

«Microcirculation» Experiment

**INFLUENCE OF SPACE FLIGHT FACTORS ON BLOOD
MICROCIRCULATION AND ITS RHEOLOGICAL PROPERTIES IN HUMAN****Korkushko O. V.**

*Institute of Gerontology of the AMS of Ukraine
67 Vyshgorodska St., Kyiv 04114 Ukraine
tel: (380) +44 +4304068, fax: (380) +44 +4329956*

The purpose of experiment is to study the effects of micro- and hypergravity, and hypodynamics on the skin and bulbar microcirculation, oxygen tension in subcutaneous cellular tissue, and rheological properties of blood in astronauts before and after space flights. The duration of experiment will consist of pre-flight training period, period spent on board the space vehicle and period after landing, both in the next hours and in a more remote period of time.

We will study systems of microcirculation and oxygen provision of tissues both in almost healthy people of various age and in patients with diseases of cardiovascular and nervous systems. Experiment

will be performed with the laser Doppler flowmeter for noninvasive determination of the volume of blood flow in microvessels and with the transcutaneous monitor for noninvasive determination of oxygen and carbon dioxide tensions in tissues and media of the organism.

Results obtained will facilitate developing a set of measures both for preventing the disturbances in functioning of microvessels in astronauts under the influence of space flight factors and making the human organism more adaptable to the conditions of a space flight.

«Homeostasis-2» Experiment

**EVALUATION OF OXIDANT AND IMMUNE HOMEOSTASIS IN PERSONS
EXPOSED TO ADVERSE INFLUENCE OF SPACE FACTORS.
PROPHYLAXIS AND CORRECTION OF PATHOLOGICAL CHANGES****Chumak A. A., Ovsiannikova L. M.**

*Ukrainian Research Center for Radiation Medicine of the AMS of Ukraine
53 Melnikov St., Kyiv 04050 Ukraine
tel: (380) +44 +4319838, fax: (380) +44 +4319838, e-mail: chumak@kpi.kiev.ua*

The purpose of experiment is to develop recommendations for protection of the immune system and oxidative homeostasis of persons exposed to the negative influence of a space flight. The main objectives are as follows:

- to study the oxidative homeostasis and immune state of people under the influence of various doses of ionizing radiation;
- to study the immune-modulating and anti-oxidative substrates for prevention and correction of the negative influence of a space flight.

Investigation of peripheral blood mononuclear cells will be carried out by the methods of flow cytometry with antibodies. The enzyme and non-enzyme indices of antioxidant system, primary and final products of lipid peroxidation will be also determined.

Recommendations on improvement of the immune and anti-oxidative state of astronauts and persons, which are working under adverse conditions, will be proposed.