

## COMPARATIVE STUDY OF NUTRITIONAL PROPERTIES OF WALNUTS VERSUS COCONUT

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**Abstract:** *Walnuts (*Juglans regia* L.) are important components of the Mediterranean diet. They are a source of essential fatty acids and tocopherols, vegetable proteins, dietary fiber, melatonin, plant sterols, tannins and polyphenols. Many studies have highlighted the importance of regular consumption of nuts, which has been associated with a reduced risk for serious coronary heart disease and a reduction in the incidence of heart attack. Although nuts are high in fat, a diet supplemented with nuts has a positive effect on blood lipids, reducing cholesterol and lowering the relative amount of serum concentrations of low-density lipoproteins.*

*On the other hand, coconut (*Cocos nucifera* L.) - the fruit of the coconut palm - has been a great source of versatility. Due to its continuous production, coconut is readily available throughout the year in the tropics. Coconut is a source of food, oil, coconut water, coconut milk and medicine. Each part of the coconut (core, water and shell) can become a useful object or a source of food. Coconut supplementation can be used as a therapeutic option in the prevention and management of Alzheimer's and Parkinson diseases. It is classified as an extremely nutritious "functional food", being rich in vitamins, dietary fibers and minerals.*

**Key words:** *Parkinson disease, functional food, superfood*

### INTRODUCTION

All type of nuts are a good source of antioxidants, vitamins and minerals and are recommended due to their high levels of mono and polyunsaturated fats (the healthy fats) and low levels of saturated fats (the unhealthy fats) , low Glycemic Index and high fibre content [5].

Walnuts have vegetable proteins, dietary fiber, melatonin, folate, plant sterols, tannins and polyphenols. Although nuts are high in fat, a diet supplemented with nuts has a positive effect on blood lipids, reducing blood cholesterol and lowering the relative amount of serum concentrations of low-density lipoproteins by 12%. Due to their rich composition and the highest content of omega-3, the regular consumption of walnuts lowers C-reactive protein, reducing inflammation and cholesterol, which are associated with increased risk of cardiovascular disease and arthritis [14]

Coconut is classified as an extremely nutritious "functional food", the compounds and phenolic hormones (cytokines) found in coconut can help prevent amyloid- $\beta$  peptide aggregation, and can inhibit a key step in the pathogenesis of Alzheimer's disease. There are studies proving that virgin coconut oil provides a protective role against L-dopa-induced neurotoxicity, which is recommended to be used along with levodopa (basic treatment in Parkinson disease) [3].

Different fractions of coconut (globulin, prolamine and protein fractions glutelin-1) have a high radical scavenging activity and the ability of ions to protect DNA from oxidative damage, which proves that coconut can be used as a natural antioxidant or to extend the shelf life of various products [3]. Coconut water offers a very good source of potassium, which helps to stabilize sodium levels and to regulate blood pressure [12, 15].

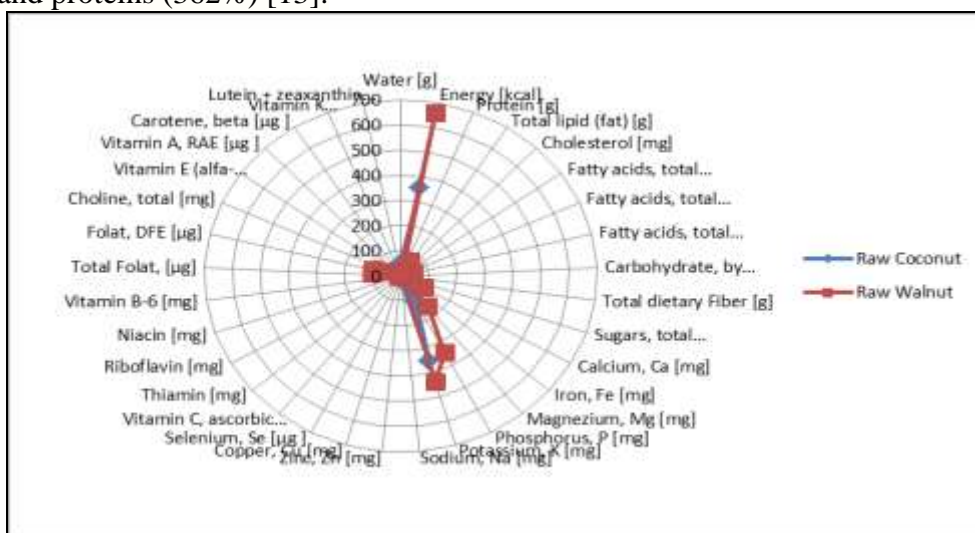
The aim of this study is to compare the nutritional properties of walnut and coconut in order to use the findings for creating personalized diets and innovative food products.

## MATERIALS AND METHODS

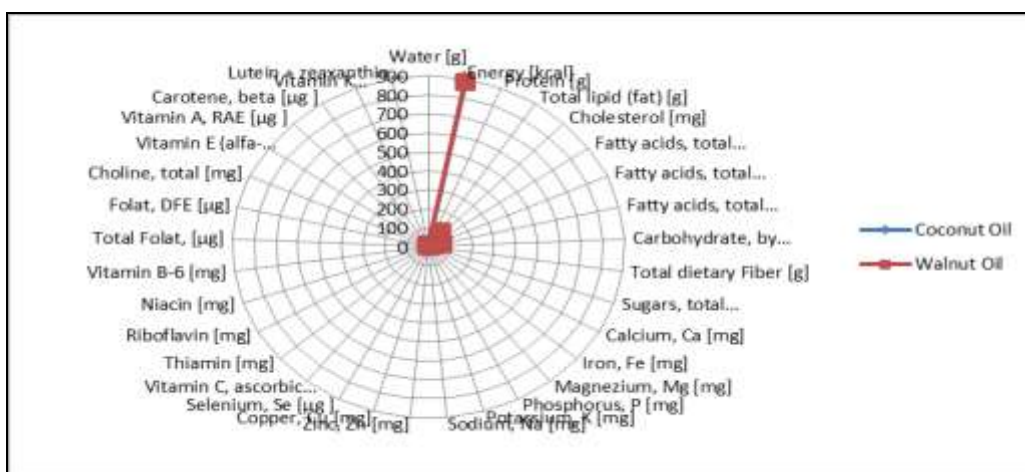
The evaluation of the seeds were based on the nutritional charts regarding to coconut and walnuts presented in different Databases [7,8,9,10,11] and research papers [1, 2, 3]. The used methods were mathematical modeling and statistical analysis of data.

## RESULTS AND DISCUSSION

Analyzing the data values as well as the graphical Joint plot representation of Principal Component Analysis, we can observe that raw walnuts have a more nutritious profile compared to coconut. Raw Coconut shows higher contents compared to raw walnuts only for total saturated fatty acids, carbohydrate total sugars, total dietary fiber, sodium, selenium and Vitamin C (figure 1), while walnuts have more calories, fat (95% more) and proteins (362%) [13].



a) Comparative representation of the nutritional values of raw coconut and walnuts

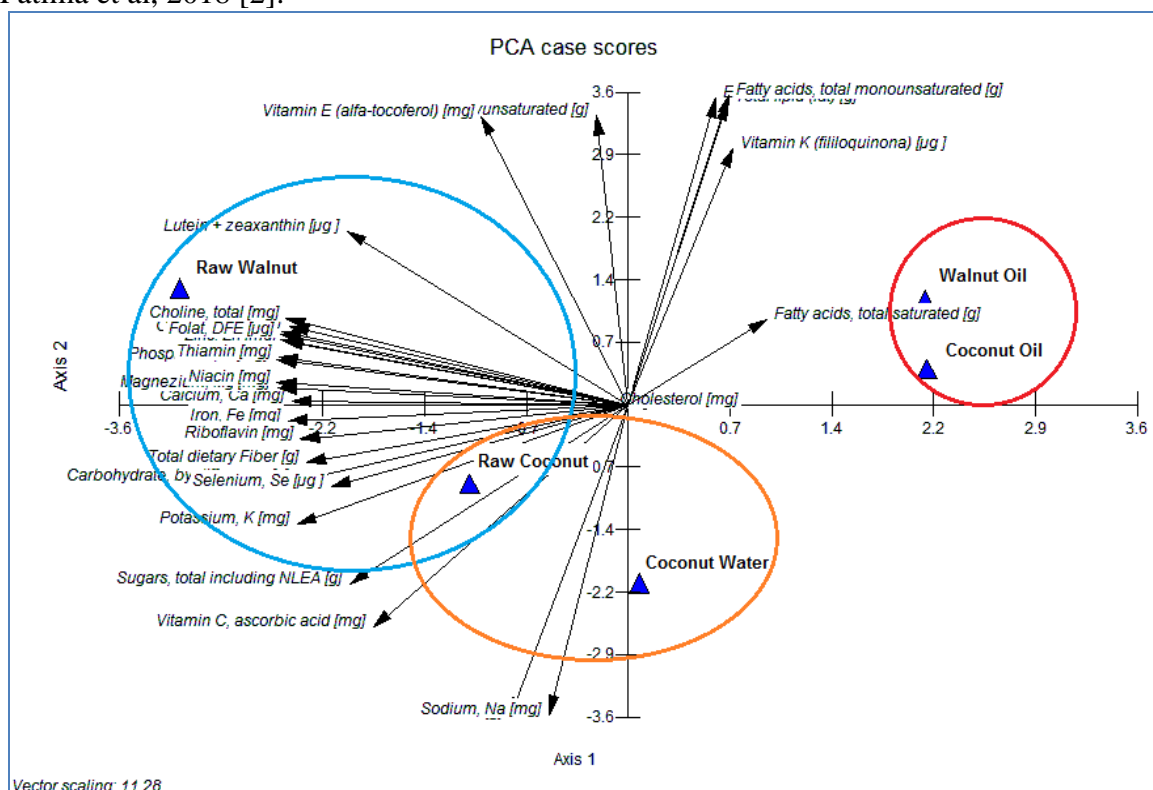


b) Comparative representation of the nutritional values of coconut and walnut oils

**Figure 1. Graphical representations of coconut versus walnut based on nutritional values data**

Although nuts are high in fat, a diet supplemented with nuts has a beneficial effect on blood lipids, lowering blood cholesterol and lowering the high density of lipoprotein by 12% [5].

Walnuts contain about 10%  $\alpha$ -linolenic acid, which has been associated with an antithrombotic effect. Other benefits of walnuts include the high content of magnesium, copper, folic acid, protein, potassium, fiber and vitamin E, observations confirmed by Fatima et al, 2018 [2].



**Figure 2. Joint plot representation of Principal Component Analysis**

Many studies have shown that the total fat and individual fatty acid contents of different varieties vary greatly]. The  $\alpha$ -linolenic content of nuts grown under the same conditions in Europe ranged from 8.0-13.8% while the content of  $\omega$ -linolenic of nuts grown in Italy ranged from 12.8-15.3% [4].

Coconut oil, or copra oil, is extracted from the kernel of the mature coconuts and is very high in saturated fat content. Due to the high concentration of high saturated fat WHO, FDA, British Nutrition Foundation as well as Dietitians of Canada [1] advises to avoid this oil and not to consume even if it is slow to oxidize and, resistant to rancidification [1,6].

## CONCLUSIONS

The consumption of combined food products with high content of walnut kernels and coconut can cover the required amount of minerals, vitamins, fibers and carbohydrates in a balanced diet. This association is also supported by nutritional compositions, which confirms that the products containing both, coconut as well as walnuts can stimulate the memory as well as to protect the cord of the consumer.

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