Nonparametric comparison in the groups with the Mann–Whitney test showed a statistically significant ($p = 0.0062$) increase in the absolute number of peripheral blood lymphocytes in patients with inflammation in the urogenital tract.

The imbalance of peripheral blood lymphocytes/neutrophils as a possible immunity disorder allows infection to cause vaginitis. Therefore, periodic monitoring of the complete blood cell count and measures leading to the normalization of the CBC can help prevent the inflammation of the urogenital tract.

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THE TRECs AND KRECs FREQUENCY IN THE BLOOD IN A POPULATION OF ST. PETERSBURG

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TRECs (T-cell receptor excision circles) and *KRECs* (kappa-deleting recombination excision circles) are surrogate markers of maturation of T-cells and B-cells. *TRECs* and *KRECs* quantification can be used for detection of primary or acquired immunodeficiency. However, to detect immunodeficiency, it is required to know the population values of the excision rings concentration.

The aim of this work was to determine the values of *TRECs* and *KRECs* in the blood of healthy donors in St. Petersburg.

Blood of healthy volunteers aged from 0 to 95 years (total 160 people) was used in the research. *TREC/KREC* copies were assessed by quantitative PCR. Calibrators for PCR are kindly provided by the Institute of chemical biology and fundamental medicine (Novosibirsk, Russia).

There was no significant correlation between the concentration of *TRECs* or *KRECs* from sex. At the same time there was a significant negative correlation between the number of copies of *TREC*/10^5 lymphocytes (Spearman correlation coefficient $r = -0.836$; $p < 0.0001$) or the number of copies of *KREC*/10^5 lymphocytes ($r = -0.641$; $p < 0.0001$) from age.

All group was divided into 7 age groups: newborns, 3 months – 9 years, 10–19 years, 20–29 years, 30–39 years, 40–49 years, older than 50 years. There was statistically significant reduction of the content of *TREC*s in the blood after 10 years and after 30 years. The number of *KREC*s was significantly decreased after 10 years. Then there are no significant differences in the number of *KREC*s between groups of 20–29 years and groups older than 30 years. At the same time the number of *KREC*s in the group of 10–19 years is significantly higher compared to adults over 30 years. Further experiments are needed to clarify whether the number of excision rings in human blood stabilizes after a certain age.

Thus, for first population values of excision rings concentration in blood of healthy donors of St. Petersburg were determined in this work. These data can be used to detect various immunodeficiency states.

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COMPARATIVE ESTIMATION OF SENSITIVITY OF SEROLOGICAL REACTIONS FOR ESTIMATION OF IMMUNITY AGAINST THE CAUSATIVE AGENT OF TULAREMIA

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Tularemia is an anthropozoonotic natural focal acute infection. According to Russian biological safety regulations compulsive immunization and specific immunity estimation is carried out in accordance with established regulations for all the employees, who work with the causative agent of tularemia. Immunological efficacy of vaccination as well as specific diagnosis of tularemia is carried out using serological reactions (ELISA, MAT, IHAT) and/or skin allergic test, which causes extra body burden of antigens. Accordind to methodological guidelines 4.2.2939-11 (RU) for estimating of post-vaccination immunity it is allowed to apply one of the serological methods. It is widely recognized that ELISA is the most sensitive serological assay, including for tularemia. Serological reactions are carried out *in vitro*.

The purpose of the work was to compare sensitivity and specificity of ELISA and IHAT designed for detection of antibodies to *F. tularensis* antigens.

Blood serum samples were obtained from people, who had been immunized with live tularemia vaccine 1 month and 5 years before the assay. As a negative control the blood sera of donors with no anamnesis of a natural infection or vaccination against tularemia were used.

Detection of specific antibodies was carried out using tularemia serodiagnostic test produced by the Stavropolsky Antiplague Scientific Research Institute, an experimental ELISA test system, and "ELISA classic Francisella tularensis IgG" (SERION, Germany) to be considered for reference, following the manufacturers' guidance. To obtain the experimental ELISA test system, LPS extracted by Westphal method [1965] was used.

Of the 16 donors' samples in the ELISA, 7 turned out significant titres that exceeded the dilution of 1: 400, and 9 — negative. The data obtained in the ELISA were completely correlated with the results of "ELISA classic Francisella tularensis IgG", which was used as a verification test. In IHAT, positive reactions were found in 15 donors, negative in one. False positive reactions of IHAT can be associated with the immobilization of whole *F. tularensis* cells on the erythrocytes with antigens capable of cross reactivity The use of IHAT is justified for the diagnosis of tularemia if it is the case of antibody titres increase in dynamics. To estimate the effectiveness of immunologic adjustment after vaccination, ELISA seems to be preferable.

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THERAPEUTIC EFFICACY OF MONOCLONAL ANTIBODIES AGAINST LETHAL TOXIN OF *BACILLUS ANTHRACIS* IN A MOUSE MODEL

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Despite insignificant number of anthrax cases in the Russian Federation, the antitoxic drug development is going on. That's connected with the threats of terrorist acts and the presence of a large number of cattle burial grounds in the Russian Federation. The inhalational and intestinal form of the disease is enhanced by complexity of diagnosis, thus anthrax may be particularly dangerous. At the late stages of anthrax infection antibiotic therapy turns out to be ineffective and the patient has a risk of quick death due to a large amount of the lethal toxin accumulated in the patient's blood. At this stage antibodies capable of neutralizing, primarily, the lethal toxin (LT)