Is the key to the disease in antioxidants, immunity or something else?

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Abstract: Living organisms are open systems that countinuosly exchange energy and matter from enviroment in which they are located. Seen through the evolution of human beings, their characteristics have been shaped over milions of years and carefully selected, which enabled them to survive, reproduce, grown and develop. One thing that was necessary for us alive was transmitted genes of our ancestors to their children, before their death. The reaction of the human organism, on or more unbalancing changes in its enternal environment present disease [1]. Some disease do not have to be hereditary, they appear later. But what is the key in the disease, whether it is hereditary or not? Perhaps the answer lies in the very evolution of man. Everything started from atoms, molecules and eventually turned into an organism, which is different and specific for itself. Good immunity is half of healt. But why does the disease occur?

Stress, poor supplementation, poor hygiene, the environment itself, these are some of the elements that can affect our body a lot. And what if it's all written in the genes, in DNA? Our task is to observe evolution and get the best out of it, correct mistakes, and learn from them in order to pass all this on to the next generations who will be even better and the basis of the development of the human species. Adaptations saved evolutionary development. Maybe them also can help to stop and prevent disease. Antioxidants like vitamin C and vitamin E, which we cannot synthesize, throughout history they have been a medicine that saved many lives and enabled the strengthening of immunity [2, 3].

Keywords: Immunity, evolution, DNA, nutrition, antioxidants

1. Introduction

In nonoxidizing atmosphere (carbon dioxide, methane, water vapor) anaerobic organisms were the only form of life. But the change from nonoxidizing atmosphere to an oxygenic atmosphere millions of years ago present the key in evolution. In the atmosphere, oxygen increase to 20 % [1]. Oxygen-producing cyanobacteria were part of that ecosystem, and the low levels of oxygen were maintained by the dominant

influence of volcanic outgassing of reduced gasses [4]. Some organisms (anaerobic) evolve to produce antioxidants to protect themselves against molecular oxygen. Others retreat into anaerobic environments. Life depends on oxygen, but it is dangerous (destroys iron). Also all life on earth depends on sunlight, but expose to ultraviolet (UV) and other radiation may lead to mutations and cancer [5]. The main sources of antioxidants are found in plants. They are necessary for plants functioning and adaptation to environmental condition. Plants have a specific antioxidant defense system, which consist of enzymes and metabolites (vitamin C-Ascorbate, glutathione – GSH, polyphenols, flavonoids, terpenoids), and can help to prevent oxidative damage and reactive oxygen species (ROS). ROS is main for normal plant grown, development, play important roles in signal transduction, but also can induce cellular damage [6] [7] [8]. Vitamin C, Vitamin E, carotenoids, polyphenolic antioxidants present dietary antioxidants which are main for normal function. The vitamins have protective role againts the ROS, and some of them are antioxidants (Vitamin C and vitamin E), mainly secondary metabolites which plants can synthetize to protect themselves against oxidative stress [9]. Oxidative stress (OS) implicates in the development of human disease, and many researches investigates the use of antioxidants for the prevention and treatment of stroke and neurodegenerative disorders [10, 11].

2. Methodlogy

2.1 What ROS and OS can cause in plants and humans?

Many biological processes in bodies can produce harmful compound, named free radicals. They present unstable atoms, molecules or ions and they contain unpaired electrons. They destroys our body's natural antioxidant system which make enzymatic antioxidants: superoxide dismutase (SOD) and catalase (CAT), which neutralize ROS and non-enzymatic antioxidants such as vitamin C, vitamin E, glutathione (GSH) which scavenge free radicals. They are by-products of natural reaction in the body including immune system respond, metabolic processes [13, 14]. Excessive production of free radicals can disrupt the ratio of oxidants and antioxidants in the body, and this leads to oxidative stress (OS), which damages DNA, proteins, lipids, and leads to the development of diseases (cardiovascular disease, neurodegenerative disease, cancer, diabetes) [12, 14]. In plants, free radicals damage DNA, proteins, lipids, but plants, as other organisms, have antioxidant system (AOS) which can help to destroy ROS. Glutathione peroxidase (GPx), glutathione reductase (GR) prezent enzymatic antioxidants, and proline, carotenoids, flavonoids, phenolic acid, tannins prezent non-enzymatic antioxidants in plants [12]. Plants do not have immune system unlike animal thus, but they use this antioxidant defense to protect themselves against microbial pathogen and animal herbivores.

2.2 Herbs with antioxidant properties

In the desire to make a person healthy, we spending two weeks of research with a certain mixture of herbs with antioxidant properties. Two female persons of different ages (50+ year and 20+ year), who fell ill, were tested and they are not users of tobacco smoke. Person 2 have problem with knee pain (right knee). Person 2 who used this mixture took it two times a day, before each meal pouring the mixture into half a cup, which she filled with water to the top. The cup can also be filled to the top with the entire mixture, but in our case, we did not do this. The mixture was a little bitter, so a little honey was added to improve or neutralize the bitter taste. For a snack we took fresh almonds. We use a smaller intake of these herbs, so that the condition does not worsen, because every person is different and we do not want to cause shock or stress to the body.

Table 1. Mixture of herb and references values for vitamin C and vitamin E in plants

Plant species	Vitamin C reference value (100 g)	Vitamin E reference value (100g)	The mixture of herbs
Turmeric- *Curcuma longa*	0.7 mg	4.43 mg [15]	½ tablespoon of this powdered spice
Ginger- *Zingiber officinale*	0,55 mg	0,03mg [15]	1cm of root chopped with stand mixer (or blender)
Pepper- *Piper nigrum L.*	Low	1.04 mg [15]	½ teaspoon
Lemon- *Citrus limon (L.)*	53 mg	1 % or 0,15 mg [16]	½ whole lemon chopped with stand mixer (or blender)
Orange- *Citrus sinensis*	59% or 53.2 mg	12 % or 0.18mg	1 chooped with stand mixer (or blender)
*Honey- for better taste			1 teaspoon
*Snack- Almonds [17]- *Prunus dulcis (Mill.) D.A. Webb*	/	25.6 mg [17]	50g

All the ingredients used were fresh and bought at the store. Ginger, lemon and orange are chopped with stand mixer (or blender). Turmeric and pepper powder are added at the end when the crushing was finished. The whole mixture is poured into a large bottle with a volume of 1.5 liters. Fruit pulp remains are not thrown away. The mixture is not filtered. The bottle is stored in the freezer. When the potion is used up, a new one is made. When forming the mixture itself, we took into account the nutritional values which is shown in Table 1.

3. Results and Discussion

This mixture of herbs accelerated the flu symptoms and helped person 2 (20+ years) to recover faster. This same person had great problems with pain in his right knee, which was unbearable. However, after a week, the intensity of the pain decreased. And after 14 days, the pain disappeared and the person 2 moved better. She had improved cognition, better memory and digestion. Additionally, she no longer felt tired when getting out of

bed in the morning. She did not drink coffee for two weeks while she used a mixture of these herbs. She had high energy levels throughout the day. The person 1 (50+ years), used medicines, but she needed more time to recover, unlike the other one who managed to recover in a week. When pearson 1 start to use mixture (10-14 day), she felt the same improvement as pearson 2 in the first week. The key is us and our nutrition and education**.** The sooner the diagnosis is made, the better, because we can control the disease when it is detect in time.

4. Conclusions

Many factors can affect health such as environment, genetics, education level, social relationships, economic, the persons individual characteristics and behaviors, alcohol consumption, dietary habits [18, 19]. In disease, a recovery is an important course for survival. Dietary antioxidants delivered from plant sources play a significant role in maintaining the redox balance, and one of solution for this is to supplement antioxidants defense system with exogenous antioxidants [12, 14]. In conclusion, using medical plants with antioxidative properties have ability to prevent or treat human pathologies in which oxidative stress can be one of the causes.

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