Differences in indicators were statistically insignificant (random)

– for myocardial infarction (t = 0,36);

– for angina pectoris (t = 1,05).

BIBLIOGRAPHY

1. *Бабанов, С.* Профессиональные поражения сердечно-сосудистой системы / С. Бабанов, Р. Бараева // Врач. – 2015. – № 3. – С. 7–10.

2. *Герасимов, А.* Медицинская статистика / А. Герасимов. – Минск: МИА, 2007. – 480 с.

3. Кардиология. Рук. для врачей. В 2 т / Под ред. Н. Б. Перепеча, С. И. Рябова. – СПб: Спецлит, 2008.

4. Клинические рекомендации. Ревматология / гл. ред. Е. Л.Насонов. – М.: ГЭОТАР- Медиа, 2006. – 288 с.

CREATION OF GENETIC CONSTRUCTION CARRYING XANTHOSINE PHOSPHORYLASE GENE

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As a result of this study, plasmid pET42a-xapA, carrying the gene xapA of the Escherichia coli xanthosine phosphorylase, was constructed. In the course of further investigations, we are planning to transform bacterial cells with the obtained genetic construction.

Keywords: xanthosine phosphorylase, nicotinamide riboside, Escherichia coli.

Nicotinamide adenine dinucleotide (NAD+) is one of the most important cofactors for numerous enzymes involved in cellular energy metabolism. NAD+ level is known to decrease with aging, while the reduced activity of enzymes consuming NAD+ contributes to a wide range of senile diseases [1].

There are several ways of synthesizing this cofactor, but one of the most important is the salvage pathway. On this route, NAD+ is produced from its precursors, such as nicotinamide, nicotinamide riboside, nicotinamide mononucleotide [1]. It is possible to promote the level of the precursors to compensate NAD+ losses during aging of the body [2]. Studies of foreign authors have shown that nicotinamide riboside is the most effective precursor of this cofactor. Biochemical and genetic investigations confirmed that xanthosine phosphorilase was capable to synthesize nicotinamide from nicotinamide riboside [3].

Therefore, the aim of this work was to derive a recombinant vector, which carries the gene of the enzyme xanthosine phosphorylase of E. coli. This enzyme is able to catalyze synthesis of nicotinamide riboside, acting as the main intermediate of the essential coenzyme NAD+.

In our study, we used the xapA gene consisting of 834 nucleotides and coding for the enzyme xanthosine phosphorylase, isolated from the E. coli K-12 strain by the method of polymerase chain reaction (PCR). The plasmid pET42a(+) (Invitrogen, USA) was linearized by PCR for further cloning of the xapA gene. The gene insertion into the linearized plasmid was performed by circular polymerase extension cloning technique [4]. The obtained genetic construction pET42a-xapA was analyzed in the course of agarose gel electrophoresis.

BIBLIOGRAPHY

1. *Fang, E. F.* NAD+ in aging: molecular mechanisms and translational implications / E. F. Fang [et al.] // Trends Mol. Med. – 2017. – Vol. 23, № 10. – P. 899–916.

2. *Yoshino, J.* NAD+ Intermediates: the biology and therapeutic potential of NMN and NR / J. Yoshino, B. A. Joseph, S. Imai // Cell Metabol. – 2018. – Vol. 27, № 3. – P. 513–528.

3. *Dong, W.* New function for Escherichia coli xanthosine phosphorylase (xapA): genetic and biochemical evidences on its participation in NAD+ salvage from nicotinamide / W. Dong [et al.] // BMC Microbiol. – 2014. – Vol. 14, № 29. – P. 1471–2180.

4. *Quan, J.* Circular polymerase extension cloning of complex gene libraries and pathways / J. Quan, J. Tian // PLoS ONE. – 2009. – Vol. 4, № 7. – Art. e6441.