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CAN WE SPEAK ABOUT A PHILOSOPHY ON NUTRITION IN CORPUS HIPPOCRATICUM?

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ABSTRACT

Corpus Hippocraticum outlines in detail the environmental impacts on human health, including those derived from nutrition. The Philosophy of Nutrition lies on the study of its role both on the preservation of physical and mental health, as well as, its impact in cases of the disease. In Corpus Hippocraticum is also highlighted the importance of choosing the right diet for healthy people along with sick taking into account the way people live. According to Hippocrates diet is also closely related to physical exercise, as it should be adjusted in a way that does not disturb the body's energy balance. Therefore, human health exists when is achieved the balance between energy intake and its consumption through physical activity. Hippocrates therefore, apart from medical advice on the maintenance of health through diet, suggests a way of life to which balanced nutrition contributes decisively.

KEYWORDS: Hippocrates, nutrition, environment, energy balance, physical activity.

1. INTRODUCTION

Hippocrates was the son of midwife Phaenarete and doctor Heraclides. Born in Kos around 460 BC and proved to be the most prominent of the doctors of antiquity. His origin was glorious, since from his father's gender was the 18th descendant of Asclepius, while from his mother's mother he was the 20th descendant of Hercules. The education he received was worthy of his origins, as according to Soranus he taught his father's medicine, the rhetoric by the famous Gorgia and the philosophy of Democritus (Soranus, *Vita Hippocratis*, 1). Later he attended the medical school of Cnidus and afterwards Kos, after the arson and death of his parents, he toured many countries. His last destination was Larissa, where he died.

In Corpus Hippocraticum are included studies covering the whole spectrum of Medicine managing to explain causes of diseases based on natural laws governing the human body and its physiology. Hippocrates introduces a Philosophy of Nutrition, which is based on the study of its relation to the balance of human health and the environment. The role of physical exercise is also important, that contributes decisively to maintaining the health of the human body.

2. THE RELATIONSHIP BETWEEN NUTRITION AND HUMAN HEALTH

Hippocrates thoroughly studied the health effects of the environment but he also mentioned the effects of diet, obviously bearing in mind the great exposure of humans to it, but also its role in the way of life (Tsekourakis, 2008). In the scientific literature the concept of environmental exposure has been widely discussed especially in the issue of congenital diseases and cancer (Thompson & Schwartz Barcott, 2017; Nicolopoulou-Stamati et al. eds 2004)

In this context Hippocrates argued that choosing a proper diet depends on the observation of the conditions of each time of the year and on each person's particular needs (Kalachanis, 2011) Therefore, food intake should be individualized and the appropriate for each case and patient as otherwise illnesses could occur (Hippocrates, *De dieta*, III, 79, 5-8). This suggests that Hippocrates believed that the diet should be individualized in order not only to achieve aesthetic pleasure but also to maintain health. van Ommen et al (2017) argue that nutrition should be aimed at well-being and be governed by "flexibility" in shaping the diet according to the needs of each individual. This flexibility is introduced as "personalized nutrition biology" which makes it possible to evaluate

metabolism and other processes that maintain homeostasis. This term is interpreted as a mechanism that maintains "the status quo" for organismal physiology, structure and function (Torday, 2015; Guyton & Hall, 2006). However, in human body there are several mechanisms such as blood pressure regulation, tumor suppressor genes etc. that keep stable its condition. In spite of the fact that Hippocrates was not aware of the term "homeostasis" nevertheless, he referred to the importance of the balance of the structural elements of the human body. He suggested the existence of four basic humors, that correspond to the four basic elements of the Universe (Nemesius *De natura hominis* 8-12) and four secreting organs, as follows (Table 1):

Table I. Humors, Elements and organs of secretion

Humor	Element	Organ
Yellow bile	Fire	Liver
Black bile	Earth	Spleen
Water	Phlegm	Brain
Blood	Air	Heart

It is worth to note that fire, air, water and earth were the first principles of the Universe according to the Presocratic philosopher Empedocles (495-444 BC) (Diogenes Laertius, *Vitae Philosophorum*, VIII, 76, 6-7; Panou et al. 2015). The harmonious mix and propotion of the four humors maintains healthy states. Consequently, humor excesses and/or shortages trigger the pathophysiology of disease (Kalachanis & Michailidis, 2015). This state of harmonious mixing of the humors is called eucrasia, and is mentioned by Aristotle (Aristotle *De partibus animalium*, 673b, 26), whereas humor imbalance is dyscrasia. Thus proper nutrdition should contribute in balancing the

Another instersting matter in Hippocrates's research is his methodology which includes *case histories* referring to patients history and were pobably used for teaching purposes (Tsiompanou & Marketos, 2013). In this context he records an incident (case study) in which Apollonius in Avdira had a problem when standing up. At the same time he suffered from swelling of the viscera, pain in the liver, jaundice and fever. These symptoms were intensified as soon as they consumed beef or milk while the usual diet followed sheep's or sheep's milk. That's where Hippocrates finds the cause of the disease, which eventually exacerbated the condition of the patient, who, after having presented coma, amnesia and delirium, died (Hippocrates, *De morbis popularibus-Epidemiae*, III, 3, 17). It is obvious that

Hippocrates observed how the change in the diet affected the progression of the disease.

Moreover Hippocrates has studied eating habits of the people of his time concluding that man should not consume large amounts of food (*polyphagia*) reaching saturation (Hippocrates, *De morbis*, VI, 4, 18, 3) which leads to obesity, cardiovascular disease and diabetes. He further clarifies that food and drink consumption with consistency does not only contribute to physical health (Hippocrates, *De morbis*, IV, 38, 23), but also affects mental health (*De dieta*, I, 35, 1-13). Actually has been proved that the diet of patients suffering from mental illnesses such as bipolar disorder, obsessive compulsive neurosis and schizophrenia exhibits deficiencies in components such as vitamins, minerals and omega-3 fatty acids (Rao et al. 2008). This fact makes it imperative to study the effects of nutrition even on the mental health of people. It is worth to note that health promotion included physical activity as an essential part of physical and mental health, and emphasized the importance of nutrition to improve performance in the Olympic Games (Kleisiaris et al. 2014). This suggestion by Hippocrates concerning the observance of the measure in food was followed by Galenus (*De usu pulsuum*, 5, 152, 11-13), who emphasized on the harmful effect on the body of the *non-symmetrical* (*ἀσυνμῆτρων τροφῶν*) foods that cause increased heart rate as well as shorter breaths. It is important that in this case, Galen has identified the direct correlation between the function of the digestive, respiratory and cardiovascular system.

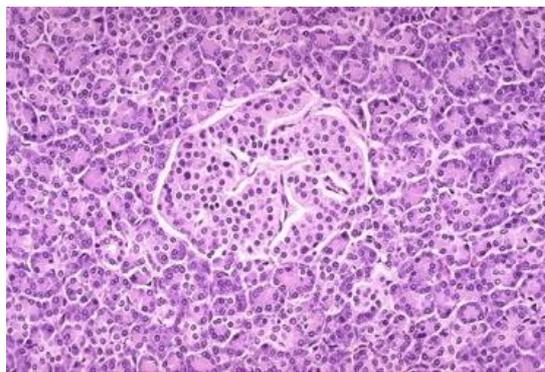


Figure 1. A Langerhans islet where can be found β pancreatic cells. Source: <https://library.med.utah.edu/WebPath/ENDOHTML/END0032.html>

It should be noted here that the tendency of man consuming large quantities of food is now considered as a disease, known as overeating (*polyphagia*) that results in obesity, type 2 diabetes, caused by insulin resistance. In the early stage of type 2 diabetes mellitus, an increased amount of insulin is secreted in the blood due to the increased activity of β pancreatic cells, which are the islets of

Langerhans and secrete insulin, which is essential for the insulin homeostasis (Da Silva Xavier, 2017) (Figure 1).

It's obvious that the eating habits affect the digestive system. In particular, long staying in the digestive tract of high-fat foods leads to the secretion of a large amount of pancreatic and bile fluid in order to digest food. In some cases, inflammation occurs in the intestine, and there are also diseases such as ulcerative colitis, in which extensive areas of the intestine show ulcers (Reid & Roberts, 2005) but also the Crohn's inflammatory disease (Figure 2).

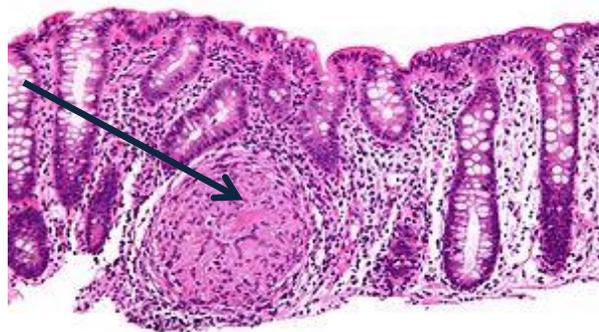


Figure 2. Crohn's disease, where a granuloma (with the arrow) is seen as a result of an inflammatory reaction Source: commons.wikimedia.org

As can be seen from the above, Hippocrates observed the important role that nutrition plays in human physical and mental health, which is also documented by modern medicine. since it would therefore be logical to assume that Hippocrates sets the principles and modern Dietetics. Also promotes the philosophy of nutrition, which aims to balance the structural components of the human body with environmental factors such as nutrition.

3. NUTRITION AND PHYSICAL ACTIVITY

Hippocrates argued that in order for nutrition to contribute to the preservation of human health it is necessary to be combined with physical activity.

Hippocrates, having an adequate knowledge of the doctors of his era, adds in the acquired by his predecessors medical experience of the study of the relationship between diet and hardworking (*πόνων*) (Hippocrates, *De dieta*, I, 2) which can be possibly interpreted as exercise. This has prompted him to regard this as his own discovery. This signifies that Hippocrates had a clear understanding of the work of the doctors in the past, and that he always sought to innovate as a right scientist (Kalachanis, 2011). So his work gives us a perfect example of how scientific research should be made.

However, in order for the combination of nutrition and exercise to be successful, Hippocrates

argues that the amount of food consumed should be in balance with body labor. This also leads to weight loss. In particular, the physician recommends doing exercises like walking especially after eating because the person who moves after eating weakens (Hippocrates, *De dieta*, II, 62 ; *De dieta salubri*, IV).

The physical activity that Hippocrates speaks of has been shown to actually affect our health, as its limitation leads to a number of problems such as poor physical condition, cardiovascular, and metabolic diseases. In addition, it has been observed that physical exercise has multiple psychological benefits, which Plato pointed out, claiming that gymnastics must also be combined with mental gifts (Plato, *Res publica*, 403d, 3-5).

In addition, in order to achieve weight loss, according to Hippocrates, man should perform a tedious fasting job, while his meal should include sesame seeds but also fatty ones. In this case, it is clear that the great physician has understood the concept of the energy balance of the human organism, which is disturbed if either exercise or food is surplus (Kalachanis, 2011).

From the above, it is clear that the value of nutrition in maintaining health is not only the result

of the foods we consume, but is also directly related to physical labor. Therefore, eating habits should be adjusted according to each person's lifestyle and physical activity, in order to keep the body's energy balance stable.

4. CONCLUSION

The above study has shown that Hippocrates, in the context of his studies on the influence of environmental factors on human health, has studied the nutrition issue thoroughly, thus setting the foundations of modern Dietetics. His comments on the effect of food on the course of illness indicate that the clinical practitioner should take into account the patient's habits in the diagnosis and treatment of diseases as well as the extent of exposure to the various harmful substances. Besides, due to nutrition, we are constantly at risk. But Hippocrates did not fail to say that the maximum benefit of the diet results from its combination with physical activity, especially when taking into account the energy consumed by man. Hence, choosing the diet requires as a criterion the assessment of the way of life of man.

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