

In this way the expression levels for the yellow gene and elongation factor gene *Drosophila melanogaster* at different stages of the development are very different which is due to the peculiarities of synthetic processes at these stages.

HYPERGLYCEMIA UNJUST-CHANGE OF NEUTROPHILS MICROBICIDAL

D. Bobrukevich, Ya. Melnikova

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

The influence of simulated conditions of light and moderate severity hyperglycemia on the activity of enzymes of the "respiratory explosion" of human peripheral blood neutrophils in vitro was studied.

Keywords: hyperglycemia, neutrophils, NADPH oxidase, diabetes, hyperglycaemic coma, hyperglycemic syndrome.

The question of the participation of neutrophils in the regulation of the immune and other parts of homeostasis is currently under close scrutiny. Neutrophils are not only eliminating, auxiliary and effector cells, but also cells involved in the initiation and regulation of immunological reactions [1].

NADPH oxidase is the leading enzyme of oxygen dependent microbiocidal neutrophils. Increase in the concentration of glucose in the blood is noted with an increase in hormonal activity of the pituitary gland, thyroid gland, diabetes mellitus, acute and chronic pancreatitis. The enzyme catalyzes the reduction of molecular oxygen to a superoxide radical, which is then converted into hydrogen peroxide and other toxic forms of oxygen. The assembly of the NADPH-oxidase complex is induced on the inner side of the neutrophil membrane [1; 4].

In our experiments it was found that under the conditions of experimental modeling of the state of mild hyperglycemia (6,5 mM), a direct dependence of the development of the activation effect of NADP oxidase on the time of incubation of neutrophils in a medium containing glucose is observed. This process is sequential in the form of a stepwise increase in activity and 60 minutes are necessary to achieve the activation maximum (2,34 times the control value).

The incubation of NP in the simulated conditions of moderate hyperglycemia (11 mM) leads to a significant activation of the NADP oxidase complex compared to the control in the first 30 minutes – 2,63 times. The further stay of NF in a medium containing 11 mM glucose (60 minutes) leads to an increase in enzyme activity with a maximum of 3,51 times the control value, with continued activity after 90 minutes and after 120 minutes of incubation.

When analyzing the obtained data on the experimental modeling of the state of hyperglycemia of small and medium severity it is obvious that an increase in the glucose concentration in the neutrophil precursor incubation medium correlates with an increase in the enzymatic activity of the NADP oxidase complex. The effect is dose dependent and has a maximum manifestation after 60 minutes of incubation of cells under conditions of hyperglycemia of both small and medium severity.

Massive entry of glucose into cells using the mechanisms of active and passive transport leads to activation of the processes of glycolysis and the Krebs cycle, oxidative phosphorylation in the mitochondria and leading to acceleration of the processes of cellular respiration and ATP synthesis, and also causing the phosphorylation of a number of key activation enzymes such as Ras protein and protein kinase C. Thanks to the activation of these enzymes, the phosphorylation of the components of the NADP oxidase complex, the main component of the farm system of the "respiratory explosion" and its faster assembly on the inner surface of the cytoplasmic membrane. All this leads to a rapid launch of a cascade of reactions leading to the formation of reactive oxygen species and the development of oxidative stress, which is one of the significant factors of damage in the pathogenesis of many diseases associated with the state of hyperglycemia [1–4].

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BIOCHEMICAL ASPECTS OF ECOLOGICAL - HYGIENIC CHARACTERISTICS OF THE DOMESTIC PLANT GROWTH REGULATOR "AFALAMIN"

M. Boika, V. Stelmakh

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

As a result of the development of protective and stimulating compositions for the treatment of agricultural seeds at the Institute of Bioorganic Chemistry of the National Academy of Sciences established a promising plant growth regulator – hexyl ester of 5-aminolevulinic acid (H-ALA) with a pronounced growth stimulating properties against a number of crops. For safe use of the H-ALA in the agricultural sector must be allowed to complete toxicological and hygienic assessment of the rationale of hygienic standards in the working area, air, water reservoirs, food, as well as to calculate the acceptable daily intake dose in humans. The basis for such studies is the toxicological experiment on warm-blooded animals, which allows you to define the threshold of harmful action of chemical factors.

Keywords: hexyl ester of 5-aminolevulinic acid, xenobiotics, cytochrome P450

The research goal of the study of biochemical parameters of white rat's that received perorally an active substance of the new plant growth regulator 5-aminolevulinic acid hexyl ester.

In the context of the thirty-days' experiment the drug showed marked dose-dependent effects of cumulative properties manifestation at the level of lethal outcomes. Intragastric administration of the drug to white rats led to the change in a number of laboratory biochemical parameters of the liver function, which was reflected in an increase of the activity of alanineaminotransferase and dose-dependent increase in the level of bilirubin was also observed.

Among the laboratory parameters is the state of white rats, receiving treatment, he-ALA in the subchronic experiment, we observed a statistically significant increase in the content of the component C3 at 1,5 times of immunoglobulin G by 28 % compared with the control values.

The study of biochemical mechanisms associated with the functioning of microsomal monooxygenases smooth endoplasmic reticulum of the liver, allows to reveal the peculiarities of the damaging effect of the poison, determine the type of its influence on the cytochrome P450 system, and also serves as a basis for prevention and treatment intoxicaci

Study of the detoxification system of xenobiotics produced in rats that received intragastric maximum tolerated dose subchronic exposure 440 mg/kg he-ALA. The initial research phase describes the microsomal fraction of the liver of group IV content cytochromom P450 and P420, and also determined the total protein concentration and activity of P450 reductase.

Introduction 5-aminolevulinic acid hexyl ester was increased to 1,4 times the specific content of cytochrome P450. It was observed increase of level of the specific content of cytochrome P420 3 times relative to the control. P420 cytochrome is a membrane-bound protein and the expression of its activity is possible only in the presence of a phospholipid environment, which stabilizes the enzyme in a functionally active conformation.

As a result of all three experiments revealed changes in biochemical parameters in experimental animals treated with the studied substance in the subchronic experiment. These data are informative to assess the response of the organism to the action of 5-aminolevulinic acid hexyl ester.

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