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Research Article

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Study of Rat Liver Mitochondrial Malate Dehydrogenase and After Nitrophen Administration

O. I. Jabbarova

Bukhara State Medical Institute, Department of Medical Biology, Bukhara, Republic of Uzbekistan

Abstract The article analyzes the study of rat liver mitochondria malate dehydrogenase.

Keywords Cytoplasm, rat liver, intracellular process, nitrofen

Introduction

Malate dehydrogenase is one of the key enzymes of energy transformations in the respiratory chain. It catalyzes the reverse oxidation reaction of malic acid to oxalic acid in the Krebs cycle. The main place of its localization – mitochondria [1-3], although it can be here in other or-gadallah – peroxide, the chloroplast, microsome, and, uh, in the cytoplasm [4-5].

It is known that the mitochondrial genome encodes a number of proteins involved in the energy supply of intracellular processes, as well as components of the mitochondrial protein – synthesizing system. It is associated with many economically valuable signs, such as resistance to adverse environmental factors, some antibiotics, herbicides, fungal pathogens [6-7].

Mitochondria are sensitive organoids to stress factors, so it is of interest to isolate, study the properties and activity of MDG (malate dehydrogenase) in the rat liver before and after administration of nitrophen.

We examined the liver of rats. The experiments were carried out on 80 white rats weighing 160-170 g. the Animals were divided into four groups of 20 pieces each. The first group was administered nitrofen at a dose of 108 mg / kg, which is 1/5 of the LD_{50}; the second group at a dose of 54mg / kg 1/10 LD_{50}; treya-27mg / kg – 1/20 LD_{50}; the fourth group – control.

The impact of atropine on the activity and composition of MPC were studied after administration to animals after 3, 6, 9, 24 and 72 h.

Liver mitochondria were isolated and purified by the previously described method with some modifications [8]. MDG activity was determined by [9]. MDG electrophoresis was performed by the method described in [10].

The results of the study showed that the activity of MDG of mitochondria and liver cytoplasm of rats before and after nitrophen administration differed (table). As can be seen, the activity of mitochondrial MDH is lower compared to MDH cytoplasm before and after the introduction nitrofene. After the introduction of nitrophen at a dose of 1/20 LD_{50} in 3, 6, 9 h activity MDG mitochondria is reduced by 2 times compared to the control, and after 24 and 72 h – 2.5 times. Nitrophen at a dose of 1/10 LD_{50} in 3, 6, 9 h reduces the activity of MD1 mitochondria 3 times, and after 24 and 72 h-respectively 3.1 and 3.5 times compared to the control. At a dose of 1/5LD_{50} 3, 6, 9, 24 and 72 h this drug is very strong impact on the activity of MDH in mitochondria reduces the activity from 3 to 6 times in comparison with the control.

The results indicate that the control MDG of rat liver cytoplasm is more active than the control MDG of mitochondria. It is seen that the introduction of nitrophen at a dose of 1/20 LD_{50} through 3 and 6 h activity MDG cytoplasm is reduced by 3 times, after 9.24 h-3.2 times, and after 72 h-2.5 times compared with the control. In the last two variants 1/10 and 1/5 LD_{50}, the activity of cytoplasm MDG is reduced to traces of MDG compared to the control.

MDH mitochondria after administration of nitrofen at a dose of 1/ LD_{50}, 1/10 and 1/20 LD_{50}, m 3, 6, and 9 h contains the same number as in the control variant, after 24 and 72 h MDH mitochondria is reduced to 1-fold compared with control.

Cytoplasmic MDH pechena rats the introduction of nitrogen in doses of 1/5 and 1/10 LD_{50} of MDG 1 and is reduced to 1.2 times in comparison with the control.

In the electrophoretic study of MDG mitochondria and liver cytoplasm of rats before and after administration of nitrophen is divided into five fractions with R_f 0.20; 0.50; 0.52; 0.56 and 0.58. The fraction with R_f 0.20 is very motionless and belongs to mitochondrial MDG, and the fractions with R= 0.50; 0.52; 0.56 and 0.58 are mobile and belong to cytoplasmic MDG.

After administration of nitrophen at a dose of 1/20 LD_{50}, no changes were observed in the composition of MDG of Mitochondria and cytoplasm. At a dose of 1/5 LD_{50} nitrophen as part of mitochondrial and cytoplasmic MDG after 24 and 72 hours, the fraction with R_f 0.56 and 0.58 was investigated. In these doses, after 24 and 72 h, a new enzyme fraction appeared next to the R_f 0.20 fraction as in the mitochondrial and cytoplasmic MDG of the rat liver.

Thus, based on the results of studies found that after the introduction of different doses of nitrophen in the liver of rats formed protective fractions MDG.

References

[1]. Rakhmatov N. A. Physico-chemical characterization of DNA and ribose Chlorella becoming cotton. Dis. dokt. Biol. Sciences'. Tashkent, 2009

[2]. Wemberg R. An elektrophorefec analeis of the isoensymesof malatedehydroqenese in reveral different plants // plant physiol 1968.Vol.43.p.622-628

[3]. Hayden D. B., Cook. F. S. malatadehyqroqenase in maire indomems the interecellular location and characteretion of the two major participate iso-rymes // Can. J. Biochen. 1972. Vol. 50. J* 6.P. 663 – 671.

[4]. N a I n a w a t e c H. C. Soluble and cliloroplast malate dehyqroqenase isoen-synies of Tricitum aeticum //Phytocheinistry - 1974, Vol. 13. P. 553-557

[5]. Accumulation and exchange of proteins in wheat grain. Alma ATA: Science. 1997. 174c.

[6]. Novikova G.M., Rakitina T. Ya., Shaxov A. A. Svetochuvstvitelen MDG of wheat seedlings, Dokl an SSSR 1974. 217.

[7]. Bochvarov P.Z., Alexina N. D., Andresenko S. S. Isoenzyme composition of MDG in highly productive wheat varieties / / Biol.sciences. 1974. J* 11. C. 86-90s.

[8]. Study of the structural organization of the genome of cotton mitochondria. Abstract. Dis. ... doctor. Biol. Sciences'. Tashkent. 2014. 45C.

[9]. Raxmatov N. A., Pazilova N. A., Zulfikarov A. N. Investigation of physical and chemical properties of DNA of rat liver mitochondria before and after administration of nitrophen / / Mat. Scientific. Those.conference "Istiqlol - 5", Navoi, 2014. 6-7C.

[10]. Tleuov A. R. Rahmatov N. A. isolation and physicochemical properties of MDTs of cotton in normal and infected mushroom daliliae V. // Bulletin of the KK branch of the Academy of Sciences of Uzbekistan. 2007. 53-56 C.