COMPARATIVE STUDY OF SOME HONEY TYPES COLLECTED FROM UNPOLLUTED AREAS OF TIMIS COUNTY

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Abstract

This research followed to achieve some physico-chemical properties for natural food based on honey and dried fruits. The honey samples were represented by three 3 different types of bee honey: multiforal and unifloral species - Acacia flower (lat. Robinia pseudoacacia), and Linden flower (lat. Tilia cordata) – bought directly from the producers originally from unpolluted areas in Timis County. In honey samples we added dried fruits: apricots (lat. Prunus armeniaca) and figs (lat. Ficus carica). For these samples, refractive index, water content - based on nD values, total solid content, and acidity were determined.

Based on nd values between 1.4811 – 1.49, the water content shows values from 18.61% and 22.54%, respectively from 81.39%, until 77.46% in case of total solid content, and acidity had values between 2.1 and 3.53 acidity degrees.

The principal purpose of this study was to bring more data to the knowledge of some types of honey originating from unpolluted area of Timis county in terms of physical properties, and also how different additions can contribute to increasing the nutritional value of these products.

Introduction

Honey is a sweet natural food product, obtained by honey bees from sugary solution of nectar flowers[1, 2]. Due to its unique nutritional and medicinal qualities, honey is one of the most widely sought products. These attributes are due to the influence of a large number of substances (about 200) - mainly sugars (glucose and fructose and other types), proteins, minerals, phytochemicals (organic acids, vitamins, enzymes), that provide beneficial properties. Honey composition, aroma, color and flavour depends in a large measure on the climatic conditions but also on the types of flowers [4].

Some unpolluted area from Timis County are well-known as melliferous variety sources, this is why our samples were harvested in those areas.

Recent studies are revealed a growing interest for new food products with an increased nutritional values, so since honey has been used from the ancient times not only as a sweet food product but also as therapeutic agent, because of multiples functional actions, we try to obtain some information in these area.

Nowadays, honey with different addition is considered as a food supplement with bioactive and innovative characteristics. From these foundations, we can consider that honey enriched with small amounts of dried fruits could be taking into consideration as functional food [5].

Experimental

Honey samples

In this study, we used 3different types of unifloral and multifloral honey samples collected from beekeepers from different parts of Timis County.Samplesobtained werestored for 30 days at 22–25°Croom temperatures.

The honey samples with addition of dried fruits were obtained by mixing the three types of honey (Acacia, Linden and multifloral) with dried figs and dried apricots in ratio 1/10 (dried fruits/honey - w/w).

Analytical procedures

Refractive index (nD) values were determined by an Abbe – type refractometer that was first calibrated with doubled distilled water. Measurements were made after the honey was reaching a constant temperature in the refractometer, in triplicate and the average value was taking into consideration for experimental part,

Water content (moisture) of the honey samples were calculated from index values by using the expression developed by Abu-Jdayil et al., [6, 7].

$$\%Water = 608.277 - 395.743 \cdot nD$$

Total solid content (TSC) can be determined from moisture content as below:

$$\text{Total solids / Dry matter} = 100 - \%\ \text{Moisture}$$

The method for determination of acidity was by titration with NaOH 0,1 N in the presence of phenolphtalein [8]. The results were expressed in acidity degrees.

All determinations were performed in triplicate, calculating their arithmetic mean of three separate determinations. The data were statistically analyzed using the program Microsoft Excel.

Results and discussion

The obtained data regarding water content in honey samples with addition of dried apricots and figs according to refractive index (nD) are represented in fig. 1.

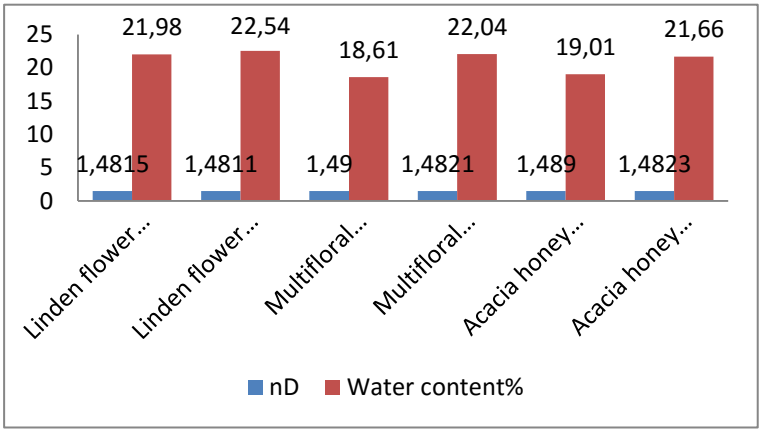

Fig. 1 Refractive index (nD) and water content (%), in honey samples with addition of dried fruits

Refractive indexes of honey samples were between 1.4811 (Linden flower honey with dried apricots) and 1.49 (Multifloral honey with dried figs).
Water content is a parameter related to the maturity of honey and temperature. In the present study water content values are between 18.61% and 22.54%. Except for two samples – multifloral honey with dried figs and acacia honey with dried figs, all the other four samples were having water content values higher than values allowed by European Community regulations [9].
Water content is a quality parameter, important for honey shelf life. The different values in water content are depending on the season in regions with high relative humidity, physical properties of honey, but also could be modified during honey processing [10].
In fig. 2 we are presenting total solid content (TSC) values.

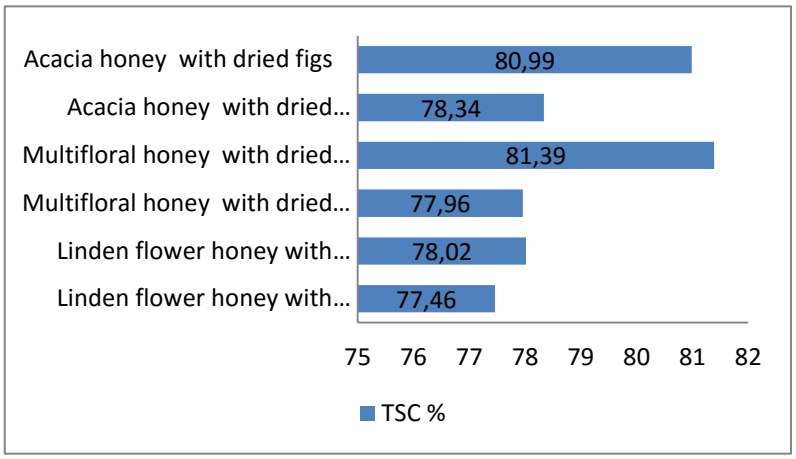

Fig. 2 Total solid content (TSC) % in honey samples with dried fruits

From the analysed data presented above, we can observe that the highest value of the total solid content was found in multifloral honey with dried figs, – 81.39%, and the lowest value were found in linden flower honey with dried apricots – 77.46%.
Determination of acidity (°),in honey samples with addition of dried fruits are presented in Fig. 3.

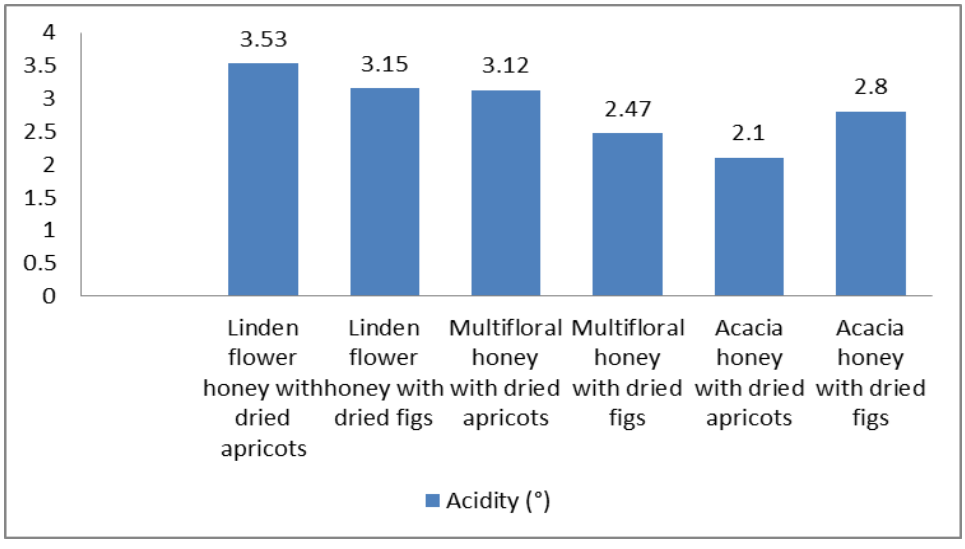

Fig. 3 Acidity degreesin honey samples with dried fruits

The acidity (low pH) contributes to antimicrobial activity of honey [11]. The values of acidity were between 2.1 – 3.53 acidity degrees (in acacia honey with dried apricots respectively in linden flower honey with dried apricots).

Conclusions

Recently, much interest in the health benefits of dried fruits used as admixtures to different types of honey has been revealed. The physical properties of three types of honey samples originating from Banat County, in which we added dried figs and apricotswere determined and used to evaluate their behavior.

The antimicrobial properties of honey may be attributed to the low acidity values, and the percentage water content can be an important parameter used to access quality of honey samples.

The obtained data could be used for future research because of results that are suggesting that honeys enriched with small amounts of dried fruits could be potential functional foods.

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