

GEORGIAN MEDICAL NEWS

ISSN 1512-0112

NO 4 (349) Апрель 2024

ТБИЛИСИ - NEW YORK



ЕЖЕМЕСЯЧНЫЙ НАУЧНЫЙ ЖУРНАЛ

Медицинские новости Грузии
საქართველოს სამედიცინო სიახლენი

GEORGIAN MEDICAL NEWS

Monthly Georgia-US joint scientific journal published both in electronic and paper formats of the Agency of Medical Information of the Georgian Association of Business Press.
Published since 1994. Distributed in NIS, EU and USA.

GMN: Georgian Medical News is peer-reviewed, published monthly journal committed to promoting the science and art of medicine and the betterment of public health, published by the GMN Editorial Board since 1994. GMN carries original scientific articles on medicine, biology and pharmacy, which are of experimental, theoretical and practical character; publishes original research, reviews, commentaries, editorials, essays, medical news, and correspondence in English and Russian.

GMN is indexed in MEDLINE, SCOPUS, PubMed and VINITI Russian Academy of Sciences. The full text content is available through EBSCO databases.

GMN: Медицинские новости Грузии - ежемесячный рецензируемый научный журнал, издаётся Редакционной коллегией с 1994 года на русском и английском языках в целях поддержки медицинской науки и улучшения здравоохранения. В журнале публикуются оригинальные научные статьи в области медицины, биологии и фармации, статьи обзорного характера, научные сообщения, новости медицины и здравоохранения. Журнал индексируется в MEDLINE, отражён в базе данных SCOPUS, PubMed и ВИНТИ РАН. Полнотекстовые статьи журнала доступны через БД EBSCO.

GMN: Georgian Medical News – საქართველოს სამედიცინო სიახლენი – არის ყოველთვიური სამეცნიერო სამედიცინო რეცენზირებადი ჟურნალი, გამოიცემა 1994 წლიდან, წარმოადგენს სარედაქციო კოლეგიისა და აშშ-ის მეცნიერების, განათლების, ინდუსტრიის, ხელოვნებისა და ბუნებისმეტყველების საერთაშორისო აკადემიის ერთობლივ გამოცემას. GMN-ში რუსულ და ინგლისურ ენებზე ქვეყნდება ექსპერიმენტული, თეორიული და პრაქტიკული ხასიათის ორიგინალური სამეცნიერო სტატიები მედიცინის, ბიოლოგიისა და ფარმაციის სფეროში, მიმოხილვითი ხასიათის სტატიები.

ჟურნალი ინდექსირებულია MEDLINE-ის საერთაშორისო სისტემაში, ასახულია SCOPUS-ის, PubMed-ის და ВИНТИ РАН-ის მონაცემთა ბაზებში. სტატიების სრული ტექსტი ხელმისაწვდომია EBSCO-ს მონაცემთა ბაზებშიდან.

WEBSITE

www.geomednews.com

К СВЕДЕНИЮ АВТОРОВ!

При направлении статьи в редакцию необходимо соблюдать следующие правила:

1. Статья должна быть представлена в двух экземплярах, на русском или английском языках, напечатанная через **полтора интервала на одной стороне стандартного листа с шириной левого поля в три сантиметра**. Используемый компьютерный шрифт для текста на русском и английском языках - **Times New Roman (Кириллица)**, для текста на грузинском языке следует использовать **AcadNusx**. Размер шрифта - **12**. К рукописи, напечатанной на компьютере, должен быть приложен CD со статьей.

2. Размер статьи должен быть не менее десяти и не более двадцати страниц машинописи, включая указатель литературы и резюме на английском, русском и грузинском языках.

3. В статье должны быть освещены актуальность данного материала, методы и результаты исследования и их обсуждение.

При представлении в печать научных экспериментальных работ авторы должны указывать вид и количество экспериментальных животных, применявшиеся методы обезболивания и усыпления (в ходе острых опытов).

4. К статье должны быть приложены краткое (на полстраницы) резюме на английском, русском и грузинском языках (включающее следующие разделы: цель исследования, материал и методы, результаты и заключение) и список ключевых слов (key words).

5. Таблицы необходимо представлять в печатной форме. Фотокопии не принимаются. **Все цифровые, итоговые и процентные данные в таблицах должны соответствовать таковым в тексте статьи**. Таблицы и графики должны быть озаглавлены.

6. Фотографии должны быть контрастными, фотокопии с рентгенограмм - в позитивном изображении. Рисунки, чертежи и диаграммы следует озаглавить, пронумеровать и вставить в соответствующее место текста **в tiff формате**.

В подписях к микрофотографиям следует указывать степень увеличения через окуляр или объектив и метод окраски или импрегнации срезов.

7. Фамилии отечественных авторов приводятся в оригинальной транскрипции.

8. При оформлении и направлении статей в журнал МНГ просим авторов соблюдать правила, изложенные в «Единых требованиях к рукописям, представляемым в биомедицинские журналы», принятых Международным комитетом редакторов медицинских журналов - <http://www.spinesurgery.ru/files/publish.pdf> и http://www.nlm.nih.gov/bsd/uniform_requirements.html В конце каждой оригинальной статьи приводится библиографический список. В список литературы включаются все материалы, на которые имеются ссылки в тексте. Список составляется в алфавитном порядке и нумеруется. Литературный источник приводится на языке оригинала. В списке литературы сначала приводятся работы, написанные знаками грузинского алфавита, затем кириллицей и латиницей. Ссылки на цитируемые работы в тексте статьи даются в квадратных скобках в виде номера, соответствующего номеру данной работы в списке литературы. Большинство цитированных источников должны быть за последние 5-7 лет.

9. Для получения права на публикацию статья должна иметь от руководителя работы или учреждения визу и сопроводительное отношение, написанные или напечатанные на бланке и заверенные подписью и печатью.

10. В конце статьи должны быть подписи всех авторов, полностью приведены их фамилии, имена и отчества, указаны служебный и домашний номера телефонов и адреса или иные координаты. Количество авторов (соавторов) не должно превышать пяти человек.

11. Редакция оставляет за собой право сокращать и исправлять статьи. Корректур авторам не высылаются, вся работа и сверка проводится по авторскому оригиналу.

12. Недопустимо направление в редакцию работ, представленных к печати в иных издательствах или опубликованных в других изданиях.

При нарушении указанных правил статьи не рассматриваются.

REQUIREMENTS

Please note, materials submitted to the Editorial Office Staff are supposed to meet the following requirements:

1. Articles must be provided with a double copy, in English or Russian languages and typed or computer-printed on a single side of standard typing paper, with the left margin of 3 centimeters width, and 1.5 spacing between the lines, typeface - **Times New Roman (Cyrillic)**, print size - 12 (referring to Georgian and Russian materials). With computer-printed texts please enclose a CD carrying the same file titled with Latin symbols.

2. Size of the article, including index and resume in English, Russian and Georgian languages must be at least 10 pages and not exceed the limit of 20 pages of typed or computer-printed text.

3. Submitted material must include a coverage of a topical subject, research methods, results, and review.

Authors of the scientific-research works must indicate the number of experimental biological species drawn in, list the employed methods of anesthetization and soporific means used during acute tests.

4. Articles must have a short (half page) abstract in English, Russian and Georgian (including the following sections: aim of study, material and methods, results and conclusions) and a list of key words.

5. Tables must be presented in an original typed or computer-printed form, instead of a photocopied version. **Numbers, totals, percentile data on the tables must coincide with those in the texts of the articles.** Tables and graphs must be headed.

6. Photographs are required to be contrasted and must be submitted with doubles. Please number each photograph with a pencil on its back, indicate author's name, title of the article (short version), and mark out its top and bottom parts. Drawings must be accurate, drafts and diagrams drawn in Indian ink (or black ink). Photocopies of the X-ray photographs must be presented in a positive image in **tiff format**.

Accurately numbered subtitles for each illustration must be listed on a separate sheet of paper. In the subtitles for the microphotographs please indicate the ocular and objective lens magnification power, method of coloring or impregnation of the microscopic sections (preparations).

7. Please indicate last names, first and middle initials of the native authors, present names and initials of the foreign authors in the transcription of the original language, enclose in parenthesis corresponding number under which the author is listed in the reference materials.

8. Please follow guidance offered to authors by The International Committee of Medical Journal Editors guidance in its Uniform Requirements for Manuscripts Submitted to Biomedical Journals publication available online at: http://www.nlm.nih.gov/bsd/uniform_requirements.html
http://www.icmje.org/urm_full.pdf

In GMN style for each work cited in the text, a bibliographic reference is given, and this is located at the end of the article under the title "References". All references cited in the text must be listed. The list of references should be arranged alphabetically and then numbered. References are numbered in the text [numbers in square brackets] and in the reference list and numbers are repeated throughout the text as needed. The bibliographic description is given in the language of publication (citations in Georgian script are followed by Cyrillic and Latin).

9. To obtain the rights of publication articles must be accompanied by a visa from the project instructor or the establishment, where the work has been performed, and a reference letter, both written or typed on a special signed form, certified by a stamp or a seal.

10. Articles must be signed by all of the authors at the end, and they must be provided with a list of full names, office and home phone numbers and addresses or other non-office locations where the authors could be reached. The number of the authors (co-authors) must not exceed the limit of 5 people.

11. Editorial Staff reserves the rights to cut down in size and correct the articles. Proof-sheets are not sent out to the authors. The entire editorial and collation work is performed according to the author's original text.

12. Sending in the works that have already been assigned to the press by other Editorial Staffs or have been printed by other publishers is not permissible.

**Articles that Fail to Meet the Aforementioned
Requirements are not Assigned to be Reviewed.**

ავტორთა საქურაღებოლ!

რედაქციაში სტატიის წარმოდგენისას საჭიროა დაიცვათ შემდეგი წესები:

1. სტატია უნდა წარმოადგინოთ 2 ცალად, რუსულ ან ინგლისურ ენებზე დაბეჭდილი სტანდარტული ფურცლის 1 გვერდზე, 3 სმ სიგანის მარცხენა ველისა და სტრიქონებს შორის 1,5 ინტერვალის დაცვით. გამოყენებული კომპიუტერული შრიფტი რუსულ და ინგლისურენოვან ტექსტებში - **Times New Roman (Кириллица)**, ხოლო ქართულენოვან ტექსტში საჭიროა გამოვიყენოთ **AcadNusx**. შრიფტის ზომა – 12. სტატიას თან უნდა ახლდეს CD სტატიით.

2. სტატიის მოცულობა არ უნდა შეადგენდეს 10 გვერდზე ნაკლებს და 20 გვერდზე მეტს ლიტერატურის სიის და რეზიუმეების (ინგლისურ, რუსულ და ქართულ ენებზე) ჩათვლით.

3. სტატიაში საჭიროა გაშუქდეს: საკითხის აქტუალობა; კვლევის მიზანი; საკვლევი მასალა და გამოყენებული მეთოდები; მიღებული შედეგები და მათი განსჯა. ექსპერიმენტული ხასიათის სტატიების წარმოდგენისას ავტორებმა უნდა მიუთითონ საექსპერიმენტო ცხოველების სახეობა და რაოდენობა; გაუტკივარებისა და დაძინების მეთოდები (მწვავე ცდების პირობებში).

4. სტატიას თან უნდა ახლდეს რეზიუმე ინგლისურ, რუსულ და ქართულ ენებზე არანაკლებ ნახევარი გვერდის მოცულობისა (სათაურის, ავტორების, დაწესებულების მითითებით და უნდა შეიცავდეს შემდეგ განყოფილებებს: მიზანი, მასალა და მეთოდები, შედეგები და დასკვნები; ტექსტუალური ნაწილი არ უნდა იყოს 15 სტრიქონზე ნაკლები) და საკვანძო სიტყვების ჩამონათვალი (key words).

5. ცხრილები საჭიროა წარმოადგინოთ ნაბეჭდი სახით. ყველა ციფრული, შემაჯამებელი და პროცენტული მონაცემები უნდა შეესაბამებოდეს ტექსტში მოყვანილს.

6. ფოტოსურათები უნდა იყოს კონტრასტული; სურათები, ნახაზები, დიაგრამები - დასათაურებული, დანომრილი და სათანადო ადგილას ჩასმული. რენტგენოგრამების ფოტოასლები წარმოადგინეთ პოზიტიური გამოსახულებით **tiff** ფორმატში. მიკროფოტოსურათების წარწერებში საჭიროა მიუთითოთ ოკულარის ან ობიექტივის საშუალებით გადიდების ხარისხი, ანათალების შედეგის ან იმპრეგნაციის მეთოდი და აღნიშნოთ სურათის ზედა და ქვედა ნაწილები.

7. სამამულო ავტორების გვარები სტატიაში აღინიშნება ინიციალების თანდართვით, უცხოურისა – უცხოური ტრანსკრიპციით.

8. სტატიას თან უნდა ახლდეს ავტორის მიერ გამოყენებული სამამულო და უცხოური შრომების ბიბლიოგრაფიული სია (ბოლო 5-8 წლის სიღრმით). ანბანური წყობით წარმოდგენილ ბიბლიოგრაფიულ სიაში მიუთითეთ ჯერ სამამულო, შემდეგ უცხოელი ავტორები (გვარი, ინიციალები, სტატიის სათაური, ჟურნალის დასახელება, გამოცემის ადგილი, წელი, ჟურნალის №, პირველი და ბოლო გვერდები). მონოგრაფიის შემთხვევაში მიუთითეთ გამოცემის წელი, ადგილი და გვერდების საერთო რაოდენობა. ტექსტში კვადრატულ ფხიხლებში უნდა მიუთითოთ ავტორის შესაბამისი N ლიტერატურის სიის მიხედვით. მიზანშეწონილია, რომ ციტირებული წყაროების უმეტესი ნაწილი იყოს 5-6 წლის სიღრმის.

9. სტატიას თან უნდა ახლდეს: ა) დაწესებულების ან სამეცნიერო ხელმძღვანელის წარდგინება, დამოწმებული ხელმოწერითა და ბეჭდით; ბ) დარგის სპეციალისტის დამოწმებული რეცენზია, რომელშიც მითითებული იქნება საკითხის აქტუალობა, მასალის საკმაობა, მეთოდის სანდოობა, შედეგების სამეცნიერო-პრაქტიკული მნიშვნელობა.

10. სტატიის ბოლოს საჭიროა ყველა ავტორის ხელმოწერა, რომელთა რაოდენობა არ უნდა აღემატებოდეს 5-ს.

11. რედაქცია იტოვებს უფლებას შეასწოროს სტატია. ტექსტზე მუშაობა და შეჯერება ხდება საავტორო ორიგინალის მიხედვით.

12. დაუშვებელია რედაქციაში ისეთი სტატიის წარდგენა, რომელიც დასაბეჭდად წარდგენილი იყო სხვა რედაქციაში ან გამოქვეყნებული იყო სხვა გამოცემებში.

აღნიშნული წესების დარღვევის შემთხვევაში სტატიები არ განიხილება.

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EFFECT OF CHRONIC ADMINISTRATION OF LOW DOSES OF POLYPEPTIDES OF CATTLE CEREBRAL CORTEX AND METHIONYL-GLUTAMYL-HISTIDYL-PHENYLALANYL-PROLYL-GLYCYL-PROLINE ON BEHAVIORAL RESPONSES OF RAT OFFSPRING

Mirzoyan Meri S, Chochiev Dmitrii S, Rostomov Faizo E, Lyutoeva Anna S, Abdurakhmanov Makhach G, Sashkova Angelina E, Gunina Anastasia A, Batalova Anfisa B, Averchenkova Mariia M, Chistyakova Sofya L, Kachanov Dmitrii A.

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Abstract.

In the modern world, anyone is susceptible to the effects of stress, regardless of age, gender, culture, and social status. Stress at an early age accelerates long-term changes in the functional properties underlying emotional perception and therefore may alter the stress response later in life. Unfortunately, the interdisciplinary approach in stress research emphasised the study of stress phenomenon in the development of this or that pathology or manifestation of appropriate reactions under the influence of this or that factor, i.e. the study of a particular case, which did not significantly affect the conceptual level of interpretation of the stress phenomenon as such. Moreover, we did not come across any publications interpreting the pathogenesis of the development of the classical triad of stress, confirming, or refuting its validity. In this study, we evaluated the effect of nootropic drugs - polypeptides of cattle cerebral cortex and methionyl-glutamyl-histidyl-phenylalanyl-prolyl-glycyl-proline on the behaviour of rat offspring under conditions of maternal deprivation. The drug affects processes related to memory formation and learning, enhances attention during learning and analysis of information, improves adaptation of the organism to hypoxia, cerebral ischaemia, anaesthesia and other damaging effects. As a result of the conducted study against the background of early postnatal maternal deprivation and the use of such drugs as methionyl-glutamyl-histidyl-phenylalanyl-prolyl-glycyl-proline and polypeptides of cattle cerebral it was noted that the latter drug showed the greatest effectiveness as a means of compensating the reaction to chronic stress under conditions of maternal deprivation.

Key words. материнская депривация, polypeptides of cattle cerebral cortex, methionyl-glutamyl-histidyl-phenylalanyl-prolyl-glycyl-proline крысы Wistar, поведение, депрессия, тревога.

Introduction.

Stress is a mental state of the organism, when excessive overstrain of the organism prevents full recovery and sometimes leads to exhaustion [1]. Stress is one of the most significant and widespread medical and social problems in the world and is an etiological factor in 80% of diseases [1,2].

In the modern world, anyone is susceptible to the effects of stress, regardless of age, gender, culture, and social status [2]. Stress at an early age accelerates long-term changes in the functional properties underlying emotional perception and therefore may alter the stress response later in life [3]. There are now various theories and models of stress - in particular maternal deprivation, which has been used as a variant of early postnatal stress as it can increase anxiety and depression-related

behaviours, as well as the offspring's hormonal response to stress.

Regardless of our desire, our bodies are subjected to external influences that determine a permanent state of stress throughout life [4].

The study of stress is inextricably linked to the name of Nobel laureate H. Selye, who published in 1936 in the journal "Nature" an article "A Syndrome produced by Diverse Nocuous Agents", in which he presented data that regardless of the specifics of the impact develops the same type of response of the organism to them. Thus, the concept of general adaptation syndrome appeared, and the classical triad of stress signs was substantiated [1-4].

The classical triad of Selye stress includes hyperplasia of the adrenal cortex; subinvolution of the thymus, erosions and/or ulcers of the upper digestive tract (stomach, duodenum), which can be complicated by bleeding [1-4].

The development of the era of stress as a general adaptation syndrome for many decades became the starting point in the study of this phenomenon, reflecting the standard response of the organism to the impact of stressors with emphasis on the development of the classical stress triad. Moreover, the problem of stress attracted the attention of scientists from different fields of knowledge, and, accordingly, there appeared a lot of its interpretations, finding names in the peculiarities of the etiological factor (traumatic stress, operational stress, military stress, social stress, stress of medical workers and teachers, social stress, etc.) [5].

Unfortunately, the interdisciplinary approach in stress research emphasised the study of stress phenomenon in the development of this or that pathology or manifestation of appropriate reactions under the influence of this or that factor, i.e. the study of a particular case, which did not significantly affect the conceptual level of interpretation of the stress phenomenon as such. Moreover, we did not come across any publications interpreting the pathogenesis of the development of the classical triad of stress, confirming, or refuting its validity. At the same time, the causal relationship of the development of these particular manifestations of stress from the position of pathogenetic features has not been assessed. Probably, the state and equipment of laboratories of that time did not allow to study these issues in more detail [1-5].

The general adaptation syndrome is a model that consists of three elements or phases that describe the body's response to stress: the anxiety stage; the resistance stage; and the exhaustion stage [3,4].

Human beings face stress daily. Short-term moderate stress, eustress, is a mechanism of adaptation. The systems activated

by stressor influences are aimed at maintaining homeostasis. Unfortunately, stress does not always have a positive outcome. The phenomenon of destructive effect of stress, when there is a failure of compensatory reactions, is called distress. A prolonged and strong impact on the organism leads to distress [2,5].

The aim of the study was to evaluate the effect of nootropic drugs - polypeptides of cattle cerebral cortex and methionyl-glutamyl-histidyl-phenylalanyl-prolyl-glycyl-proline on the behaviour of rat offspring under conditions of maternal deprivation.

Materials and Methods.

The experiment was conducted on the offspring of Wistar rats of both sexes in the amount of 30 rats, which were specially bred for scientific research work. The rats were placed in special cages and were kept in a laboratory box, in which the conditions necessary for their habitat were constantly maintained: moderate lighting, air humidity 30-50% at a temperature of 18-20 degrees centigrade, use of exhaust ventilation system. Before the beginning of the practical part of the work, the rats were in a 7-day quarantine for adaptation to life in new conditions.

Three groups were formed: control group (n=10), receiving intramuscularly 0.9% NaCl, experimental group №1, receiving intramuscularly the preparation of polypeptides of cattle cerebral cortex in a dose of 0.2 ml (n=10), experimental group №2, receiving intranasally the preparation of methionyl-glutamyl-histidyl-phenylalanyl-prolyl-glycyl-proline in a dose of 0.1 ml (n=10). For the convenience of reading the article, the names of preparations were abbreviated: polypeptides of cattle cerebral cortex (A), methionyl-glutamyl-histidyl-phenylalanyl-prolyl-glycyl-proline (B).

The studied rat offspring were subjected to maternal deprivation with a timing of 6 h for 21 days. For the experiment, a 12 h/12 h light day was strictly observed.

Results.

At first, no changes in the behaviour of rats of all three groups were observed, they did not react in any way to the process of maternal deprivation. However, on the 6th day of the study, the rats of experimental group №1 began to show aggression, including to each other, and strong anxiety. When performing deprivation, the rats surrounded the mother, trying to protect her. After isolating the mother, the rats ran almost non-stop around the cage, were stressed and did not even touch food or water. This behaviour continued until the mother was returned to the cage. Only under this condition the rats became calmer and gathered around the mother again.

At the same time, the rats from experimental group №2 behaved calmly and no problems with the execution of the course of the experiment were observed. In the first days the rats receiving preparation A, after isolation of the mother, gathered in a heap and did not move away from each other. After 6 days from the beginning of the drug administration the rats stopped reacting to the deprivation process and, being in isolation from their mother, behaved calmly, ran around the cage, anxiety and aggression were not observed.

By the end of the second week of the experiment, the aggression of rats that received preparation B only increased, and some of

them began to show it even to their mothers. At the same time in the experimental group №2 the behaviour of rats did not change.

Later, 2 rats each were selected from the control and two experimental groups for adrenalectomy. At the stage of weighing, we noted the fact that the average weight of the rats of the experimental group №2 was equal to 32-34 grams, while the weight of the rats of the control group and experimental group №1 reached 38-40 grams.

At the end of the successful operation, it took the rats an average of one week to return to their previous lifestyle. However, one of the operated rats from experimental group 1 was attacked by other rats and its mother after returning to the cage and died as a result.

After adrenalectomy, biopreparations of rat adrenal gland slices from each group were prepared. The micro preparation was made on a microtome, a special mechanical device used for preparation of thin sections, which were then examined by microscopy. The data presented in Table 1 were obtained during the study of biopreparations.

Table 1. Morphometric parameters of rat adrenal medullae.

Indicator	Control	Group №1 (A)	Group №2 (B)
Relative adrenal weight (mg/100 g weight)	14,5±0,50	13,4±0,60	13,8±0,21
Volume (mm³)			
adrenal cortex	17,5±0,80	15,8±0,90	20,3±0,40
zona glomerulosa	3,0±0,10	2,8±0,15	3,8±0,39
zona fasciculata	12,9±0,73	11,3±0,33	14,7±0,58
zona reticularis	1,6±0,28	1,7±0,20	1,8±0,29
adrenal medulla	2,5±0,20	1,8±0,10	2,2±0,10
Cross-sectional area of endocrine cells (µm²)			
zona glomerulosa	129,7±3,45	123,8±4,20	105,2±2,04
zona fasciculata	151,2±3,60	158,3±3,76	188,8±4,50
zona reticularis	121,3±4,58	105,3±2,26	89,2±3,16

The relative mass of the adrenal gland, volume of the adrenal cortex and medulla zones, and cross-sectional area were considered when analysing the results.

In the studied groups the changes of adrenal cortex on chronic stress caused by maternal deprivation were different. In rats of the control group all signs of morphological changes of the adrenal glands were observed – hypertrophy of the adrenal cortex (17,5±0,80 mm³), namely the predominance of the volume of the fascicular zone, the volume of which reached 12,9±0,73 mm³, which is associated with increased cortisone production. In group №1 compensatory reactions were observed, in this connection hypertrophy was not observed in comparison with the control, the indices were relatively normal. In group №2 there was excessive hypertrophy of adrenal cortex (20,3±0,40), even in comparison with the control group, and the same bundle zone prevails (14,7±0,58), although it should be noted that the data of the tubular zone (3,8±0,39) and reticular zone (1,8±0,29) were also higher than those of other groups (p<0,05). Volume of cortex, zona fasciculata was significantly in group B compared to control and group A (Figure 1, p<0,05).

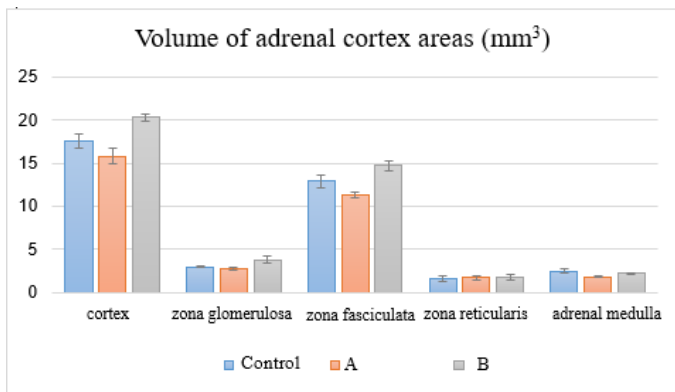


Figure 1. Volume indices of adrenal cortex zones (mm³).

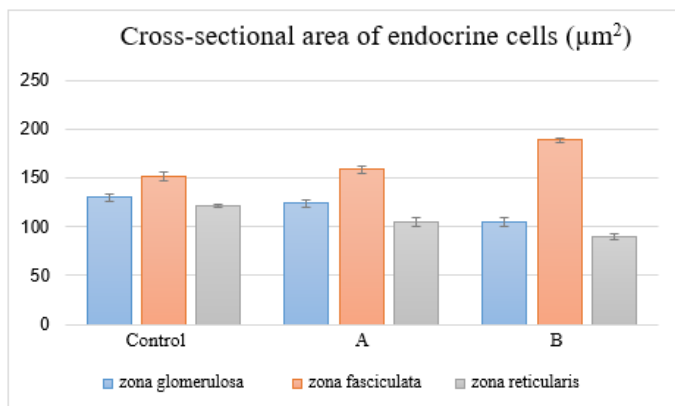


Figure 2. Cross-sectional area indices of endocrine cells (µm²).

When analysing the results of the cross-sectional area of endocrine cells, we also noted that the indices of the bundle zone in rats from experimental group №2 that received drug B were higher than in the other two groups.

Conclusion.

In our study we compared two drugs from the group of nootropics methionyl-glutamyl-histidyl-phenylalanyl-prolyl-glycyl-proline and polypeptides of cattle cerebral. From the drug instructions it was revealed that the first drug has an original mechanism of neurospecific effect on the CNS. The drug affects processes related to memory formation and learning, enhances attention during learning and analysis of information, improves adaptation of the organism to hypoxia, cerebral ischaemia, anaesthesia and other damaging effects.

Polypeptides of cattle cerebral has nootropic action, namely affects the disturbed cortical functions of the brain, improves activity, thinking, attention, neuroprotective action, that is, protects brain cells from damage, stimulates regenerative processes in the brain, reduces the harmful effects of toxic substances for the brain.

Protein fractions in the composition of Drug A are able to penetrate directly into the brain, which provides a wide range

of effects and indications for treatment. This drug has nootropic (affects disturbed cortical functions of the brain, improving activity, thinking, attention), neuroprotective (protects brain cells from damage), anticonvulsant effect, stimulates regenerative processes in the brain, reduces the harmful effects of substances toxic to the brain.

Drug B is a synthetic analog of corticotropin, which has nootropic properties and is completely devoid of hormonal activity. The drug affects the processes associated with memory formation and learning. Drug B enhances attention in learning and analyzing information, improves consolidation of memory trace in patients after neurosurgical interventions, craniocerebral trauma, suffering from cerebrovascular diseases, including dyscirculatory encephalopathy; improves adaptation of the body to hypoxia, cerebral ischemia, anaesthesia, and other damaging effects. The drug is practically non-toxic with a single and prolonged administration. It does not show allergic, embryotoxic, teratogenic and mutagenic properties.

As a result of the conducted study against the background of early postnatal maternal deprivation and the use of such drugs as methionyl-glutamyl-histidyl-phenylalanyl-prolyl-glycyl-proline and polypeptides of cattle cerebral it was noted that the latter drug showed the greatest effectiveness as a means of compensating the reaction to chronic stress under conditions of maternal deprivation.

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