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ВЛИЯНИЕ МИНЕРАЛЬНОЙ ВОДЫ С ПОВЫШЕННЫМ СОДЕРЖАНИЕМ ОРГАНИЧЕСКИХ ВЕЩЕСТВ « ЗБРУЧАНСКАЯ 77 « НА ПСИХОЭМОЦИОНАЛЬНЫЕ РАССТРОЙСТВА (ЭКСПЕРИМЕНТАЛЬНО-КЛИНИЧЕСКОЕ ИССЛЕДОВАНИЕ)

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INFLUENCE OF MINERAL WATER WITH INCREASED CONTENT OF ORGANIC SUBSTANCES «ZBRUCHANSKAYA 77» FOR PSYCHO-EMOTIONAL DISORDERS (EXPERIMENTAL AND CLINICAL STADY)

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АННОТАЦИЯ

Экспериментальными исследованиями установлен мягкий успокаивающий эффект минеральной воды с высоким содержанием органических веществ «Збручанская 77» на функциональное состояние центральной нервной системы и эмоционального напряжения животных (белые крысы линии Выстар аутобредного развеления). Такой характер биологической

активности позволил определить направление дальнейших клинических испытаний. Группа лиц с психо-эмоциональными расстройствами пили минеральную воду «Збручанская 77» в суточной дозе 1 % от массы тела 3 раза в день за 40 минут до еды, курс 21 дней. Применение минеральной воды «Збручанская 77» приводит к нормализации психо-эмоционального состояния у 80 % исследуемых. В конце лечения оставалось лишь слабо проявление психоэмоциональных расстройств.

ABSTRACT

Experimental studies have established a mild calming effect of mineral water with a high content of organic substances "Zbruchanskaya 77" on the functional state of the central nervous system and the emotional strain of the animals (white rats, Wistar female avtobriding). This character of the biological activity allowed us to determine the direction of further clinical trials. The group of persons with psycho-emotional disorders drank mineral water "Zbruchanskaya 77" a daily dose of 1% of body weight 3 times a day for 40 minutes before a meal, a course of 21 days. Application of mineral water "Zbruchanskaya 77" leads to the normalization of psychoemotional condition at 80% of the investigated. At the end of treatment remained only weakly manifestation of psychoemotional disorders.

Ключевые слова:функциональное состояние центральной нервной системы, эмоциональное напряжение экспериментальных животных, коррекция психо-эмоциональных расстройств у пациентов, минеральная вода "Збручанская 77".

Keywords: functional state of the central nervous system and the emotional strain of experimental animals, correction of psycho-emotional disorders in patients, mineral water "Zbruchanskaya 77".

Due to the economic, social, domestic and other causes stress attacked modern society more and more, so the problem of abuse of mental and emotional state of the person is very important, as this state promotes the development of the pathology of the nervous system in the form of numerous neurotic, neuronlike and psychosomatic illnesses, including neurosis take lead. Anxiety, general emotional stress causing overstrain psychophysiological systems of the body, early signs of which are manifestations of psychosomatic syndromes. The variety of physiological changes that occur during emotional stress, suggests its pathogenesis factor in a variety forms of somatic pathology [1].

Given the above, considerable attention and interest in experimental physiology is the impact of varying intensity and genesis of the stress on the organism as a whole and on the system, organ and cellular levels. During the evolution of stress emerged as a general nonspecific adaptive reaction of the organism in response to stress factors. But when these effects become chronic, even minor stress factors are crucial in the development of pathological processes [2]. Chronic stress associated with lower non-specific resistance and is non-specific basis for a number of diseases. [3] According to the authors reducing the adaptive capacity of an organism is determined in almost all patients with psychosomatic diseases. [4]. Level of resistance of the organism is determined by the quality of its overall adaptive response. Inductors of general anti-stress adaptation reactions appear adaptogens. Adaptogen considered all stimuli and influences, which in effect on the body can cause a particular general adaptive response. Natural mediators of stress limiting systems increase resistance to stress damage [5]. From this perspective, promising in the prevention and correction of stress damage may be the use of tools that increase the efficiency of natural stress-limiting systems, namely, the use of mineral water (MW) of a specific chemical composition [6, 7].

Based on the many achievements of experimental medicine and balneology the mechanisms of therapeutic effect of MW constantly updated [8, 9]. In a complex and not fully studied the process of forming of natural MW special role belongs to of autochthonous microorganisms. Due to the metabolic products of different environmental and physiological groups of bacteria in MW come therapeutically important components that can affect the neuroendocrine-immune complex of animals by different expressions and even widely differing effects depending on the state of microflora, products of metabolism and microbial antigens [10, 11]. Features of modern socio-economic conditions, increased intensification of work, changing environmental conditions (climate, ecology) create the preconditions for development in the population surge and psycho-emotional condition exclusion, which in the future could lead to the formation of emotional stress.

Therefore, the search and elaboration of tools that are able to prevent or stop the development of this condition, it is appropriate and reasonable.

Assignment of drugs may reduce the therapeutic effect due to addiction, development of allergic reactions, disorders of metabolic essential nutrients and reduce adaptation reserves of the organism. These deficiencies deprived therapeutic MW, which have significant biological and detoxification activity, affordably priced and can be used in the treatment of many diseases.

Based on the above, the purpose of research - to study the biological effects which make MW «Zbruchanskaya 77» in its internal application on the performance of the functional state of the central nervous system (CNS) and the vegetative nervous system (VNS) of animals will recommend it to people with psycho-emotional disorders.

Materials and Methods:

MW «Zbruchanskaya 77» refers to the high content of organic matter (0,009 - 0,017 mg / dm3), weakly mineralization (total mineralization is 0,82- 0,017 g / dm3) hydrocarbonate-magnesium-sodium MW. Well relates to the display of Romanov Zbruchanske deposit MW and located in the National Park «Podolski Tovtry», 200 meters from the r. Zbruch.

The formula of the chemical composition of water:

C org. 0,009 — 0,017$M_{0,82\ —\ 0,84}$ ($HCO_3$71-72$SO_4$13-17Cl13-16/(Na+K)63-66Mg20-21Ca14-16) pH 7,4 – 7,5

The experiment was conducted on 30 white female rats weighing 180-200 g. Animal studies were performed according to the directive of the European Parliament and of the Council 2010/63 / EU on the protection of animals used for scientific purpose. [12]

The animals were divided into three groups:

- I group - 10 intact rats (control);
- II group - 10 rats fed pooled tap water that was injected into the stomach with olive soft probe;
- Third group - 10 rats treated with MW «Zbruchanskaya 77» through the esophagus where it injected with olive soft probe, in an amount of 1% of body weight, rate for 7 days.

State of the activity of the central nervous system (CNS) was evaluated by the changes of orientation-research behavior (ORB), physical activity and level of emotional state of the animals studied by the «open field» method [13, 14].

The behavior of rats in the appliance «open field» is prognostic criteria for state of CNS. Placing the animals in the new environment leads to activation of research motivation, accompanied by the formation of a passive-defensive behavior. A typical manifestation of this condition is considered vegetative reaction of animals as bowel movements (bolus) and urination and changes in the level of physical activity. Rats enough most of the time given to the care of the fur and skin, and in some cases this process for the duration is more than the time of motor activity [15].

Grooming is traditionally classified as comfort behavior or comfortable condition of animals. But the state when the rats make short exercise and the quantity of grooming increased indicates that the animals are in a state of anxiety [16, 17, 18].

Methodical and reception techniques that were involved in the research, published in the «Methodical Recommendations» [19].

Statistical analysis of the data was performed by method of indirect differences, reliable changes were considered those that were within the tables Student's probability <0.05 [20].

Clinical trials of MW «Zbruchanskaya 77» were conducted in clinical sanatorium «Arcadia» State Border Service of Ukraine (c. Odessa). It involved 30 patients with psycho-emotional disorders.

Patients were divided into two groups: 1th (control) - patients received normal drinking water, 2nd (main) - patients receiving MW «Zbruchanskaya 77» in a daily dose of 1% of body weight, 3 times a day 40 minutes before meals, course of 21 days. Psychosomatic evaluation of patients was conducted by Hamilton anxiety scale.

Results and discussion:

Upon completion of the course the experimental animals of 3rd group have the calming effect of the functional state of the CNS (Table. 1).

Significantly reduced ORB of rats - integral index, consisting of the sum of amounts crossed squares, vertical uprights and peek in mink ($p < 0.001$, $p < 0.01$ and $p < 0.001$ respectively). Determined significant decrease in locomotor activity in rats, the animals barely crossed the central squares ($p < 0.001$). But this animal did not look depressed or inactive. On the contrary, they do not bother, they did not make unnecessary movements, some of the experiment were engaged in grooming, as evidenced by a significant increase not quantity, and more importantly, the duration of grooming ($p < 0.01$); they were completely focused on the washing and brushing hair. That is, the emotional state of the animals improved markedly. The second indicator, which characterizes level of animal emotional activity - the number of defecation and urination under the influence of MW «Zbruchanskaya 77» reduced ($p < 0.01$ and $p < 0.001$), indicating a reduction in emotional stress animals.It should be emphasized that in the animals of group 2nd group, who received pooled tap water, significant changes in indicators of the functional state of the CNS and emotional activity not installed.

Table 1

Characterization of functional condition of the CNS and emotional state of animals under the influence of tap settled water and MW «Zbruchanskaya 77»

Indicators	1st group	2nd group	3rd group
	(M3 ± M3)	(M3 ± m3)	(M3 ± m3)
Number of exits in the center, n	100	No changes	No changes
Number of squares crossed, n	100	No changes	38**
Number of vertical posts, n	100	No changes	30**
Number of peek in mink, n	100	No changes	70**
Grooming, s	100	105	107
Grooming (duration),	100	95	120*
Number of urination, n			
Number of defecation, n	100	103	80**

Note: data research groups are calculated as a percentage of the data the first control group of rats, which are 100%

* — significant changes of the 2nd group comparatively the control ($p < 0,05$),

** — significant changes of the 3rd group comparatively the control ($p < 0,05$)

The data about the calming influence of MW «Zbruchanskaya 77» on the functional state of the CNS of animals coincide with ongoing at the time experimental research weakly mineralization MW with high content of organic matter from Skhidnytsia deposits (Ukraine), which was conducted by scientists of the Odessa Research Institute of Medical Rehabilitation and Health Resort of the Ministry health of Ukraine. [21]. It was found similar calming effect on the processes of CNS stimulation of test animals. Watering healthy rats with MW #10 from Skhidnytsia deposits for 24 days led to a significant reduction (relative to controls) duration index of β-wave for 1.3 times ($P < 0.01$), which was recorded during electrocorticography in the frontal and occipital regions of the cerebral cortex, which indicates inhibition of excitation. Thus, the experimental data of calming influence MW «Zbruchanskaya 77» on the functional state of the CNS and emotional activity made it possible to predict the availability of medicinal properties and generate confidence about the advisability correction of psycho-emotional overstrain and disadaptation in individuals with the effects of psychological trauma and social disorders.

Patients in both groups (control and basic) before treatment had moderate degree of emotional disorder in a disturbing premonition, difficulty concentrating, memory loss, irritability, feeling of anxiety and increased sensitivity to noise. Patients were inherent distinctive look, which marked facial tension, shifted eyebrows, pale skin, excessive sweating, and willingness

to tears. The presence or absence of psychosomatic symptoms in different patients were evaluated with a total score of the Hamilton anxiety scale (17 points or less - absence of neurosis, 18-24 points - moderate degree, 25 points and higher – severe degree). After treatment in patients of 2nd group signs of emotional disturbance had only 20% of the patients and in the control group - 80% of subjects (Table. 2). It should be noted that the 2nd group patients to the end of treatment kept only just noticeable displays of psycho-emotional disorders.

Table 2

The dynamics of the degree of neurosis in patients of control and basic groups after the treatment of MW «Zbruchanskaya 77»

Degree of neurosis	Control group,n = 10		Basic group n = 20	
	before treatment	after treatment	before treatment	after treatment
Absence	—	20,0	—	77,8
Moderate	100	80,0(p > 0,2)	100,0	22,2(p < 0,001)
Severe	—		—	—

Notes: — p calculated between data before and after treatment; %

Consequently, the results of clinical trials found that use of MW «Zbruchanskaya 77» normalizing psycho-emotional state of patients. Correction of psycho-emotional disorders, possibly due to the positive impact of bioorganic components MV «Zbruchanskaya 77» in the regulatory process, violation of which is a pathogenic factor of psycho-emotional disorders. Regular use this type MW increases reserves the functioning of the adrenal cortex and other hormones systems with increased organ resistance to damaging factors of different nature [22, 23]. It should be taken into account that the effect of MW is due not only to its physical and chemical properties, but also features functioning state of organs and systems at the time of its use. Because MW is a regulator of physiological and pathological processes in biological systems, MW contributes sanogenetic direction of their compensatory capacity of the organism. In addition, the effect of MW has integrative direction - on the entire body as a whole or on multiple systems simultaneously. Thus, the integrated data justifying the appropriateness of MW «Zbruchanskaya 77» for psycho-emotional recovery of patients, for correction of psycho-emotional overstrain and desadaptation in individuals with the effects of psychological trauma, social disorders, suffered in combat operations and more.

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THE STUDY OF TOLL-LIKE RECEPTORS WUTH PSORIASIS

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АНОТАЦІЯ

Псоріаз - одне з найпоширеніших захворювань шкіри, яке носить хронічний характер. Відкриття TOLL-рецепторів і виявлення їх підвищеної кількості в шкірі хворих на псоріаз дають можливості для більш глибокого вивчення його етіології та патогенезу. У статті докладно розглянуто класифікація і будова TOLL-рецепторів, а також їх участь у регуляції та ініціації імунної відповіді при псоріазі.

ABSTRACT

Psoriasis - one of the most common chronic skin diseases. Opening TOLL-receptors and detection of an increased amount in the skin of psoriasis patients provide opportunities for more in-depth study of its etiology and pathogenesis. The article discussed in detail classification and structure TOLL-receptors, and their involvement in the initiation and regulation of immune response in psoriasis.

Ключові слова: псоріаз, TOLL-подібні рецептори, хронічні дерматози

Keywords: psoriasis, TOLL-like receptors, chronic dermatoses.

Кожа является основным барьерным органом человека, а также высокоорганизованным периферическим органом иммунной системы, обладающим большим количеством разнообразных иммунокомпетентных клеток. Эти характеристики позволяют коже осуществлять ряд важных физиологических функций, поддерживающих гомеостаз организма: распознавание антигенного материала, его элиминацию, дифференцировку иммунных клеток в различные эффекторные популяции, иммунологический надзор за опухолевыми клетками. Основную массу клеток кожи составляют кератиноциты, которые участвуют в иммунной защите, продуцируя широкий спектр цитокинов, хемокинов и ростовых факторов.

Псориаз является одним из самых распространенных хронических мультифакториальных заболеваний, при котором доминирует генетический компонент склонности к возникновению заболевания и нарушений многочисленных звеньев нейроэндокринных, метаболических и регуляторно-трофических процессов. Удельный вес псориаза в общей структуре заболеваний кожи составляет от 7% до 10%, а среди госпитализированных больных с кожными болезнями до 20-25% [1,2]

По данным Международной Федерации ассоциации псориаза (International Federation of Psoriasis Associations) распространенность псориаза в мире неодинакова, она зависит от региона и колеблется в пределах 1,2% -5%, а средний показатель распространенности составляет около 3% от общей популяции. Результаты других исследований указывают на более широкий диапазон распространенности дерматоза в мире - от 0,1% до 11,8% [2; 3]. Начало заболевания возможно в любом возрасте, но гораздо чаще в наиболее трудоспособном возрасте 21-40 лет, а рецидивы псориаза наблюдаются