

OVERVIEW OF VEGETARIAN AND CARNIVOROUS DIET IN HEALTH

DIRECTIVITY TO HEALTH APPORACH

Vegetarianism is considered to be healthy, viable and lasting diet. Several United States and Canadian nutritionist organizations have recognized that a well-planned vegetarian menu fully provides the necessary nutrients at all ages. Large-scale studies have shown that vegetarianism significantly reduces the risk of cancer, cardiac ischaemia and other lethal diseases (Key, 1999).

Also, the Ministry of Health of the Republic of Latvia "agrees with the statement that vegetarian and vegan diet is healthy and plant food products are able to supply all necessary nutrients to humans" (Latvian Ministry of Health). Nutrients, proteins and amino acids necessary for the maintenance of the body are found in green leafy vegetables, cereals, legumes, nuts, concentrated juices or soy milk (USDA).

Vegetarian diet can help to control body weight (Rosell, 2006) and significantly reduce the risk of heart disease and osteoporosis (BBC NEWS). By contrast, the use of heavy red meat is directly linked to a dramatic increase in the risk of lung, oesophagus, liver and intestinal cancer (A Prospective). Other studies have shown that non-vegetarians are significantly more likely to die from cerebrovascular disease, stomach, colon, breast, or prostate cancer compared to vegetarians (Mortality in vegetarians).

US and Canadian nutritionists admit: "Vegetarian diet offers a number of benefits, including lower levels of saturated fat, animal protein and cholesterol, higher carbohydrates, fibre, magnesium, potassium, folate, antioxidants such as vitamins C and E" (Vegetarians Diets, 2003). Vegetarians generally have lower body weight, lower cholesterol and blood pressure, and are uncommonly affected by heart disease, hypertension, type 2 diabetes, kidney disease, osteoporosis, Alzheimer's, and other diseases (Mattson, 2002).

Nutrition: The Western vegetarian diet is usually rich in carotenoids, but contains relatively few omega-3 fatty acids and vitamin B12. Vegans may lack Group B vitamins and calcium if they do not eat cauliflower, green leafy vegetables, tempeh and tofu in sufficient quantities. High amounts of fibre, folic acid, vitamins C and E, magnesium and low levels of saturated fat can be considered as the most beneficial benefits of vegetarian diet (Davey & Co 2003). Any processing of plant and animal products that changes their internal structure (cooking, pasteurizing, salting, roasting, baking, marinating, drying, canning, etc.) reduces their energy potential.

The Most Popular Food Products of Vegetarians: Vegetarians prepare a daily menu by choosing food from the foods listed below.

Cereals: barley, rice, wheat (bread, macaroni), oats, millet, corn.

Legumes: beans, peas, sweat peas, lentils (fried or sprouted).

Nuts and seeds: all types of nuts, nuts butter, pumpkin seeds, sunflower and sesame seeds, germinated seeds. The nuts contain no cholesterol, but unsaturated fat, which has a beneficial effect on the heart. Nuts from the botanical point of view also fall into fruits (Malahov, 1999).

Vegetables (fried, cooked and/or green): yellow vegetables and greens, such as carrots, green peppers, broccoli, spinach and kale. Other vegetables are, such as potatoes, tomatoes, lettuce, cabbage, sweet corn, celery, onion, cucumber, beets, and cauliflower.

Fruits (fresh, dried and preserved): bananas, avocados, oranges, mandarins, apples, grapefruit, mangoes, cherries, grapes, apricots, pears, kiwifruits, black currants, cherries and plums, figs.

About a quarter of the grown fruit and vegetables are not consumed but destroyed. This creates unnecessary loss of resources and pollution. It is therefore important not to buy more than you can consume and properly store the purchased products. Vegetables, left in polyethylene bags, quickly spoil.

British scientist E. Nox compared various death causes (people aged 55-64) with food intake in 17 European countries, Canada, the USA and Japan. The scientist had compared 58 food products with death cases that caused by 70 various illnesses.

The study revealed that there is no doubtful valued or harmful product, although a closer analysis of the relationships found, has revealed that certain food groups are associated with certain diseases. For example, food made from cereals offers the opportunity to die from epilepsy, peptic ulcer, cirrhosis of the liver, chronic nephritis, pulmonary tuberculosis, and various types of cancers. Vegetables, fruits, pulses, nuts and fish are also, to some extent, similarly act to humans (Malahov, 1999).

Without enough vitamins (especially in Group B), bakery products are subjected not to digestion but to fermentation and bacterial decay with the formation of alcohol and other degradation products. These processes result in ulcers, cirrhosis of the liver, as well as oral cavity, throat, oesophagus and stomach cancer.

From materials collected by E. Nox, it can be concluded that they illustrate not the harmfulness of food but the harmfulness of their misuse. The division of food and the most successful combination were already known in ancient times. "Chudshy" is written about this topic: "but if you eat incompatible nutrients, it's just like to enjoy the poison" (Malahov, 1999).

Fruits, vegetables and germinated juices: It is widely known that fruits and vegetables contain a lot of vitamins, minerals and a lot of other substances that protect against cancer and other diseases. Fruit and vegetable juices are a way how to add these products to the diet in a concentrated way and to provide fluid to the body. They offer not only the liquid of these products, but also the nutrients they contain. Fresh fruits and vegetables fibres make these products more nourishing than juices.

Juice is a concentrate. Consequently, no pure juice is used as a drink. Juices are strong enough to be used alone. They should be diluted with milder and more watery vegetable juices (cucumber juice, celery juice, etc.) or pure water. Fruit and vegetable juices can be a supplement to cooking other dishes. For example, cocktails, salads, etc. By the way, the ancient Greeks did not use the pure natural wine (they did not know the fortified and fermented wine) like alcoholic beverage, other type of drink, and so on. They used diluted wine daily as a thirst-quenching drink. They said that undiluted wine was used only by barbarians.

Mature fruit juices purify organisms, but vegetable juices strengthens the body

and restores strength. When you eat fresh fruits and vegetables, juices should be included in the menu. They are the best source of micronutrients for human cells and tissues. Juices contain many amino acids, minerals, enzymes that are so much needed for the human body. Preserving juices kills or lowers value of a great part of the above listed. Fresh vegetable and fruit juices are highly needed when using a mixed diet.

For to make the juice, choose unsweetened products without added sugar. Vegetable juices usually have less sugar than fruit juices. The only thing that should be avoided, when buying vegetable juice in bottles or cans, is the large amount of salt. Choose a juice with a reduced amount of salt. Juices should not be heated. Fruit and vegetable juices are not gutted by blending, because during blending process the fibres are not removed from the juice, resulting in puree.

Vegetarian beverages: tea and coffee (better with soy milk); herbal tea; cocoa; diluted fruit juice; mineral water (better without gas); tap water; soft drinks; coffee substitutes; soy milk cocktails, etc.

Greater attention has been paid to germinated seeds as an excellent nutritional supplement since the first half of the last century. Until then, it was mainly about the very beginning of the seed germination process: the germ as the seed has evolved and a new plant has emerged on the surface that its roots have developed, but cotyledons still instead of the actual leaves. Today it says that the germ is a seed that is used in the diet with the whole sprout.

By the previous definition, one could understand that the seed evolved as a sprout in a natural way, and the ultimate goal of using it as a new plant. The latest definition emphasizes the purpose of the use of sprouts – to include it in the diet. Sprouts intended for this purpose are commonly referred to as germs. The germination of the higher grade (stage) is the micro-greenery. Microdermabrasion, including micro silica, is the cotyledons of germ and/or the first true leaves that are consumed without seeds (if to cut off, will not outgrow again).

Such germ and micro grass definitions expand the germination horizons and the applicability of the new food grasses. Germinating is a new generation of food (Wigmore, 1986). Germs are biogenic, they are alive and bring life forward. The biogenic properties are manifested only in uncooked crops – germinated groats, nuts, seeds, etc. The germs have a lot of aminoacids. Germs fully provide the human body with proteins, i.e. supply all eight amino acids. It is better to use regularly different type of germs because each of them has different amino acid composition and quantity. Unripe, uncooked and sufficiently germinating seeds are suitable for germination. The germ is a seed that is used in the diet along with the whole shoot (sprout). For the juices are more commonly used the following plant and vegetable germs: lucerne, sunflower, cabbage, radish, mung or golden (Chinese) bean seedlings, buckwheat green seeds, i.e. whole seed, seedlings (brown buckwheat seeds are cooked, which are no longer suitable for sprouting), short wheatgrass, etc. Wheat shoots contains little gluten (practically says that it does not contain gluten). However, for people with gluten intolerance, it is recommended to consult a doctor about using wheat germ. Shoots juice cannot be used freely if there is a stomach ulcer, gastritis,

inflammation of the intestine, gallstones, kidney problems, and if the woman is in the mother's expectations. It is also recommended to eat several types of germs and gastropods in a shorter period of time. It provides a variety of menu items. Consult your doctor. Germinated juices are obtained in slow-speed (slow-acting) presses. Juices should not be heated. In the heat treatment of fresh products, we lose most of the vitamins and minerals – they are spilled with boiling water or oxidized by air and heat. All sprouts and micro-grass should be used with moderation. They are not the main ingredient of a meal. They are a healthy, flavourful additive for dishes. Wheat shoot juice should be taken on an empty stomach immediately after pressing, starting with a teaspoon, gradually increasing the dose. For children, the same process, only half the dose. Germinated juices are used in relatively small doses, with breaks.

Germs (germinated grains and seeds) are rich in vitamins and minerals, contain many biologically active substances, such as enzymes and antioxidants. Seeds are called "live nutrition" because of their valuable composition. Germs not only provide enough vitamin C but can also provide enough protein to keep people healthy. Several germs are also good sources of vitamin A, sources of vitamin B, vitamins E, other vitamins and many minerals.

To summarize the abovementioned, it can be concluded that germination can provide humanity with proteins and additional nutrients necessary for the easy transition from food products of animal origin to healthier and often economically more beneficial herbal foods.

Germination process increases the vitamins of E and B, the supply of fibre, minerals and proteins. For example, in wheat germ, two or more times the amount of potassium, phosphorus, calcium, magnesium, iron and zinc increases.

The main benefits to health of the most commonly used sprouts:

- Regulates and restores vital processes of the body of any age, increases immunity, promotes indifference to colds;
- Provides normal metabolism and full functioning of the nervous system;
- Normalizes digestion, treats eczema, stomach ulcers and improves sexual function;
- Increases work capacity;
- Improves vision, coordination of movements, hair colour and thickness, strengthens teeth;
- Restores the body because it contains antioxidants – vitamins A, C, E and enzymes;
- It is an effective tool for overweight;
- Easily assimilated, contains much more vitamins than other products, as well as an optimal combination of proteins and carbohydrates;
- Improves sleep;
- Stimulates the body's cleansing and regeneration capacity;
- Promotes haemoglobin formation and cleanses blood.

Germinated grains contain many enzymes that break down nutrients and

promote metabolism; germinated grains contain much more enzymes than ordinary grains. Enzymes change the rate of many biochemical reactions in the body. They provide several functions - involved in the synthesis and cleavage of proteins, fat, carbohydrates, breathing, transmitting nerve impulses, muscle contractions and reproduction. Using antioxidants of germinated grains (vitamins A, C and E) and biologically active substances, the body cleanses and rejuvenates.

Grain digestion increases the amount of vitamin E and some of the B vitamins. The germ has also vitamin C, which is not processed in grains. Germinated wheat and legumes have a much higher nutritional value than their processed products, since the germs contain most valuable substances. When grinding, many useful substances (Group B vitamins, minerals, fibre) remain in the bran.

Germinated wheat and legume seeds germs destroy substances that block the full absorption of magnesium, calcium, zinc and other minerals in the human body. They contain a lot of easy to assimilate sugar and fibre.

Wheat sprouts are rich in vitamins E and B, which have a beneficial effect on the nervous system.

They contain calcium, phosphorus, magnesium, iron and other minerals. Germinated wheat strengthens immunity, normalizes intestinal activity, improves cardiovascular performance. Masks and creams that contain wheat germ, are an effective remedy for improving skin and hair condition.

Rye sprouts are rich in plant hormones and oils, and are recommended to men suffering from prostate diseases.

Pulse sprouts are healthy for the body, because they contain a lot of protein and amino acids. They normalize metabolism, improve sleep and have a beneficial effect on the functioning of the brain.

Sprouted sunflower and buckwheat seeds are very healthy and vitamin-rich (Sakne, 2010).

No one of plants, vegetables, germs, microgreens, sprouts, etc. did not recommended for long-lasting use on its own. All of them, having taken them separately, are very valuable, but the variety is needed. This approach gives the best results.

Crustaceans: This group is a high quality protein source with low fat content, rich in minerals and a good source of vitamins for Group B. In contrast to receiving proteins from warm-blooded animals, eating crustaceans produces significantly less fat. Crustaceans have very little saturated fat. Crustaceans contain a lot of minerals, including calcium (Ca) and phosphorus (P), which are necessary for healthy bones and teeth; Copper that helps in the formation of connective tissue in blood cells; Iodine (I) required for thyroid function; Iron (Fe) required for healthy red blood cells; Magnesium (Mn) required for metabolism, bone growth and genetic material formation; Potassium (K) for nervous, muscular activity and metabolism; Zinc (Zn) is necessary for strengthening the immune system and reproductive health.

The energy value and saturated fat are often increased by sauces co-produced with crustaceans. Cocktail sauces and tartar sauces are rich in fat and have a high

energy value. Edible snails, lobsters and other crustaceans are well complemented by finely chopped Askalonium onions mixed with lemon juice. Crustaceans can be taught simply with lemon or lime. To make a sauce that contains a lot of calcium, you can take shrimp and lobster shells, boil it in a mixture of snails or lemon juice, white wine and herbs.

Crustaceans are underwater creatures, with a skeleton outside the rest of the body; Molluscs, for example, oysters and bivalve molluscs, have a sedentary lifestyle that accompanies shells. The mussels also include octopus and squid. They are free to move, they do not have shells. Exceptions are snails living on land or in water. They move by placing their shell. They are also molluscs.

MOST IMPORTANT NUTRIENTS

The broadest and most important nutrition groups in the body are proteins and carbohydrates. These two groups also participate in the construction and metabolism of any living organism.

Proteins are complex polymers that contain azote and for which monomers serve amino acids. Different proteins have different amino acids. Proteins are very important nutrients. They are needed for every human body's cell to grow and develop. They are also antibodies that protect us from diseases, enzymes that are necessary for digestion and metabolism and hormones such as insulin.

Proteins are very complex and versatile substances that consist of long amino acid chains. They are interconnected with peptide bonds. There are thousands of different proteins, but all of them are based on carbon and nitrogen atoms. These carbon and nitrogen compounds can be joined by a wide variety of atomic groups. The human body needs 20 different amino acids to create all the necessary proteins. Of these, 11 amino acids are formed in the body, while the remaining 9, i.e., indispensable amino acids, are taken by diet. Amino acids can be joined in many ways, and can create more than 50,000 different proteins in the body.

Animal proteins (except gelatine) contain all 9 essential amino acids in the proportions needed for human body. Therefore, essential proteins are also called high-grade or high-quality proteins. In its turn, vegetable proteins (other than soya containing almost the same amount of complete protein as products of animal origin) lack one or more of the essential amino acids.

As some of the plant products lack some amino acids, the human body can produce full protein, when these foods are combined to supplement each other. For example, cereals have a lot of essential amino acids, methionine, but lysine is still missing. When combining cereals with legumes, you can get all the necessary amino acids. It can produce valuable protein in the body. There are many similar product combinations. The products contained in corresponding combinations should not be used simultaneously. They can be used in the corresponding sequence. All traditional kitchens that use a little meat, have foods that provide the body with full protein: fried beans, corn tortillas in Mexico, rice in India, tofu, rice and vegetables in Asian cuisines, peas and bulgur's in Middle Eastern dishes. A rigid vegetarian menu can provide a human body with a variety of proteins, using cereals and legumes.

In certain cases, such as starvation, the human body has essential amino acids in insignificant amount. Then the body begins to use the muscle tissue to recover the essential amino acids.

Proteins of not overcooked foods are easier to digest due to the breakdown of some of the amino acids linked by heat. However, because of too long cooking, amino acids can be connected even more closely. In this case, proteins are much harder to digest and to split into individual amino acids.

Since amino acids are not stored in the human body, they are not used in the relatively short period of time and are delivered to the liver. There is separated nitrogen, which is delivered to the kidneys and removed from the body in the urine. The remaining protein molecules are usually converted to glucose and provide the body with energy (Stanton, 2010).

Protein imbalance: People in developed countries receive more protein than they need. However, in poorer regions such as Africa, people, especially children, often suffer from protein deficiency. It causes a number of diseases that may include growth and mental disorders, anaemia, reduced muscle mass, decreased immunity, metabolic disorders, and the like.

The common diet of Westerners contains more protein than the human body needs. For healthy people it does not pose a serious health hazard. Excessive protein intake impairs kidney and liver function. Therefore, people who suffer from liver and kidney disease should pay attention to the low protein content menu.

A big plus for foods high in protein is that they stimulate brain activity. They provide the human body with tyrosine. This can increase the level of norepinephrine. It stimulates brain activity.

Studies show that unnecessary negative effects can occur when using dietary supplements containing certain amino acids. Amino acid diet supplements can interfere with protein digestion, causing nutritional imbalance in the body. Some scientists believe that protein supplementation increases the release of calcium from the body. It can cause osteoporosis. Excessive protein intakes with food can have similar effects (Stanton, 2010).

The amount of protein intake in the vegetarian diet is only slightly lower than that of the carnivorous, and is sufficient to provide everyday human needs for protein, including athletes (Sanders, 2002). Studies at the University of Harvard, as well as other studies in the United States, Britain, Canada, Australia, New Zealand and several European countries, have confirmed that vegetarian diets provide more than enough protein, if accessible and used a variety of plant protein products (Melina, Davis 2003). Proteins are made from amino acids, therefore, it is often worried about the possibility of absorbing a sufficient amount of essential amino acids (which the body cannot synthesize itself). With milk and eggs ovolactovegetarians are fully provided with essential amino acids. On the other hand, from plant products, all of the eight essential amino acids in some considerable amounts contain soy, hemp seed, chia (Spanish sage) seeds, amaranth, buckwheat and quinoa. However, it is not necessary to take proteins directly from these products – all of the essential amino acids can be obtained by eating a variety

of plant amino acids mutually complementary to the amino acids, such as rice (preferably brown) with beans, humus (peas) with bread (preferably whole wheat) and vegetables. Moreover, it is not obligatory to eat these foods at one meal – it is quite enough to simply observe the diversity in the use of plant protein products (Young, Pellett 1994).

In the ongoing studies, it was questioned that a vegetarian diet can provide an organism with a sufficient nutritional value and protein content (referring to an average vegetarian). People only need four percent protein in energy. It can easily be obtained by consuming plants. It can get a great mix of amino acids.

Considering the utility of nutrients that have a high protein content, feed can be broken down into:

- The best food (nuts, sunflower seeds, sprouted grains, beer yeast);
- Good food (eggs, peas, beans, fish, cheese, mushrooms, fresh milk);
- Poor nutrition (all cereal grains, scallops, meat, boiled and pasteurized milk)

(Malahov, 1999).

But most of these concerns have been overcome in recent years scientists have begun to study the effects of vegetarian diet on the treatment of illness and its prophylactic role.

Vegetable products do not need to be specially combined for the purpose of obtaining a wholesome protein, as the body forms an amino acid reserve, which is supplemented with everyday amino acids that are absorbed in sufficient quantities and the amino acids that are missing from the meal are taken from the reserve.

The main sources of protein are all cereal crops (whole wheat flour and bread, oat flakes, buckwheat, grits, pasta, brown rice), lean meat, cheese, nuts (most, including hazelnuts, almonds), seeds (sunflower, sesame, pumpkin), legumes (peas, mature beans, lentils), soya beans, soy powder, soy milk, olives, avocados, aubergines, eggs, mushrooms, crayfish, fish, curd, milk.

Protein compatibility with other products: Proteins and starch. Two steps, digestion of starch and protein, occur in succession rather than simultaneously. If the bread is eaten with meat, gastric juice with a large amount of hydrochloric acid is immediately released in place of almost neutral stomach juice. The digestion of the starch is rapidly discontinued. Proteins and carbohydrates should therefore be taken separately.

Different proteins: The digestive system glands work different, when processing different proteins together with other nutrients, and the time it takes for digestion of different proteins is different. This does not apply to the simultaneous eating of different types of meat or different types of nuts. Should be avoided such proteins mix as meat and eggs; Meat and cheese; Meat and nuts; Eggs and milk; Eggs and nuts; Milk and nuts; Cheese and nuts for simultaneous eating. Only one type of protein should be taken in one meal.

Proteins and acids: Proteins are complex compounds. In the stomach, their cleavage at the first digestive stage takes place under the action of the enzyme pepsin. Pepsin effects only in the acidic environment. In the alkaline environment,

it does not function. If acid enters the mouth and stomach, gastric juice does not escape. The human stomach generates the acid that is needed to allow the pepsin to split protein-bound foods. Lemon juice, vinegar and salad dressings, which are supplemented with proteins as an additive, inhibit the secretion of hydrochloric acid in the stomach. Consequently, protein digestion is also inhibited. Therefore, proteins and acids should be taken separately.

Proteins and fats: Sweet cream, butter, margarine, greasy sauces, fatty meat must not be consumed with nuts, cheese, eggs and lean meat. Protein digestion takes much longer. Fats taken with foods reduce appetite supportive secretion, inhibit the function of the stomach, reduce the amount of pepsin and hydrochloric acid in the gastric juice. Fat and protein-containing products should also be eaten individually.

Proteins and sugar: All types of sugar, incl. syrup, sweet fruits, honey interferes with the secretion of gastric juice and reduces gastric activity. Sugar is not cracked in the oral cavity, not in the stomach, but in the intestinal tract. Proteins and sugars should be taken separately.

Some examples of tasty fruit salad with proteins:

- Grapefruit; orange; apple; pineapple; leaf salad; celery; nuts; several avocados; 120 grams of cottage cheese (the list of fruits may be shorter);
- Peaches; plums; apricots; cherries; leaf salad; celery;
- Other food compatibility.

Green vegetables, especially fresh ones, neutralize the negative effects of fat. Therefore, in order to prevent fat from digestion of the protein, you must eat a lot of green vegetables along with them.

Sugar and starch: The cleavage of starch begins in the mouth. If it has the necessary conditions, the stomach continues it for a short time too. Sugar is not split in the mouth or in the stomach.

When using butter with bread, it does not cause any disturbance. When sugar, jam or marmalade is used with bread and butter, digestion of normal food is affected as sugar is recycled first, but digestion of starch is delayed and recycled as the last. Sugar with starch contributes to fermentation processes. Sugar and starch should be eaten separately.

Acid and starch: Even weak acid breaks down saliva enzyme pallylinium. This is needed for starch disassembly. Acid and starchy products should be eaten at different times.

Milk: Milk is protein and fat. It has poor compatibility with almost all other food groups except the acid fruits. Take milk separately from other foods.

Melons and watermelons: Melons are healthy foods and are digested very easily. Properly eaten melons enter the stomach in a few minutes, and then in the intestines. If melons are eaten with other products that require longer digestion, melon is present in the stomach (along with other eating foods).

Melon dissolves very quickly in the heat of the body, forms gases and causes other inconveniences. Melons should be eaten separately. It is not desirable to eat melons and watermelons of all varieties between meals. Ideally, melon or watermelon should be the main dish or can be eaten with sweet fruits.

Examples of compatible foods:

Oranges – Grapefruit; Oranges – pineapple; Bananas – persimmon – dates; Bananas – pears – grapes; Bananas – pears – figs – a glass of skimmed milk;

Apples – grapes – figs; Grapefruit – apples; Apples – grapes – dates – a glass of curd milk;

Dates – apples – pears; Ripe figs – peaches – apricots;

Cherries – Peaches; Cherries – apricots – plums; Cherries with sour cream (no sugar);

Mango – cherries – apricots;

Grapefruit – orange – apple – pineapple – lettuce – celery – several avocados – nuts – 120 grams of cottage cheese;

Peaches – plums – apricots – cherries – lettuce – celery.

The last two examples also contain some protein. In the last two examples, it is not recommended to add sweet fruits like bananas, raisins, figs, dried black plums.

Fruit acids or sugars are badly matched together with both starch and proteins. Therefore, sweet fruits and very acid fruits are better to eat separately at different times. Sugar, honey and other sweets are not recommended to eat with grapefruit.

Carbohydrates: The role of carbohydrate in human nutrition is still one of the most controversial issues. Starches and sugars are the main sources of energy in the human body. Fibre has many health benefits. Almost all starches and sugars that the human body uses to produce energy comes from plants. The only exception is lactose – sugar containing milk.

Each plant is a complex nutrition production that takes water from the soil, carbon dioxide (carbon dioxide) from the air and takes energy from the sun. Of these ingredients, they form glucose as simple sugars, which are later transformed into starch. As the plant grows, it also produces various vitamins, minerals and other herbal chemicals, as well as fats and proteins. As a result, carbohydrates and many other nutrients that strengthen our body can be obtained from thousands of different crops, seeds, fruits and vegetables.

Carbohydrates are the organic compounds, which contain two types of functional groups – aldehyde and alcohol types, which are made up of carbon, hydrogen and oxygen. In addition, the ratio of hydrogen to oxygen is 2:1 (like water, so they have the name carbohydrates).

It is a source of energy in plant and animal cells. Plants in the process of photosynthesis from carbon dioxide and water synthesize various carbohydrates. Glucose, fructose, galactose, glycogen, amino sugars and their polymers are the most significant in the metabolism. By the various signs of complex indicators carbohydrates can be divided into: sugars, starches and fibre. Carbohydrates can be divided into two groups: simple and compound carbohydrates. Simple carbohydrates or sugars basically make crystals that are soluble in water and easily dissolve in the body. Natural sugars are found in a variety of fruits, vegetables and honey. The processed sugars are refined sugar, brown sugar and molasses syrup. Following the complexity criteria for carbohydrates, they are divided into monosaccharides, oligosaccharides and polysaccharides.

Monosaccharides (simple carbohydrates) are the simplest carbohydrate agents. They do not degrade in hydrolysis in even simpler compounds. Glucose, fructose, galactose, ribose, deoxyribose, and others are the most important for humans. Oligosaccharides are more complex compounds consisting of several (2-10) monosaccharide residues. The most important for people are sucrose, maltose, lactose, and the like. Polysaccharides are molecular compounds - polymers made of many monosaccharides. They are divided into digestive and non-degradable polysaccharides in the gastrointestinal tract. The digestible ones include starch and glycogen. Pulmonary cellulose, hemicellulose and peptic substances are non-degradable polysaccharides important for humans.

Composite carbohydrates can have different shapes, flavours, colours and molecular structure. These carbohydrates are made up of complex sugar chains and can be divided into starches and fibre.

World nutrition is based on compound carbohydrates. People who eat more carbohydrates and less fat are unlikely to face a variety of health problems.

Refined carbohydrates, such as wheat flour and white rice, are just as good sources of energy as carbohydrates contained in rye flour and brown rice, but several important nutrients, including vitamin B, iron and other minerals, and fibre, are lost in the processing. It's best to eat predominantly whole wheat or slightly processed grain products, legumes, beans, fresh or slightly cooked vegetables and fruits, and do not consume a lot of sugar.

Proper nutrition has a great impact on the physical capacity of a person. Physical abilities influence the way the body absorbs the nutrients used. Regular physical activity increases the body's ability to use glucose effectively and accumulate glycogen in muscle tissue (Stanton, 2010).

Carbohydrates are the main source of energy for human consumption. Carbohydrates are in all the body's tissues. If the diet is lacking in carbohydrates, the body uses more proteins and fat for energy.

In the case of high physical activity, when the body needs a lot of energy, more sugar should be consumed in the diet, especially glucose. Excessive intake of sugars is converted into fat and promoting obesity. Carbohydrates are better used in the body when using a mixed diet, i.e., consumption of animals and plants.

The main sources of carbohydrates are cereal starch (the main source of carbohydrates), cereals (wheat, oats, barley, rice), whole grain bread, pasta and other flour products, dried peas, lentils, beans (other than soya beans), potatoes, chestnuts, peanuts, courgettes, pumpkins, artichokes. With a little starch content: kale, carrot, beet, cauliflower. Sugars: sugar (white, yellow, milk sugar), honey, syrup (maple, sugar cane). Sweet fruits: bananas, muscat grapes, sun-dried pears, raisins, figs, persimmons, black plums, dates, dried apricots.

Fibre, especially cereal fibre, reduces the risk of coronary heart disease. Dietary fibre (often called coarse food, ballast) is a non-degradable part of plant foods.

Fibre is divided into two main groups – soluble and insoluble. Most of the plants contain both types of fibre, but there are plants with more than one group of fibre. Soluble fibre dissolves in water and becomes sticky. The fibre belonging to

this group is in lentils, legumes, oat bran, coarse oat flour, barley and pectin-rich fruits as apples, pears, strawberries and citrus fruits. The insoluble fibre is insoluble and it moves through the digestive system almost without changing. It is found in wheat bran, whole-wheat products, brown rice, and fruits and vegetables such as carrots, broccoli and peas.

Most of the dietary fibre is from wholegrain flakes, grains, fruits, vegetables, dried beans, peas and other legumes, nuts and seeds. The outer layer of the fibre that contains the most fibre is separated during the processing; i, which means that whole-grain products such as brown rice and meal bread are good fibre sources.

Fibre helps to avoid illness and maintain good health. Low-fibre diets that is usual for people in the developed West, may lead to various diseases, such as coronary artery disease, diabetes and intestinal diseases, including cancer.

REFERENCES

183. *A Prospective Study of Red and Processed Meat Intake in Relation to Cancer Risk*, Available at: <http://medicine.plosjournals.org/perlserv/?request=get-document&doi=10.1371>. PLoS Medicine.

184. BBC NEWS Health. *Rejecting meat 'keeps weight low*, Available at: <http://news.bbc.co.uk/2/hi/health/2526891.stm>.

185. Davey G.K., Spencer E.A., Appleby P.N., Allen N.E., Knox K.H., Key T.J. (Davey & Co 2003). *EPIC-Oxford: lifestyle characteristics and nutrient intakes in a cohort of 33 883 meat-eaters and 31 546 non meat-eaters in the UK*. Public Health Nutrition 6.

186. Key, T.J. et al (1999). *Mortality in vegetarians and nonvegetarians: detailed findings from a collaborative analysis of 5 prospective studies* American Journal of Clinical Nutrition, Vol. 70, No. 3, pp. 516-524, September 1999, Available at: <http://www.ajcn.org/cgi/content/full/70/3/516S>.

187. Malahovs, G. (Malahov, 1999) *Organisma attīrīšana un pareiza ēšana. (Body cleansing and proper eating)* ISBN 9984-621-68-5.

188. Mattson, Mark P. (2002) *Diet-Brain Connection: Impact on Memory, Mood, Aging and Disease*. Kluwer Academic Publishers. ISBN 978-14-0207-1294.

189. Melina, V. & Davis, B. (2003). *The New Becoming Vegetarian*. Book Publishing Company ISBN 978-15-7067-1449.

190. *Mortality in vegetarians and nonvegetarians: detailed findings from a collaborative analysis of 5 prospective studies* – Key et al, No. 70(3), 516 p. *American Journal of Clinical Nutrition*, Available at: <http://www.ajcn.org/cgi/content/full/70/3/516S#T7>.

191. Rosell, M. (2006). *Weight gain over 5 years in 21 966 meat-eating, fish-eating, vegetarian, and vegan men and women in EPIC-Oxford*. International Journal of Obesity, No. 30(30), pp. 1389-1396.

192. Sakne, P. (2010). *Diedzētu graudu dzīvības spēks (Germinal life force)* ISBN 978-9934-0-1641-7.

193. Sanders, T. & Emery, P. (2002). *Molecular Basis of Human Nutrition*. Taylor & Francis Ltd. ISBN 978-07-4840-7538.

194. Stanton, R. (2010). *Foods that Harm, Foods that Heal*. ISBN 978-9984-38-854-0, Available at: <http://www.readersdigest.co.nz>.
195. USDA National Nutrient Database (USDA), Available at: <http://www.nal.usda.gov/fnic/foodcomp/search>
196. Vegetarian Diets (2003). *Journal of the American Dietetic Association*, No. 103(6).
197. Veselības ministrija (Latvian Ministry of Health): Veģetāriešu un vegānu uzturs ir veselīgs (*Vegetarian and Vegan diet is healthy*), Available at: <http://woman.delfi.lv/kitchen/nutrition>.
198. Wigmore, A. (1986). *The Sprouting Book*. ISBN 978-0-89529-246-9.
199. Young, V.R. & Pellett, P.L. (1994). *Plant proteins in relation to human protein and amino acid nutrition*. *Am. J. Clinical Nutrition* Vol. 59, Available at: <http://www.ncbi.nlm.nih.gov/pubmed/8172124>.