

## FEATURES OF USE OF PSYCHOACTIVE SUBSTANCES IN VARIOUS AREAS OF THE REPUBLIC OF BELARUS

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**D. Filatova, M. Sineleva**

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

The work shows that abuse of psychoactive substances in the Republic of Belarus is more prevalent among men than in women. There were significant regional differences in the number of registered drug users: the highest prevalence rates of consumption of psychoactive substances were observed in the city of Minsk and the Gomel region.

*Keywords:* drug substance, psychoactive substances, mental addiction, opium addiction, drug treatment, narcological situation.

In the Republic of Belarus, the abuse of narcotic and non-narcotic psychoactive substances is more prevalent among men than in women. Most of the men and women who were registered with the narcological facilities of the Ministry of Health of the Republic of Belarus used opium group drugs, mainly opium extracts. To a lesser extent, the use of illegal methadone, heroin and other opioids was common. In 2016, the proportion of opiate and opioid users among men was 65,8 %, among women – 79,2 %. The age range of people registered in narcological records of the Ministry of Health of the Republic of Belarus ranged from 9 to 72 years. However, the overwhelming majority of registered drug users in Belarus were between the ages of 20 and 39 years. Drug users of different ages differed in their preference for certain types of psychoactive substances. So, in younger age groups of registered users, consumers of inhalants, cannabis preparations, including smoking drugs containing synthetic cannabinoids, prevailed. Injection of opium drugs is found only in drug users over 20 years of age, and the proportion of people who use these drugs increases with the age of the consumer of psychoactive substances.

In this way, for the four period (2012–2016) in the Republic of Belarus there was a moderate (by 36 %) increase in the prevalence of drug addiction. The significant "Prevalence of consumption of opiates" increased 1,4 times during this period. There is an increase in the prevalence of consumption of extraction opium, methadone, and also some synthetic opioids (tramadol, 3-methylfentanyl, dextromethorphan). However, the number of registered heroin users shows a downward trend. The spread of selected opiates has pronounced regional characteristics. The largest number of consumers of this group of drugs is registered in the city of Minsk, Minsk region and Brest region. In the Vitebsk and Mogilev regions, only half of registered drug users use opiates and opioids. Consumers of extraction opium predominate in the Brest and Minsk regions, the least of which is registered in the Vitebsk and Mogilev regions. The largest number of people who use heroin and methadone, is registered in Minsk, Mogilev and Vitebsk regions. The least synthetic opioids are found in Grodno and Brest regions.

## THE COMBINED EFFECT OF PHYSIOLOGICAL AND PHYSICAL FACTORS ON HOMEOSTASIS OF CALCIUM IONS IN THE CELLS OF THE IMMUNE SYSTEM

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**K. Fomenko, I. Puhteva, N. Gerasimovich**

*Belarusian State University, ISEI BSU,  
Minsk, Republic of Belarus  
ksusha\_199597@mail.ru*

The object of the study was the thymocytes of intact rats and the cells of rats after the influence of chronic  $\gamma$ -irradiation with the dose of 1 Gy. The measurement of cytoplasmic  $[Ca^{2+}]_i$  in thymocytes was carried out by using the fluorescent probe Fura-2/AM. The exogenous dexamethazone was added to the suspension of the cells and analysis of above-mentioned parameters was carried out. The analysis of the change of the concentration of the intracellular calcium under the influence of dexamethazone showed an activated role of this physiological substance on the given parameter in the intact cells. The amplification of the effect of dexamethazone was marked after chronic irradiation with the dose of 1 Gy.

*Keywords:* thymocyte, cytoplasmic  $[Ca^{2+}]_i$ , chronic  $\gamma$ -irradiation, dexamethasone, Fura-2AM.

In the case of exposure to ionizing radiation stress mobilized implements systems, which regulators are primarily glucocorticoid hormones. These substances can be one of the possible causes of death of immune cells of

the body, i. e. apoptosis. However, the mechanism of launching and implementing glucocorticoid -induced apoptosis remains largely unclear. The effect of glucocorticoids on target cells is carried out mainly at the level of gene transcription regulation. There is also the evidence that the start-up phase of such cooperation is the formation of the complex with specific membrane hormone regulatory protein-receptor. In this case, an important role in modifying signal transmission inside the cell, apparently, can play a radiation-induced damage to the plasma membrane affecting its lipid and protein component.

Of particular interest there are studies indicating that calcium ions may play a role marker glucocorticoid -induced apoptosis of thymocytes and lymphoid cells. It is expected that the increase in intracellular calcium concentration in cytoplasm appears to be the only trigger  $Ca^{2+}$ -mediated cell death.

The aim of this work was to study the homeostasis of calcium ions in the midst of glucocorticoid -induced apoptosis of thymocytes in rats on the 30th day after exposure to chronic (exposure at a dose of 1. Experiments were conducted on thymocytes and irradiated rats. For the measurement of intracellular  $Ca^{2+}$  concentration ( $[Ca^{2+}]_i$ ) were using fluorescent probe Fura-2AM (Molecular Probes, SIGMA).

It was found that intracellular cytoplasmic  $Ca^{2+}$  ion concentration increases at the time of incubation with dexamethasone. The visible effect of GIBBERELIC ACID on the levels of  $Ca^{2+}$  ions in the thymocytes occurs after 15 minutes of incubation with the above link (20 %). The most significant persistent increase in concentrations of  $[Ca^{2+}]_i$  is approximately 1,5 times compared with controls; there is through incubation 1:00 with this product.

Preincubation for 1:00 suspension thymocytes control animals with dexamethasone resulted in an increase in the concentration of calcium ions in cytoplasmic cells approximately 2 times. However, on the 30th day after chronic exposure at a dose of 1 g in the cytoplasm of rat thymocytes declining concentrations of cytoplasmic calcium ions by almost 40 % compared with control cells irradiated suspensions interactions of animals with dexamethasone in the above conditions also caused an increase in the concentration of calcium ions in the cytoplasm. However, there was only 50 % from the original values.

The results obtained in this work seem to be able to provide further disclosure of important problems related to the breakdown of the molecular mechanisms of action of glucocorticoids in the cells of the immune system that may eventually help to address the issues of violation of adaptive systems of the body when exposed to ionizing radiation.

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## PSYCHOLOGICAL PECULIARITIES OF PREGNANT WOMEN

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**A. Gaiduk, E. Tolstaya**

*Belarusian State University, ISEI BSU,  
Minsk, Republic of Belarus  
alena89gudz@gmail.com*

The psychological profile of pregnant women suffering from arterial hypertension is characterized by a tendency to psychosomatic reactions, the expression of anxiety at the somatic level, disadaptative in the experiences of stressful situations. As a result of psychological testing, it was found that pregnant women with hypertension have a high level of anxiety and stress.

*Keywords:* pregnancy, arterial hypertension, psychological state, reactive anxiety, stress.

It is known, that even physiological pregnancy is influencing psychological state of women. Several authors consider pregnancy as crisis.

Arterial hypertension is one of the main reasons of complications as for mother and for fetus. These complications sometimes may be mortal.

Last investigations lead to conclusion, that many complications in pregnancy have psychosomatic origin. In addition, psychoemotional tension plays very important role in the development of psychosomatic disturbances.

The aim of research was to analyze the psychological state in pregnant women.

We tested 60 women: 20 pregnant women without arterial hypertension; 20 pregnant women with arterial hypertension being developed during pregnancy; 20 healthy women of fertile age (medical workers).

The psychological state was investigated with the help of Spilberger Trait Anxiety Inventory (trait and reactive anxiety) and with Holms and Ray stress scale.

Pregnant women with arterial hypertension had reactive anxiety level distinctly higher then healthy women from control group (45,7+1,3 and 38,0+1,7,  $p < 0,001$ ). In addition, most of the pregnant women with arterial hypertension had high levels of reactive anxiety. None of them had low levels of reactive anxiety.