

COMPARATIVE STUDY ON NUTRITIONAL PROPERTIES OF SOME
CHOCOLATE SORT TRADED ON THE TIMIȘOARA MARKET

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Abstract: *Chocolate is one of the most popular and appreciated food products in the world being consumed equally by children, adults and the elderly. Chocolate is not only a tasty product but is also valuable because it represents one of the most concentrated sources of natural antioxidant compounds, named flavonoids. Today many varieties of chocolate are made worldwide and this is the reason why this study was conducted. It was calculated the energy value, nutritional value and the nutritional value index of five chocolate sorts: dark, white, with strawberry filling, with peanuts and with milk. The results showed that the highest energy value was registered by chocolate with peanuts (2477kJ/100 and 593kcal/100g) and the lowest energy value was calculated in case of white chocolate (2171kJ/100g and 519kcal/100g). The highest protein content was calculated for milk chocolate and white chocolate (14,6g/100g), the richest in carbohydrates was white chocolate (49,8g/100g) and the biggest total lipids content was determined in case of chocolate with peanuts. The values index of chocolate with peanuts was the highest of all calculated values and correlates with the energy value of this sort.*

Key words: *nutrition, chocolate, romanian market*

INTRODUCTION

Chocolate is one of the most popular and appreciated food products in the world being consumed equally by children, adults and the elderly. Chocolate is not only a tasty product but is also valuable because it represents one of the most concentrated sources of natural antioxidant compounds, named flavonoids. Flavonoids has the capacity to decrease bad cholesterol and to increase good cholesterol. Chocolate has stimulatory properties as: increasing energy, may have effects on people's moods, could improve cognitive performance and generally beautifies life [1].

The previous studies showed that composition in nutrients of chocolate depends of the recipe and contains small amounts of essential nutrients such as protein, vitamin E, calcium, phosphorus, magnesium, iron, copper and antioxidants [2,3,4]. The less positive aspects of chocolate are related to its high fat content and added sugar, and because of this it is a 'discretionary' food. Chocolate is an important source of caffeine and for this reason could be create a mild dependence [5,6,7]. Unlike dark chocolate, white chocolate does not have the same effect, because it does not contain cocoa solids [8,9]. Chocolate is one of the most profitable segments of the sweets industry in the world. The global chocolate market is divided taking into account the variety and frequency of sale. Based on chocolate type, the market is classified as milk chocolate, dark chocolate, and white chocolate [10-12].

Based on frequency of sale, the market is categorized as daily chocolate, premium chocolate, and seasonal chocolate. Presence of a large number of leading international chocolate brands and higher chocolate consumption will continue to account for the top market position of North America, especially the U.S. Europe will be another major market, led by the U.K. and Germany [13,14]. Taking into account all mentioned before and the fact today many varieties of chocolate are made worldwide and this is the reason why this study was conducted.

MATERIALS AND METHODS

The energy value, nutritional value and the nutritional value index of five chocolate sorts: dark, white, with strawberry filling, with hazelnuts and with milk it was calculated. The mentioned values were calculated based on the data from National Nutrient Database for Standard Reference of USA [15].

The recipes of those five chocolate sorts were theoretically elaborated on the basis of the specific technology. The obtained results were assessed comparatively.

RESEARCH RESULTS

The dynamics of nutrients that have been calculated in the five types of chocolate is presented in figure 1.

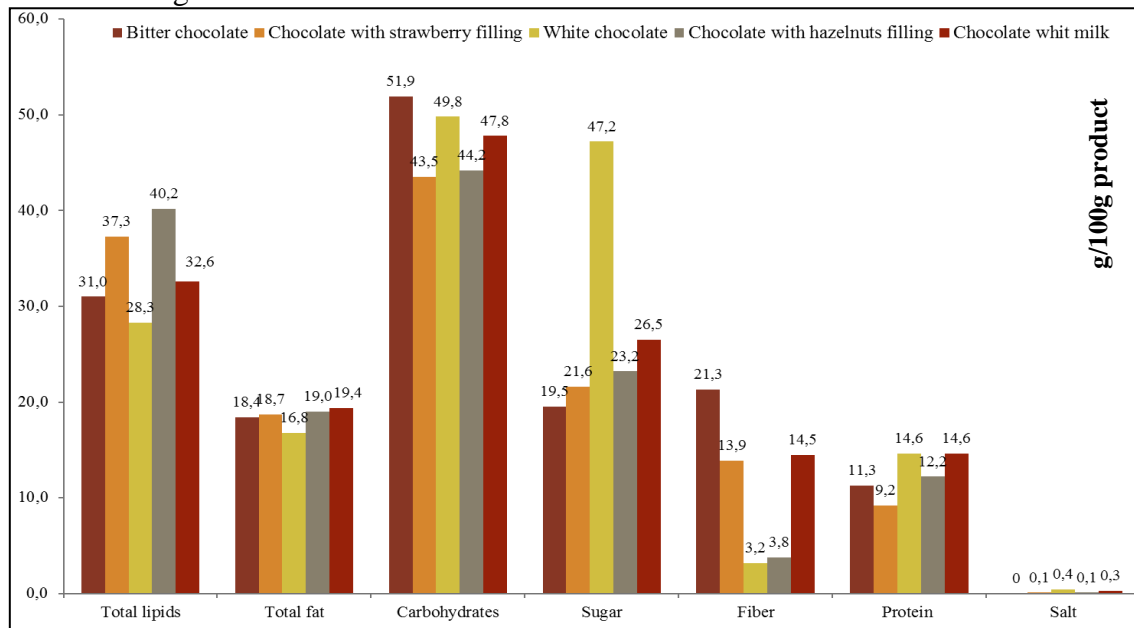


Figure 1. The nutritional value of chocolate sorts

The dynamics of nutrients that have been calculated in the five types of chocolate (figure 1) reveals the fact that the major share of the total of lipids has been determined in the case of peanuts chocolate and that is explained by the share of fat that the peanuts contain. The lowest share of fat has been found in the case of white chocolate, due to the ingredients that have been used in it's manufacture. Also, it has to mentioned that white chocolate doesn't contain cocoa, which would have brought it's own share of fat. The containing of the saturated fat in the five types of chocolate has been similar. Regarding the carbohydrates, it is distinguished the biggest share at the dark chocolate, but also the lowest content of sugar. The biggest amount of carbohydrates has been given by the fiber contained. The lowest share of carbohydrates has been calculated in the case of strawberries chocolate. It should be mentioned that the white chocolate has the biggest share of sugar. Regarding the share of protein, the most of it has been found in the case of white chocolate and chocolate with milk, due to the milk that has been used in manufacture.

The graphic representation of the energy values representing the five types of chocolate is presented in figure 2.

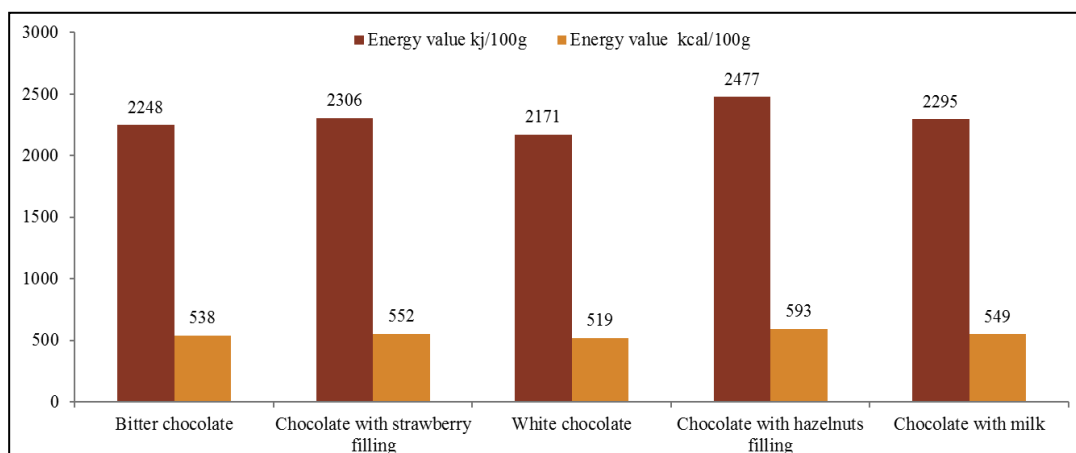


Figure 2. Energy value of chocolate assortments

The graphic representation of the energy values (figure 2) representing the five types of chocolate shows that the calculated values have been relative similar. Although it needs to be mentioned that the energy values of the chocolate with peanuts has been slightly bigger followed by the ones with strawberries, milk, dark and white. It is similar with the calculated value concerning the total of lipids.

The nutritional value index of chocolate sorts is shown in figure 3.

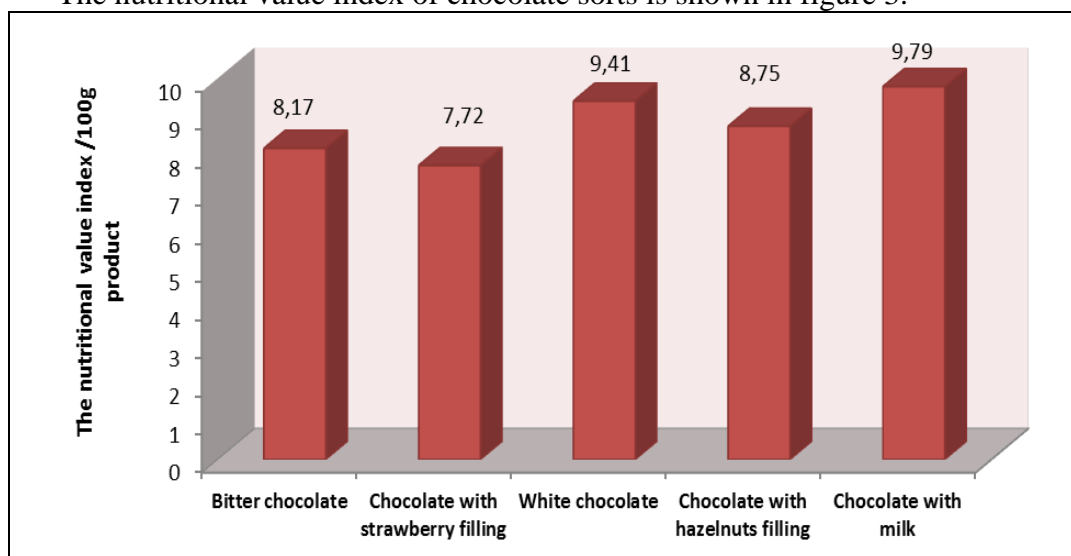


Figure 3. The nutritional value index of chocolate sorts

The index of nutritive values has been determined based on the contribution of the 10 nutrients considered essential: proteins, carbohydrates, calcium, iron, vitamin A, vitamin B1, vitamin B2, vitamin C.

The obtained results (figure 3) show that the biggest values have been calculated in the case of the chocolate with milk and dark, followed in order by the one's with peanuts, dark, the biggest value being in the case of the one with strawberries.

The biggest calculated values in the case of the chocolate with milk and white can be assigned to the milk from the manufacture, which is noticed through his increased contribution of proteins compared with the other's ingredients.

CONCLUSIONS

The studied literature data reveals the fact that chocolate is one of the most studied and appreciated food products. Chocolate is a very tasty product and contains important quantities of natural antioxidants represented especially by flavonoids. The biggest content of lipids has been calculated for the peanuts chocolate, because of it's contain. The saturated fat content of all studied chocolate type has been similar. The white chocolate and with chocolate with milk have registered the biggest protein content. The calculated energy value was similar for all five chocolates. The biggest calculated values in the case of the chocolate with milk and white could be attributed to the milk used in recipe.

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