

Vegetables and fruits, specific foods in the increase of immunities of living organisms

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Abstract: The man must eat to live, from his food, he must find the necessary nutrients to satisfy the needs of his body which must grow and develop its immunities so that it stays alive. For this purpose, no type of food can be neglected. Vegetables and fruits, which have only played a secondary role in the human diet, the health situation in the world puts them at the forefront of planetary news and demonstrates all their nutritional importance.

Keywords: vegetables, fruits, growth, immunities, living organisms

1. Introduction

Man must eat to live, it is the law of nature, shared by all living beings from the simplest to the most complex. The foods they eat each have a specific role to play in their bodies. The classification of foods into different groups thus makes it possible to define their nutritional role. No food contains all the nutrients necessary for the proper development and good health of humans in particular. It is rather the combination of several foods including those of plant origin (cereals, legumes, fruits and vegetables) and those of animal origin (eggs, milk, meat, fish etc ...) to have all the nutrients useful to the organization. Nutrients act better when they are associated with each other, and they thus allow the body to recover the immunities essential to its harmonious functioning. To this end, vegetables and fruits have an important role to play.

2. Definitions of some concepts

- 1) The vegetable is the organ of certain plant species that can be eaten raw or cooked by humans. For example, tomato, eggplant are fruit vegetables while amaranth, spinach are leafy vegetables, etc.
- 2) The fruit is the organ of the plant originating from the ovary of the flower and containing the seeds or the stone.
- 3) Nutrients are constituents of food, for example, carbohydrates, lipids, proteins (proteins), vitamins, mineral elements, water, etc.
- 4) Vitamins are organic substances necessary in small quantities, useful to the human body for its proper growth, reproduction and maintenance of good health.
- 5) Mineral elements are chemical elements widespread in the animal, vegetable and mineral kingdom, for example, sodium (Na), nitrogen (N), phosphorus (P), potassium (K) etc...
- 6) Immunity is a natural or acquired resistance of a living organism against an infectious agent (micro-organism) or a toxic principle (venom, toxins from fungi) or in other words the defense of the organism in the face of certain natural atmospheric phenomena such as cold, heat, etc., or physiological phenomena such as hunger, thirst, etc.

3. Some general considerations about vegetables and fruits

Vegetables and fruits are classified in the nutritional group of protective foods providing the body with protective materials which are vitamins and mineral elements. In all regions of the world, there are plants that give vegetables and fruits. They vary from one region to another according to dietary habits. What is consumed in one region as a fruit or vegetable is not necessarily so in another. Cassava leaves are a widely consumed vegetable in Central Africa while taro leaves are in West Africa. In the regions of Sub-Saharan Africa, the consumption of vegetables and fruits is more a question of eating habits and the means at our disposal than of observing nutritive principles.

Table N°1 : Nutrient content of some vegetables (per 100g of edible part)

Some vegetables	Water %	Proteins g	Carbohydrates g	Matter mineral			Vitamins				
				Tha t (mg)	P (mg)	Fe (mg)	HA S (UI)	B1 (mg)	B2 (mg)	Niaci n	VS (mg)
Spinach	83	3	4	83	35	5.2	7300	0.05	0.20	0.5	37
Tomato	92	1	4	13	25	0.5	900	0.05	0.03	0.5	23
Squash	91	1	6	15	30	0.6	-	0.05	0.05	0.4	6
Cucumber	94	0.6	4	18	15	0.4	-	0.01	0.02	0.2	3
Celery	94	1	5	50	60	0.4	270	0.05	0.05	0.7	6
Leek	-	1	4	51	25	0.6	-	0.05	0.05	0.3	17
Onion	89	1.5	9	29	40	0.5	40	0.03	0.03	0.2	8
cassava leaves	71	1	24.5	274	105	17	90	0.08	0.21	0.3	248
Carrot	88	1.2	10	38	-	0.8	5500	0.06	0.06	0.6	8
potato leaves gentle	82	4.4	11.3	83	91	9.2	4000	0.07	0.22	0.6	60

(Nkongolo , 2020)

This table clearly shows that vegetables have high water content and on the other hand displays a very low content of basic nutrients, proteins, carbohydrates, they are lower in lipids. Their content of mineral elements and vitamins, although low, generally covers the needs of living organisms in these nutrients. They are then indicated as specific protective foods for this need. Foods with a high content of basic nutrients are used to cover energy and building needs, it would not be convenient to use them additionally for protection needs.

Table N°2 : Nutrient content of some fruits (per 100g of edible part)

some fruit	Water %	Proteins %	Lipids %	Carbohydrates %	Tha t (m g)	P (m g)	mg (m g)	Vit A (m g)	Vit B (m g)	Vit C (m g)	Niaci n (mg)	Vit B2 (m g)	Fe (mg)
Banana	76	1.5	0.2	22	6	14	30-40	55	0.03	10	0.6	0.03	1.5
Lawyer	75	1.7	16	6	10	40	20-40	72	0.06	15	0.4	0.1	1
Papaya	90	0.5	0.1	9	22	13	-	102	0.02	50	0.3	0.04	0.5
Mango	81	0.6	0.2	17.2	15	10	160	510	0.02	86	0.2	0.03	1
Orange	88	0.7	0.3	10	30	15	-	38	0.7	64	0.2	0.03	-
Apple	84	0.3	0.4	14	6	10	-	50	0.04	5	0.2	0.03	5-6
Pineapple	90	0.4	0.2	9	14	10	-	45	0.06	44	0.1	0.03	0.3
Guava	79	1	0.4	18	18	24	-	105	0.04	240	1.1	0.03	1.2
Mandarin	87	0.8	0.3	11.8	28	21	-	80	0.07	28	0.2	0.02	1.2
Grapefruit	90	0.9	0.1	9.4	20	18	-	12	0.05	47	0.2	0.03	0.7
Banana plantain	64	0.8	0.3	34	10	38	-	195	0.05	25	0.7	0.04	1.4

(Head , 2020)

Like vegetables, fruits have the same characteristics for their water and protein content. With the exception of carbohydrates and lipids for which certain fruits have a high content, the banana for the 1st and the avocado for the 2nd. Generally, vegetables are eaten with meals while fruits are occasionally. Raising awareness is necessary for their consumption, especially since their production remains strictly seasonal without transformations for their conservation and consumption in any period of scarcity or abundance.

4. The role of some minerals and vitamins in the immunity of living organisms

4.1. Nutritional role of some minerals

It is necessary to indicate that the minerals are divided into two groups, the major elements and the trace elements. The first are those that the body needs in greater quantity than the second. The trace elements preside over the essential catalytic processes of the exchanges of which our organism is the permanent seat. Trace elements are of paramount importance in biological phenomena. In addition, trace elements allow and increase several vitamin, hormonal, antibiotic, enzymatic functions, etc.

Sodium and chlorine are involved in regulating the acid-base balance of the body. They are also involved in regulating the osmotic pressure of body fluid and therefore its volume. Sodium is also involved in muscle contraction and the transmission of nerve impulses.

Potassium is also involved in muscle contraction and in the regularity of the heartbeat, the functioning of the nervous system. Calcium plays an important role in muscle contraction and the transmission of nerve impulses. It also plays a role in blood clotting. It is essential for the activity of many enzymes.

Magnesium is an activator of several enzymes, especially those involved in phosphate group transfer. Magnesium influences the irritability of muscles and nerves. It also plays the role in regulating body temperature. It is a thermoregulator and is also involved in protein synthesis.

The human body contains about 4 to 5 g of iron, about 65 to 70% of this amount is present in hemoglobin, 25 to 30% is stored in the liver and spleen, the rest of the iron is found in myoglobin. Iron is in many fruits, almonds, hazelnuts, carrots, spinach, onions, cabbage...

The body of an adult contains approximately 15 to 40 mg of iodine; of which 75% is concentrated in the thyroid gland, the rest is found in the blood and other tissues. The function of iodine in the body lies in its participation in the formation of thyroid hormones. Seaweed is rich in iodine, garlic, onion, spinach, cabbage, carrot, leek, turnip, tomato, pear, and grape

Copper is part of the structure of some enzymes and acts as an activator for others. The human body contains approximately 2g of zinc with high concentrations found in the liver, bones, hair, testicles and eyes. Copper is found in onions, turnips, spinach, leeks, cherries, apples, oranges, grapes, etc. Zinc is part of several enzymes and acts as an activator for others. Fluoride is present in the body mainly in the teeth and bones. Fluoride protects teeth against decay.

Arsenic is a tonic and a restorative (stimulant of the appetite and activates the nutritive exchanges). It facilitates breathing and is beneficial in certain dermatoses. It is found in garlic, cabbage, spinach, turnip, carrot, apple, etc. Bromine is a nervous system sedative. Its usefulness is real in insomnia. It is found in apple, grape, strawberry, melon, garlic, asparagus, carrot, celery, cabbage, onion, leek, radish, tomato.

Manganese is a constituent of various enzymatic systems, glandular regulator, important in growth, active in the metabolism of sugars, fats and proteins, it promotes liver and kidney functions, accelerates combustion. It is found in watercress, cabbage, celery, carrot, onion, etc.

Nickel stimulates pancreatic functions and is therefore indicated in diabetes. It is found in carrots, cabbage, spinach, onions, tomatoes, grapes...

Phosphorus is a plastic and dynamic element. It comes in many combinations with fats, sugars, proteins. It plays an important role in the vitamin D mechanism and controls the calcium balance of the internal environment. It participates in bone and blood formation and plays an important role in the regulation of parathyroid functions. It is a capital element of nervous, intellectual and sexual energy.

Many plants contain it: garlic, celery, carrot, onion, leek, tomato, almond, walnut, grape.

4.2. Nutritional role of some vitamins

It is important to state that vitamins fall into two groups, hydrosoluble (soluble in water) and fat-soluble (soluble in lipids). In the second group are the following vitamins:

-Vitamin A plays an important role in the growth of young beings. Anti-infectious, it contributes to the nutrition of cartilage and bones, digestive organs, blood vessels, mucous membranes and integuments and as such, it is a factor of rejuvenation.

-Vitamin D is necessary for adequate absorption of calcium and phosphorus in the small intestine. It is also important for the proper mineralization of teeth and bones. It is also involved in the mobilization of calcium from the bones.

-Vitamin E plays a very important role in the fight against male or female infertility.

- Vitamin K is essential for the formation of prothrombin in the liver. This substance is necessary in the mechanism of blood clotting.

In the second, the following vitamins are stored: -Vitamin B₁ or Thiamine plays an important role in nervous balance. It is an appetite stimulant and has the power to excite favorable bowel movements.

- The importance of vitamin B₂ or riboflavin is at the level of cellular regulation phenomena, it acts on the metabolism of sugars, fats and proteins. It thus presides over the nutrient balance. It has a favorable action on the skin and mucous membranes; it plays a role in intestinal balance. It is a growth factor It is found in the same foods as vitamin B₂

-Vitamin B₆ or pyridoxine plays an important role in the metabolism of fats and amino acids. It is useful in the formation of hemoglobin. It is also a muscle stimulant, skin protector and growth factor. It is found in green plants.

-Otherwise called cyanocobalamin, vitamin B₁₂ is the most powerful anti-anemic factor currently known. It also has a structural analogy with hemoglobin. These are the B group vitamins.

Vitamin C is of vital importance for the body. It intervenes in oxidation-reduction reactions, it is anti-infectious, invigorating, it participates in the destruction of toxins, in the use of iron. This vitamin is found in cabbage, tomato, onion, lettuce, pepper, radish, lemon, orange, grapefruit, etc.

5. Closing

It is established that vegetables and fruits are characterized by their diversity in mineral elements and vitamins that they contain compared to energy and builder foods. Although in minute quantities of these so-called "protective" nutrients, they are sufficient to cover the needs of living organisms. Food builders and energy are not devoid of minerals and vitamins, they also contain some. Given their richness in basic nutrients, they can only be used to cover the needs of organisms in these nutrients and not in mineral elements and vitamins.

If vegetables are consumed more in meals, it is more for their affordable cost and not for nutritional reasons. It is currently up to all public officials to invest in an awareness campaign for fruit consumption. The human body cannot do without any food unless prescribed by a doctor. Since no food contains all the nutrients necessary for the proper development and good health of humans in particular. It is rather the combination of several foods including those of plant origin (cereals, legumes, fruits and vegetables) and those of animal origin (eggs, milk, meat, fish etc ...) to have all the nutrients useful to the organization. Vegetables and fruits are therefore very important.

The chemical composition of vegetables and fruits clearly shows their importance for protective nutrients whose role in metabolism and the body's natural defense is more than essential. Vegetables and fruits thus have their special place in human nutrition in such a way that we cannot do without them in the diet without the body suffering immune consequences.

Vegetables and fruits therefore remain specific foods in increasing the immunities of living organisms.

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