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**REFLEX ACTIVITY OF THE CENTRAL NERVOUS SYSTEM
OF ANIMALS LIVES SIMILAR ORGANIZED IN URBAN,
MARGINAL AND HABITATS**

Annotation. Currently, the issue is particularly relevant for the study of the activity of the central nervous system in the mechanisms of living organisms to adapt to the realities of environmental change and possible ways sanokreotologiya rehabilitation.

Keywords: sanokreotologiya, rehabilitation, central nervous system.

Тірек сөздер: санокреатология, оңалту, орталық жүйке жүйесі.

Ключевые слова: санокреатология, реабилитация, центральная нервная система.

In connection with the export of raw materials orientation of the economy Karaganda region permanent environment is experiencing the impact of production, which in turn affects the condition of morpho-functional mechanisms of adaptation of organisms similar to organized forms of animals, to communicate in an urban environment, marginal areas and in the wild. Among the transformative impact of anthropogenic factors on the conditions and the Sary - Arch should be called «Baikonur» cosmodrome, corporation «Kazakhmys», «Mittal - Steel», Aktau cement plant, open coal mine «Chubarkulsky» factory of rubber products and a number of other businesses.

Currently, the issue is particularly relevant for the study of the activity of the central nervous system in the mechanisms of living organisms to adapt to the realities of environmental change and possible ways sanokreotologiya rehabilitation. It is established that in the adaptation of organisms is of great importance individually - typological characteristics of the nervous system, which largely determine the nature of the resistance to the damaging effects of various [1]. Therefore, our objective was to examine the individual - the typological features of different types of rats that live in different ecological environments.

The paper will outline the results of studies on the individual - the typological characteristics of the nervous system of different types of organized similar animals.

In the work we used adult male populations of animals that lived in laboratories, marginal areas and wild-caught-by-hole traps.

Synanthropic and field mice were kept in a cage and were taken into the experiment after 6-8 days after capture. Individually-typological features of the nervous system of animals were studied in the test «open field» [2].

The total number of 10 was used by adult males of each species of animal - (laboratory, synanthropic rats and field mice).

It is well known that the characteristics of the nervous system largely determine the resistance of the body, being the basis of conduct in the course of adaptation to the environment.

To study the effect of specific problems for the various types of organized similar animals on the functional state of the central nervous system conducted experiments using test «open field». The experiment used outbred white rats (n=10), synanthropic rats (n=10) and field mice (n=10).

In the experiments recorded the number and duration of each act in seconds. The behavior of animals in the new unfamiliar situations, in our experiments in the «open field», is characterized by orientation and exploratory motivation and negative emotional states such as anxiety and fear.

The results are shown in tables 1-3.

As seen from the largest number of tables has behavioral acts on locomotion. However, the marked species peculiarities of this behavioral act. Thus, it acts on the number of the most prolonged in mice field and at least synanthropic rats, whereas the length is expressed in a laboratory and synanthropic rats as compared with field mice in which it is below 9.5%. Analysis of vertical activity (rack-supported) shows that it is the number of attacks and the duration is very high (31.0 ± 36.0 and 0.34 ± 1.08) in synanthropic rats, which exceeds those figures laboratory rats (24.5% and 41.6%) and field mice (29.0% and 78%), respectively. Changes in vertical activity with a rack without support were less significant, although the

Table 1 – Parameters of the functional state of the central nervous system of laboratory rats

№	The investigated parameters		The number of acts of	Duration, seconds
1	The horizontal activity	Motion on site	39.30 ± 0.44	48.0 ± 1.80
			3.2 ± 0.03	11.9 ± 0.24
2	The vertical activity	Rack with support	7.6 ± 0.14	15.0 ± 0.46
		Rack without support	0.8 ± 0.08	1.2 ± 0.22
3	Gruming		1.4 ± 0.04	6.9 ± 0.32
4	Sniffing		8.5 ± 0.07	31.9 ± 1.04
5	Immobility		0.45 ± 0.04	4.00 ± 0.10
6	Definition		0.10 ± 0.07	2.40 ± 0.40

7	Urination		0.10±0.04	0.15±0.07
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Table 2 – Parameters of the functional state of the central nervous systems synanthropic rats

№	The investigated parameters		The number of acts of	Duration, seconds
1	The horizontal activity	Motion on site	34.0±0.36	47.0±1.12
			3.1±0.03	12.4±0.24
2	The vertical activity	Rack with support	31.0±0.34	36.0±1.08
		Rack without support	1.00±0.10	1.6±0.16
3	Gruming		1.5±0.06	6.7±0.31
4	Sniffing		6.8±0.07	31.0±1.29
5	Immobility		1.0±0.03	2.80±0.21
6	Defecation		0.8±0.06	1.90±0.31
7	Urination		0.16±0.05	0.18±0.07

Table 3 – Parameters of the functional state of the central nervous systems of field mice

№	The investigated parameters		The number of acts of	Duration, seconds
1	The horizontal activity	Motion on site	41.00±0.48	43.00±1.4
			4.8±0.03	12.00±0.12
2	The vertical activity	Rack with support	0.90±0.08	8.00±0.24
		Rack without support	6.90±0.19	8.00±0.19
3	Gruming		2.4±0.06	16.0±0.27

4	Sniffing		10.0±0.09	42.0±1.08
5	Immobility		1.00±0.02	6.00±0.07
6	Definition		8.70±0.09	32.1±1.03
7	Urination		0.98±0.06	5.00±0.09

direction of events were similar in nature. The next number duration act was sniffing, which was at most 7.6% and 7.5% longer for a field-mouse, compared with laboratory rats and synanthropic. Act on the number of real estate were little different in different animal species, whereas the duration of intercourse for field mice is almost 2 times higher than the results of laboratory and synanthropic rats. Such were the characteristics of grooming, with the only difference being that the field mice, he increased both the number of acts and duration of reactions. Defecation and urination in both frequency and duration were higher in field mice compared with the laboratory and synanthropic rats.

Given the average values of the horizontal and vertical activity and the value of the mean square error can be attributed to the active synanthropic rats, field mouse, and the average lab rat-passive types of animal behavior, which seems to stem from individual - typological features of eco - ethological behavior associated with the medium of their habitat.

The structural and functional integrity of the organism is provided by the integrated regulation of its various organs and systems, as well as the relationship with the external environment. Remain studied rather poorly morphological and functional features of adaptations of animals living in urban and border areas with it, and in the wild. Meanwhile, it is known that at the present stage of development of the degradation of both the biosphere and the living organisms on it, and the regulatory mechanisms that provide the equivalent reactive homeostasis to harmful environmental stimuli and the organism [3]. This fact is a limiting element in the effective fight to prevent, retreading, rehabilitation and treatment of various types of degradation at all levels of the organization of organisms [4]. Following the anthro-pogenic pollution increasingly approaching global ecological crisis is the direct contamination of the internal environment, which leads to the «endoecological disease» creatures living on earth [5, 6].

Rubezh of reaching the threshold concentration of toxic substances in the environment surrounding the cells entered the literature as the «point of Levin's» who first described this phenomenon (similar to the point Urey, which began extinction arche and eubacteria on the surface of the Earth). After passing through a point Levin mutation all nuclear organisms would be irreversible. In this situation the study of the structure of adaptive reconstructions of morphological and functional changes in the animals that live in varying degrees of urban environment is relevant. One of the first tasks in the study of this problem, it was a choice of animal species that live in an urban, marginal, and natural environments with a similarly organized form of life, based on common physiological and genetic mechanisms. These views were synanthropic and laboratory rat, as well as a field mouse, which can be indicators of adaptation and monitoring of the environment as well as morphological and functional changes occurring in their bodies in connection with exo-and endo environmental, mostly by anthropogenic pollution.

Using this test model we have studied the parameters of animal activity to the conditions of the ecological environment.

The results of experiments on the reflex activity of the central nervous system confirm the well-known position of the adaptive role in the central nervous system due to changes in the environment. The evidence suggests that animals living in different conditions acquire a certain type of individual-typological reaction seems to ensure their eco-ethological behavior associated with their environment.

Thus, we studied the functional activity of the central nervous system of animals living in urban and marginal areas and wildlife exposed to radiological and industrial pollution from common sources.

Specific features of the reflex activity of the central nervous system associated with acts of locomotion, sniffing, grooming, defecation and urination, and, apparently, come from eco-ethological animal behavior associated with the environment.

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Резюме

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УРБАНИЗАЦИЯЛАНҒАН, МАРГИНАЛДЫҚ ЖӘНЕ ТАБИҒИ ОРТАДА МЕКЕНДЕЙТІН ҰҚСАС ЖАНУАРЛАРДЫҢ ОЖЖ РЕФЛЕКТОРЛЫҚ ҚЫЗМЕТІ

Қазіргі кезде қоршаған ортаның өзгеруіне байланысты тірі организмдердің бейімделуінің орталық жүйке жүйесі механизмдерінің белсенділігін зерттеу бойынша және санкреатологиялық оңалту жолымен мүмкін болатын мән-жайларды зерттеу мәселелері ерекше маңызды болып отыр.

Тірек сөздер: санокреатология, оңалту, орталық жүйке жүйесі.

Резюме

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РЕФЛЕКТОРНАЯ ДЕЯТЕЛЬНОСТЬ ЦНС СХОДНО-ОРГАНИЗОВАННЫХ
ЖИВОТНЫХ, ОБИТАЮЩИХ В УСЛОВИЯХ УРБАНИЗИРОВАННОЙ,
МАРГИНАЛЬНОЙ И ЕСТЕСТВЕННОЙ СРЕДЫ ОБИТАНИЯ

В настоящее время особенно актуален вопрос по изучению активности центральной нервной системы в механизмах адаптации живых организмов к реалиям изменения окружающей среды и выявление возможных путей санокреотологической реабилитации.

Ключевые слова: санокреотология, реабилитация, центральная нервная системы.

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5	Immobility		0.45±0.04	4.00±0.10
6	Definition		0.10±0.07	2.40±0.40
7	Urination		0.10±0.04	0.15±0.07

Table 2 – Parameters of the functional state of the central nervous systems synanthropic rats

№	The investigated parameters		The number of acts of	Duration, seconds
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Резюме

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Урбанизацияланған, маргиналдық және табиғи ортада мекендейтін

ұқсас жануарлардың ОЖЖ рефлекторлық қызметі

Қазіргі кезде қоршаған ортаның өзгеруіне байланысты тірі организмдердің бейімделуінің орталық жүйке жүйесі механизмдерінің белсенділігін зерттеу бойынша және санкратологиялық оңалту жолымен мүмкін болатын мән-жайларды зерттеу мәселелері ерекше маңызды болып отыр.

Тірек сөздер: санократология, оңалту, орталық жүйке жүйесі.

Резюме

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Рефлекторная деятельность ЦНС сходно-организованных животных, обитающих в условиях урбанизированной, маргинальной и естественной среды обитания

В настоящее время особенно актуален вопрос по изучению активности центральной нервной системы в механизмах адаптации живых организмов к реалиям изменения окружающей среды и выявление возможных путей санокреотологической реабилитации.

Ключевые слова: санокреотология, реабилитация, центральная нервная системы.

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