

Такой площади воздействия достаточно, чтобы человек четко ощутил холод или тепло. И в этом случае северяне (**а**) отличались от южан (**б**) до обливания большим разбросом температур, а после применения системы закаливания у северян и у южан произошло смещение температур в сторону меньших значений; через три месяца у северян не встречалась температура выше 29°C, а у южан – выше 30°C. Через шесть с половиной месяцев у северян температура локализовалась в пределах 29-31°C, а у южан – в пределах 31-32°C. При этом, несмотря на различие в диапазонах температур, и в той и в другой группах наибольший процент людей ощущал холод при воздействии температурой в 31-32°C. Все приведенные данные на этих трех рисунках свидетельствуют о том, что после трех месяцев обливания температура кожи у людей с двинулась в сторону меньших значений, и воспринимать холод они стали при более низких температурах, а после шести с половиной месяцев – температура кожи повысилась, и воспринимать холод они стали при более высоких значениях температуры.

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Тұжырым

Терінің сезу рецепторлары «оңтүстік» және «солтүстік» тексерілді. Алынған мәліметтер, тері температурасының әртүрлігі және суықты қабылдау негізінде, олардың терідегі метаболизм деңгейі әртүрлі екендігін көрсетті.

Summary

Sensitivity of skin receptors of "southerners" and "northerners" is surveyed. The analysis of the received data has shown that at the heart of distinction in temperature of a skin and perception of a cold different level of a skin metabolism at them can lie.

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BEHAVIOUR OF RATS IN THE RAISED CROSSWISE LABYRINTH DURING SUBCHRONIC EXTERMINATION BY THE STEAMS OF SULFUR

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There were studied the behavior of white rats in the time of the inhalation by steams of sulfur in terms 1 and 2 months at a concentration 1,76mg/m³, 12,68mg/m³. Most expressed infringements were found out by physiological methods of research on 8 week of the extermination - reduction of research activity and of impellent activity, emotional reactance with increase in terms of inhalation are observed. From the behavior of experimental animals there were observed the pauperization of repertoire of behavioral reactions, infringement of mink reflexes of rodents, and also display of anxiolytic properties of sulfur steams in a concentration 1,76mg/m³.

I. Introduction. To begin with the development of scientific and technical progress in the Western Kazakhstan, oil layers with the high maintenance of sulphurous formations have started to master (Tengiz, Karashaganak), that has led to an increase of the lumped elementary sulfur's reserves on sulfuric platforms up to 9 mln.tons. It has increased ecological pressure on ecosystem of Caspian Sea's coasts, namely: the oxidation of ground and water, and to the pollution of atmospheric air by the steams of sulfur, sulphurous anhydride, sulfuric anhydride, sulfuric acid and hydrogen sulphide. In addition, sulfur from the area storages

evaporates rather easily under influence of environment's high temperatures (from 38°C and higher) in summertime as an aerosol or steam, forming eight-nuclear molecules that can have toxic effect on vivid organisms [1, 2].

II. Statement the purpose. Subsequently the purpose of our paper is studying the toxic action of steams of pure sulfur to the behaviour of experimental animals, in particular in the raised crosswise labyrinth (RCL). Studying of the inhalation's influence by the steams of sulfur in a concentration 1/3 maximum concentration limits (MCL) ($1,76 \text{ mg/m}^3$) and 2MCL ($12,76 \text{ mg/m}^3$) [3] (subchronic experiment within two months) has been executed on experimental animal - 30 white rats-male, with initial weight of a body 180-240 gramm. Experimental animals were exposed to the influence of the sulfur's steams during 5 days in a week and for 4 hours per day in special inhalation chambers of Kurljanskiy. The steams of elementary sulfur were received using the method of a sandy bath by Sanotskiy I.V. [4].

There was used one of the commodity forms of sulfur from the deposit Tengiz- technical gas granulated sulfur with a high degree of cleanliness (99, 99%) [5-8].

Experimental animals have been distributed on following groups, namely: I - the rats, which were exposed to inhalation influence of the sulfur's steams in a concentration $1,76 \text{ mg/m}^3$ (n=15), II – rats, which were exposed to inhalation influence of the sulfur's steams in a concentration $12,68 \text{ mg/m}^3$ (n=15).

The installation "raised crosswise labyrinth" is intended for the estimation of the research behaviour's structure and the estimation of anxiousness of rodents. It has received wide application [14-17], because there is using the balance between natural fear of animals before the open space, height, novelty and simultaneous aspiration to investigate these unfamiliar conditions. All manipulations with animals were spent according to the international recommendations on carrying out medic-biological researches using the animals [9-10].

During the experiment physiological parameters were studied in dynamics. Dynamics was spent as follows: background supervision - prior to the beginning of the experiment, for the fourth week of the experiment and on the eighth week of the experiment. By means of test RCL we estimated parameters of research activity (RA), impellent activity (IA) and emotional reactance (ER) of rats for the estimation of behavioural reactions. The estimation of parameters RA included incline reaction (IR), the look out from the closed sleeves (L). Besides, time of stay in closed sleeve of the labyrinth (TSC), time of staying in the open sleeve of the labyrinth (TSO) was defined. The estimation of parameters IA included VIA (a rack with an emphasis, the rack), ER included grooming (G), urination (U) and defecation (D). There were also spent the definition of muscular force (MF).

Results are processed statistically using the spreadsheet Microsoft Excel by the definition of average arithmetic (M) and its standard mistake (m), the degree of reliability of distinctions between compared sizes was defined by Student criterion.

III. Results. Chronic influence of the sulfur's steams leads to the infringement of a normal physiological addition in weight growing and muscular force with an increase in age of animals that is connected with the toxic influence of the sulfur's steams and process of the reorganization of exchange reactions with the purpose of the adaptation, and with prevalence of processes of catabolism.

The sulfur's steams render an adverse influence on the infringement of behavioural reactions of animals. In figure 1 changes IA rats of II group, who have been influenced by the sulfur's steams in a concentration $1,76 \text{ mg/m}^3$, are presented.

Analyzing obtained data in two experimental groups, we have noted heterogeneousness of whole toxic process, except for the test of muscular force. RA shows the most precise tendency to downturn in the second group at a concentration $12,68 \text{ mg/m}^3$ 4 week of supervision on 64,6%, while IA at 8 of week in 74% at the same time ER has a tendency to increasing at inhalation terms prolongation. In particular, on 4 week of supervision IA at the subchronic inhalation of sulfur's steams in a concentration $1,76 \text{ mg/m}^3$ decreases slightly on 11%, while on 8 week it increases for 167% in comparison with background parameters. At subchronic inhalation by steams of sulfur in a concentration $12,68 \text{ mg/m}^3$ on 4 week there was marked an increase of IA on 30%, whereas on 8 week this parameter decreased on 74% in comparison with background indexes ($p < 0,001$).

Apparently, it is connected with the greater toxic action of small dozes of sulfur in comparison with action of a doze, which is practically twice exceeding active maximum concentration limit. Probably the guarding braking was progressively developing because of the weakening of functional ability of nervous cells. All received results are coordinated with the literary data [11, 12], where the correlation between levels of rats' stability to deficiency of oxygen and their impellent activity in the raised crosswise labyrinth is established.

Research activity in two experimental groups decreased: on 4 week on 64%, on 8 week of supervision on 94% in comparison with background parameters at subchronic inhalation in a concentration 1,76 mg/m³; on 4 week on 129%, on 8 week of supervision on 84% in comparison with background parameters at subchronic inhalation by sulfur's steams in a concentration 12,68 mg/m³ (p<0, 005).

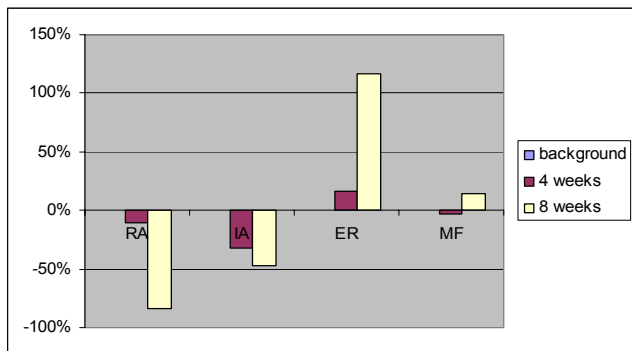


Figure 1 - Dynamics of changes of physiological parameters at subchronic influence by the steams of sulfur in a concentration 1,76mg/m³

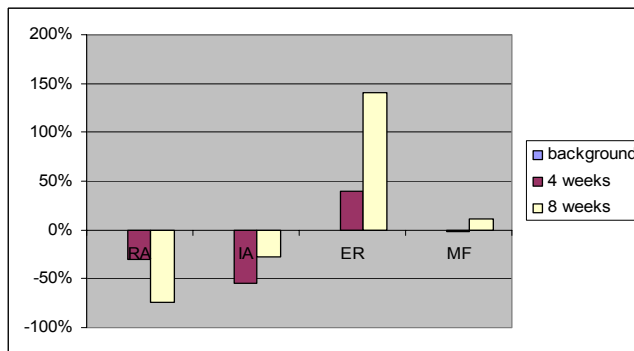


Figure 2 - Dynamics of changes of physiological parameters at subchronic influence of sulfur's steams in a concentration 12,68mg/m³

Furthermore, figure 1 shows the dynamics of change of parameters ER of rats at subchronic influence by the steams of sulfur, which is measured in percentages. While ER increased to 16% on the fourth week of the experiment on eighth week increased in 117% in comparison with, with background indexes at a concentration 1,76 mg/m³ at subchronic inhalation by the steams of sulfur (p<0, 001). It is important to take into the account the fact that ER increased on eighth week due to the grooming.

As you can see from the bar chart, since the fourth week of supervision rats at subchronic inhalation by steams of sulfur in a concentration 12,68 mg/m³ had substantial growth of ER to 40%, whereas it had a moderate decrease to 141% on 8 week in comparison to the background indexes (p<0,005), additionally due to an increase of grooming movements (figure 2), that give evidence about processes of animals' adaptation to a new conditions and confirm with the reduction of impellent activity in the second group. Livanova L.M., Lukjanova L.D. have revealed a feedback between impellent activity and emotional reactivity that we corroborate in our work too [12].

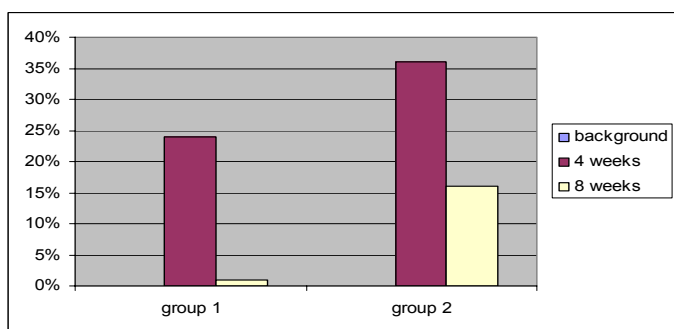


Figure 3 - Dynamics TSC of rats at subchronic influence of sulfur's steams

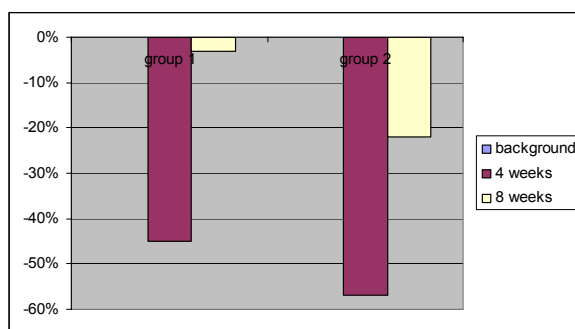


Figure 4 - Dynamics TSO of rats at subchronic influence of sulfur's steams

Also we studied the time of staying of rats in the open and closed sleeve of the labyrinth depending on a dose of subchronic inhalation by steams of sulfur in the test "the raised crosswise labyrinth" (figure 3, 4).

We have established that subchronic action of sulfur's steams in a concentration 1,76 mg/m³ leads to an increase of TSC on 24% on 4 week of supervision, whereas it leads to the reduction of TSC to the background indexes on 8 week of the research. While the influence of subchronic inhalation of sulfur's steams in a concentration 12,68mg/m³ leads to reduction of TSC on 4 week by 45%, on 8 week of supervision it leads to the fall on 11% in comparison with background parameters (p<0,001).

It is the fact that animal visits the open sleeves of the raised crosswise labyrinth (RCL) seldom because of the fear about the open and shined space. Number of visits to the open sleeves of RCL as well as time of their staying there is considered as the parameters, which testify about the anxiousness of an animal /13-16/.

Whereas subchronic influence of sulfur's steams in a concentration $1,76 \text{ mg/m}^3$ leads to the reduction of TSO by 45% on 4 week, TSO increases to the background indexes on 8 week of supervision. At subchronic influence by steams of sulfurs in a concentration $12,68 \text{ mg/m}^3$ parameters of TSO decrease on 4 week of supervision for 60% ($p < 0,05$), and it fell on 8 week on 28% respectively in comparison with the background parameters.

As regards muscular force of experimental animals, on 4 week of experiment it decreased for 3% and 2% accordingly depending on an increase of a concentration of inhalation by steams of sulfur, but in contrast on the eighth week of the experiment is increased for 14% and 11% respectively that, apparently, is a consequence of processes of the adaptation to the toxicant during all considering experiment.

IV. Conclusions.

1. The steams of sulfur, which get into the organism of experimental animals during an inhalation, cause toxic action.

2. For the first time it is established that subchronic extermination of sulfur's steams in a concentration $1,76 \text{ mg/m}^3$ causes more expressed infringements of experimental animals' behaviour that is provided by "the effect of small dozes"

3. For the first time it is established subchronic extermination of sulfur's steams in a concentration $1,76 \text{ mg/m}^3$ causes anxiolytic effect on experimental animals on 8 week of supervision that is based on the reduction of their anxiety up to background induces identify by time of staying in the open sleeve of the labyrinth.

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Резюме

Изучали поведение белых крыс при ингаляционной затравке парами серы в сроки 1 и 2 месяца при концентрации $1,76 \text{ mg/m}^3$, $12,68 \text{ mg/m}^3$. Физиологическими методами исследования обнаружили

наиболее выраженные нарушения на 8 неделе затравки – наблюдаются уменьшение исследовательской активности и двигательной активности, эмоциональной реактивности с увеличением сроков ингаляции. Со стороны поведения экспериментальных животных наблюдается обеднение репертуара поведенческих реакций, нарушение норковых рефлексов грызунов, а также проявление анксиолитических свойств паров серы в концентрации 1,76мг/м³.

Тұжырым

Ақ егеуқұйрықтардың қарапайым күкіртпен 1 және 2 ай мерзімінде 1,76мг/м³, 12,68мг/м³ концентрацияда тыныс жолдары арқылы дем алдыру кезіндегі мінез-құлқы зерттелген. Физиологиялық зерттеу әдістерімен уландырудың аптасында келесі айқын бұзылыстарды анықтадық: ингаляция мерзімінің ұзаруымен зерттеу белсенділігінің төмендегені және қозғалыс белсенділігі мен көңіл-күй реактивтілігінің күшеюі. Тәжірибелік жануарлардың мінез-құлқы жағынан мінез-құлқы реакцияларының бәсеңдеуі, кемірушілердің індік рефлексстердің бұзылысы, сонымен қатар 1,76мг/м³ концентрацияда қарапайым күкірт буларының анксиолитикалық қасиеттерінің көрініс тапқаны анықталды.

УДК: 631.95:636.087.74: 636.5.034

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О РОЛИ СМЕСИ ПОЛИМЕРОВ НА ЯЙЦЕНОСКОСТЬ КУР КРОССА «ОМСКИЙ БЕЛЫЙ»

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Использование кормовых добавок: смеси казеината натрия и поливинилового спирта, смеси желатина и поливинилового спирта в основном рационе цыплят стартового периода развития, влияние их на яичную продуктивность кур.

Разведение разных видов сельскохозяйственной птицы для получения высокопитательных продуктов (яиц, мясо) – основная задача птицеводства на сегодняшний день. Установлено, что уровень, характер и качественная сторона продуктивности зависит от наследственных факторов (вида, породы, линии, кросса, индивидуальных особенностей), пола, возраста птицы, а также условий ее содержания и кормления [1-2].

Одним из показателей продуктивности является яичная продуктивность – это основной селекционируемый признак и решающий показатель не только птицы яичного направления, но и птицы мясного направления [3]. Яичная продуктивность тесно связана с использованием в птицеводстве сбалансированных по всем питательным веществам рационов [4].

В ходе проведения эксперимента мы изучили рост и развитие цыплят контрольного и экспериментального вариантов до половозрелового возраста и их яйценоскость.

Поступая в организм птицы с комбикормами, загрязненные корма являются причиной хронических отравлений. Это приводит к замедлению роста и развития молодняка, снижению потребления корма [5].

В стартовый период развития цыплят происходит основной падеж птицы по причине заболевания специфическими для них болезнями [6].

Материалы и методы

Исследования проводились на базе ТОО «Бишкульская птицефабрика» Северо-Казахстанской области (Республика Казахстан) были проведены научно-хозяйственные опыты на цыплятах кросса «Омский белый» в 2005-2008 гг.

Целью нашего исследования явилось изучение влияния кормовых добавок: смеси казеината натрия и поливинилового спирта и смеси желатина и поливинилового спирта в основных рационах на рост и развитие цыплят кросса «Омский белый» стартового периода развития до половозрелового возраста, а также влияния их на яйценоскость.

В премиксе в основной рацион кормления опытных вариантов вводили экологически безопасные кормовые добавки: смесь казеината натрия с поливиниловым спиртом, смесь желатина с поливиниловым спиртом (в количестве 0,02 % (7 мг) от живой постановочной массы одного цыпленка) в разных соотношениях. Смеси предварительно растворяли в воде, а затем добавляли в кормосмесь.

Для проведения первого опыта методом случайной выборки сформировали 4 варианта цыплят суточного возраста по 3300 голов. Первый вариант – контрольный, второй, третий и четвертый