

FOOD SUPPLEMENTS WITH THERAPEUTIC EFFECT

Plesa Bianca*, Luisa Andronie*, Aurelia Coroian*

*University of Agriculture and Veterinary Medicine, Cluj-Napoca, Faculty of Animal Science and Biotechnology, Manastur Str 3-5, 400272.

Cluj-Napoca, Romania,

email: bianca-daniela.plesa@student.usamvcluj.ro; luisa.andronie@usamvcluj.ro
aurelia.coroian@usamvcluj.ro

corresponding author: luisa.andronie@usamvcluj.ro
aurelia.coroian@usamvcluj.ro

Abstract

Nutritional and protein bar are designed to offer an ideal ballance in protein, carbohydrate and fat, in order to help you to achive your goals related with nutrition and training . The aim of this work is to inform the consumers about a healthy eating by using two types of protein bars which offer an imediate fullness when they are ingested, this type of bars being easy to carry and store. When we used this type of protein bars the hunger feeling was reduced and the results were amazing. My purpose was to bring a benefit in eating, a protein bar, good for our health by using only natural products. This work presents the benefits of the ingredients and their chemical composition used to realize this two type of sticks. Moreover, it shows how we can calculate the nutritional value depending on the weight of the bars obtained.

Key words: protein bar, FT-IR

INTRODUCTION

Protein bars are an important resource of vitamins and minerals , being probably the simplest and fastest way to get the dose we need in vitamins and minerals, when we do not have much time to use.

The vitamins, minerals and fibres found in this bars help to control the blood sugar, by slowing the absorption of carbohydrates. It is very useful to use this bars due to the benefits of them: it is a simple way to introduce proteins in eating, they are ideal snacks before and after a training, can replace a good meal and be a delicious snack.

The work presents two types of bars, the first, „beeStrong” is useful for people with heart problems, diabetics with a high level of cholesterol, but still want to have something sweet.

This type of bar is composed by polyflower honey, oatmeal, flaxseeds, sea buckthorn, dried apples, zer powder. These ingredients have beneficial properties for the human body when we use them.

The main ingredient, the polyflower honey has a superior quality and is considered to be a complex honey, because it is obtained from many species of plants. It has a therapeutic power stronger than other types of honey.

This honey is rich in vitamins and minerals and contains vitamins like B1, B2, B3, B5, B6, vitamin C, Vitamin K, minerals as iron, calcium, magnesium, organic acids, glucose, fructose. Polyflower honey has antiseptic, antiinflammatory, antibacterial properties, has a beneficial action to the liver and heart and improves blood circulation, ensuring a good reserve for the human body (Radulescu 2002).

I choose oatmeals and flaxseeds to offer fullness and benefits for the body and to protect it from many health problems. They have a big contribution in lowering of „bad” cholesterol without changing the level of „good” cholesterol. It helps to improve type 2 diabetes, beta glucan, a soluble fibre from oatmeal.

Flaxseeds contain twice as many acids Omega 3 than fish being rich in vitamins, fibre and estrogen, are recommended for people with diabetes, it reduces blood pressure, and cholesterol.

Sea buckthorn combined with dried apples have amazing properties, it helps to neutralize toxic substances from outside and gives a nice color to this stick, dried apples are rich in fibre, acids, proteins, essential oils having a beneficial effect on nervous, circulatory and digestive system. Zer powder has an important role too (Craciun et.al 1976).

The second bar „beeDetox” helps people who want to lose weight and to purify the body in a healthy way. It contains coconut, dried apples, oatmeal, zer powder, buckwheat honey and goji. All of these ingredients used together have benefits for the body. Each ingredient was chosen for its detoxifying properties. Buckwheat honey helps lowering cholesterol and rises the level of antioxidants. Coconut has a nutritional effect and it helps to remove belly fat.

Goji Berries fruits are very often called superfood because of their phytochemical compounds produced by plants. These are a very important source of dietary fibres, improving immune system, with antioxidant properties, offering fullness.

Propolis is a good antiinflammatory, anesthetic and prevents cells aging, increases antibodies production. The combination between oatmeal and zer powder is a fascinating one, because both of them offer more proteins, fullness, and does not have sugar. Spirulina is the main ingredient because gives energy to the body, helps lose weight, decreases

tryglicerides level from blood and has a hepatoprotector role (Brad et al., 2002).

One of the most important ingredient from this bars is dried apple powder (red Pinova apple and Sovar apple), used to increas the level of vitamin C, calcium,magnesium over the final product.

With vibrational spectroscopy method I analised the samples (powder) obtained from these two types of apples and I chose this technique.

FT- IR, offers several advantages in the context of current research and using this techniques we can identify molecular components in the samples studied (Alexa et al., 2009). IR spectroscopy is based on the absorption of radiation in the 400 – 4000 cm^{-1} range which excites molecular vibrations.

MATERIAL AND METHOD

The ingredients used for to make the beeStrong bar was: polyflower honey, oatmeal, flaxseeds, sea buckthorn, dried apples, zer powder, acording to the values.

For the beeDetox bar i used: coconut, dried apples, oatmeal, zer powder, buckwheat honey and goji.

Each of these bars has 50 grams, the ingredients being chosen carefully in order to have a good effect. First bar has in its composition 15g honey,10g oatmeal, 5g flaxseeds, 5g sea buckthorn, 10g dried apples, 5g zer powder.

The second bar has 10g of buckwheat honey, 10g oatmeal, 5g coconut, 5g goji, 2g propolis, 3g spirulina, 10 g dried apples, 5g, zer powder.

Method of obtaining is very simple, without ripen. We put the ingredients in a bowl and mix them together, until we have a quite thick composition.

We put it into the fridge using a tray covered with baking paper and after 4 -5 days we can eat it.

FT-IR spectroscopy experimental

The samples of apples fruits (red Pinova appels and Sovar appels) was dried at room temperature and after this was crushed using a commercial blender obtaining a powder this being used on the same day.

The sample was prepared using calcinated potassium bromide as a matrix material and was mixed at a proportion of 3 mg of the sample (powder of sesame seeds and hampseeds) to 200 mg KBr. Then the mixture was condensed in 15 mm dies at a pressure equal to 10 t till 2 min. Same procedure was applied for-all samples (Crişan et al., 2019).

Measurements were carried out on the infrared scale of 350-4000 cm^{-1} and a spectral resolution was set at 4 cm^{-1} using a Jasco FT-IR-4100 spectrophotometer (Oklahoma City, OK United States) using KBr pellet technique. All spectra were acquired over 256 scans. The spectral data were analysed using Origin 6.0 software (Fig. 1). Measurements were carried out on infrared scale of 500-4000 cm^{-1} .

RESULTS AND DISCUSSION

FT-IR analysis

The FT-IR spectra were used to identify the functional groups of the macronutrients based on the IR absorption in typical spectral regions.

Natural apple powder were evaluated by FT-IR spectral data as shown in figure 1.

Characteristic of apples samples is the bands obtained from polyphenols, glucose, sucrose, and these are clearly highlighted in the spectra obtained by the FT-IR technique.

The results were compared to peaks associated with elements/components. Wang et al. (2010) found one of the peaks for calcium carbonate at 1440 cm^{-1} , which is a common form of calcium in apples and Kanakis et al. (2011) located the presence of polyphenol complexes at 2833–2947 cm^{-1} . Stretching (OH), (CH) asymmetric, deformation (OH), deformation of (CH) functional groups in natural apple identified in the region from 3441-1415 cm^{-1} . While, stretching (CO), (CC) and (CCO) of sugar and stretching C-OH ring were located at 1045-1058 cm^{-1} and 924-930 cm^{-1} , respectively (Irudayaraj et al. 2003).

The fruit are characterized with their fructose content, where several spectral bands assigned to fructose as deformation OCH, COH and CCH that detected at 1425-1414 cm^{-1} . Another spectral peaks identified due to the presence of glucose, sucrose, 1029-1045 cm^{-1} , 1058-1061 cm^{-1} (Guillot *et al.*, 2006).

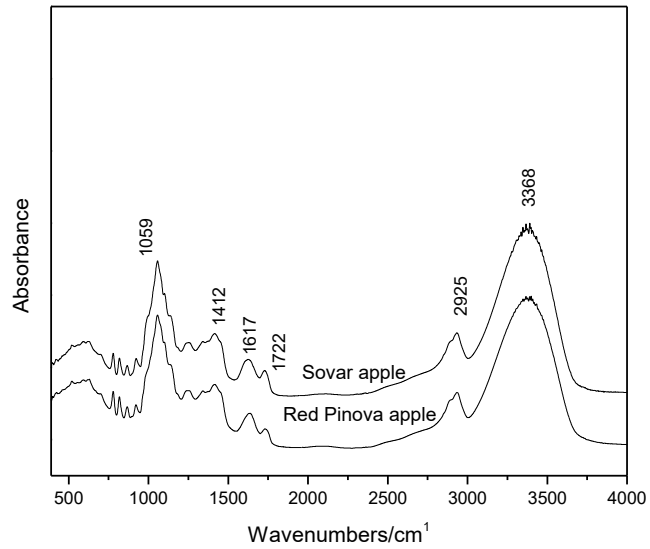


Figure. 1. FT-IR spectrum of Sovar and Pinova appels

Using the ingredients mentioned we obtain two types of bars presented in figure 2 (a and b).



a)



b)

Figure 2. The beeStrong bar and beeDetox bar

Table 1 and Table 2 present nutritional information for the 2 types of bars, taking into account the fact that each bar has 50g.

BeeStrong nutrition facts Table 1

Serving Size:50g	Amount Per Serving	%Daily Value		Amount Per Serving	%Daily Value
Total Fat	8g	10%	Total Carbohydrates	25g	9%
Saturated Fat	4g	15%	Dietary Fiber	4g	7%
Trans Fat	0g		Sugar	16g	
Cholesterol	0mg	0%	Protein	5g	6%
Sodium	0mg	0%			

BeeDetox nutrition facts Table 2

Serving Size:50 g	Amount Per Serving	%Daily Value*		Amount Per Serving	% Daily Value
Total Fat	5g	6%	Total Carbohydrates	27g	10%
Saturated Fat	1g	5%	Dietary Fiber	3g	7%
Trans Fat	0g		Sugar	16g	
Cholesterol	0mg	0%	Protein	4g	8%
Sodium	0mg	0%			

Making a comparison between these two types of bars from a nutritional point of view, we can see that the beeStrong bar (8g) has a higher fat value than the beeDetox bar (5g), but the second one has a protein concentration lower than the first one.

CONCLUSIONS

In conclusion, following analyzes performed we can say that these products are ready to be used.

The majority of people were pleased about sugar free products. By consuming these bars we can bring a benefit to the body, we can eat more easily, and for those who have problems with diabetes it is a welcome snack without influencing in any way its index.

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