

To the results of the detoxifying ability of the external action of activated glauconite in patients with allergic skin diseases.

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Summary

The article presents the results of clinical and laboratory studies of a new way of detoxifying the body with the external use of natural activated glauconite (fatigrin) in patients with atopic dermatitis. Clinical, biochemical and microbiological research methods have shown that in patients with atopic dermatitis, endogenous intoxication is accompanied by a violation of the syndrome of colonization resistance of opportunistic microorganisms with a shift in skin pH to an alkaline environment, depending on the severity of the disease. The use of pelotherapy with glauconite mineral mask "Fatigrin" in the complex therapy of patients with atopic dermatitis contributes to a more pronounced decrease in the degree of endogenous intoxication of the body than standard therapy. The obtained data testifies to the detoxifying ability of the mineral mask "Fatigrin" of external action, which can be recommended for the widespread introduction of dermatological practice.

Keywords: atopic dermatitis, endogenous intoxication, skin microbiota, skin pH, exogenous detoxification, glauconitis.

The steady growth of allergic skin diseases, especially severe forms of morbidity among the population, poses a number of serious questions for clinicians in terms of detoxification therapy. This phenomenon, in our opinion, is associated with the influence of socio-economic and environmental factors. [2,3,4,5] This negative process is expressed by the chronicity of human diseases, the growth of complicated forms in the able-bodied population, deaths and a decrease in the average life expectancy of patients.

In the development of severe forms of allergic skin diseases, a special place is occupied by the syndrome of endogenous intoxication (ESI), since its formation is reflected in organ and multiple organ failure of the body, as well as the condition of the skin. [1,4]

Successful treatment of endotoxemia largely determines the prognosis for many diseases, including those of a dermatological profile. [3,4].

In order to find new methods of detoxification in patients with allergic skin diseases, within the

framework of an applied grant, pelotherapy was developed using an activated natural mineral - glauconite (hereinafter referred to as fatigrin) from a deposit in the Tashkent region of Uzbekistan.

Glauconite is a group of clay minerals, aqueous iron aluminosilicates, formed in the final stage of sedimentogenesis in diagenesis, as a result of coagulation of Fe, Al, and Si gels, followed by their interaction with sea and silt waters containing K and Mg. [6,7,8,11,12] Uzbek scientists have developed a mineral mask "fatigrin" based on glauconite - a highly mineralized natural fine mixture of green color from a natural deposit in Uzbekistan. (LLC "Fatiderm"). It contains 15 types of rare (glauconite, silica, zeolite, illite, montmorillonite, clinoptillonite, muscovite, orthoclase, albite, anorthite, biotite, maghemite, goethite, magnetite, etc.), 100% natural natural ion-exchange minerals - ionites, humic and silicic acid in a form accessible to the body, silicic water.

Taking into account the above, we have developed a new method of external detoxification as pelodioterapy by using an activated clay natural

mineral - glauconite of the fatigrin mineral mask in patients with allergic skin diseases. Mineral mask "fatigrin" was prescribed to patients 1 time per day by applying lesions and healthy skin (on the whole body) for 15-30 minutes and then washed off with a warm shower. The procedure was prescribed 1 time per day daily in complex therapy No. 10.

The aim of our research was to evaluate the detoxifying efficacy of activated glauconite (fatigrin) in the treatment of endogenous intoxication, taking into account the state of the microbiota and skin pH in patients with atopic dermatitis.

Material and research methods. We examined 72 patients with atopic dermatitis aged 12 to 43 years. Among them, there were 39 females and 33 males. All patients underwent clinical (SCORAD), biochemical, microbiological and statistical studies. The control group consisted of 43 healthy individuals without skin manifestations of the corresponding age.

The assessment of the degree of endogenous intoxication was carried out with the study of the sorption capacity of erythrocytes and the level of peptides of medium molecules. Determination of the sorption capacity of erythrocytes was carried out by the method of Togaibaev A.A. and co-authors [10] and the level of peptides of medium molecules by the method of Gabrielyan N.I. and co-authors [3].

In order to study the microbiological status of the skin in patients with various clinical forms of allergic dermatosis, bacteriological studies of the skin in the lesions were carried out. Microbiological studies were characterized by bacterioscopic and cultural studies of skin flakes from lesions in patients with allergic dermatosis. For cultural studies, we used 5% blood agar, Endo's medium, Kligler's, as well as saline agar with the addition of mannitol, and incubation was carried out in a thermostat at 36.8 ° C. Skin pH was measured with a special paper indicator, where the norm was considered to be 5.0 U.

For comparative characteristics of the method of

external detoxification with the use of the mineral mask "Fatigrin", the patients were divided into 2 groups: I - the main group - 35 patients with AD, who received pelotherapy using the glauconite mineral mask "Fatigrin" against the background of complex therapy (hyposensitizing, antihistamine therapy and topical anti-inflammatory therapy) and II - control group - 32 AD patients who received standard therapy (hyposensitizing, antihistamine therapy and topical anti-inflammatory therapy). III - group - 43 healthy individuals.

The results of the study were statistically processed using standard methods of variation statistics using Student's t-test using the Excel-Office-2010 application program on a Pentium IV computer.

Research results. Clinical assessment of severity according to the SCORAD index revealed mild severity in 15 (20.8%) cases, moderate severity in 30 (41.6%) cases, and severe severity in 27 cases, which accounted for 37.5% of cases. According to the clinical form, the erythematous-squamous form was diagnosed in 19 patients, the erythematous-squamous form with lichenification - in 26 patients, the exudative form - in 7 patients, the lichenoid form - in 14 patients, and the pruriginous form - in 6 patients, respectively.

The results of biochemical blood tests in patients with AD revealed the development of endogenous intoxication, characterized by a significant increase in the sorption capacity of erythrocytes (SCE) compared with the data of the control group and averaged $43.3 \pm 0.26\%$ against $26.46 \pm 0.61\%$ in the norm. The data obtained were statistically significant. ($p < 0.001$)

In patients of this group, the level of peptides of the middle molecule (PMM) in the blood serum also significantly increased by 1.9 times (0.422 ± 0.004 EU, $p < 0.001$) in relation to the indicators of the control group (0.213 ± 0.003 EU).

Table 1 Indicators of endogenous intoxication in patients with atopic dermatitis (M ± m)

Group	Number of examined patients	Sorption capacity of erythrocytes (%)	Middle molecule peptides (EE)
Control group of healthy individuals	43	$26,46 \pm 0,61$	$0,213 \pm 0,003$
Patients with atopic dermatitis	72	$43,3 \pm 0,26^*$	$0,422 \pm 0,004^*$

Note: p - reliability in relation to the indicators of the control group * – $p < 0,001$

In further studies, we studied the effect of pelotherapy with the use of the Fatigrin mineral mask on the state of the degree of endogenous intoxication in patients with atopic dermatitis.

The results of the study showed (Table 2) that after traditional therapy in patients with atopic dermatitis

in the blood, the SSE indicators significantly decreased compared to the data before treatment ($p < 0.01$) and, on average, it was $36.75 \pm 0.64\%$ against $39.32 \pm 0.69\%$ before treatment, however, it remained higher than in the control group ($29.08 \pm 0.88\%$).

endogenous intoxication in patients with atopic dermatitis (M±m)

Table 2 Comparative analysis of the effect of ongoing therapy on performance

Treatment method	Number of examined patients	Research	SCE(%)	PMM(EE)
Standard	35	before treatment	$42,84 \pm 0,43$	$0,428 \pm 0,008$
		after treatment	$36,52 \pm 0,19^*$	$0,306 \pm 0,004^{**}$
Integrated (peloidotherapy with Fatigrin)	37	before treatment	$43,64 \pm 0,34$	$0,416 \pm 0,005$
		after treatment	$30,87 \pm 0,33^{**}$	$0,245 \pm 0,007^{**}$

Note: p is the reliability of data after treatment in

relation to indicators before treatment * – $p < 0.01$; **

- $p < 0.001$

The study of the effect of standard therapy on the content of middle molecule peptides in the blood serum indicates that in patients with atopic dermatitis after the end of treatment, there is also a significant decrease in the level of SMP ($p < 0.001$), but it also did not reach the control level and averaged $36.52 \pm 0.19\%$ and $0.306 \pm 0.004\text{EU}$, respectively.

When studying the effect of complex therapy with the use of pelotherapy with Fatigrin, the SCE and PMM levels statistically significantly decreased compared to the data before treatment ($p < 0.001$) and, on average, they were $30.87 \pm 0.33\%$ and $0.245 \pm 0.007\text{EU}$, respectively. at $43.64 \pm 0.34\%$ and $0.416 \pm 0.005\text{EU}$, respectively, before treatment. It should be noted that the studied indicators of endogenous intoxication in patients of this group decreased by 1.4 and 1.7 times and were statistically significant. ($P < 0.05$).

The results of microbiological studies of lesions revealed an increased colonization of opportunistic microorganisms of the genus *Staphylococcus* spp. 12.9 times in comparison with the indicators of healthy individuals and averaged $60.9 \pm 1.1\text{CFU/cm}^2$. (at a rate of $4.7 \pm 0.3\text{CFU/cm}^2$; $P < 0.05$) Taking into account the species identification of staphylococci, the degree of colonization had a different character. (diagram 1).

At the same time, SCE was in direct correlation with *st. Saprophyticus* - $r = +0.4$, and PMM - $r = -0.3$ correlations ($P < 0.05$). In parallel, we assessed the state of pH and microbiota of the skin against the background of pelotherapy with Fatigrin before and after treatment. (diagram 1).

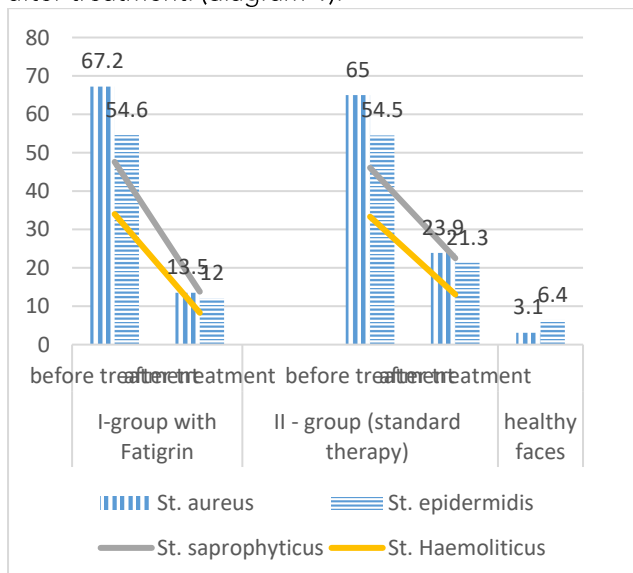


Diagram 1. Comparative characteristics of indicators of the degree of colonization of opportunistic microorganisms of the genus *Micrococcacea* against the background of complex therapy with Fatigrin. (CFU/cm^2) ($P < 0.05$)

As follows from the diagram, in the group of patients who received pelotherapy with Fatigrin, the degree of colonization of the staphylococcal flora of *st.aureus* significantly decreased by 4.9 times

($13.5 \pm 0.3\text{CFU/cm}^2$), *St. Epidermidis* - after treatment averaged - $12 \pm 0.3\text{CFU}$ (at $54.6 \pm 0.9\text{CFU}$), *St. Saprophyticus* - $13.8 \pm 0.3\text{CFU}$ (before treatment $47.6 \pm 0.8\text{CFU}$) and *St. Haemoliticus* - $8.3 \pm 0.3\text{CFU}$ (at $34 \pm 0.3\text{CFU}$), respectively. The data obtained were statistically significant ($P < 0.05$). At the same time, the decrease in the degree of colonization of the staphylococcal flora was in direct correlation with the SMP - $r = +0.4$. ($P < 0.05$)

In the group of patients receiving standard therapy, the degree of colonization of staphylococcal flora decreased by 2.9, 2.5, 2.04, respectively, and the average contamination in the lesions of *st.aureus* was - $23.9 \pm 0.3\text{CFU/cm}^2$ (at $65 \pm 1.3\text{CFU}$), *St. Epidermidis* - $21.3 \pm 0.36\text{CFU}$ (at $54.5 \pm 1.2\text{CFU}$), *St. Saprophyticus* - $22.5 \pm 0.4\text{CFU}$ (at $46.06 \pm 0.6\text{CFU}$) and *St. Haemoliticus* - $13.03 \pm 0.3\text{CFU}$ (at $33.3 \pm 0.3\text{CFU}$), respectively.

Analysis of the results of cultural microbiological studies showed that complex therapy with the use of the mineral mask "Fatigrin" reduced the indicators of the degree of colonization of staphylococcal flora by 1.7 times compared with the group of patients who received standard therapy. ($P < 0.05$).

Studies of the pH of the skin against the background of the use of the mineral mask Fatigrin showed a positive trend, characterized by a decrease in the indicator by 1.3 times and after treatment after the 10th day, on average, it was 5.1 ± 0.09 (at 6.5 ± 0.05 to treatment). ($P < 0.05$). (diagram 1). At the same time, the pH had a level of SMP was in direct significant correlation with the pathogenic flora *st.aureus* - $r = +0.3$ ($P < 0.05$). Whereas in patients receiving standard therapy, the pH level decreased by 1.1 times compared to before treatment and averaged 5.8 ± 0.04 (with a significance of 6.49 ± 0.06) ($P < 0.05$).

Thus, our data indicate that in patients with atopic dermatitis, endogenous intoxication is detected with a violation of the syndrome of colonization resistance of opportunistic microorganisms with a shift in skin pH to an alkaline environment, depending on the severity of the disease. The use of pelotherapy with glauconite mineral mask "Fatigrin" in the complex therapy of patients with atopic dermatitis contributes to a more pronounced decrease in the degree of endogenous intoxication of the body than standard therapy. The obtained data testifies to the detoxifying ability of the mineral mask "Fatigrin" of external action, which can be recommended for the widespread introduction of dermatological practice.

Conclusions

1. In patients with atopic dermatitis, endogenous intoxication is accompanied by a violation of the syndrome of colonization resistance of opportunistic microorganisms with a shift in skin pH to an alkaline environment, depending on the severity of the disease.

2. The use of pelotherapy with glauconite mineral mask "Fatigrin" in the complex therapy of patients with atopic dermatitis contributes to a more

pronounced decrease in the degree of endogenous intoxication of the body than standard therapy. The obtained data testifies to the detoxifying ability of the mineral mask "Fatigrin" of external action, which can be recommended for the widespread introduction of dermatological practice.

Literature

1. Vigdorovich V.I. Adsorption processes: textbook. allowance for students of chem. specialties of universities / V.I. Vigdorovich, L.E. Tsygankova, N.V. Shel. - Tambov. - 2014. - 150 p.
2. The study of microbiocenosis of the skin and intestines in patients with atopic dermatitis / O.V. Georgieva [et al.] // Effective pharmacotherapy. - 2012. - No. 11. - S. 32-35,
3. Mavlyanova Sh.Z., Gulyamova G.Sh., Mamatkulov U.A., Teshabaeva D.A., Muminova S.S., Mullakhanov Zh.B. The state of endogenous intoxication and lipid metabolism in patients with atopic dermatitis // Collection of abstracts of the 3rd Eurasian Congress of Dermatology, Cosmetology and Aesthetic Medicine of the IV International Scientific and Practical Conference "Age Aspects of Dermatovenereology and Dermatocosmetology. - Astana. -2013. -S.64-66.
4. Mavlyanova Sh.Z., Gulyamova G.Sh., Mamatkulov U.O. Correction of indicators of endogenous intoxication and lipid spectrum with the drug "Ferrocamed" in patients with atopic dermatitis // Dermatovenereology and aesthetic medicine. - Tashkent. -2018. -#2. -p.56-60. (14.00.00, No. 1).
5. Molokova A.V. Trace element disorders in children with atopic dermatitis and combined forms of allergy.// Russian Journal of Immunology, 2019, volume 13 (22), No. 2 - p.414-416
6. Some aspects of the use of glauconite in medicine / S.B. Venig, V.G. Serzhantov, E.I. Selifonova // Methods of computer diagnostics in biology and medicine: materials of the All-Russian Youth Conference, Saratov, November 10-12. 2015 - Saratov, 2015. - С 217-220,
7. Nikolaevsky A., Sivolapova D.A., Tanygina E.D. Method for improving the efficiency of wound healing.// RU 2698298C1
8. Regulatory and scientific materials "Therapeutic green clay (glauconite) Stetsenko G.I., Sabat R.V., Stryi - 2005.
9. Pashinyan A. G., Dzhavaeva D. G., Mulikova T. Yu. Efficiency of medical and cosmetic skin care products in patients with chronic dermatoses // Medical business. 2014; 2:13-16. [Pashinyan
10. Modern possibilities of maintaining the pH of the skin by means of dermatocosmetic care / N. V. Zilberberg, A. I. Polishchuk
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11. Method for treating burns of degree 3a by applying glauconite powder.// RU2760838C1
12. Khrebtova O.M. Biotesting of glauconite on ciliates / O.M. Khrebtov // Bulletin of the Baltic Federal University. I. Kant. - 2016. - No. 2. - S. 73-76,
13. Enterosorbent and method for its production: Pat. (19) RU (11) 2545711 (13) C1 Ros. Federation: IPC A61K 33/06, A61K 33/26, A61K 9/107, A61R 1/00 / M.Yu. Volkov, A.A. Kalilec. No. 2013151541/15; dec. 11/20/2013; publ. 04/10/2015, Bull. №10.- S. 2-7
14. A. G. Efficiency of medical and cosmetic skin care products in patients with chronic dermatoses / A. G. Pashinyan, D. G. Dzhavayeva, T. YU. Mulikova // Lechebnoye delo. 2014. № 2. P. 13-16.
15. Proksch E., Berardesca E., et al. Dry skin management: Practical approach in light of latest research on skin structure and function // Journal of Dermatological Treatment. 2019.