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MODULATING EFFECTS OF BIOACTIVE WATER NAFTUSSYA FROM LAYERS TRUSKAVETS' AND POMYARKY ON SOME METABOLIC AND BIOPHYSIC PARAMETERS AT HUMANS WITH DYSFUNCTION OF NEURO-ENDOCRINE-IMMUNE COMPLEX

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Abstracts

Background. Previously we have been carry out comparative investigation **immediate** effects of Bioactive Water Naftussya from layers Truskavets', Pomyarky and Skhidnyts'a on neuro-endocrine-immune complex at men with its dysfunction. The aim of this study is the influence of the use of the **course** of Bioactive Water Naftussya from layers Truskavets' and Pomyarky on some metabolic and biophysical parameters at similar patients. **Materials and methods.** The object of observation were 20 volunteers: ten women and ten men aged 33-76 years without clinical diagnose but with dysfunction of neuro-endocrine-immune complex and metabolism. In daily urine and venous blood we determined the content of electrolytes, nitrogenous metabolites and lipids, recorded conductivity of acupuncture points, rate of electronegative nuclei of buccal epithelium as well as parameters of gas discharge vizualisation (GDV). After examination volunteers within 7 days used bioactive water Naftussya (250 mL three times a day) from Truskavets' or Pomyarky layer, then repeated the tests listed. **Results.** Weekly use of Bioactive Water Naftussya increases in the normal level of plasma chloride and sodium, normalizes low level of bicarbonate and decreases within the normal levels of potassium and phosphate. Urinary excretion of sodium and chloride increases while excretion and concentration of uric acid decreases, as the urine concentration of phosphates. The index lithogenicity urine decreased from 112% to 103% norm standard. Initially reduced level of plasma triacylglycerides increases, while decreases in the normal level of cholesterol in low-density lipoprotein composition. Among the biophysical parameters detected increase in the normal conductivity acupuncture points Pg (ND) at right

side, which represent the nervous system, and left shift the ratio between the conductivity of acupuncture points MC (AVL), which represents the immune system. Increases electrokinetic index of epithelial cells of cheek to 1,7±0,3%, that indicating the "rejuvenation" of the organism to 1,4±0,3 years. We first discovered changes in parameters of GDV, namely elimination of asymmetries of virtual chakras (first, second and third) as well as reducing the excess energy of the first chakra. No significant differences between the effects of Bioactive Water Naftussya both fields generally not found. **Conclusion.** Bioactive water Naftussya both Truskavets' and Pomyarky layers causes favorable normalizing effects on abnormalities parameters of metabolism and gas discharge visualization, which is a manifestation of its adaptogenic properties.
Keywords: bioactive water Naftussya, electrolytes, nitrogenous metabolites, lipides, electroskin conductivity, gas discharge vizualisation.

INTRODUCTION

Previously we [37] have been carry out comparative investigation **immediate** effects of Bioactive Water Naftussya from layers Truskavets', Pomyarky and Skhidnyts'a on neuro-endocrine-immune complex. The object of observation were 15 volunteers-men without clinical diagnose but with moderate dysfunction of neuroendocrine-immune complex (dysadaptation). By method of discriminant analysis it is detected 38 variables specific to basal level and after 1,5 h after drink Control Waters (CW) and Bioactive Waters Naftusssya (BAWN). Discriminant variables divided on four clusters. First cluster reflects caused by BAWN reversion of activating trend after CW for 17 variables while second cluster reflects reversion of inhibiting trend for 12 variables. Third cluster reflects attenuation of activating trend for 4 variables while fourth cluster reflects reduction of inhibiting trend for 5 variables. No significant differences between the effects of BAWN all fields generally not found. Thus, BAWN from layers Truskavets', Pomyarky and Skhidnyts'a causes approximately equal immediate effects on 29 parameters of neuro-endocrine-immune complex different from effects of Control (distillated, filtered, well) Waters.

The aim of this study is the influence of the use of the **course** of BAWN from layers Truskavets' and Pomyarky on some metabolic and biophysical parameters at similar patients. Previous post published as abstracts [33].

MATERIAL AND RESEARCH METHODS

The object of observation were 20 volunteers: ten women and ten men aged 33-76 years without clinical diagnose but with dysfunction of neuro-endocrine-immune complex and metabolism, characteristic for premorbid (intermediate between health and illness) state. Echoscopy kidney (echocamera "Radmir") stones not found. First volunteers collected daily urine, in which we determined the content of electrolytes and nitrogenous metabolites, and then on an empty stomach in the morning they took samples of capillary and venous blood for biochemical, hormonal (cortisol, testosterone, triiode-thyronine, calcitonin) and immune tests. We recorded conductivity of acupuncture points, rate of electronegative nuclei of buccal epithelium, parameters of gas discharge vizualisation (GDV) as well as heart rate variability (HRV).

Among electrolytes estimated calcium (by the reaction with arsenazo III), magnesium (by the reaction with colgamite), phosphate (phosphate molibdate method), chloride (mercury rodanide method), sodium and potassium (flame photometry method) as well as bicarbonate (reverse titration method). Uric acid estimated by uricase method, creatinine by Popper's method as described in the handbook [12]. Also determined plasma concentration of triacylglycerides (metaperiodate-acetylacetone colorimetric method) and total cholesterol (direct method by reaction Zlatkis-Zach) as well as its distribution as part of lipoproteins

high-density/α (applied enzymatic method G Hiller [15] after precipitation nonα-lipoproteins using dextransulfate/Mg^{2+}), very low-density/preβ (calculated by level of triacylglycerides) and low-density/β (calculated by balance) as described in the handbook [12]. Use analyzers "Pointe-180" ("Scientific", USA), "Reflotron" ("Boehringer Mannheim", BRD) and flame spectrophotometer.

Electroskin conductivity recorded in follow points of acupuncture: Pg(ND), TR(X) and MC(AVL) at Right and Left side, which represents the nervous, endocrine and immune systems respectively [17]. Used complex "Medissa".

According to the authors [35,36], electrophoretic mobility of cell nuclei of animals naturally varies under various external influences, including decreases under high temperature, UV exposure and inhibitors of protein synthesis and nucleic acids, while under the influence of stimulants increased biosynthesis. In human cell nuclei electrokinetic mobility buccal epithelium (named as Electrokinetic Index) almost linearly decreases with aging. However, it is reduced to a state of fatigue in different diseases, and reduction measure associated with severity of disease and successful treatment at this rate is reduced to a level typical for this age group. We were very impressed that when the device patenting his main purpose was stated rapid testing efficiency rehabilitation of human health, particularly in resort. The rate of electronegative nuclei of buccal epithelium we determined by intracellular microelectrophoresis on the device "Biotest" (Kharkiv State University), according to the method described [35].

We registered also kirlianogram by the method of GDV by the device of "GDV Chamber" ("Biotechprogress", St-Pb., RF). Method of GDV, essence of which consists in registration of photoelectronic emission of skin, induced by high-frequency electromagnetic impulses, allows to estimate integrated psycho-somatic state of organism. The first base parameter of GDV is area of gas discharge image (GDI) in Right, Frontal and Left projections registered both with and without polyethylene filter. The second base parameter is a coefficient of shape (ratio of square of length of external contour of GDI toward his area), which characterizes the measure of serration/fractality of external contour. The third base parameter of GDI is entropy, id est measure of chaos. It is considered that GDI, taken off without filter, characterizes the functional changes of organism, and with a filter characterizes organic changes. Program estimates also Energy and Asymmetry of virtual Chakras [21,22].

After examination volunteers within 7 days used Bioactive Water Naftussya (250 mL three times a day), then repeated the tests listed. Normal values for surveyed contingent (including age and gender) were obtained from the database of Truskavets' Scientific School of Balneology. Results processed using the software package "Statistica 5.5".

RESULTS AND DISCUSSION

In this report will be analyzed only biophysical and metabolic parameters. Regarding the performance of neuro-endocrine-immune complex we confine ourselves to the announcement of four options identified abnormalities such as: 1) drastically hypercortisolemia and increased Baevskiy's Stress Index combined with moderately decreased level of Testosterone, that accompanied by a significant supression of cellular immunity and insignificant activation of humoral immunity; 2) moderately increased level of Cortisol and Triiode-thyronine combined with moderately decreased level of Calcitonin and level of Stress Index in a wide range, that accompanied by negligible inhibition of cellular immunity and significant activation of humoral immunity; 3) moderately increased level of Cortisol while moderately decreased level of Triiode-thyronine, Calcitonin and Testosterone, that accompanied by a significant activation of humoral immunity without abnormalities of cellular immunity; 4) upper borderline levels of Cortisol and Testosterone combined with slightly reduced level of

Stress Index, that accompanied by more pronounced activation of humoral immunity without abnormalities of cellular immunity [14,16]. Thus, various constellations of Neuroendocrine factors of General Adaptation Reactions accompanied by various constellations parameters of Immunity.

For the purpose of adequate comparative assessment as an initial condition registered data and their changes as a result of the use of Bioactine Water Naftussya they are transformed into normalized parameters Id and Z, calculated by formulas [27,29]:

Id=V/M;

Z=(Id-1)/Cv; where

V is individual value indicator (variable);

M is its Mean Norm;

Cv is coefficient of variation in normal rate.

This approach allows us to estimate changes in indicators expressed in different units (μM/L, mM/L, mM/24h, units), firstly, on one scale, and secondly, in view of their "physiological cost" which determined by variability of indicators. For example, abnormal levels of calcium in plasma (Cv=0,065) 5% (Id=0,95) approximately equally notable as the abnormality its urinary excretion (Cv=0,214) 18% (Id=0,82), as evidenced by roughly the same Z-scores: -0,80 and -0,85 respectively (Tables 1 and 2).

If we accept gradation by which the deviation from the average norm in a range of ±0,5 σ are ignored, ±0,5÷1,0 σ is slight and more than ±1,0 σ is moderate, the following picture emerges.

The initial state surveyed continent as a whole is characterized by a moderate decrease in plasma levels of sodium and magnesium, and a slight decrease levels of chloride, calcium, phosphate, bicarbonate and uric acid, whereas creatinine level increased slightly (Table 1).

Table 1. Effects of weekly consumption of bioactive water Naftussya on the blood levels of nitrogen metabolites and electrolytes

Variables	Statistic parame-ters	Baseline (20)	After drink course (20)	Change as direct differen-ces (20)
Creatinine Mean Norm=68,5 μM/L Cv=0,208	V Id Z	78,2±1,7 1,14±0,02*** +0,68±0,12***	76,4±1,8 1,12±0,03*** +0,56±0,13***	-1,8±2,4 -0,03±0,03- 0,12±0,17
Uric Acid Mean Norm=340 μM/L Cv=0,181	V Id Z	291±13 0,86±0,04** -0,73±0,21***	296±12 0,87±0,03*** -0,66±0,18***	+5±4 +0,01±0,01 +0,07±0,07
Calcium Mean Norm=2,30 mM/L Cv=0,065	V Id Z	2,21±0,05 0,96±0,02* -0,60±0,31*	2,18±0,03 0,95±0,01*** -0,80±0,19***	-0,03±0,02 -0,01±0,01 -0,20±0,16
Phosphate Mean Norm=1,20 mM/L Cv=0,167	V Id Z	1,10±0,05 0,91±0,04* -0,52±0,25*	1,05±0,04 0,87±0,03*** -0,77±0,17***	-0,05±0,02* -0,04±0,02* -0,25±0,12*
Magnesium Mean Norm=0,90 mM/L Cv=0,056	V Id Z	0,84±0,01 0,93±0,01*** -1,18±0,17***	0,84±0,01 0,93±0,01*** -1,23±0,16***	0,00±0,01 0,00±0,01 -0,05±0,18
Potassium Mean Norm=4,55 mM/L Cv=0,104	V Id Z	4,53±0,13 0,99±0,03 -0,05±0,27	4,43±0,11 0,97±0,02 -0,25±0,24	-0,09±0,02*** -0,02±0,01* -0,20±0,05***
Sodium Mean Norm=145,0 mM/L Cv=0,034	V Id Z	138,7±1,7 0,96±0,01*** -1,27±0,34***	147,7±1,6 1,02±0,01 +0,55±0,33	+9,0±1,9*** +0,06±0,01** +1,82±0,39***
Chloride Mean Norm=101,5 mM/L Cv=0,032	V Id Z	98,4±1,4 0,97±0,01* -0,95±0,42*	105,6±1,3 1,04±0,01*** +1,26±0,40***	+7,2±1,5*** +0,07±0,02** +2,21±0,47***
Bicarbonate Mean Norm=26,1 mM/L Cv=0,167	V Id Z	22,7±0,4 0,87±0,02*** -0,77±0,09***	24,5±0,3 0,94±0,01*** -0,37±0,07***	+1,8±0,4*** +0,07±0,02** +0,40±0,09***

Notes. p<0,05*; <0,01**; <0,001***

Regarding the urinary excretion may state moderate reduction of sodium, calcium, phosphates and slight decrease in magnesium, potassium and creatinine, whereas moderately increased excretion of urates (Table 2).

For plasma lipid spectrum is typical moderate decrease cholesterol as part of VLD LP, combined with a slight increase of its content as part of LD and HD LP (Table 3).

Table 2. Effects of weekly consumption of bioactive water Naftussya on diurese and urinary excretion of nitrogen metabolites and electrolytes

Variables	Statistic parame-ters	Baseline (20)	After drink course (20)	Change as direct differen-ces (20)
Diurese Mean Norm=1,40 L/24 h Cv=0,274	V Id Z	1,36±0,14 0,97±0,10 -0,11±0,38	1,52±0,09 1,09±0,07 +0,32±0,25	+0,16±0,14 +0,12±0,10 +0,42±0,36
Creatinine Mean Norm=11,0 mM/24 h Cv=0,300	V Id Z	8,2±0,8 0,74±0,07*** -0,86±0,24***	9,2±0,9 0,84±0,08 -0,53±0,27	+1,1±1,0 +0,10±0,09 +0,33±0,29
Uric Acid Mean Norm=3,00 mM/24 h Cv=0,250	V Id Z	3,54±0,34 1,18±0,11 +0,72±0,45	2,94±0,24 0,98±0,08 -0,08±0,32	-0,60±0,40 -0,20±0,13 -0,79±0,54
Calcium Mean Norm=4,38 mM/24 h Cv=0,214	V Id Z	3,26±0,42 0,74±0,10* -1,20±0,45**	3,58±0,27 0,82±0,06** -0,85±0,29**	+0,33±0,49 +0,07±0,11 +0,35±0,53
Phosphate Mean Norm=25,2 mM/24 h Cv=0,294	V Id Z	15,4±2,3 0,61±0,09*** -1,32±0,32***	15,9±1,7 0,63±0,07*** -1,26±0,23***	+0,5±1,6 +0,02±0,07 +0,06±0,22
Magnesium Mean Norm=4,10 mM/24 h Cv=0,256	V Id Z	3,36±0,35 0,82±0,08* -0,70±0,33*	3,86±0,44 0,94±0,11 -0,23±0,42	+0,50±0,45 +0,12±0,11 +0,48±0,43
Potassium Mean Norm=65 mM/24 h Cv=0,269	V Id Z	53±6 0,82±0,09 -0,66±0,33	60±3 0,92±0,05 -0,29±0,20	+7±6 +0,10±0,09 +0,37±0,32
Sodium Mean Norm=225 mM/24 h Cv=0,211	V Id Z	162±17 0,72±0,07*** -1,33±0,35***	191±12 0,85±0,05** -0,71±0,25**	+29±19 +0,13±0,08 +0,62±0,39
Chloride Mean Norm=167,5 mM/24 h Cv=0,172	V Id Z	159±17 0,95±0,10 -0,30±0,57	198±15 1,18±0,08* +1,04±0,50*	+39±22 +0,23±0,13 +1,35±0,77

Table 3. Effects of weekly consumption of bioactive water Naftussya on the blood lipids

Variables	Statistic parame-ters	Baseline (20)	After drink course (20)	Change as direct differen-ces (20)
Triacylglycerides Mean Norm=1,47 mM/L Cv=0,250	V Id Z	0,96±0,11 0,66±0,08*** -1,35±0,32***	1,16±0,11 0,80±0,07** -0,82±0,29**	+0,20±0,11 +0,13±0,07 +0,53±0,30
Cholesterol total Mean Norm=5,39 mM/L Cv=0,184	V Id Z	5,55±0,22 1,03±0,04 +0,15±0,20	5,23±0,20 0,97±0,03 -0,17±0,18	-0,32±0,10** -0,06±0,02** -0,31±0,10**
VLD LP Cholesterol Mean Norm=0,68 Cv=0,250	V Id Z	0,44±0,05 0,66±0,08*** -1,35±0,32***	0,53±0,05 0,80±0,07** -0,82±0,29**	+0,09±0,05 +0,13±0,07 +0,53±0,30
LD LP Cholesterol Mean Norm=3,35 mM/L Cv=0,184	V Id Z	3,62±0,22 1,08±0,06 +0,41±0,33	3,27±0,17 0,98±0,05 -0,13±0,29	-0,35±0,13* -0,10±0,04* -0,54±0,21*
HD LP Cholesterol Mean Norm=1,36 mM/L Cv=0,179	V Id Z	1,49±0,11 1,11±0,09 +0,61±0,49	1,43±0,08 1,06±0,06 +0,32±0,36	-0,06±0,06 -0,05±0,05 -0,29±0,25
Klimov's Atherogenicity Coefficient Mean Norm=3,03 Cv=0,184	V Id Z	3,08±0,33 1,04±0,11 +0,21±0,57	2,85±0,21 0,97±0,08 -0,15±0,46	-0,24±0,22 -0,07±0,07 -0,36±0,36

Fig. 1 illustrates both quantitative and qualitative effects of drinking BAWN. As you can see, the degree of reduction in plasma triacylglycerides and sodium excretion transformed from moderate to slight. Slightly reduced bicarbonate level quite normalized. Moderately reduced level of plasma sodium transformed into a slightly elevated. On the other hand, slightly increased uric acid excretion is quite normal. Such balneoeffects we treat as normalizing, that is physiologically favorable. Reducing initially normal levels of potassium and cholesterol, both general and as part LDLP, is in the normal range, and the same level of plasma phosphate only slightly exceeds the lower limit. Such balneoeffects are physiologically neutral. Instead initially normal level of chloride excretion and moderately reduced level of chloride in the plasma increases to moderately elevated.

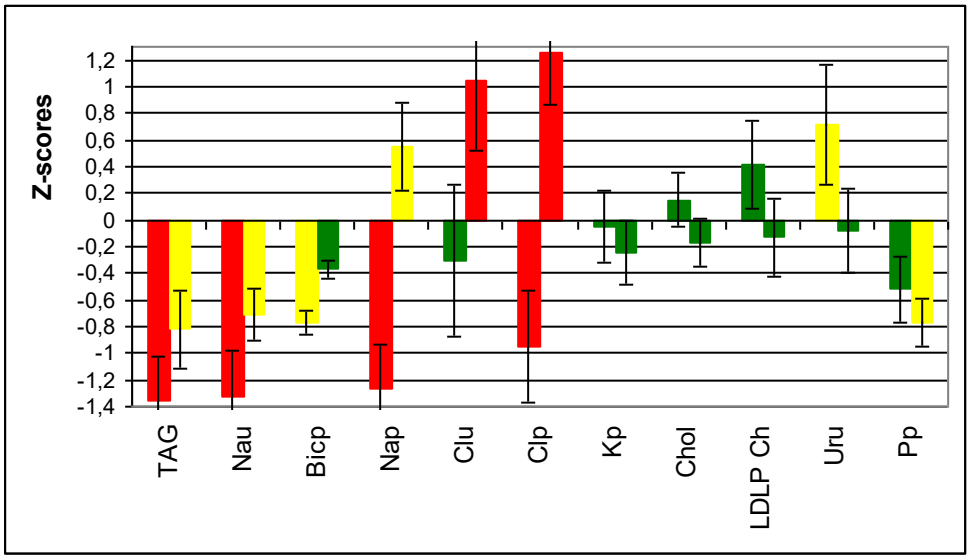

Fig. 1. Z-scores (Mean±SE) for parameters sensitive to the influence of bioactive water Naftussya

Fig. 2 visualizes balneoeffects calculated by direct differences between the initial and final Z-scores.

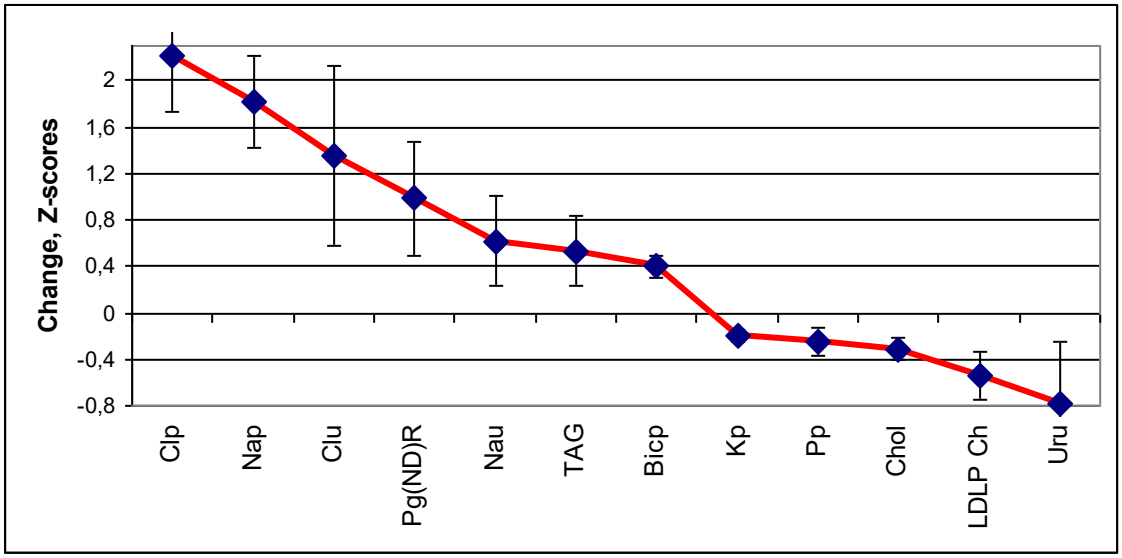

Fig. 2. Changes as direct differences (Mean±SE) in parameters sensitive to the influence of bioactive water Naftussya

It is evident that the use of BAWN causes the most pronounced effect on the exchange of chloride, sodium and uric acid. Despite the downward trend only urinary concentration uric acid and increased concentration of creatinine and magnesium urine lithogenicity index, calculated by formula: $(Ur \bullet Ca/Cr \bullet Mg)^{0,25}$, decreases from 0,82±0,04 to 0,76±0,02 (direct difference: -0,06±0,03*), to wit from 112% to 103% norm standard (0,73±0,04). Our data, in principle, consistent with the long-known, obtained both in the clinic and in experiments on dogs and rats [9,18,19,23,30,40], but different from the recently published [26].

Recently have been educed relationships between conductivity in acupuncture points, which represents the nervous, endocrine and immune systems, from one side, and parameters of phagocytosis of neutrophils, blood levels of lymphocytes and testosterone (negative) as well as Baevskiy's Stress-Index and mineralocorticoid activity (positive), on the other side [17]. In this study, the electrical conductivity of the skin appeared significantly increased in all recorded acupuncture points (Table 4). This is consistent with the announced disorders in this group of neuroendocrine-immune complex. The use of BAWN causes a further increase in conductivity only at points that represent the nervous system, and significant only on the right side (Fig. 2). In addition, shifts to the left Laterality Index for acupuncture points which represents immune system (Table 4).

Table 4. Effects of weekly consumption of bioactive water Naftussya on the electroskin conductivity (ESC) in acupuncture points (AP) as well as Electrokinetic Index

Variables	Statistic parame-ters	Baseline (20)	After drink course (20)	Change as direct differen-ces (20)
ESC AP Pg(ND) Right Mean Norm=58 units Cv=0,034	V Id Z	62,3±1,4 1,07±0,02** +2,18±0,73*	64,3±1,2 1,11±0,02*** +3,17±0,63***	+2,0±1,0 +0,034±0,017 +0,99±0,49*
ESC AP Pg(ND) Left Mean Norm=58 units Cv=0,034	V Id Z	62,0±1,4 1,07±0,02** +2,03±0,69*	63,7±1,1 1,10±0,02 +2,89±0,57	+1,7±0,9 +0,03±0,02 +0,86±0,44
ESC AP TR(X) Right Mean Norm=58 units Cv=0,034	V Id Z	63,2±1,3 1,09±0,02*** +2,66±0,68**	63,2±1,1 1,09±0,02*** +2,64±0,54***	0,0±0,9 0,00±0,02 -0,03±0,45
ESC AP TR(X) Left Mean Norm=58 units Cv=0,034	V Id Z	62,9±1,4 1,08±0,02*** +2,48±0,71**	63,2±0,9 1,09±0,02*** +2,64±0,47***	+0,3±0,9 +0,01±0,02 +0,15±0,44
ESC AP MC(AVL) Right Mean Norm=58 units Cv=0,034	V Id Z	63,4±1,4 1,09±0,02*** +2,74±0,72**	63,0±1,0 1,09±0,02*** +2,51±0,50***	-0,4±1,2 -0,01±0,02 -0,23±0,62
ESC AP MC(AVL) Left Mean Norm=58 units Cv=0,034	V Id Z	62,8±1,3 1,08±0,02*** +2,43±0,65**	63,8±0,9 1,10±0,02*** +2,92±0,46***	+1,0±0,8 +0,02±0,07 +0,48±0,43
ESC AP Pg(ND) LI, %	V	+0,5±0,8	+0,8±0,6	+0,3±1,1
ESC AP TR(X) LI, %	V	+0,6±0,6	-0,1±0,8	-0,7±1,1
ESC AP MC(AVL) LI, %	V	+0,8±0,5	-1,3±0,9	-2,13±0,98*
Electrokinetic Index, %	V	41,6±2,9	43,3±3,0	+1,7±0,3***

Note. Laterality Index calculated by formula: LI=200%•(Right-Left)/(Right+Left)

Other biophysical parameter, namely Electrokinetic Index, also significantly increased (Table 4). Earlier research with our participation [25] was found correlation ties Electrokinetic Index with Baevskiy's Adaptation Potential, Stange's Test, VLF HRV, plasma Testosterone, Cholesterol and Klimov's Atherogenicity Coefficient, which together determines it on 73%. Analysis ties of Electrokinetic Index with other registered parameters will be made in the next

publication, and in this we restrict ourselves intriguing conclusion that its increase reflects the "rejuvenation" of the body on to 1,4±0,3 years.

Among base parameter of GDV we detected only increase Coefficient of Shape in Right projections registered with filter (see Table7). Greater interest is the virtual Chakras. According to existent ideas, Chakras are power centers, related to the endocrine glands and neural plexus as well as to some organs [34]. In particular, the first Chakra is related to the testicles and sacral plexus, second Chakra to the ovaries, adrenals and kidneys, third Chakra to spleen, liver and solar plexus, fourth Chakra to thymus, heart and cardial plexus, fifth Chakra to thyroid and parathyroid glands, sixth Chakra to pituitary gland and brain, seven Chakra to pineale gland. We found in the surveyed contingent excess energy first, second, fourth and fifth chakras, while the sixth chakra energy deficit (Table 5). This gives grounds for assumptions about the relationship of these disorders chakras with announced disorders neuro-endocrine-immune complex.

Table 5. Effects of weekly consumption of bioactive water Naftussya on GDV Chakras Energy

Variables	Baseline (20)	After drink course (20)	Change as direct differences (20)
Chakra 1 Muladhara	+0,17±0,07*	+0,06±0,07	-0,11±0,06
	+0,20±0,05***	+0,16±0,05**	-0,04±0,03
Chakra 2 Svadhisthana	-0,05±0,06	-0,08±0,08	-0,03±0,08
	+0,08±0,04*	+0,10±0,05*	+0,03±0,05
Chakra 3 Manipura	-0,04±0,05	-0,13±0,09	-0,09±0,08
	+0,10±0,06	+0,05±0,06	-0,05±0,05
Chakra 4 Anahata	+0,25±0,06***	+0,24±0,05***	-0,02±0,05
	+0,35±0,05***	+0,37±0,05***	+0,03±0,05
Chakra 5 Vishudha	+0,03±0,06	-0,06±0,07	-0,09±0,06
	+0,11±0,05*	+0,11±0,07	0,00±0,05
Chakra 6 Adjna	-0,15±0,06*	-0,21±0,07**	-0,06±0,06
	-0,09±0,05	-0,09±0,07	-0,01±0,05
Chakra 7 Sahasrara	-0,08±0,05	-0,11±0,06	-0,03±0,05
	+0,01±0,04	+0,02±0,05	+0,01±0,04

Note. Each column in the top row shows the parameters registered without the filter, while the bottom line whith filter

Table 6. Effects of weekly consumption of bioactive water Naftussya on GDV Chakras Asymmetry

Variables	Baseline (20)	After drink course (20)	Change as direct differences (20)
Chakra 1 Muladhara	-0,09±0,06	0,00±0,04	+0,10±0,07
	-0,02±0,04	0,00±0,04	+0,02±0,04
Chakra 2 Svadhisthana	+0,12±0,07	-0,01±0,07	-0,13±0,07
	0,01±0,06	-0,02±0,06	-0,03±0,06
Chakra 3 Manipura	+0,12±0,07	-0,04±0,07	-0,16±0,08*
	+0,03±0,05	-0,05±0,05	-0,08±0,05
Chakra 4 Anahata	+0,01±0,09	+0,05±0,05	+0,05±0,11
	-0,03±0,04	-0,04±0,07	-0,01±0,07
Chakra 5 Vishudha	+0,02±0,05	+0,03±0,05	+0,01±0,06
	+0,02±0,05	-0,02±0,09	-0,04±0,07
Chakra 6 Adjna	+0,04±0,05	+0,06±0,04	+0,02±0,05
	+0,04±0,05	-0,01±0,08	-0,04±0,06
Chakra 7 Sahasrara	+0,08±0,07	-0,05±0,06	-0,13±0,07
	0,00±0,05	+0,02±0,05	+0,01±0,06

An additional argument in favor of this assumption can be detected Asymmetry in first, second and third Chakras (Table 6).

Digital data Table 5 visualized in Figures 3 and 4 which show clearly that the initial state of the chakras and their influence on the use of BAWN. The influence appears significant in normalizing the excess energy of the first chakra.

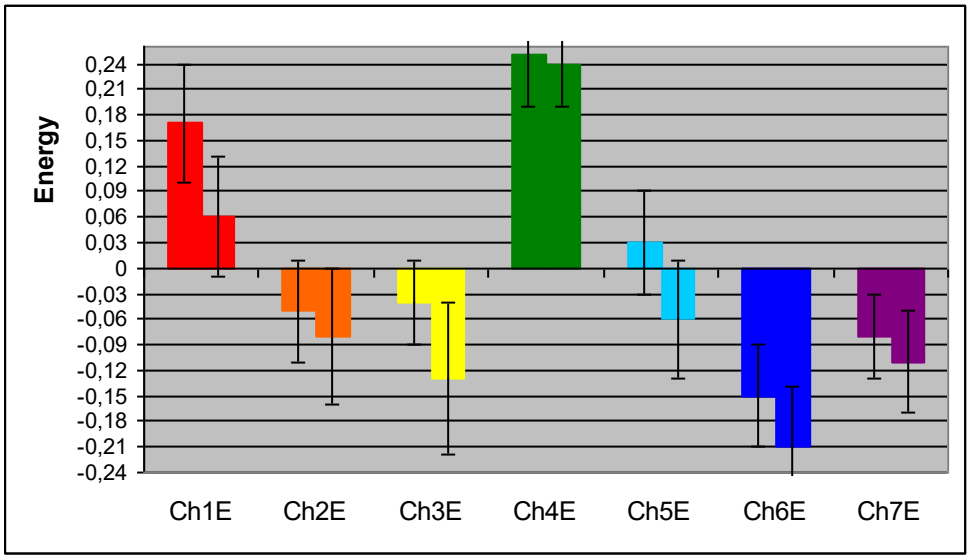

Fig. 3. The Energy profiles of virtual Chakras registered without the filter before and after the course drinking of bioactive water Naftussya

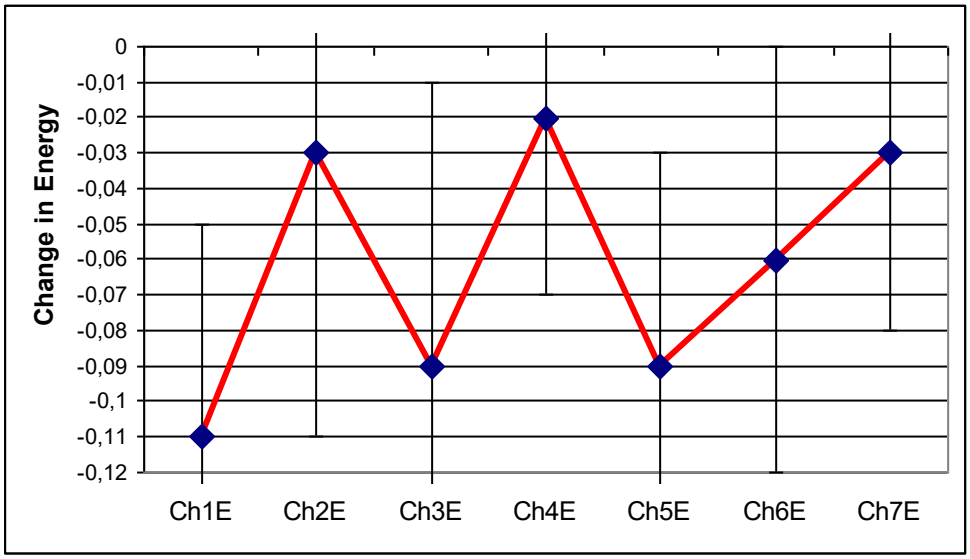

Fig. 4. Changes as direct differences in Energy of virtual Chakras registered without the filter caused by course drinking of bioactive water Naftussya

Other manifestations effects of BAWN are leveling left-sided asymmetry first chakra as well as right-sided asymmetry second and third chakras (Fig. 5 and 6).

Our previous studies with distilled water in vitro [11] give reason to believe that changes of GDV parameters of the human body are realized through changes GDV its water, which is about 2/3 of body weight.

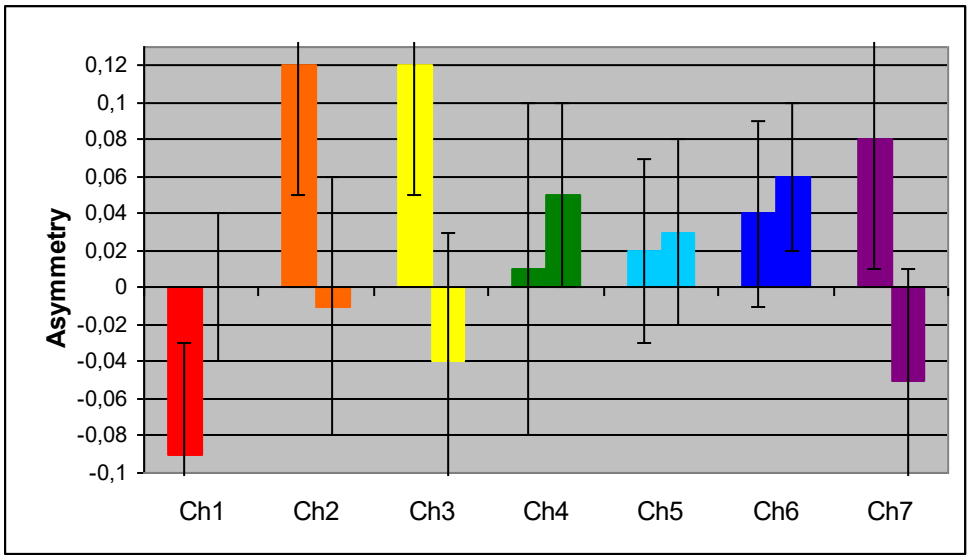

Fig. 5. The Asymmetry profiles of virtual Chakras registered without the filter before and after the course drinking of bioactive water Naftussya

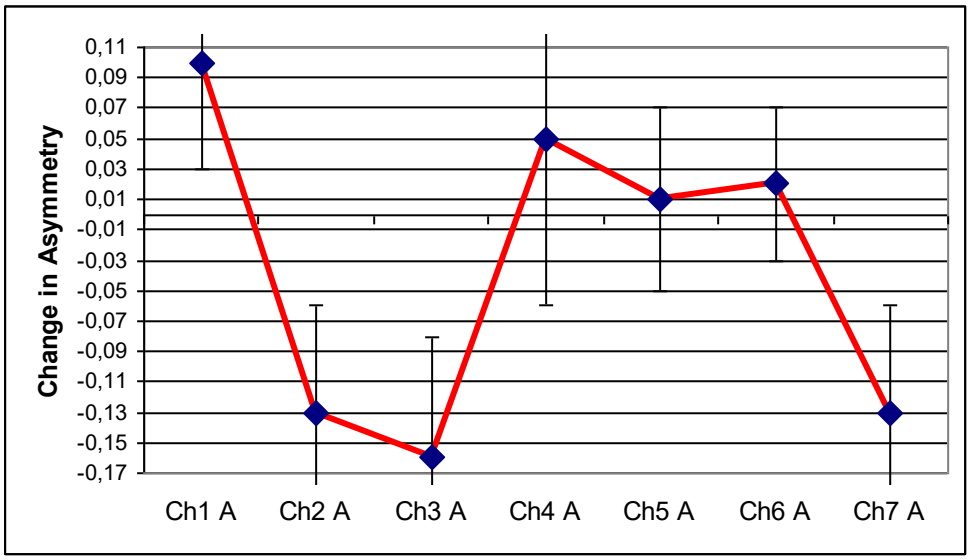

Fig. 6. Changes as direct differences in Asymmetry of virtual Chakras registered without the filter caused by course drinking of bioactive water Naftussya

Previously we shown by observations healthy men that between the eight basic parameters of GDV, on the one hand, and plasma levels of triiode-thyronine (T_3), testosterone and cortisol as well as mineralocorticoide activity (MCA) estimated by plasma Na/K-ratio, on the other hand, exist closely canonical correlation (R=0,947; $\chi^2_{(40)}$=59; p=0,028). In particular, with T_3 R=0,80, testosterone R=0,48, MCA R=0,40 and with cortisol R=0,35 [1-6,8,31,32].

In another study, we demonstrated that phytoadaptogen has modulating influence on the neuroendocrine-immune complex, and the GDV [7].

In present investigation we detected that among hormones coefficient of canonical correlation parameters of GDV with testosterone makes 0,81 ($p<10^{-5}$), with cortisol 0,66 ($p<10^{-4}$), with calcitonin 0,61 ($p<10^{-3}$), with triiode-thyronine 0,60 (p=0,007), with MCA 0,48 (p=0,022). Among parameters HRV closely correlated with GDV constellation Bayevskiy's Stress Index (R=0,80; $p<10^{-5}$) and LF/HF Ratio (R=0,76; $p<10^{-4}$). Coefficient of canonical correlation between Neuroendocrine constellation, on the one hand, and parameters of GDV,

on the other hand, makes 0,970 (R^2=0,941; $\chi^2_{(198)}$=264; p<0,001). Thus, we confirmed that between principal neuroendocrine factors of adaptation and parameters of GDV exist strong canonical correlation suggesting informativenes this method.

In order to identify precisely those indicators for which a set conditions of people before and after course drink Naftussya vary, available information field were subjected to discriminant analysis by method forward stepwise [20]. For inclusion in the model program selected only 12 indicators (variables), while others are out of discriminant model (Table 7).

Table 7. Discriminant Function Analysis Summary
Step 12, N of vars in model: 12; Grouping: 2 grps
Wilks' Lambda: 0,253; approx. $F_{(12)}$=6,6; $p<10^{-4}$

Variables currently in the model	Wilks Λ	Part Λ	F-re-move	p	Tole ranc	Before n=20	After n=20	Change
Chloride Plasma, mM/l	,404	,628	16,0	10^{-3}	,540	98,4±1,4	105,6±1,3	+7,2±1,5
Chloride Excretion, mM/24h	,301	,843	5,03	,033	,268	159±17	198±15	+39±22
GDV Shape Coeff. Right (filtr)	,311	,816	6,09	,020	,219	13,75±0,3	14,27±0,3	+0,52±0,31
ESC PA Pg (ND) Right, units	,301	,843	5,03	,033	,644	62,3±1,4	64,3±1,2	+2,0±1,0
Uric Acid Urine Conc., mM/l	,265	,958	1,18	,287	,289	2,99±0,46	1,95±0,11	-1,04±0,43
Uric Acid Excretion, mM/24h	,321	,789	7,21	,012	,189	3,54±0,34	2,94±0,24	-0,60±0,40
ESC PA MC (AVL) LI, %	,308	,822	5,83	,023	,844	+0,8±0,5	-1,3±0,9	-2,1±1,0
GDV Chakra 3 Asymmetry	,298	,851	4,72	,038	,754	0,12±0,07	-0,04±0,07	-0,16±0,08
GDV Chakra 2 Asymmetry	,319	,796	6,94	,014	,485	0,12±0,07	-0,01±0,07	-0,13±0,07
GDV Chakra 1 Energy	,277	,914	2,53	,123	,181	0,17±0,07	0,06±0,07	-0,11±0,06
LDLP Cholesterol, mM/l	,267	,949	1,45	,239	,639	3,62±0,22	3,27±0,17	-0,35±0,13
Phosphate Plasma, mM/l	,263	,965	,99	,328	,480	1,10±0,05	1,05±0,04	-0,05±0,02

Variables currently not in the model; Df for all F-tests: 1,26

	Wilks Λ	Part Λ	F to ente	p	Tole ranc	Before n=20	After n=20	Change
Electrokinetic Index, %	,343	,972	,840	,37	,520	41,6±2,9	43,3±3,0	+1,7±0,3
Bicarbonate Plasma, mM/l	,251	,990	,263	,61	,106	22,7±0,4	24,5±0,3	+1,8±0,4
Sodium Plasma, mM/l	,245	,966	,872	,36	,510	139±2	148±2	+9±2
Triacylglycerids Plasma, mM/l	,251	,991	,230	,64	,775	0,96±0,11	1,16±0,11	+0,20±0,11
GDV Chakra 1 Asymmetry	,248	,978	,597	,45	,806	-0,09±0,06	0,00±0,04	+0,10±0,07
GDV Chakra 7 Asymmetry	,251	,990	,253	,62	,152	0,08±0,07	-0,05±0,06	-0,13±0,07
GDV Entropy Left Projection	,247	,976	,643	,43	,565	3,80±0,04	3,73±0,03	-0,07±0,03
Cholesterol Plasma, mM/l	,253	,998	,049	,83	,111	5,55±0,22	5,23±0,20	-0,32±0,10
Potassium Plasma, mM/l	,249	,982	,475	,50	,660	4,53±0,13	4,43±0,11	-0,09±0,02
Phosphates Urina Conc., mM/l	,245	,968	,870	,36	,514	12,3±1,4	10,8±1,1	-1,5±0,6

Then the 12-dimensional space discriminant variables transformed into a one-dimensional space canonical discriminant function (canonical root), which is a linear combination of discriminant variables. Discriminating (distinction) ability to root characterizes canonical correlation coefficient as a measure of relationship, degree of dependence between the groups and the discriminant function.

Table 8 shows the row (current) and standardized (normalized) coefficients of canonical variables. Coefficient in non-standardized form gives information about the overall contribution of discriminant variable in function value, while standardized coefficients reflecting the relative contribution of variable independent from units. They make it possible to identify those variables that make the largest contribution to the value of the discrimination function. There are given full structural coefficients, ie the coefficients correlation between the root and discriminant variables. The structural coefficient indicates how closely related variables and discriminant function, that is what fate information about discriminant function (root) lies in this variable. As you can see, the root shows the inverse way about the first four

variables and direct way about other eight.

Table 8. Summary of Stepwise Analysis and Coefficients for Canonical Variables

Variables currently in the model	Parameters of Wilks' Statistics					Coefficients		
	F to enter	p-level	Λ	F-value	p-level	Struc-tural	Standar-dized	Raw
Chloride Plasma, mM/l	14,8	,0004	,720	14,8	10^{-3}	-,36	-,961	-,163
Chloride Excretion, mM/24h	5,11	,0305	,405	8,08	10^{-4}	-,16	-,886	-,013
GDV Shape Coeff. Right (wf)	2,57	,1192	,308	7,48	10^{-4}	-,12	-1,060	-,782
ESC PA Pg (ND) Right, units	4,76	,0358	,557	9,53	10^{-4}	-,10	-,571	-,095
Uric Acid Urine Conc., mM/l	2,94	,0961	,335	7,71	10^{-4}	,21	-,440	-,293
ESC PA MC (AVL) LI, %	5,19	,0286	,631	10,8	10^{-3}	,20	,531	,164
GDV Chakra 3 Asymmetry	3,37	,0757	,366	7,91	10^{-4}	,15	,514	1,655
Uric Acid Excretion, mM/24h	2,53	,1206	,468	7,74	10^{-4}	,14	1,221	,929
LDLP Cholesterol, mM/l	1,45	,2397	,253	6,63	10^{-4}	,12	,326	,364
GDV Chakra 2 Asymmetry	3,83	,0585	,503	8,66	10^{-4}	,12	,751	2,384
GDV Chakra 1 Energy	1,62	,2132	,267	6,99	10^{-4}	,10	-,795	-2,546
Phosphate Plasma, mM/l	2,64	,1153	,283	7,37	10^{-4}	,08	,315	1,628
Canonical r*=0,864; Wilks' Λ=0,253; $\chi^2_{(12)}$=44; p<10^{-4}						**Constant**		30,67

The amount of products of raw coefficients of the value of discriminant variables together with the constant given value discriminant function (root) for each person and enabling its visualization (Fig. 7).

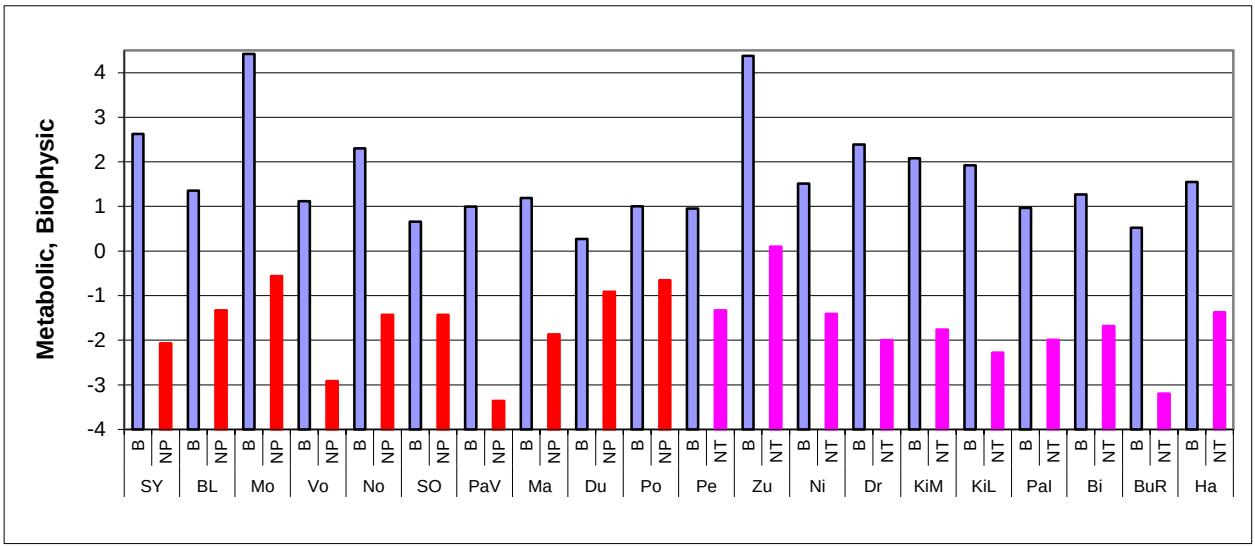

Fig. 7. Individual levels of Metabolic and Biophysical Canonical Root before (B) and after course drinking of bioactive water Naftussya from Pomyarky (NP) and Truskavets' (NT) layers. Below is listed the initials of volunteers

One can clearly see that in all volunteers integral condition on the set of selected metabolic and biophysical parameters before and after drinking bioactive water Naftussya to some extent different. Thus it appears that the effects of water Naftussya from **Pomyarky** and **Truskavets'** layers about the same.

The visual impression is confirmed by calculating averages roots, which do not differ significantly (Table 8).

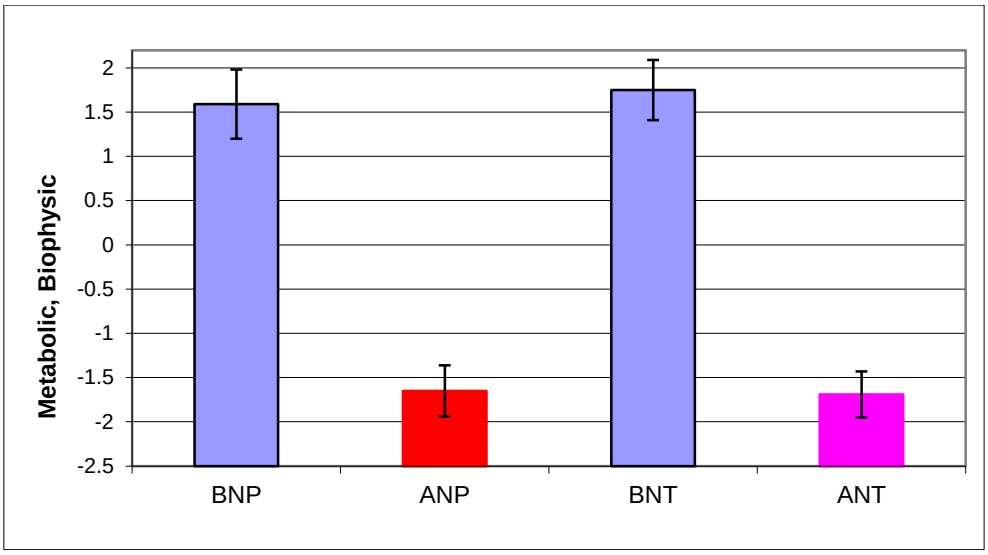

Fig. 8. Averages (M±SE) of Metabolic and Biophysical Canonical Root before (B) and after (A) course drinking of bioactive water Naftussya from Pomyarky (NP) and Truskavets' (NT) layers.

Selected variables can be used for identification (classification) state of a person before or after drinking water. This goal is realized using Classification (discriminant) functions as special linear combinations for each group that maximize the differences between groups and minimize the variance within groups. Coefficients for Classification Functions are not standardized, so not interpreted. The house is of a maximum value function calculated by summing the quantities of products at variable rates ranging functions plus constant (tab. 9). In this case, we can retrospectively identify accurately the initial state and the state after drinking rate with an accuracy of 95% (one error in 20 people). The object belongs to a group with a maximum value function calculated by summing the products quantities of variables at rates Classification functions plus constant (tab. 9).

Table 9. Coefficients and Constants for Classification Functions

Variables currently in the model	Before	After
Chloride Plasma, mM/l	8,257	8,802
ESC PA MC (AVL) LI, %	-2,208	-2,755
ESC PA Pg (ND) Right, units	3,754	4,072
GDV Chakra 2 Asymmetry	-102,2	-110,2
Uric Acid Excretion, mM/24h	-2,755	-5,864
Chloride Excretion, mM/24h	,135	,178
GDV Chakra 3 Asymmetry	-13,04	-18,58
Uric Acid Urine Conc., mM/l	2,869	3,848
GDV Shape Coeff. Right (wf)	50,39	53,01
Phosphate Plasma, mM/l	-21,40	-26,84
GDV Chakra 1 Energy	213,8	222,3
LDLP Cholesterol, mM/l	-7,025	-8,243
Constant	-866,1	-968,7
Squared Mahalanobis Distance: 11,8 (F=6,7; $p<10^{-4}$)		

In this case, we can retrospectively identify accurately the initial state and the state after course drinking of bioactive water Naftussya with an accuracy of 95% (one error in 20 people).

CONCLUSION

Weekly use of Bioactive Water Naftussya increases in the normal level of plasma chloride and sodium, normalizes low level of bicarbonate and decreases within the normal levels of potassium and phosphate. Urinary excretion of sodium and chloride increases while excretion and concentration of uric acid decreases, as the urine concentration of phosphates. The index lithogenicity urine decreased from 112% to 103% norm standard. Initially reduced level of plasma triacylglycerides increases, while decreases in the normal level of cholesterol in low-density lipoprotein composition. Among the biophysical parameters detected increase in the normal conductivity acupuncture points Pg (ND) at right side, which represent the nervous system, and left shift the ratio between the conductivity of acupuncture points MC (AVL), which represents the immune system. Increases electrokinetic index of epithelial cells of cheek to 1,7±0,3%, that indicating the "rejuvenation" of the body to 1,4±0,3 years. We first discovered changes in parameters of GDV, namely elimination of asymmetries of virtual chakras (first, second and third) as well as reducing the excess energy of the first chakra. No significant differences between the effects of Bioactive Water Naftussya both fields generally not found. Bioactive water Naftussya both Truskavets' and Pomyarky layers causes favorable normalizing effects on abnormalities parameters of metabolism and gas discharge visualization, which is an additional manifestation of well-known its adaptogenic and sanogenic properties [10,13,23,27,29,3038,39].

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Висновки

Тижневе вживання Нафтусі підвищує в межах норми рівень в плазмі хлориду і натрію і нормалізує знижений рівень бікарбонату та знижує в межах норми рівні калію і фосфату. Екскреція з сечею хлориду і натрію зростає, а сечової кислоти – знижується, при цьому знижується і її концентрація, як і концентрація фосфатів. Попри відсутність суттєвих змін концентрацій в сечі креатиніну, кальцію і магнію, розрахований на їх основі початково підвищений індекс літогенності сечі нормалізується, знижуючись від 0,82±0,04 до 0,76±0,02, тобто від 112% норми (0,73±0,04) до 103% норми.

Початково знижений рівень триацилгліцеридів підвищується від 66% норми до 80 % норми, натомість знижується в межах норми рівень холестерину в складі ліпопротеїнів низької густини.

З-поміж біофізичних параметрів виявлено підвищення в межах норми електропровідності точки акупунктури Pg (ND) справа, котра репрезентує нервову систему, а також зміщення вліво співвідношення між електропровідністю точок акупунктури MC (AVL), котрі репрезентують імунну систему.

Вперше виявлено зміни параметрів газорозрядної візуалізації: усунення асиметрії віртуальних чакр (другої, третьої і першої) і зменшення надлишкової енергії першої чакри.

Суттєвих відмінностей між ефектами Нафтусі обох родовищ в цілому не виявлено.