

Original Article

Anthelmintic program by means of Ayurveda and yoga therapy

BABAK SVITLANA¹, KARNAUKH TETIANA²

^{1,2}Department of medical and biological disciplines, National University of UKRAINE on Physical Education and Sport, UKRAINE

Published online: February 29, 2020

(Accepted for publication: January 20, 2020)

DOI:10.7752/jpes.2020.s1038

Abstract.

People nowadays often have complaints about poor health, lethargy, fatigue, deterioration of capacity, anxiety. According to data from the World Health Organization, a fourth of the Earth's population is infected with intestinal parasites, the infection of which causes these symptoms. A common unhealthy lifestyle contributes to the spread of human parasites. Parasites affect all segments of the population, people of different age categories, genders, nationalities, races, professions. There is an objective need to improve the process of preventing helminthiasis and taking a modern approach to its application by means of complex methods, such as Ayurveda and yoga. The main purpose of the research was to create a comprehensive anti-helminth program based on scientific data. At the same time, we were guided by the desire to help a person choose the right style of nutrition, which is based on the principles of Ayurveda and brings balance, harmony and health to human life.

We determined the type of constitution - Vata, Pitta, Kapha, on the basis of which created a proper diet, cleaning and motor activity program. The research involving women who have expressed a desire to get rid of parasites and promote health through Ayurveda and yoga therapy has shown the effectiveness of these remedies.

Key Words: helminthiasis, anthelmintic program, ayurveda, yoga therapy.

Introduction.

According to the World Health Organization (WHO), a quarter of the Earth's population (1.4 billion people) is infected with intestinal parasites. In Europe, every third person got helminths or is a carrier of helminths. In Ukraine, 300-400 thousand cases of helminthiasis are registered annually, although, according to some studies, their number reaches 2 million [Lukshina R.G., Bodnya S.P., Moskalenko I.K. etc. (2004), Mao X.Q, Sun D.J., Miyoshi A. et al. (2000)]. Recently, there has been an increase in the incidence of human helminthiasis due to socioeconomic problems in the country and a decrease in the volume of sanitation work; poor sanitation [Zryachkin N.I. (2006)].

The most common helminthoses are enterobiosis and ascariasis. Currently, the proportion of enterobiosis among other helminthiasis reaches 67.1%, and in large industrial cities - more than 95% [Horton J. (2000)]. In Ukraine enterobiosis occurs 3.5-4 times more often than ascariasis, which ranks second in the structure of morbidity. The magnitude of the spread of enterobiosis is due, on the one hand, to the ease of transmission of the invasion, and on the other, to the possibility of completing the entire pathogen in any climatic conditions without the involvement of the intermediate host.

The second most common type of worms in Ukraine is roundworm. About 65 thousand patients are registered annually. Conditions for the spread of ascariasis in cities are absent. However, the proportion of citizens among registered patients with ascariasis is consistently about 2/3, up to 80% of them - children under 14 years [Bodnya E.I. (2005), Zryachkin N.I. (2006)]. Helminths have a negative effect on the human body. They lead to allergy, development of polyhypovitaminosis, decrease of macro- and microelements, impaired hematopoiesis and vascular permeability, hormonal imbalance. Helminthiasis contribute to the formation of chronic diseases (cholecystitis, cholelithiasis, pancreatitis, colitis, diabetes, bronchial asthma, atopic dermatitis), psycho-emotional disorders (chronic fatigue, irritability, anxiety, hyperactivity), anemia etc. Secondary immunodeficiency can develop with prolonged helminth infestation [Helminthiasis in Ukraine: the current state of the problem (2012), Krivopustov S.P., Shcherbinskaya E.N., Loginova I.A. et al. (2011)]. Data from modern scientific literature indicate that there is an objective need to improve the process of prevention of helminthiasis and a modern approach to its application by means of complex methods. This applies in particular to Ayurveda and yoga therapy. The purpose of the work is to theoretically substantiate and develop a comprehensive anti-helminth program for people with helminthiasis using Ayurveda and yoga therapy.

Material & methods.

To solve the tasks, the following research methods were used:

- analysis of scientific literature and scientific and methodological sources;
- logical methods of research: analysis, synthesis, generalization, deduction, induction;

- psychological and pedagogical methods - lectures, interviews, questionnaires, surveys and observations;
- anthropometric methods and somatological methods (determining the type of body constitution);
- preparation of a diet with products that have anthelmintic properties.

The following anthropometric studies were performed. The following indicators were determined: body length (cm), body weight (kg), chest circumference at rest (cm). This data was used to calculate the Pinier index:

$$I = \text{body length} - (\text{body weight} + \text{chest circumference at rest}) \text{ [Grinkiv M.Y., Baranetskiy G.G. (2006)].}$$

Determination of the constitution of the body types: Vata, Pitta, Kapha.

The researches were conducted on the basis of the "Medical Center" in Kyiv for a year.

The study was voluntarily attended by 20 women, aged 30 to 40 years. All women, under their own will, underwent medical examination before the study. Two groups of 10 people were formed. The women of both groups, in the first place, had interviews and lectures on yoga, as well as determining women's readiness for yoga. After that, yoga classes were started. During the month, a survey was conducted on the physical condition of women and found that some people complained of fatigue, sometimes poor mood, head and abdominal pain, for these reasons they missed classes or could not concentrate during exercise.

Interviews were conducted with the participants regarding the problem of helminths, foods that contribute to the deepening of the problem, and foods used to get rid of helminths. During the discussion of this issue, it became clear that most of them were poorly informed about the issue and did not even suspect that it was a problem. After the interview, a questionnaire was conducted regarding their usual diet.

They were tested for the presence of helminths in the body. Of the 20 women, 12 expressed a desire to adjust their diet. 7 voluntarily carried out inspections in the respective laboratories for the detection of helminths.

Women attended yoga classes and consulted with a nutritionist and clearly followed the diet regime. At the consultations, each was individually assigned a balanced diet. Women practiced yoga 3 times a week and performed cleaning procedures on their own at home. Determined the type of constitution (according to Ayurveda) - Vata, Pitta, Kapha. Body weight, body length, and chest circumference were measured.

Interviews were conducted to expel Prakriti and Vikriti, which made it possible to make a correct diet, day regime and physical activity.

Results.

At the beginning of the study, some of the people who came to practice yoga irregularly complained of poor well-being (headaches, nausea, weakness, shortness of breath, etc.), which prevented them from practicing fully and sometimes they skipped classes. Based on this, we conducted a survey on the diet of women and talk-lectures on helminths and helminthiasis. After that, it was suggested to be tested for the presence of helminths in the body. The test results are shown in Tables 1 and 2.

Table 1

Test results for the presence of helminths (with symptoms) in the human body (n = 12)

Symptoms (for 6 months before study)	Number of people with symptoms		
	Positive	Rare	Negative
You have itching in the anus in the morning	6	4	2
You gnash your teeth in your sleep	3	3	6
There is salivation while you sleep	2	1	9
Increased salivation in the morning	3	2	7
Nausea in the morning when brushing your teeth	4	4	4
Peeling of the skin of the fingers or toes is observed, with the layers of the skin being joined together	3	3	6
The heightened sense of hunger followed by fainting	3	3	6
Allergic skin rashes	2	2	8
Allergic rash in the eyelids, peeling, swelling	6	6	0
Itchy skin	2	3	7
Are there any unexplained symptoms of emptying: bloating, bloating in the abdomen, instability of emptying	7	5	0
Deficiency of body weight with good appetite	4	1	7
Do you suffer from several serious chronic diseases of the joints, bronchopulmonary system, gastrointestinal tract	1	3	8
Feeling bad, not diagnosed, treated for a long time and ineffective, without improvement and visible positive dynamics	7	4	1
Unexplained abdominal pain	2	3	7
Persistent, long-lasting toxic-allergic manifestations	2	2	8
An incomprehensible fever, with sore muscles and joints	2	4	6
There is an increase in eosinophils in the blood *	3	0	4
There is a decrease in the content of proteins in the blood and changes in protein composition. Increase of immunoglobulins, especially E class *	1	0	6
Persistent anemia (decrease in hemoglobin in the blood)*	2	0	5

Note: * 7 of the examiners who underwent medical control answered these questions.

Table 2
Test results of subjects (n = 12) for the probability of the presence of helminths (by the number of points)

Scores	The probability of the presence of helminths	The number of people who have a certain result
From 0 to 6 points	Doubtful	0
From 7 to 15 points	becomes real	4
From 16 to 25 points	very high	8

As a result of the survey, some of the study participants were concerned about their condition and even underwent medical checks to confirm the presence of worms.

According to scientific literature, the defeat of the organism with ascarids and pinworms is characterized by the presence of a certain symptom complex: mechanical bowel obstruction (constipation), discomfort or pain in the abdomen (sometimes with colic), nausea, shortness of breath, cough, sometimes urticaria, decreased immunity, dysbiosis, lack of appetite, anemia, allergic reactions, mucosal diarrhea, dyspepsia, eosinophilia, sometimes develop appendicitis and perforation of the small intestine (peritonitis). Pinworms also have a negative effect on the nervous system and intelligence, causing restless sleep, impaired well-being, increased irritability, capriciousness, inattention, impaired memory, headaches, impaired performance, neurasthenia, etc. [Pokrovsky V.I. (1997), Ferreyra N.P., Cerri G.G. (1998)].

After receiving the results of the survey and medical control, a lecture on the Ayurvedic diet and products with anthelmintic properties was given. 12 people who agreed to adjust the diet according to the study conditions were interviewed to determine the type of constitution.

According to Ayurveda, there are 3 types of human body constitution: Vata, Pitta, Kapha. People with Vata constitution should not take large amounts of food, especially heavy, because they have digestive tract enzymes and anabolic hormones produced in small quantities. However, because the rate of transition of the food lumps from one part of the gastrointestinal tract to another is quite high, they need to eat 4 times a day. At large breaks in meals, they have antiprestaltic colon, which leads to spastic constipation. The appetite of people with Vata constitution is very volatile and highly dependent on the psycho-emotional state. Therefore, Ayurveda does not recommend them to eat at a certain time, but only to eat when there is a famine [Frawley D. (1994), Nadkarni K.M. (2007)].

People with Pitta constitution should take food at a certain time, as they are more dependent on circadian (daily) rhythms. Having developed a certain diet for themselves, they should strictly adhere to it. The activity of the digestive system of such people is very high. However, if they regularly consume food at a strictly specified time, then all the enzymes and hormones are produced in sufficient quantities. But if they miss their meal time, they usually have a bad mood. It is enough for people with Pitta constitution to have their meal three times a day. It is not recommended to do this at sunrise, sunset, noon, and midnight, since their neuroendocrine system readjusts to certain cosmic rhythms at this time. In the evening, they should not consume large amounts of animal fats and simple carbohydrates (sugar, wheat and corn, potatoes, bananas and grapes), as their liver is able to synthesize a large amount of cholesterol at this time. Improper nutrition can cause liver disease, peptic ulcer and atherosclerosis [Frawley D. (1994), Nadkarni K.M. (2007)]. People with Kapha constitution can consume food 1-2 times a day, avoiding simple carbohydrates and large amounts of animal food, as they are prone to being overweight due to their high insulin activity. They should take mostly fruits, berries and vegetables in the second lunar phase. In the fourth lunar phase, it is recommended to limit pickling, pickles and marinades. In winter, they can eat a lot, in the summer - little, in the spring and autumn - moderate [Frawley D. (1994), Nadkarni K.M. (2007)].

Among the participants of the study, we determined the types of constitution of the body according to Ayurveda. For example, a constitution of Vata type was determined for 4 persons, Pitta type for 3 persons and Kapha type for 5 persons (Table 3).

Table 3
Determination of constitutive Ayurvedic type in subjects (n = 12)

CONSTITUTION MARK	VATA (4 persons)	PITTA (3 persons)	KAPHA (5 persons)
Stature	Thin	Average	Dense, obese
Skin	Dry, rough, cold, white, thin and easily cracked	Dry, soft, warm, light, pink, medium thickness. There are freckles	Moist and oily, soft, cold, pale, white, thick
Hair	Dry, thin, rough, often with cut ends, often with a dandruff	Soft, buttery, premature gray hair, predisposition to baldness	Soft, buttery, thick
Teeth	large, curved, clearly thin	Medium size, soft gums, teeth yellowish, sometimes bleeding gums	Strong, white
Appetite	Variable, insufficient	Good, redundant, unbearable	Slow to emerge, but persistent
Taste inclinations	Sweet, sour, salty	Sweet, bitter, tart	Spicy, bitter, tart
Thirst	Unstable	Excessive	Insignificant

Waste of life products	Dry, difficult, constipation	Soft, oily, free, prone to diarrhea	Plentiful, oily, slowly emerging
Physical activity	Very active	Moderately active	Apathetic
Temperature	Cold limbs	The body is warm to the touch, sometimes hot	Warm
Mind (intelligence)	Restless, active	Aggressive, intelligent	Calm, slow
Character (temper)	Timid, indecisive, unpredictable	Aggressive, irritable, envious	Calm, with a penchant for greed and attraction
Memory	Good short term	Quick perception of information	Slow perception of information. Good long term
Dreams	Fears, flights, jumps, running	Fire, anger, violence, war	Water, river, ocean, lake, swimming, romance
Sleep quality	Insufficient, intermittent	Short but deep	Heavy, long
Speech character	Quick	Acute, pungent	Slow, monotonous

According to Ayurveda, body constitution corresponds to the types of body constitution according to M. Chornorutsky (1927). He identified three types: 1) asthenic, 2) normostenic, 3) hyperstenic. The classification was based on the Pinier index value. To the asthenics, the Pinier index is greater than 30, to the hypersthenics - less than 10, to the normostenics - from 10 to 30 [Grinkiv M.Y., Baranetskiy G.G. (2006)].

Table 4

Anthropometric indices and Pinet index in the study subjects (n = 12)

	Initials	Body length, cm	Body weight, kg	Chest circumference, cm	Pinier Index	Types of body constitution according to M. Chornorutsky
1.	N.M.	170	57	75	38	Asthenic
2.	R.A.	160	53	70	37	Asthenic
3.	O.S.	165	57	70	38	Asthenic
4.	U.D.	176	63	78	35	Asthenic
5.	T.M.	170	65	90	15	Normostenic
6.	D.D.	166	58	80	28	Normostenic
7.	A.V.	169	57	90	22	Normostenic
8.	N.V.	165	74	85	6	Hyperstenic
9.	O.M.	159	67	88	4	Hyperstenic
10.	A.M.	166	75	90	1	Hyperstenic
11.	O.Y.	160	68	87	5	Hyperstenic
12.	M.S.	167	66	95	6	Hyperstenic

Dicussion.

On the basis of analysis and generalization of data from literature sources and analysis of our conducted surveys and tests, a comprehensive anti-helminth program was developed.

Task:

- cleansing the body of parasites and products of their vital activity,
- restoration and normalization of digestive and respiratory organs,
- strengthening of the protective function of the organism (immunity), at the expense of adequate nutrition and absorption of nutrients and vitamins.

Diet:

From the point of view of Ayurveda, the amount and nature of the food consumed should correspond to the type of constitution of the person, his age, season, time of day, psychological state and possible pathology of the body. The measure of food intake is its amount, which is easily and quickly digested.

The diet was prepared according to the survey results, taking into account the constitutive type and daily and seasonal impact of doshas. Foods with anthelmintic properties were included in the diet: pumpkin seeds, garlic, onions, ginger, horseradish, parsley, carrots, beets, cabbage, pomegranate, blackberries, pineapple, walnuts, cloves, oregano, hemp oil, sour milk products; infusions of wormwood, tansy, black walnut, etc. The number of fiber-containing products has been increased (this provides the body with lignin, soluble and insoluble fibers, which increases the resistance of the immune system, especially the intestines), and a limited amount of easily digestible carbohydrates. Prevention of helminthiasis with the help of a diet does not have rigid contraindications or time restrictions, which allows it to be used in everyday life.

After determining the type of constitution of the body according to Ayurveda, the appropriate diet was offered. These diets were maintained throughout the year. When preparing a diet for persons with certain three types of body constitution, according to the literature, we have developed: general recommendations, indications and contraindications (for vegetables, fruits, cereals, legumes, dairy products, meat, fishery products and seafood, nuts and seeds, drinks, spices, nutritional supplements) proportions, taking into account the dominant tastes. According to Ayurveda, the regime plays a very important role in health condition. Natural life is a life regulated in accordance with the individual constitution. Keeping the right rhythms of life provides the

maximum vital activity and the most effective restoration of physical and mental forces of the body [Aranson M.V. (2001), Bond D. (2003)].

To reduce Vata, the most important factors are enough sleep, early bedtime, moderate sunbathing, light exercise. Wind and cold should be avoided, fatigue and excessive physical exertion, excess talk and reflection, modesty in sexual life, not traveling too much, and not exposing yourself to the excessive influence of stimulating factors, including cinema, radio, television.

To reduce Pitta should be avoided prolonged exposure to the sun, in the heat and near heaters. Beneficial effect of light cool wind, cool water, moonlight, gardens, flowers and lakes. Educate yourself in a manner of speaking pleasant to others, be condescending. Cooling and soothing asanas are recommended, in particular, most sitting or reclining poses. Avoid excessive aerobic exercise.

To reduce Kapha, you should perform intense and aerobic exercise, take sun and air baths in light warm winds, avoid cold and dampness, observe discipline, give yourself enough exercise, sleep less and give up sleeping in the daytime; useful variety of experiences, travel, pilgrimage [Svoboda R. (2007)].

Purification techniques (Shatkarma) is one of the components of Yoga practice. Although Shatkarma has six cleaning techniques, each has many options. We have offered some of these procedures for mastering under the supervision of an instructor in the process of homework and practice: Jala-Dhauti, Nauli-Kriya, Agni-Sara-Dhauti, Neti-Kriya, Trataka, Kapalabhati.

The practice of Shatkarma gives impetus for internal changes and the manifestation of qualitatively new information in the mind, and the accumulation of fresh energy in the body, acquired as a result of practice.

At regular performance of Shatkarma the following processes are involved:

- purification of the physical body from parasites, mucus, bile, toxins that have accumulated inside the body;
- establishing a more stable connection between physical and energy bodies, and bringing these components into a state of complete resonance;
- removal of the total voltage from the subtle body.

As soon as all the imbalances and signs of unhealthy state are eliminated as a result of Shatkarma practice, it makes sense to stop regular practice and to resort to certain techniques from time to time, if necessary. If practiced without special need, these techniques will not be as effective as in true need [Pakhomov A. (2010)].

Movement is a natural biological stimulator of the processes of growth, development, support and improvement of human physiological functions. Due to systematic training, the tone of the central nervous system increases, and the activity of analyzers improves: motor, vestibular, tactile, visual. Any reaction of the body: motor, vascular, respiratory is perceived by the motor nerve fibers, the impulses from which come to the central nervous system, where this information is processed [Aranson M.V. (2001)]. The hormonal-humoral mechanism is important in the regulation of functional systems when performing physical exercises. During exercise, the natural stimulation of the hypothalamic-pituitary-adrenal system occurs. As a result, the release of glucocorticosteroid hormones into the blood increases, which ensures the normal activity of the respiratory and cardiovascular systems, water-electrolyte balance and increases the level of free amino acids required for enhanced synthesis of bio enzymes. Exercise helps to normalize the metabolism, which is associated with improving blood circulation, breathing and other organ systems [Damsker I.S. (1986)]. On this basis, we offered a yoga practice program that included asanas, bandhas and pranayamas.

As a result of the developed and implemented complex anthelmintic program we have received the following: itching disappeared in different parts of the body, nausea, gnashing of teeth in a sleep, allergic rashes, lethargy, drowsiness, anemia and other symptoms disappeared. Some of the study participants repeatedly underwent a medical check, which confirmed the absence of helminths in the body.

Yoga practices have increased the muscle tone of the thighs, abdomen, back, improved flexibility and mobility in the joints, normalized sleep and increased efficiency. Some of the participants got rid of shortness of breath, back pain and menstrual pain.

Given the positive results of our program, the study participants were advised to continue to use preventative measures such as a rational diet, a rational regime of physical activity and rest, cleansing procedures and yoga practices (asanas, pranayamas, bandhas) to prevent helminth damage.

Conclusions.

Modern scientific and methodological knowledge and results of practical domestic and foreign experience on the use of Ayurveda and yoga therapy by people with helminthiasis have been systematized and generalized. According to the literature, the peculiarities of the use of antiparasitic funds and methods in persons with helminthiasis have been studied. A comprehensive anti-helminth program with the use of Ayurveda and yoga therapy for people with helminthiasis is theoretically substantiated and developed.

One of the leading problems in recent decades that medical science and practice cannot ignore is the increasing number of infectious diseases, among which parasitic diseases are increasingly important.

There are various methods and means of solving this problem, among which it is important to note the methods of Ayurveda and yoga therapy, primarily due to the safe and natural approach of these practices, which can solve the problem by adjusting diet and optimal mode of activity and rest.

According to Ayurveda, each person has a Prakriti (a birth constitution), which is determined by the genotype of the ancestors and their health at the time of conception, and the Prakriti (that is the constitution for a present moment), which consists of the Prakriti and life layers and changes. Prakriti consists of a quantitative ratio of doshas - Vata, Pitta, Kapha, which are a combination of the first elements (ether, air, fire, water, earth). The activity and mobility of doshas determines the processes of growth and decay. Each dosha is characterized by certain qualities that are manifested not only by the physiological characteristics of the human body, but also reflected in nature phenomena (the theory of daily and seasonal effects) and the qualities of food (theory of taste). The specific feature of a particular constitutional type necessitates the need for an individual approach to diet and physical activity and rest, which is a prerequisite for normalization and improvement of the physical condition of the human body in the presence of certain pathological processes and elimination of any health problems.

Based on the above, we have compiled a comprehensive anti-helminth program, which included a diet according to the type of constitution, various cleansing procedures and a complex of exercises in the yoga system. The complex approach allowed to solve not only a specific problem, namely getting rid of the body from helminths, but also to get rid of a number of accompanying dysfunctional conditions, such as mechanical obstruction of the intestines (constipation), discomfort or abdominal pain, nausea, shortness of breath, cough, dysbacteriosis, anorexia, anemia, allergic reactions, diarrhea, poor health, decreased performance, headaches, etc.

References:

- Aranson M.V. (2001). Nutrition for athletes. M.: Physical education and sport, 224.
- Bodnya E.I. (2005). The problem of the prevention of parasitosis in modern conditions. *News of Medicine and Pharmacy*, 20–22, 9.
- Bond D. (2003). Natural nutrition: How to eat in accordance with our genetic program. M.: Iris-press, 336.
- Helminthiasis in Ukraine: the current state of the problem (2012) // *News of medicine and pharmacy*. 10 (416), 4.
- Grinkiv M.Y., Baranetskiy G.G. (2006). Sports morphology (with the basics of the world morphology): Tutorial. Lviv: NVF Ukrainian Technology, 124.
- Damsker I.S. (1986). Assessment of the effectiveness of physical therapy classes: method. directions. Leningrad, 36-40.
- Zryachkin N.I. (2006). Helminthiasis (pathogenesis, clinical features, diagnosis, treatment, medical examination and prevention): Tutorial. Saratov: Publishing House of SSMU, 21.
- Lukshina R.G., Bodnya S.P., Moskalenko I.K. etc. (2004). Advanced Methods of Basic Parasitic Twigs of Humans: Method. recommendations. Kharkiv: KhMAPO, 39.
- Krivopustov S.P., Shcherbinskaya E.N., Loginova I.A. et al. (2011). Helminthiasis in clinical pediatrics: issues of diagnosis, therapy, prevention. *Child Health*, 4 (31), 71-75.
- Pakhomov A. (2010). Hatha Yoga: the correct approach to the spine. K.: Nika Center, 352.
- Pokrovsky V.I. (1997). The role of infectious factors in the pathology of the gastrointestinal tract. *Med. Parasitology*, 3, 3-5.
- Svoboda R. (2007). Praktiti. Your Ayurvedic Constitution, M.: Sattva, 304.
- Ferreya N.P., Cerri G.G. (1998) Ascariasis of the alimentary tract, liver, pancreas and biliary system: Its diagnosis by ultrasonography. *Hepatogastroenterology*. 45(22). 932–937.
- Frawley D. (1994) *Ayurvedic Healing. A comprehensive guide*. Delhi, Banarsidass Publishers Private Limited, 346.
- Horton J. (2000). Albendazole: a review of anthelmintic efficacy and safety in humans. *Parasitology*. 121. 113.
- Mao X.Q, Sun D.J., Miyoshi A. et al. (2000). The link between helminthic infection and atopy. *Parasitol. Today*. 16 (5), 186-188.
- Nadkarni K.M. (2007). Indian material medical Bombay. *Popular Prakashan*, 1-2, 22-87.