for the writing of this paper were the results of field research in 2016 (April), held on the pond in the village Schomyslitsa Minsk district area of 952 m<sup>2</sup>. Censused of amphibians conducted by routing method in the period of greatest activity of amphibians (Handogiy, 1995). Features amphibian reproduction were studied by well-known population parameters (Bannikov et al. 1978).