

In this study the methodological approach of recombinant human erythropoietin detection by high resolution mass spectrometry based on their prior tryptic hydrolysis (“bottom-up method”) was developed. Peptides obtained from tryptic hydrolysis was separated by HPLC method on reversed-phase column and analyzed using high resolution mass spectrometer Agilent 6550 iFunnel Q-TOF. Designed approach allowed to detect all non-glycosylated rhEPO peptides (figure 1). Compound and structure of found peptides were proved by tandem mass spectrometry.

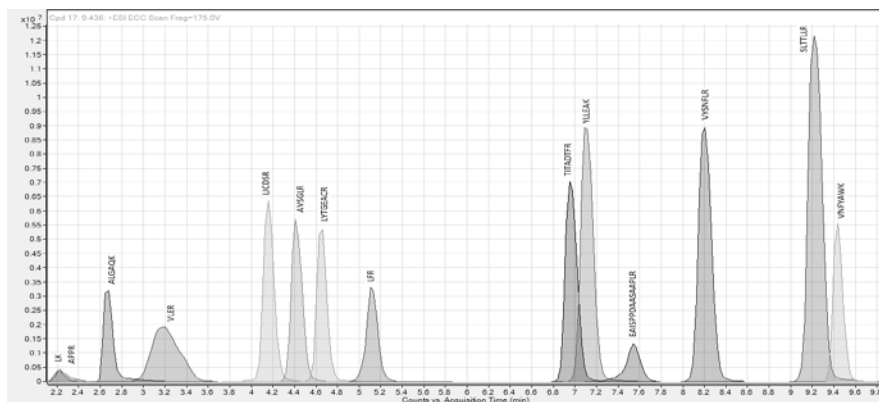


Figure 1. – Chromatogram of peptide mapping of recombinant human erythropoietin (tryptic digestion)

Simultaneously, chromatography – mass spectrometry allowed to identify wide range of mixture compounds which were determined as various types of glycopeptides. It is caused by heterogeneity of oligosaccharide components in erythropoietin. Utilization of LC-MS method in conjunction with computer modeling makes it possible to assume oligosaccharide chains structure of present glycopeptides.

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CYTOLOGIC FEATURES BREAST CANCER AFTER RADIOTHERAPY

Breast cancer occupies the first place in the structure of oncological diseases of the female population, its rate is rising, especially among the elderly. Mortality from breast cancer remains high, despite the progress in treatment and improving the quality of the diagnosis of this pathology.

Criteria for cytological diagnosis of malignant tumors based primarily on cell morphology and especially nucleus, and the presence of abnormalities in chromo-

some sets, increasing the cell cycle time compared to the normal formation of micronucleus, nuclear protrusions and various pathologies of mitosis.

During the cytological and cytogenetic analysis, the object of the study was smears of tumor breast tissue among women aged 44 to 65 years with invasive breast cancer after radiotherapy.

In the course of our study normal and abnormal mitosis were found. The frequency of cells in mitosis was $0,092 \pm 0,027\%$, cell distribution of the phases of mitosis normally was: 91.3% prophase, telophase 8.7%. Cells at the stage of the metaphase and anaphase were not detected. In the result of smears analysis we identified the following types of abnormal mitosis: c-mitosis (mitosis colchicine), lagging chromosomes in metaphase, anaphase bridges and another mitosis. Among pathological mitosis, anaphase bridges were the most frequent $0,121 \pm 0,003\%$. The frequency of mitosis was $0,014 \pm 0,003\%$, lagging chromosomes in metaphase was $0,007 \pm 0,003\%$, the share of other mitotic was $0,05 \pm 0,007\%$. Along with internuclear chromatin bridges, which are continuously joining the nuclei were seen to explode bridges – "caudate nucleus". The smears were found with multiple nuclei "tails": two ($0,057 \pm 0,021\%$), three or more ($0,007 \pm 0,007\%$). The greatest number of cells amounted to a "tails" ($0,564 \pm 0,066\%$). In this study, we counted the cells with one, two, three or more micronuclei. The total number of cells with micronuclei was $4,592 \pm 0,183\%$. The frequency of cells with a micronuclei was $3,908 \pm 0,170\%$, with two – $0,431 \pm 0,057\%$, and three or more micronuclei – $0,255 \pm 0,044\%$. Total found micronuclei – $5,531 \pm 0,201\%$. It should be noted that cells with two, three or more micronuclei, as a rule, are more common after radiation exposure. We have also taken into consideration the frequency of cells with nuclear protrusions. Analysis of nuclear protrusions in cells of invasive breast cancer showed great variety and high frequency of their occurrence in tumor cells. Cells were detected with a nuclear protrusion ($0,836 \pm 0,08\%$), two – ($0,043 \pm 0,018\%$), three or more – ($0,014 \pm 0,01\%$).

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QUANTITATIVE ANALYSIS INDICATORS OF CHILD MORBIDITY IN BARANOVICHI

Relevance. Today's children are the main reproductive group of the first half of the 21st century, so the study of the children health is especially important.

Objective. Using quantitative methods of evaluation to analyze the incidence of morbidity in child population in Baranovichi within the period from 2005 to 2013.

Objects and methods of investigation. The object of investigation was the information from the form of the state statistical reporting on the number of diseases of child population in Baranovichi. In this work the following methods were used: