Estimation of influence of hyalomelanic acids from peloids on pro- and antioxidative systems condition in model of an immune inflammation

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Alongside with traditional mud cure recently there is popular use various peloidpreparations in a mode of physiotherapy that allows to make treatment accessible to the extensive categories of patients, to make it's dosed out, to increase efficiency

Therefore, there is actual an allocation and studying of biological activity of separate components of medical muds. Object of our research were peloidpreparations based on hyalomelanic acids (HMA) – alcohol-soluble fractions of humic substances, allocated of low mineralized sludge muds from «Sergiyevsk mineral waters resort» by the patented technique which was developed at the Department of Medical Chemistry. For definition of biological activity white not purebred rats in model of a chronic immune inflammation which was caused by subplantar introduction in the right hinder leg of 0,1 ml full Freund's adjuvant have been used. On the 14th day after an inflammation induction started to enter HMA as 0,1 % (weight) water solution (pH=7,4). Injections were carried out daily within 10 days (table 1).

Table 1. Changes in blood pro - and antioxidant parameters under the influence of HMA

Enzyme	Indicator	3 day	7 day	12 day
Catalase, nmol/ml × min	M±m	120,24 ± 8,35	112,19 ± 6,44	89,48 ± 7,68
	P	0,47	0,14	0,002
SOD, conl. units.	M±m	2,06 ± 0,10	2,04 ± 0,12	1,87 ± 0,09
	P	0,69	0,6	0,7
Unsaturated higher fatty acids, mol/l	M±m	0,37 ± 0,04	0,91 ± 0,05	0,46 ± 0,07
	P	0,02	0,07	0,09
Malondialdehyde, nmol	M±m	79,83 ± 10,27	70,08 ± 11,76	55,72 ± 6,19
	P	0,0006	0,02	0,02

Functioning pro- and antioxidative systems estimated on activity of catalase and superoxide dismutase, expressiveness of diene conjugation (DC) of the highest nonsaturated fat acids and concentration of malonic dialdehyde (MDA) for 3,7,12 days after the beginning of HMA injection. Under Freund's adjuvant's action, superoxide dismutase activity has decreased on 38,30 % - 61,69 % in various terms of supervision while catalase activity has decreased insignificantly. Activity of prooxidative systems, on the contrary, has considerably increased - DC has increased on the average for 60 %, and MDA concentration has increased in 3,5 times. The application of HMA has led to normalization of superoxide dismutase activity for 3 days; MDA concentration has decreased for 35,58 % - 40,68 %. Expressiveness of a DC under action of HMA for the third day has decreased a little bit below an initial level, but by the end of treatment was normalized. Thus, application of peloidpreparations on a basis of hyalomelanic acids promotes normalization of oxidation-reduction systems in an organism at diseases in which basis lay autoimmune processes.