«бус», и сами по себе размеры этих гранул – большие по объему и количеству. До начала лечения в основной группе наблюдалось достоверно выше концентрация МП (8,74±0,31 с.у.о.опт.п.) в сравнении с контрольной группой (5,49±0,25 с.у.о.опт.п.) ($p \leq 0,05$). Через месяц проведенной химиотерапии наблюдались не достоверные изменения (8,78±0,32 с.у.о.опт.п.) в основной группе ($p > 0,05$).

Выводы. У больных с ТБЛ по сравнению с практически здоровыми людьми обнаружена активизация МП в нейтрофилах: гранулы миелопероксидазы более крупные, расположены по периферии нейтрофилов, оптическая плотность цитоплазмы при постановке цитохимической реакции на МП повышена. Стандартная месячная противотуберкулезная терапия не изменяет содержание МП в нейтрофилах.

Viletska Y[1], Minchenko D. [1,2]

Molecular mechanisms of the development of metabolic complications in obesity

[1]Palladin Institute of Biochemistry, National Academy of Sciences of Ukraine, Kyiv, Ukraine;
[2]Bogomolets National Medical University Kyiv, Ukraine,

Obesity is an ever-growing global problem that may cause several metabolic complications including insulin resistance, hyperlipidemia, hypertension, atherosclerosis, and type 2 diabetes. Furthermore, chronic diabetic complications are leading causes of morbidity and mortality worldwide. The occurrence of overweight is due to numerous factors: genetic predisposition, sedentary lifestyle, reduced physical activity, and socio-economic conditions, as well as others. Much attention is paid to the clarification of mechanisms of growth of adipose tissue and the disturbance of metabolic processes at the molecular level. This will help to better understand the nature of obesity, as well as its complications, in particular glucose intolerance. It is important to note that the number of people with obesity is constantly growing, and the development of metabolic complications associated with it is the causes of premature death. The study of changes in the expression of genes that control the growth of adipose tissue and the development of obesity associated metabolic complications is a significant trend in this area, as it may contribute to finding ways to prevent and treat these pathologies.

The purpose of this study was to investigate the level of gene expression encoding the key factors of proliferation and differentiation in subcutaneous adipose tissue of men with obesity and insulin resistance to clarify their role in the development of obesity and its metabolic complications.

Materials and methods. The studies were performed on subcutaneous fatty tissue, which was taken by biopsy in three groups of men aged close to 45 years: no signs of obesity (control), obesity and normal glucose tolerance, as well as obesity and impaired glucose tolerance. The methods of RNA isolation from adipose tissue, spectrophotometric methods for determining the amount of RNA and their spectral characteristics, synthesis of complementary DNA, real-time polymerase chain reaction are used in the work.

Results. It was shown that in subcutaneous adipose tissue in adult obese men the expression of key genes encoded proliferation factor (*LEP, LEPR, IGF2, IGFBP5, IGFBP7*, *HTRA1* and miR-19a) is increased, but the expression level of *INSR, IGF1, IGFBP2, IGFBP3, IGFBP6* and miR-143 *i*s decreased as compared to control group. Glucose intolerance in obesity is associated with decreased level of *LEP*, *IGF1,* and *IGF2,* but the expression level of *LEPR* is increased in subcutaneous adipose tissue of adult obese men as compared to obese patients with normal glucose tolerance. Glucose intolerance in obesity is associated with decreased level of *INSR, IGFBP2, IGFBP3, IGFBP5* і *IGFBP7,* but the expression level of *IGFBP6,* and *HTRA1* is increased as compared to control group. Results of this investigation clearly demonstrated an important role of changes in the expression level of key regulatory factors in obesity and its metabolic complications.

Conclusions. The result of quantitative polymerase chain reaction studies indicate genome reprogramming in adipose tissue under conditions of obesity and its etabolic complication, including insulin resistance and provide information on the important role of regulatory genes in the development of obesity and this is an important basis for developing new approaches to the prevention and treatment of metabolic diseases.

Войнаровский В.В., Мартинович Г.Г.

Регуляция структурной стабильности эритроцитов с участием окисленных форм гемоглобина: математическая модель и эксперимент

Белорусский государственный университет, Минск, Республика Беларусь

Одним из важнейших механизмов повышения структурной стабильности мембран эритроцитов является их взаимодействие с основным белком клетки гемоглобином. Гемоглобин является регулятором гомеостаза эритроцитов и ключевым участником внутриклеточных окислительных процессов. Связывание гемоглобина с мембраной ре-