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The Biological Activity of Apple Juice.

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ABSTRACT

The subject of alimentary correction of health with natural plant products with immune protective properties is essential to maintain human health. Apple juice, immediately after taking, slightly reduces the activity of all organs, except the cardiovascular system. In one hour after his admission increases the biological activity of all body systems, especially cardiovascular system, system of stomach – pancreas – spleen and system of liver – gall bladder. In functional weakness in humans these systems, it is advisable to use them apple juice.

Keywords: Correction of alimentary health, Apple juice, biological activity of organs, the biological activity of Apple juice.

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INTRODUCTION

Longevity and quality of life, according to researches hold by the World Health Organization in 50% is determined by lifestyle and only in 10% depends on the level of medical care[1]. A healthy lifestyle involves a healthy (healing people) food. A health of population is largely determined by the intake of dietary nutrients and minor components. Therefore, the subject of alimentary correction of health with natural plant foods, as the immunoprotectors metabolic close to the body, is essential to maintain human health [2-6].

Table 1: The average content of vitamins and minerals in Apple juice, 100g

Vitamins																	
Vitamin	Vitamin A	Vitamin B1	Vitamin B2	Vitamin B3	Vitamin B6	Vitamin B9	Vitamin C	Vitamin E	Vitamin H	Vitamin PP							
The content in apple juice	0,03 mg	0,03 mg	0,02 mg	0,07 mg	0,07 mg	2,0 mcg	10,0 mg	0,55 mg	0,3 mcg	0,3 mg							
The daily requirement of the body	5000 IU	1,5 mg	1,7 mg	20 mg	2 mg	200 mcg	60 mg	20 IU	200 mcg	10 mg							
Microelement																	
Microelement	Iron	Potassium	Calcium	Magnesium	Sodium	Sulfur	Phosphorus	Chlorine	Bor	Manganese	Copper	Molybdenum	Fluoride	Zinc	Vanadium	Iodine	Chrome
The content in apple juice	2,2 mg	278,0 mg	15,0 mg	9,0 mg	26,0 mg	5,0 mg	11,0 mg	2,0 mg	245,0 mcg	47,0 mcg	110,0 mcg	6,0 mcg	8,0 mcg	150,0 mcg	4,0 mcg	2,0 mcg	4,0 mcg
The daily requirement of the body	10-20 mg	1-2 g	1000 mg	400 mg	4-5 g	500-1000 mg	1000 mg	3400 mg	2-5 mg	2 mg	2 mg	75 mcg	2-4 mg	15 mg	20-30 mcg	150-200 mcg	50 mcg

Apples and apple juice are the most important vegetable food from the ancient times and were used also for the correction of a health state[7]. There are more than 150 species of apple trees on the Earth, and a hundreds of different varieties are cultivating in a present time [8, 9].In the composition of fruits of apples contains: sugar 5-15% (sucrose, glucose, fructose, etc.), fibre 0.6%, starch up to 9, 8%, pectin to 0.27%, organic acids 0,3-0,89% (apple – 0,37%, lemon – 0.11%, and the wine and chlorogenic acid). Chlorogenic acid helps the excretion of oxalic acid and normalization of liver[8].The average content of vitamins and minerals in apple juice [10] are presented in Table 1.

In ancient medicine has been already used the apples as nutritional and medicinal product. Even Ibn Sina used the sour apples in the absence of appetite, weakness of the stomach, sweet apples – for strengthens heart. According to Muhammad Hussain Sherazi (XVIII century) apples strengthen the heart, stomach, liver and intestines, improve mood, appetite, amuse [8]. In German and Russian folk medicine, the

fruit and juice of apples were used for the treatment of anemia (anemia of various origins), for normalization of the gastrointestinal tract as an anti-inflammatory agent[9].

In modern medicine the anti-inflammatory and blood pressure lowering properties of vitamins C and P are well known. They are in large quantities in apple juice. Soitisused as a prophylactic agent in the treatment of colds and hypertension. Extract of malic acid iron used for treatment of anemia, especially in pediatric practice [8].Due to the presence of potassium salts and tannin apples inhibit the formation of uric acid, and the chlorogenic acid help the excretion of oxalic acid. For these reasons, long-term use of apples and apple juice is helpful for patients with gout and urolithiasis. Organic acids contained in apples, participate in the processes of regulation of acid-alkaline balance in the body, and therefore useful in gout, diabetes, and some forms of diathesis. Apples prescribed as a diet product because of the presence of potassium for patients with heart diseases, cardiac edema to organize fasting days. Potassium is beneficial and activates the excretory system and the pectin helps to eliminate cholesterol. In addition to cholesterol, pectins contribute to the removal of harmful substances generated by inflammatory processes, intoxication, or indigestion.Regulating the activity of the stomach, apples are especially good for sedentary people and the elderly, and in patients with metabolic syndrome and obesity.Freshly squeezed apple juice has a strong choleric and diuretic effect, strengthens the cardiovascular system and useful in these diseases; tones the body; refreshes and quenches thirst, increases body resistance to colds, infectious and other diseases; prevents formation of kidney stones, useful in hepatitis and cholecystitis, kidney disease, gastrointestinal diseases, atherosclerosis, metabolic disorders. Its use is important for people of metal work [7-13].

The aim of this study was to determine the nature of the impact of apple juice on the human body, changes in its use, biological and functional activity of human organs.

Main part. Materials and methods of research.To analyze state changes of biological activity of organs under the action of consuming apple juice wasused a hardware-software complex RUNO (thermoalgometry).Diagnosis is based on the reflex connection of the activity of the autonomic centres with the sensitivity zones of the skin – the less the sensitivity threshold of the corresponding biologically active points of the Meridian of the body, the higher the biological activity of the respective organ.Professional medical diagnostic system RUNOwas added to the register of medical devices, certified by the Ministry of health of the Russian Federation.Today it is the most accurate, complete, and at the same time, the most simple technology of express – diagnostics, allowing for a 3-5 minutes to identify the changes in the activity of the organs.

As research material were taken healthy men and women [14] of the most socially significant ages from 20 to 69 years.

To create an “anchor measurement” – the average annual amount of the biological activity of the organs during the 3 years (November 2012 – October 2015) fasting from 7.00 am to 8.00 am every 2 weeks, were performed the measurements of the biological activity of bodies of healthy people.Just to identify the average biological activity of the organs during this period of time 557 measurements were spent. The number of measurements and the average age of the studiedagegroupsarepresentedinTable 2.

Table 2: The number and average age of nearly healthy men and women that took part in “anchor measurements” by age group

Age group	20-29 years	30-39 years	40-49 years	50-59 years	60-69 years
The number	40	165	65	169	118
The average age, years	27,7±0,02	37,0±0,08	43,1±0,03	51,7±0,02	64,0±0,01

In the same time period of the day (from 7 a.m.) to assess changes in biological activity of organs under the action of 50 ml apple juice consumed, using hardware-software complex of the RUNOwere held two measurements in 37 people: immediately after taking the juice, and 1 hour after taking it.

The analyzed databases were created in Microsoft Excel 2003. The variational series constructed for each indicator, for:

The age of the subjects;

12 measurements of the biological activity of the meridians of the organs:

- According the “anchor measurement” of the biological activity of the organs;
- According to the values of the biological activity of each body immediately after ingestion of apple juice;
- According to the values of the biological activity of each organ one hour after ingestion of Apple juice.

There were evaluated the indexes of the average values of the mode, the median, the method of moments and the boundaries of their confidence intervals. The critical level of significance was taken as $p = 0.05$. Indicators of activity of the bodies presented in Table 3 and in Fig. 1.

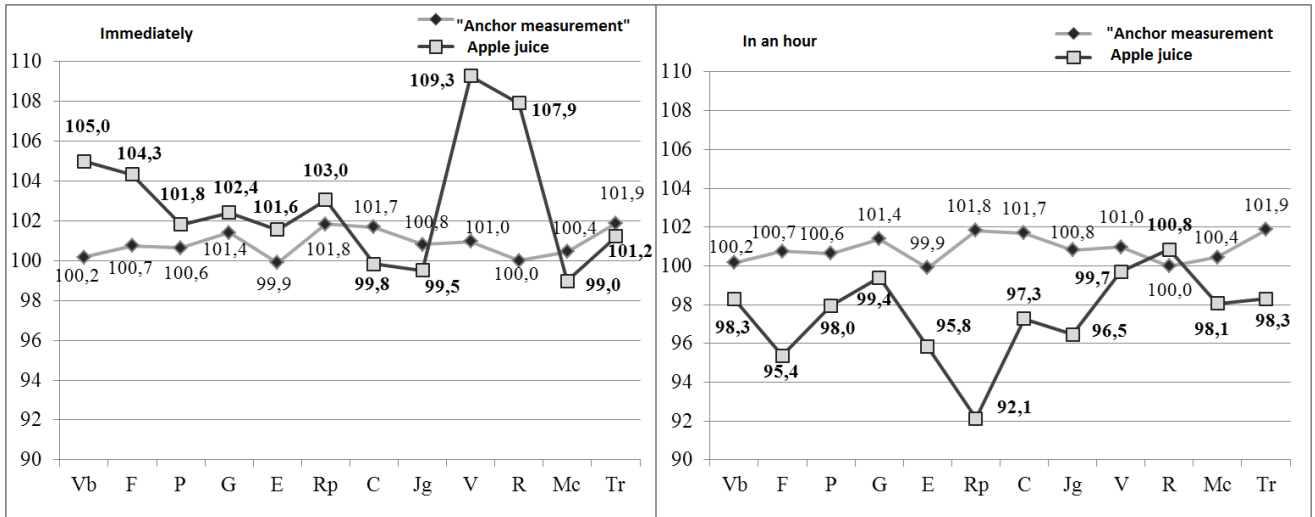
Table 3: The average values of indicators of the biological activity of the organs

Meridian	Vb	F	P	G	E	Rp	C	Jg	V	R	Mc	Tr
	Gallbladder	The liver	Lungs	The colon	Stomach	Pancreas - spleen	Heart	The small intestine	The bladder	Kidneys	The pericardium (vascular system)	Triple heater (hormonal system)
“Anchor” measurement	100,17 ±1,49	100,74 ±1,19	100,65 ±1,17	101,40 ±1,22	99,90 ±1,20	101,83 ±1,41	101,69 ±0,95	100,82 ±2,31	100,96 ±2,31	99,99 ±1,39	100,45 ±1,14	101,88 ±0,99
Immediately	105,0 ±5,67	104,3 ±5,66	101,8 ±4,77	102,4 ±4,77	101,6 ±5,61	103,0 ±5,93	99,8 ±3,15	99,5 ±3,49	109,3 ±6,54	107,9 ±5,52	99,0 ±3,94	101,2 ±3,68
In an hour	98,3 ±6,24	95,4 ±5,93	98,0 ±3,46	99,4 ±5,72	95,8 ±4,82	92,1 ±4,61	97,3 ±4,13	96,5 ±3,47	99,7 ±6,71	100,8 ±7,84	98,1 ±3,83	98,3 ±4,08

Figure 1: The indicators of the biological activity of the authorities

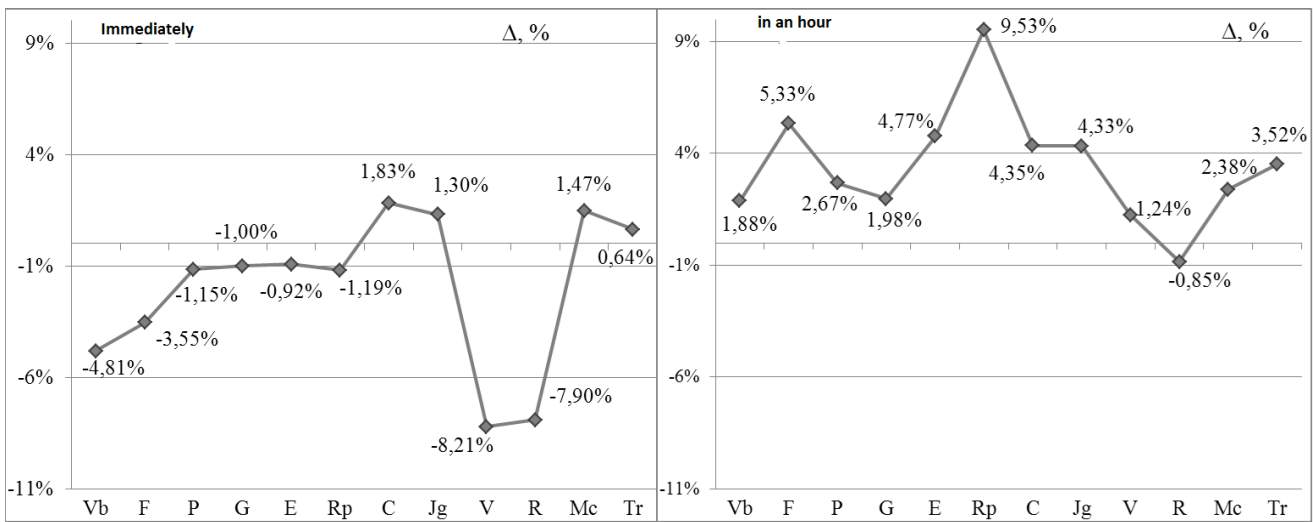
Table 4: The change of biological activity of organs in absolute values (Δ , points) in %ratio (Δ , %) of relative indicators of the biological activity of the organs in an “anchor measurements”

Meridian	Vb	F	P	G	E	Rp	C	Jg	V	R	Mc	Tr	
Immediately	Δ , points	-4,82	-3,57	-1,16	-1,01	-0,93	-1,21	1,86	1,31	-8,29	-7,90	1,48	0,66
	Δ , %	-4,81	-3,55	-1,15	-1,00	-0,92	-1,19	1,83	1,30	-8,21	-7,90	1,47	0,64
In an hour	Δ , points	1,88	5,37	2,69	2,01	4,80	9,70	4,42	4,36	1,25	-0,85	2,39	3,58
	Δ , %	1,88	5,33	2,67	1,98	4,77	9,53	4,35	4,33	1,24	-0,85	2,38	3,52



The change of biological activity of organs by drinking apple juice relative to an “anchor measurement” in absolute values and in percentage are presented in Table 4 and in Fig. 2.

Figure 2: The change of biological activity of organs by drinking apple juice in a percentage relative to an “anchor measurement”.



CONCLUSION

The change in the biological activity of the organs regarding the “anchor” values *immediately after* intake of apple juice are presented in Table 5. The change in the biological activity of the organs regarding the “anchor” values *one hour after* ingestion of apple juice are presented in Table 6.

Table 5: The change in the biological activity of the organs immediately after administration of Apple juice, %.

Meridian of an organ	C	Mc	Jg	Tr	E	G	P	Rp	F	Vb	R	V
%	1,8	1,5	1,3	0,6	-0,9	-1,0	-1,2	-1,2	-3,5	-4,8	-7,9	-8,2

Table 6: The change in the biological activity of the organs in an hour after the intake of Apple juice, %.

Meridian of an organ	Rp	F	E	C	Jg	Tr	P	Mc	G	Vb	V	R
%	9,5	5,3	4,8	4,3	4,3	3,5	2,7	2,4	2,0	1,9	1,2	-0,9

The comparison of the results (Fig. 2, Tables 5 and 6) show that the total change of the biological activity of all organs immediately after drinking of apple juice is “-23,5%”, i.e. the total biological activity of the organism decreases. Speaking with the language of Eastern medicine, apple juice when it is received immediately manifests sharply the Yin beginning. [15]. Thus, slightly (in the amount of 5.2%) increased biological activity of C, Mc, Jg and Tr, i.e., activated state of the entire cardiovascular system; the biological activity of other organs and systems decreased (most significantly in the system kidney – bladder R and V in the amount of 16.1%). *In an hour after* the intake of apple juice, the total change in the biological activity of all organs increases dramatically and is “+41,1%”. Speaking with the language of Eastern medicine, apple juice during its absorption by the body activates the Yang beginning.[15].

SUMMARY

In summary, we can draw the following conclusions:

1. On Apple juice, *immediately after* his admission, the body reacts to the decrease in the biological activity on “-23,5%”. While 5.2% increases the biological activity of the cardiovascular system (Jg, Tr, s, MS).
2. *An hour after* taking the apple juice dramatically increases the biological activity of almost all organs and systems of the body (in the amount of “+41,1%”). Most show biological activity: cardiovascular system (Mc, Jg, C, Tr, for a total of “+14,4%”); a stomach – pancreas – spleen (RP, E in the amount of “+14,3%”); the liver – gall bladder (F, Vb – in the sum of “+7,2%”); lungs – large intestine (P, G – at “+4,7%”). To a lesser extent activated system kidney – bladder (R, V – up “to+2.1 per cent”).
3. By drinking Apple juice gently and constantly activates the cardiovascular system.
4. In cases involving “YANG syndromes” – inflammatory processes, delirium - for food correction of the body towards a more harmonious, healthy, is very important the use of apple juice as having originally pronounced “YIN-existence” [15]. Thus, Apple juice is able to remove the condition of “redundancy” of organs and body systems.
5. It is possible to recommend the use of apple juice for alimentary correction of health in people with functional weakness, primarily of the cardio-vascular system, stomach – pancreas – spleen, liver – gallbladder.

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