



**XI RUSSIAN SCIENTIFIC CONFERENCE IN
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VI INTERNATIONAL JOINT CONFERENCE
RUSSIAN-IMEOF-AEPRIMO**

**Ozone: active forms of oxygen, nitric oxide
and high-intensity physical factors in biology and medicine.**

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Health Ministry of Russian Federation,

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The International Medical-Ozone Federation (IMEOF),

Russian Association of Ozone Therapists

Spanish Association of Medical Practitioners in Ozone Therapy (AEPRIMO)



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EPR STUDY OF NITRIC OXIDE PRODUCTION CHANGES IN TISSUES OF HEART AND LIVER OF RATS WITH THE 30-DAY RESTRICTION OF MOTOR ACTIVITY AND SUBSEQUENT RECOVERY



Kh.L. Gainutdinov^{1,2}, T.L. Zefirov², V.V. Andrianov^{1,2}, G.G. Yafarova^{1,2}, M.I. Sungatullina², V.S. Iyudin¹, N.I. Ziyatdinova², S.V. Yurbaeva¹, F.G. Sitdikov²



¹E.K.Zavol'sky-Kazan Physical-Technical Institute of the KSC of RAS, Kazan, Russia

²Kazan Federal University (Institute of Fundamental Medicine and Biology), Kazan, Russia



Hypokinesia (restriction of motor activity - MA) is one of the most important medical and social problems caused by lifestyle, professional activity, a long bed rest, etc. Thus there is a decrease in loading on the muscular apparatus, consumption of oxygen by tissues and activity of oxidative processes significantly decrease, there are changes of contractile function of a heart muscle. Nitric oxide (NO) plays an important role in the adaptation to various conditions in external environment. Based on this, the aim of the study was to study the possible changes in the production of NO in the tissues of the heart and liver of rats, which were restored within 2 weeks after a long (30 days) restriction of MA.

White outbred rats of different age were used for experiments. The restriction of MA of growing rats was achieved by placing them in pen-cage cages. Limitation of MA started from age of 20-day-old rats and to 25-day limitation of MA stay animals in pen-cage cages made up 23 hours. We studied the changes in the amount of NO in the tissues of the heart and liver using the electron paramagnetic resonance (EPR) spectroscopy method. It was applied the technique of spin traps, which allows to detect NO in small concentrations used the complex of Fe²⁺ with diethyldithiocarbamate c (DETC). EPR measurements were carried out in the X-band on the EPR spectrometer ER-200 by Bruker at a temperature of 77 K. The number of NO was estimated by the intensity of the characteristic EPR signal belonging to the complex (DETC)₂-Fe²⁺-NO. We found that the amount of NO formed in the tissues of the ventricles and atria of the heart increases after a 30-day restriction of MA by 2-3 times. It was found that 2 weeks after recovery of MA, the level of NO production in the heart tissues decreases even more.

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Key words: nitric oxide, heart, hypokinesia, electron paramagnetic resonance

