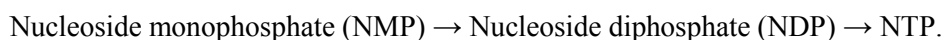


DNA-dependent RNA polymerases and other reagents [1]. It appears that development of technology for producing components indispensable for implementation of transcription *in vitro* is likely to reduce the cost of reagent purchase.

NTPs act as precursors of RNA molecule. There are four kinds of NTP engaged in transcription *in vitro*: ATP, GTP, CTP and UTP. A large variety of chemical and enzymatic methods was proposed for NTP production [2; 3]. Enzyme-mediated NTP manufacturing scheme is presented as follows:



NDP synthesis from NMP proceeds using nucleoside monophosphate kinases. Guanosine monophosphate kinase (GMP kinase) is involved in GDP synthesis from GMP, while cytidine monophosphate kinase (CMP kinase) catalyzes production of NDP from NMP of pyrimidine series. NTPs are derived from NDPs with the aid of non-specific enzyme nucleoside diphosphate kinase, promoting phosphorylation reaction for all four NDPs.

Taking into account the preamble, the present study was aimed at engineering of strains – sources of GMP kinase and CMP kinase.

The research resulted in novel recombinant *E. coli* strains pGMK and pCMK demonstrating heterologous expression of *Saccharomyces cerevisiae* enzymes GMP-kinase and CMP-kinase, respectively. The structure of the above-mentioned proteins contains complementary octahistidine oligopeptide at C-terminus, allowing to recover enzymes in a single stage using affinity chromatography on Ni-NTA resin. Following SDS gel electrophoresis the target proteins accounted for 20 % of total protein fraction. Enzyme-generating capacity of strains *E. coli* pGMK and pCMK equaled 3,3 and 4,2 thousand units per 1 liter of cultural liquid, respectively.

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INDICATORS OF GLYCATED HEMOGLOBIN AND BLOOD GLUCOSE IN TYPE 2 DIABETES MELLITUS IN PATIENTS OF SMORGON

A. Khromchenkova, A. Batyan

*Belarusian State University, ISEI BSU,
Minsk, Republic of Belarus
Khilinni@mail.ru*

The study involved patients Smorgon district clinic. The study involved 20 volunteers. Patients were invited for control examinations once a month for 3 months. The study revealed a direct positive relationship between the level of blood glucose level and glycated hemoglobin: the higher the indicators for one criterion, the higher, and compare with it.

Keywords: diabetes mellitus, glycated hemoglobin, glucose.

Diabetes is a disease that is characterized by a chronic increase of sugar level (glucose) in the blood.

In the Republic of Belarus at the beginning of this year at the dispensary, there were about 288 thousand patients with diabetes, including the 2nd type – more than 268 thousand people.

The main causes of diabetes mellitus type 2 are: genetic predisposition; obesity, particularly Central or abdominal it type; age (the degree of disruption of glucose tolerance is constantly increasing with age), physical inactivity (loss of muscle leads to increased glucose levels in the body).

The purpose of the study is based on experimental data to study the performance of glycated hemoglobin and blood glucose and their relationship with diabetes 2 type patients the city of Smorgon.

Were investigated patients Smorgon district clinic. The study involved 20 volunteers. Patients were invited for control examinations once a month for 3 months. The study involved 12 people are female (60,0 %) and 8 males (40,0 %). The average age of patients was 53,5 years. Identified the diagnosis of diabetes mellitus of the 2nd type.

The study volunteers revealed that among patients with diabetes mellitus of the 2nd type, the level of glycated hemoglobin is between 7 to 8 % inclusive have 40,0 % of the patients of the clinic, from 8 to 9 % inclusive –

20,0 %, from 9 up to 10 % – 10,0 % of patients. The average value of the level of glycated hemoglobin in the study group after the first survey was $8,43 \pm 1,71$ %, after the second and $7,60 \pm 0,87$ %, after the third survey – of $7,53 \pm 0,64$ %. The calculated student's t-test is less than table, then the differences of the compared values is statistically not significant.

Among patients with diabetes mellitus of the 2nd type, the level of glucose in blood is 6 to 8 mmol/l inclusive at 20,0 % of patients Smorgon regional clinics, from 8 to 10 mmol/l inclusive at 50,0 per cent, from 10 to 12 mmol/l, inclusive, from about 20,0 %, more than 12 mmol/l in patients of 10,0. The average value of blood glucose at study group Smorgon district clinic after the first inspection made of $10,66 \pm 2,86$ mmol/l, after the second of $9,34 \pm 1,40$ mmol/l, after the third survey – of $9,18 \pm 1,04$ mmol/L. The calculated student's t-test is less than table, then the differences of the compared values is statistically not significant.

To establish the statistical significance of the obtained results, we used the method of mathematical statistics – rank correlation coefficient. Correlation coefficient coincided with the critical value for significance level of 1 %. The study revealed a direct positive relationship between the level of blood glucose level and glycated hemoglobin: the higher the indicators for one criterion, the higher, and compare with it.

DYNAMICS OF PREVALENCE OF TUBERCULOSIS RESISTANT TO DRUG THERAPY AMONG RESIDENTS OF MINSK CITY FOR 2011–2015

E. Khrustalyova, V. Lemiasheuski, I. Merkulova

*Belarusian State University, ISEI BSU,
Minsk, Republic of Belarus
elena.xrustalyova.92@mail.ru*

Tuberculosis is a latent infection, which remains one of the biggest threats in the world. According to the World Health Organization in 2015 of 10,4 million people suffered from TB and 1.4 million people died. In this regard, the World Health Organization developed a global strategy «to put an end to tuberculosis» for the period after 2015. The main goal is to end the tuberculosis epidemic. However, a major obstacle to the successful implementation of this plan is the proliferation of drug-resistant tuberculosis forms. In 2015 multidrug-resistant tuberculosis (MDR-TB) was affected by 480,000 people, there were 100,000 cases of tuberculosis with resistance to rifampicin. In 2014 MDR-TB killed 190,000 people.

The purpose of the work is to characterize the features of the dynamics and structure of the primary incidence of tuberculosis, resistant to drug therapy among Minsk residents in 2011–2015.

Keywords: tuberculosis, multidrug-resistant tuberculosis.

The problem was studied on the basis of the data of the health care institution «2nd City TB Dispensary» in Minsk. The data were obtained from the electronic Republican register «Tuberculosis». Extensive indicators, intensive indicators, indicators of visibility have been calculated. The analysis of long-term dynamics of morbidity by the function of a parabola of the first order has been conducted [1; 2].

In Minsk and the Republic of Belarus, there is a similar tendency to reduce the primary incidence of MDR-TB, but at different rates. In Minsk, for example, the level of this disease declined by 13,51 % per year, while in the Republic of Belarus the annual loss was 1,33 %.

In the city of Minsk, men and women have become less likely to have tuberculosis that is resistant to treatment. In 2015, the primary incidence of women was 3,29 cases per 100 thousand people, men – 12,95 cases per 100 thousand people.

In comparison with Minsk, in the Republic of Belarus there is a tendency to increase the level of primary incidence of women by an average of 0,05 % per year.

In the city of Minsk, the primary incidence of people from 0 to 14 and from 15 years and older decreases with an average annual rate of 75,3 % and 13,1 % respectively.

In the Republic of Belarus for five years the primary incidence of the population from 0 to 14 years compared with Minsk, on the contrary, increased, the rate of growth was 9,1 % annually. The incidence of persons aged 15 and older decreased, but at a lower rate than in the city Minsk, on average by 1 % per year.

There are no differences in the types of drug resistance of mycobacterium tuberculosis in Minsk and the Republic of Belarus. The prevalence of multidrug-resistance (36 % and 34 % respectively). The proportion of forms with a wide drug resistance was much lower 21 % and 31 % respectively, monoresistance to rifampicin was observed only in 4 % and 5 % of cases respectively.