

GREEN FRESH SMOOTHIE – SOME PHYSICO-CHEMICAL AND NUTRITIONAL ASPECTS

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Abstract

Increasing tendency for fresh food - fruits, vegetables, and herbs consumption worldwide and also in our country, shows the weight that they have held or hold them in the diet. In their case, not only good looks, nice color or taste and aromas are considered to be important, but especially their nutritional value, rich in sugars, vitamins and minerals needed in the diet of the human body. They also have the advantage that it can be consumed without any processing who could reduce the nutritional value.

The purpose of the study was to obtain and reveal some physico-chemical and nutritional properties of some fresh foods: green apple (*Golden delicious – Malus domestica.*), baby spinach (*Spinach oleracea*), pineapple (*Ananas comosus*) and mint leaves (*Mentha piperita*) and the juice that we obtain from them, while achieving a characterization highlighting their dietary and healing properties.

The study presents important application not only for food industry, but also for other areas, because it addresses to special categories of consumers such as vegetarians and people with lactose intolerance and fasting period.

Keywords: fresh food, juices, physical-chemical characteristics, healing properties

Introduction

Nowadays, for nutritional reasons, it is necessary to increase the amount of fresh food in the daily diet due to the current nutritional habits of the society, based on increased intellectual effort, which demands larger amount of vitamin and mineral and less amount of carbohydrates and fat. Consumption of fresh fruits and vegetables provide a healthy diet that can prevent some chronic diseases, (e.g. Cardiovascular and coronary diseases, diabetes (type 2), different types of cancer, cancer, prevent developing kidney stones, help decreases bone loss, obesity [5,6].

In the category of fresh food products are included vegetal food products that are basic components of human diet, due to their increased nutritional value [3].

Mint is a perennial herb, from Lamiaceae family, well-known in history because of bioactive compounds, such as mint-oil and L-menthol and L-carvone, which is used in both pharmaceutical industry but also in food industry, as flavour [8].

Smoothies are blended drinks consisting of a number of ingredients including fruit (or less commonly vegetables), fruit juice, ice, yoghurt and milk [4, 7]. There are three main types of smoothies: fruit only, fruit and dairy, and functional.

Experimental

Samples preparation

In this study, we used 3 different types of samples (pineapple and green apple fruits, baby spinach and mint leaves) bought from a Romanian hypermarket, from west of Romania – Timisoara city.

The smoothie sample was obtained by mixing the fruits with baby spinach and mint leaves in ratio 1/1/1/0,01 (pineapple/green apple/ baby spinach/mint leaves- w/w/w/w).

Analytical procedures

Humidity of fresh food samples was evaluated thermo-gravimetrically by using Sartorius thermo-balance.

Total dry weight content (TDW, %) can be determined from moisture content as below:

$$\text{Total dry weight content (TDW, \%)} = 100 - \text{Total moisture content (M, \%)}$$

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

Ascorbic acid is extracted from samples by means of weak acids (2% oxalic acid solution) in the presence of hydrochloric acid, followed by titration with 2,6 – dichlorofenolindofenol until a pink color appeared [1, 2].

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

In fig. 1 we are presenting total moisture contents (M, %) and total dry weight content (TDW, %) values.

The moisture contents of analyzed samples were of 75.85 % (leaves of mint) up to 93.18 % (baby spinach). From the analysed data presented above, we can observe that the lowest value of the total dry weight content was found baby spinach (6.32 %) and the highest value was found in mint leaves – 24.15 %.

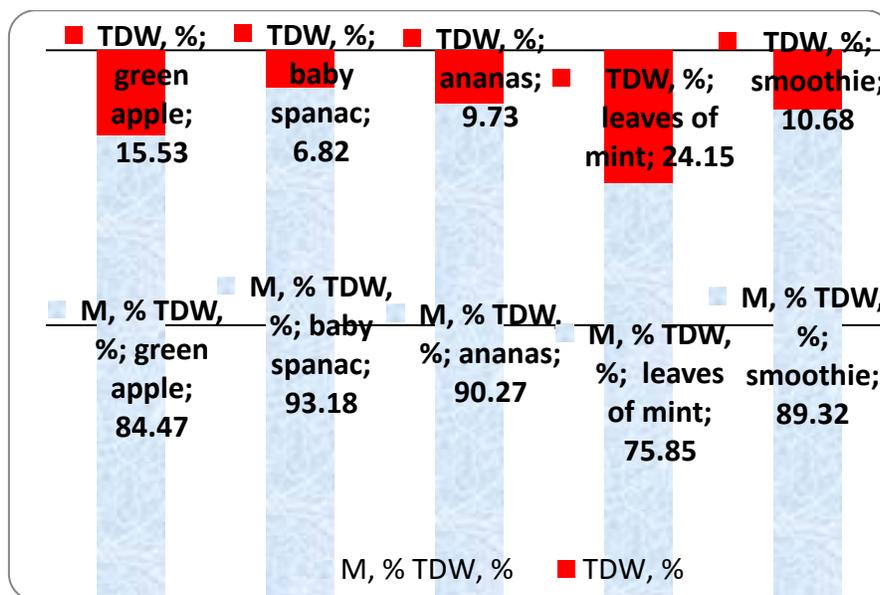


Fig. 1 Total dry weight content (TDW, %) and total moisture content (M, %) in all samples. The different values in water content are depending on the season in regions with high relative humidity, physical properties of samples during storage processes, but also could be modified during processing.

Determination of acidity ($^{\circ}$), in fresh food samples and smoothie samples were presented in Fig. 2.

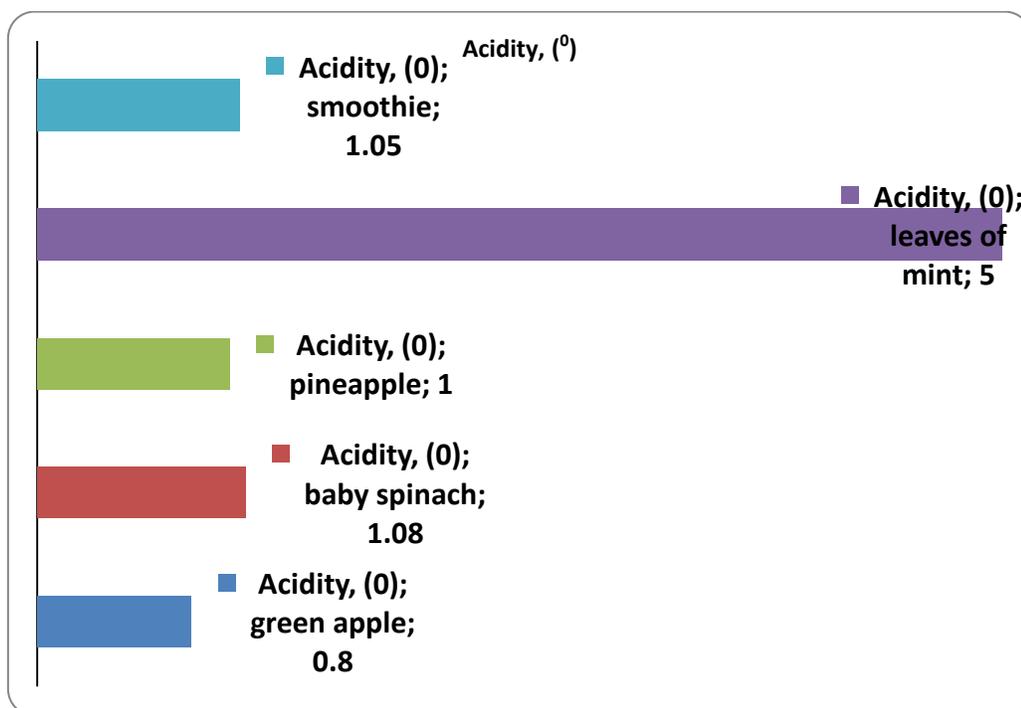


Fig. 2 Acidity degrees in all samples. The values of acidity were between 0.8 to 5 acidity degrees (in green apple respectively in mint leaves).

From the fig. 3 presented data it can be observed the values of vitamin C concentrations in all samples (fruits, vegetables and smoothie).

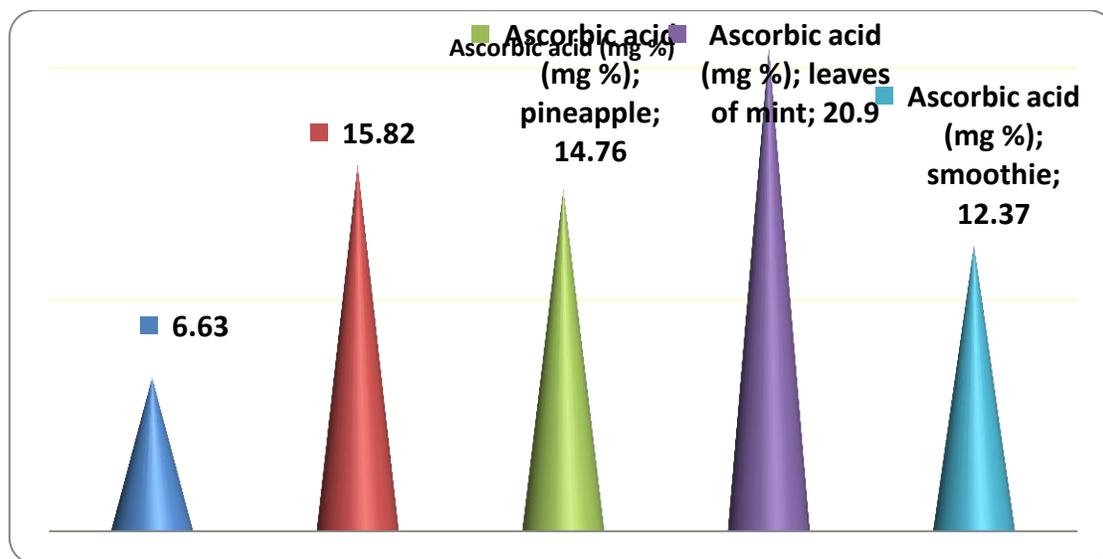


Fig. 3 Ascorbic acid content in all samples

Ascorbic acid contents of analysed samples were found to range from 6.63 mg/100g (green apple) to 20.9 mg/100 g (mint leaves).

Conclusions

Beverages are an ideal food format to deliver bioactive compounds to consumers.

In this study, complex beverages formulas, smoothies were formulated containing green fresh food and mint leaves as medicinal herb.

The obtained data could be used for future research because of obtained results that are under lightning once more the fact that minimally processed foods are important source of fruits, vegetables and even medicinal plants with superior quality and no additives.

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