

# Functional nutrition as a new concept of healthy lifestyle for teenagers

Author: Polina Masenkova

Tutor: Natalia Fomenkova

## Content

Introduction .....	2
Chapter 1. What is “functional nutrition”?	
1.1. The concept of functional nutrition and its benefits to human health.....	3
1.2. The composition of functional food .....	4
1.3. The history of the emergence of functional nutrition	
1.3.1. Japan – the home country of functional nutrition .....	5
1.3.2. The USA and Europe .....	5
1.2.3. Russia .....	6
Chapter 2. Developing the functional foods diet.	
2.1. What is necessary for teenagers’ nutrition?.....	7
2.2. The ingredients of “Energy Diet”.....	7
2.3. Developing the menu.....	9
Conclusion.....	10
List of references.....	11

## Introduction

*You are what you eat*

The pace of modern life is so fast that people cannot pay much attention to what they eat. Quick breakfasts, lunches on the go, unbalanced heavy dinners increasingly cause many illnesses and diseases. Doctors say that such eating habits shortens lives of people on average by 8 years. And in general, every 62 minutes at least one person dies as a direct result of an eating disorder.

This issue is particularly relevant for modern teenagers. Unhealthy eating habits, overconsumption of junk food have a negative impact on adolescent organism. Unbalanced ration causes a metabolic disorder, problems of growth and proper body development, the sensation of listlessness, apathy and depression.

Functional nutrition helps to avoid these problems and improve health. This is a new trend in the science of nutrition, which includes the development of theoretical foundations, production, marketing and consumption of functional foods.

Nowadays the theories and concepts of functional nutrition are gaining popularity. However, *Eating Disorder Statistics* clearly show that young people and teenagers demonstrate lack of interest in this issue. This happens because teenagers are not aware of the importance of following a proper diet, they consider a diet to be something boring and useless. Some adolescents begin to follow a diet in order to lose weight, but they do it in the wrong way and damage their health.

The project is aimed at the solution of this specific problem by developing a balanced 4-day menu which includes functional food products. It will help teenagers to understand the biological value of foods and build their nutritional culture. The menu will meet the requirements of food science and needs of a modern teenager such as going to a café or cinema with friends. Following the menu will not be a problem, it will be easy and helpful for any teenager.

## Chapter 1. What is “functional nutrition”.

### 1.1. The concept of functional nutrition and its benefits to human health

*“Medicament should be food, and food should be medicament.”*

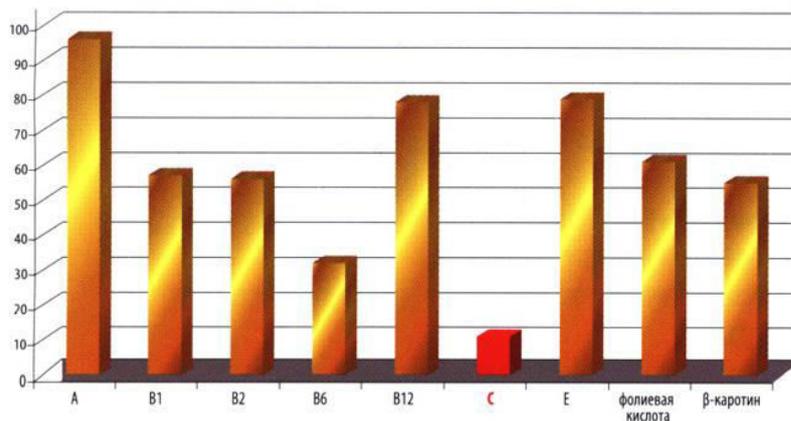
*Hypocrate  
400 B.C.*

Life is infinitely interesting and beautiful. But people need to be healthy to fully enjoy their lives. However, it is becoming increasingly difficult from year to year. High levels of stress, the deteriorating ecological situation, inappropriate nutrition – all these problems make young people affected by chronic illness that used to be prevalent among pensioners.

Modern food is poor in quality and there is a lack of variety so human organism does not get enough necessary nutrients. The human body has to deal with its intake of carcinogens, pesticides, antibiotics and radioactive isotopes in food. These chemicals influence an organism like a bomb waiting to explode.

The development of civilization has exhausted the deposits of useful minerals. Consequently, they no longer enter the human body via the dietary route. A lot of fruits and vegetables are gathered before their ripening is fully complete. Moreover, they are treated with pesticides and other chemicals which kills the vitamins.

As a result, a typical citizen obtains four times less of the internationally recommended daily amount of nutrition in food. According to nutrition experts that fact cannot be corrected through the consumption of traditional and conventional food. World science has explored the problem and suggested the new “type” of nutrition – functional.



Functional food products – is food (not dietary supplements, powders or meds) of natural or synthetic origin with pleasant taste and perceptible health-improving effect which is guaranteed by the results of the

other medical documentation. Also, these products are easy to use every day.

*Pic. 1. Coverage of vitamins in the Russian population*

Functional foods are based on high technology production, environmentally friendly and free of genetic modification materials. Largely because of this, food is easily absorbed by the human body and GI system (gastrointestinal tract) works correctly. At the same time, the body gets enough nutrients: microelements, proteins, fats, carbohydrates, vitamins and acids. Such processes result in the following benefits:

- overcoming obesity;
- blood sugar gets normal;
- provides "rejuvenation";
- addresses the intestinal problems;
- enhances immune system;
- organism gets positive energy, people feel happier;
- prolongs life;
- eliminates toxins and waste in body;
- staves off the risk of stomach and bowel cancer.

Functional nutrition is gaining popularity around the world because it effectively copes with the tasks of maintaining health and beauty.

## **1.2. The composition of functional food**

Scientists have approved some requirements to the functional products:

- 1) Must have a natural origin
- 2) Must be mass consumption goods of daily ration
- 3) Must be made, following by modern technologies, which makes it possible to extend the storage time of the products, to cook quickly
- 4) Must be absorbed by organism easily and not have side effects
- 5) Must contain a minimum of 30% of biologically active agents daily dose such as lactic-acid bacteria, vitamins, oligosaccharides, food fibres, bioflavonoids, antioxidants, minerals, essential amino acids, peptides, glycosides.

A special methods of food processing and fortification have been set up to meet all these requirements. Starting from a selected basis:

- 1) Dairy products (yogurt, kefir, cottage cheese).
- 2) Meat, fish and seafood.
- 3) Fruit and vegetables (which are grown in local areas).
- 4) Cereals (muesli, cereal).
- 5) Vegetable oils (only natural).

All waste substances, saturated fats, unnecessary carbs are put away from the food. Therefore, other substances enter the bloodstream faster, spread throughout the body and provide immediate energetic costs. If necessary, some useful components (lactulose, probiotics, bifidobacterial, calcium, vitamins and extracts from medicinal plants) can be added in functionalized products. There are also special series of products with nutrients for children and teenagers. And, as a result, the food becomes more wholesome, the ration – more balanced.

In 2004, the Ministry and the General Medical Officer of Russia approved the recommended optimal food and bioactive-substance consumption values. Russian manufacturers of functional food must be guided by these recommendations.

However, functional food cannot be viewed as an alternative to traditional diet. Overconsumption of that kind of food leads to excess of substances in organism that

would prove harmful to health. It is best to combine functional nutrition with the system of well-balanced nutrition.

### **1.3. The history of the emergence of functional nutrition**

#### **1.3.1. Japan – the home country of functional nutrition**

Functional food products have been invented in Japan. The first fermented sour-milk product on the basis of lactobacillus was developed there in 1955. At that time Japanese doctors understood that it was impossible to be healthy without growth of normal microflora of the intestines.

In 1984 Japanese medical community began the first Government-sponsored project the primary purpose of which was to create the system of functional nutrition. In 1991 that system was framed at the legislative level. It was intended to promote health-improving food production. As a result, a list of 5 categories of functional products was established:

- 1) Powdered milk for lactating and pregnant women;
- 2) Powdered milk for newborn babies;
- 3) Food for pensioners who have problems with their chewing or swallowing;
- 4) Foods for patients;
- 5) Functional food as an alternative to drug therapy (“Food for Specific Health Use” - FOSHU)

Japan is a leader in the development of functional food, and nowadays Japanese market is one of the most booming markets in the world. This is evidenced by the fact that 70% of the Japanese population eat nutritionally enhanced food products every day. Accordingly, Japan's achievements are used as the basis of the USA and Europe's products.

At present Japan produces more than 160 kinds of various functional products from bread and soup which improves the blood circulation for child and sport nutrition. That food can be compared to astronaut food – it has a homogenous consistency, is well assimilated in human body and consists of natural and healthy elements. Japanese scientists have even created functionalised chocolate candies that prevent heart attacks.

A compelling proof of the benefits of functional food is that the average life span of a Japanese is about 84 years, the longest in the world despite the notorious environmental disasters in Japan. In the last decade Japan's life expectancy increased by more than 20 years. It is a clear demonstration that functional nutrition helps to solve weight problems, raises immunity, improves the functioning of heart and digestive system and even helps to combat the malignant diseases.

#### **1.3.2. The USA and Europe**

The markets of the USA, Canada and the developed countries of Europe have progressively developed in parallel with Japan's.

The United States market of functional products is the largest in the world. High levels of their consumption are due to liberal legislation on food products, high level

of market freedom, the sensitivity of Americans to the innovations in the areas of nutrition and food quality.

The leaders on the European market are Germany, France, Britain, the Netherlands. Generally speaking, the market is quite different from one region to another. For example, functional food demand is low in the countries of the Mediterranean region because their inhabitants give preference to fresh food which they consider to be healthier.

At the moment, the most popular categories are functional drinks and dairy products that ease the digestion (especially probiotics and prebiotics). Germany (21 %), France (18 %), Britain (16 %), The Netherlands (11 %) account for over two thirds of all dairy products sales in Europe.

The other popular functional foods are pastry, confectionery, breakfast cereals, snacks, energy bars, juice drinks, cocktails. So, France is a home of one of the most popular functional products in the world - "Energy Diet".

Nearly 30 years ago a French scientist Jean-Marie Blanche developed a formulation of functional nutrition for sportsmen. A positive impact of these products attracted the attention of so many people that sportsmen's friends started to use it. Then the range of customers began to widen.

After the invention of Energy Diet, the concept of functional nutrition gained popularity in Europe. Over the past 10 years, functional food production only in France has increased by 350 times.

### **1.3.3. Russia**

As for Russia, the preparations based on bifidobacteria have developed since the '70s. The term "functional nutrition" entered the Russian scientific literature in 1993 and in 1998 a Concept of State policy for a healthy diet was approved in Russia.

There are many products that are fortified with vitamin and mineral complexes, fiber etc. in the Russian market as well. Also, functional products by foreign manufacturers have gained popularity during recent years.

In 2017 "NL International" company began the production of a new improved Energy Diet products line called "Energy Diet Smart" on the territory of Russia. This event marked a further step in the development of functional food concept in our country.

In 2013 the attention of Internet users all over the world was attracted by the story of courageous Russian seafarers who in March of the same year, made a trip round the world sailing on an inflatable vessel. They traveled about 50 000 km across the Indian Ocean, the Atlantic and the Pacific. They needed about 200 jars of Energy Diet to undertake this long journey, overcome formidable challenges and keep fit.

## Chapter 2. Developing the functional foods diet.

### 2.1. What is necessary for teenagers' nutrition?

According to doctors and dieticians teenagers' organism should receive a full "collection" of essential ferments and elements in order to work properly.

The list of essential vitamins and elements for teenagers' ration:

1) Vitamin D helps to form a skeleton, provides calcium to bones and cartilages.

2) B-group vitamins enhance, in varying degrees, metabolic processes in human organism. So, they produce necessary amount of proteins, fats, carbohydrates.

3) Vitamin A increases the synthesis of protein which is an important building material for bones, teeth and body tissues.

4) Ascorbic acid (C) makes other vitamins more easily available to organism assimilation and strengthens immune system.

5) Vitamin E protects cells and tissues from harmful influence of many free radicals and reduces the number of damaged cells. As a result, the organism is able to stop wasting all its energy on restoration of injured areas of organs and tissues and to spend energy for growth and proper development.

6) PP, K and H help to normalize blood circulation and improve the functioning of tissue structures.

7) In order to remove acne eruption, doctors recommend to eat 20-30 grams of fiber and also products containing zinc, chromium, calcium.

8) It is also important that body should get all necessary minerals. The most important one is calcium (1 g a day) which also participates in blood circulation and helps to move oxygen around the body.

9) Magnesium (400 g per a day) is a sedative for good sleep, has a healthy effect on cardiovascular system

10) Zinc, copper, manganese are also indispensable for harmonious development of teenager's body.

11) Phosphorus (1.2 g per a day) copes with metabolic disorders, positively affects the functioning of the brain, muscles, liver and kidney.

12) Iron (15-18 mg per a day) produces blood and provides organs with oxygen.

13) Iodine (150 mkg per a day) is needed to stabilize thyroid function.

However, as stated above most modern food does not contain the necessary amount of microelements and does not meet the needs of teenagers' organisms. However, the producers of functional nutrition promise that their products contain all necessary nutrients.

Consider the example of "Energy Diet" composition as the most popular functional product in Russia.

### 2.2. The ingredients of "Energy Diet"

To get the entire picture, here is a comparison of the amount of vitamins and minerals with daily norm for teenagers (in percentage).

Nutrition and energy facts	Amount per ready serving (30 g of dry product +
----------------------------	---

		200 ml of 1,5% milk)	
<b>Energy value, kcal</b>		200	
<b>Protein, g</b>		21	
<b>Fat, g</b>		5	
<b>Carbohydrate, g</b>		15	
<b>Food fibers, g</b>		2,7	
<b>Vitamins</b>	<b>Amount per ready serving</b>	<b>The daily norm</b>	<b>Percent of the daily norm</b>
<b>Vitamin A, mg</b>	0,2±0,06	1	25%
<b>Vitamin E, mg</b>	2,5±0,75	9	28%
<b>Vitamin D3, mcg</b>	1,25±0,375	5	25%
<b>Vitamin C, mg</b>	15,0±4,5	60	25%
<b>Vitamin B1, mg</b>	0,35±0,07	1.3	25%
<b>Vitamin B2, mg</b>	0,1±0,02	1.5	6,5%
<b>Vitamin PP, mg</b>	4,5±0,9	18	25%
<b>Vitamin B5, mg</b>	1,5±0,3	6	25%
<b>Vitamin B6, mg</b>	0,5±0,1	2	25%
<b>Vitamin B9, mg</b>	0,05±0,015	0.2	25%
<b>Vitamin B12, mcg</b>	0,25±0,075	1	25%
<b>Biotin, mcg</b>	12,5±3,75	50	25%
<b>Minerals</b>	<b>Amount per ready serving</b>	<b>The daily norm</b>	<b>Percent of the daily norm</b>
<b>Calcium mg</b>	250±50	1000	25%
<b>Phosphorus mg</b>	280±56	1200	23%
<b>Magnesium mg</b>	100±20	400	25%
<b>Zinc mg</b>	3,75±0,75	92	25%
<b>Iron mg</b>	3,5±0,7	15	25%
<b>Copper mg</b>	0,25±0,05	1	25%
<b>Manganese mg</b>	0,5±0,1	2	25%
<b>Iodine mcg</b>	37,5±11,25	150	25%
<b>Chromium mcg</b>	12,5±2,5	310	25%

Accordingly, 1 portion of “Energy Diet” cocktail has an average of 25% of daily vitamins and minerals. This fact gives the users the opportunity not to worry about low intakes of certain vitamins and minerals and be free from following a strict diet. This is especially important for teenagers’ daily ration.

Also, there are other healthy substances in “Energy Diet” cocktails

- 1) Protein complex
  - Feeling of fullness for the whole day
  - Construction material for the cells
  - Source of calcium
  - Gives an energy boost
- 2) Fats (lecithin (phospholipids))
  - Weight-loss friendly
- 3) Digestive Complex
  - Slows down aging process
  - Help to absorb protein.
  - Dissolve fat accumulations.
  - Cleanse stomach.
  - Reduce hunger feeling.
  - Provide stable work of gastrointestinal tract.
- 4) VMP Complex

- Boosts immune system
- Gives nutrition for brain
- Retards aging process.
- Reduces appetite.
- Eliminates tension.

#### 5) Antistress Complex

- Protects from stress and fatigue.

### 2.3. Developing the menu

Taking into consideration the contributions of today teenagers' life, the menu will include meat, fowl, eggs, porridge, cheese, fresh fruits, cottage cheese, vegetable oils, juices, bread. Of course, there also will be functional food products.

The following menu is a sample 2000 calorie diet plan that can be maintained by teenagers who are not much into exercise, outdoor games and sports.

The 2000 calorie diet is usually divided into 3 meals and 1 snack. Additional snacks can be added individually.

<b>Day 1</b>	<b>Breakfast</b>	<b>Oatmeal with nuts and honey + fruits + milk or tea</b>	<b>550 kcal</b>
	Lunch	Spaghetti Bolognese + vegetable salad + tiramisu	770 kcal
	Snack	Energy Diet Smart "Melon" + 200 ml of 1,5% milk + an apple	280 kcal
	Dinner	Cottage cheese with raisin and sour cream	300 kcal
<b>Day 2</b>	Breakfast	Sandwich of bread with lettuce, 2 hard-boiled eggs, cheese and tomato + tea or milk	500 kcal
	Lunch	Burger made of marbled beef with iceberg salad, a tomato, a red onion and French fries	800 kcal
	Snack	Energy Diet Smart classic "Latte" + 200 ml of 1,5% milk + an apple	280 kcal
	Dinner	Protein muesli with dried fruits + kefir	300 kcal
<b>Day 3</b>	Breakfast	Omelet with cheese + salad + 1-2 biscuits + tea or milk	450 kcal
	Lunch	Cooked brown rice + baked or roasted chicken breast + salad made with lettuce, carrots, onions, tomatoes and olives	520 kcal
	Snack	Energy Diet Smart "Berry mix" + 200 ml of 1,5% milk + an apple	280 kcal
	Dinner	Grilled turkey with Greek salad	600 kcal
<b>Day 4</b>	Breakfast	2 slices of whole grain toast, 2 tablespoons of butter + 2 hardboiled eggs + orange juice	740 kcal
	Lunch	Steak + buckwheat grouts + salad with the oil + bread	600 kcal
	Snack	Energy Diet Smart "Lemon biscuit" + 200 ml of 1,5% milk + an apple	280 kcal
	Dinner	Cheese pancakes with cream	270 kcal

## **Conclusion**

The study confirmed the common notion that modern food does not provide enough nutrition for human organism. What is more, people often choose less healthy, but tastier food that is more harmful for the taste buds and health in general.

The problem of junk and lacking in nutrition food is even more relevant for modern teenagers. The unhealthy eating habits which they acquire in their youth can damage their future and cause many diseases.

The inclusion of functional foods in daily teenagers' menu helps to solve this problem. Its concept has been developed since the middle of the past century to promote healthy lifestyle and turn it into a trend.

It is easy to cook the functional cocktail from the menu everywhere and it also has a pleasant sweet taste and contains a lot of necessary nutrients. Its use may attract many teenagers to the problem of unhealthy nutrition and help them start paying attention to what they eat. Moreover, functional products contain about 25% of daily norm of vitamins and minerals and also other healthy elements. That gives teenagers an opportunity to occasionally treat themselves to such food as a burger, French fries, or a pizza etc., which is generally considered to be unhealthy, but is very attractive for teenagers. The organism that gets enough vitamins and minerals does not suffer from rare junk food consumptions.

The balance of functional nutrition concept and traditional methods of healthy lifestyle like sports, a balanced diet, positive emotions and good sleep might not only address health issues but also gives an opportunity to receive more pleasure from life. Functional nutrition will encourage people to live a healthier lifestyle and to pass it on to future generations.

**List of references**

1. Красовский О.А. Генетически модифицированная пища: возможности и риски // Человек, 2002, № 5, [с. 158-164].
2. Монастырский К. Функциональное питание. Ageless Press, 2007.
3. Чечилова С. Трансгенная пища. // Здоровье, 2004, № 6, [с. 20-23].
4. Bellenir K. Diet Information for Teens: Health Tips about Diet and Nutrition. Omnigraphics, 2001.
5. <http://anad.org/education-and-awareness/about-eating-disorders/eating-disorders-statistics>
6. <http://profilaktica.ru/profilaktika-zabolevaniy/vse-o-pravilnom-pitanii/roditelyam-o-pitanii-detey/neobkhodimost-pravilnogo-pitaniya-dlya-podrostkov/>
7. <https://afpafitness.com/blog/what-is-functional-nutrition>
8. <https://agroinvestor.ru/technologies/article/23406-funktsionalnoe-pitanie/>
9. <https://healthcentre.com.ua/poleznoe/kakie-vitaminy-nuzhny-podrostkam>
10. <https://livestrong.com/article/548851-breakfast-lunch-dinner-diet-for-teenagers/>
11. <https://missbagira.ru/themes/health/funkcionalnoe-pitanie>
12. <http://nlstar.com/ru/catalog/energydietsmart/73100/>
13. <https://thefitindian.com/healthy-diet-charts-for-teens-to-maintain-weight/>