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GREEN LEAVES OF ALFALFA USED IN THERAPEUTICAL PURPOSES

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Abstract: *Medicago Sativa*, also known as fodder for animals, has the propriety to increase the content of organic substance from the soil. After the biological, chemical and biochemical research on this plant, there was found an important/significant content of nutritive substances necessary for the human body and, used in various forms (as tea, juice, salads etc.), contributes in the same time as naturist medicine for human organism, or just in therapeutic forms for treating or improving diseases (as tinctures, capsules, powder etc.).sent the results obtained in order to determine the optimal moment for harvesting green leaves of *Medicago sativa* and the establishment of the maximum content in nutritive substances. *Medicago sativa* distinguished by the high content in enzymes, phytoestrogen, protein, Calcium, iron, magnesium, phosphorus, potassium, essential amino acids and vitamins C, B6, D, A, K and E (biologist Frank Bouer).

Because the quantity of vegetal protein existing in the green leaves of the plant is higher than the one existing in the animal protein and the vitamin C is four times higher than in citrus (Gillian Mc Keith, 2008), the values of the two nutrients are determined in two different moments of leaf harvesting.

Key words: evolution, milk production, NW Region, Romania, trends.

INTRODUCTION

The medicine obtained naturally and their beneficial role for the human body are searched in old treatment recipes and naturist cures used for hundreds of years but forgotten through time, are rediscovered today by research and are people seek and use them more and more.

The completion of the nutritive substances necessary for the human body by day-by-day nutrition gives importance for the knowledge of other sources for obtaining them besides the known ones [Pârnu C.,2003].

Thus, besides the consumption of many plants, fruits and vegetables, *Medicago sativa* is studied and recommended by phyto-therapists as a naturist medicine for treating and improving various diseases but also for the completion of the necessary of essential amino acids which cannot be synthesized by the human body and which are found in this plant in number of eight (Mc Keith, 2008). The content in chlorophyll existent in *Medicago sativa* leaves has an anti-bacterial effect for the consumer and has a beneficial effect for the consuming organism by fortification of the immune system for elders, the decrease of cholesterol level and the prevention of cardiovascular diseases and myocardial infarction, if it is added in nutrition.

Also, the consumption of green leaves of this miraculous plant supports the fortification of osseous system and dentition at children. The quantity of vitamin C existent in these leaves is four times higher than in citrus and the calcium is absorbed and assimilated easier by the organism, being the essential nutrient that every cell in the human body needs in order to resist, to be strong and healthy and which can be taken by consuming the leaves [Giurgiu O., Giurgiu C., 2005; Olimpia Pandia, Sărăcin I, Dinu Mariana, Chiriac Al., 2010].

The plant is also used as general tonic and hardener for the immune system. The treatment with *Medicago sativa* is recommended by specialists for detoxification and stimulation of liver function and purification of blood.

Due to its high content in fibbers, the plant has the power to absorb and eliminate the toxins inside the body [Mc.Keith Gillian 2008]. "In case of consuming the plant before meals, the gastro-intestinal functions are supported because it facilitates the release of gastric compounds which help the digestion. Equally, it can support the assimilation of nutritive

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substances from aliments if consumed at the end of the meal”, [Mc.Keith Gillian 2008].

Because the proteins are components of every cell in the organism, being involved in its every functioning process, it is very important to know the quantities of vegetal proteins existent in each aliment, because the daily necessary is 1g/body, depending on sex and age, and the *Medicago sativa* leaves have in their composition high quantities of protein (above 18,9% protein), compared to the animal proteins [WHO, 1999].

MATERIALS AND METHODS

Research and studies were made in 2013 in the north of Oltenia, specifically in Grecești village, where favourable natural conditions exist. *Medicago sativa* improves soil fertility, being par excellence an ameliorative plant, and is the most extended culture existent in the area. It is used by people especially as fodder for animals, without being aware of its agro-technical value and its propriety of aliment and naturist medicine and without accounting the seed purity or the mandatory maintenance works, respectively weed control.

Therefore, the appliance of technology at alfalfa for seed is indicated for its usage as food and naturist medicine.

To realize the proposed objectives, we have taken in study a surface of 100 m² cultivated with alfalfa, where we have made the maintenance works for weed control in the spring and we harvested eight samples for each separate development moment, at the end of April and the beginning of May, specifically at the end of budding and the middle of blooming phase of the plant, for determining protein and vitamin C from these plants.

The sample preparation for analysis is made in this way: before establishing the analyses program to be made, the plant leaves harvested before budding are carefully examined in order to be healthy and not to contain impurities (straws, soil particles), and numbered for each sample.

The work method for determining vitamin C (volumetric) in *Medicago sativa* leaves consist in: 5 g of fresh substance from the sample plant are milled and washed with 50 ml hydrochloric acid 2%, in 250 ml large glasses by philtering. 10 ml of extract are taken, 5 ml of IK 1%, 5 ml HCl 2%, 30 ml distilled water, 2-3 drops of starch. It is titrated with potassium iodate 0,001 n and a slightly blue solution results.

The results of the titration are multiplied by an 8.8 coefficient. The result is expressed in mg of ascorbic acid/100 g fresh substance/mg%.

Work method for determining the content in protein from *Medicago sativa* leaves was made on the principle of classical method Kjendal, where 1 g of vegetal material is weighed and introduced in a Kjendal balloon.

10 ml of concentrated H₂SO₄ are introduced in the balloon and are left until the next day when the balloon is covered with a glass funnel and boiled for 4-5 hours.

When the liquid from the balloon has bleached (from black to light brown) the balloon is taken from the flame and left to cool for 20-30 minutes. After this, 4-5 ml of perhydrol are added. The mineralization is continued until the liquid becomes colorless.

The cooled solution is completed with distilled water and is passed through a 100 ml ranked balloon, and is brought to the sign. The obtained solution represents the nitrogen from the analysed plant which will be dosed by distillation and, after the nitrogen is calculated, the percent of gross protein from the analysed vegetal material is calculated by multiplying the N₂ total content calculated with a convert factor which represents the quantity of protein in grams which corresponds to a gram of nitrogen.

In this case, the calculated factor has a value of 6.00.

$$\text{Protein} = \text{Nt} \times f \quad (1)$$

Where:

Nt – represents the total nitrogen from the analyzed plant

f – the convert factor

RESULTS AND DISCUSSIONS

The effectuated analyses and the obtained results are shown in the tables down, these being harvested in two different methods, eight samples each.

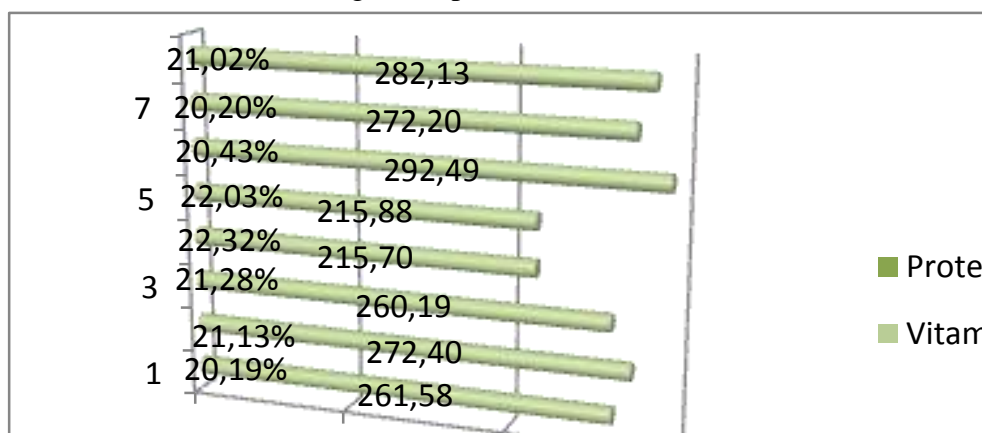


Fig. 1. Determination of protein and vitamin C during budding
Source: Own determination.

From the results obtained after determinations it was found that the higher percent of protein is in the leaves harvested at the end of blooming (22.32%), which leads to the assumption that the harvest of *Medicago sativa* leaves in this period is very good, so that they can be used at their maximum yield both as food and medicine. The vitamin C has significant values (292.49 mg of ascorbic acid) and the consumption of these leaves in green state is a new source of nutritive substances needed by our organism.



Figure 2. *Medicago sativa* harvest plants for making determinations
Source: own results

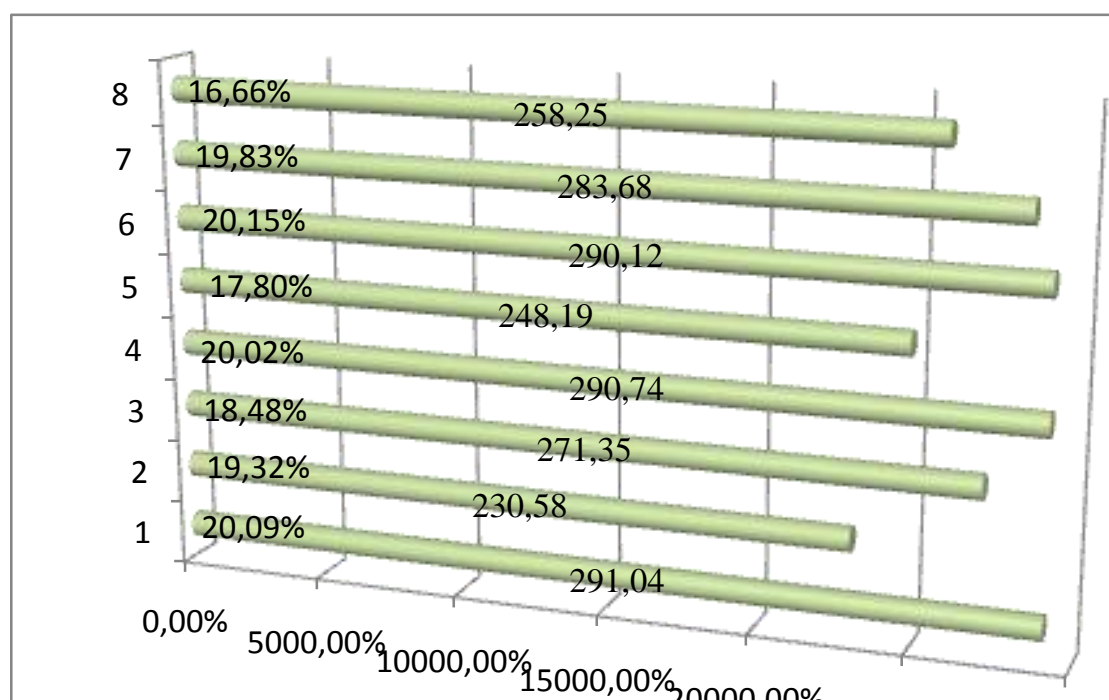


Figure 3. Determination of protein and vitamin C during blooming
Source: Own determination.

After making the determination for the second moment (the plant blooming one), the results obtained for the two determinations are positive, but the alfalfa leaves are richer in vitamin C in this period, having values comprised between 230.58 and 291.04 mg of ascorbic acid and the protein has the highest value of 20.09%.

CONCLUSIONS

The results obtained by biochemical determinations are necessary materials which will make the study object for obtaining naturist products which have as active substance components obtained from alfalfa leaves, being known that the replacement of chemical-obtained products with naturist ones is tried with success.

The researchers continue the studies and put into practice the obtained results for the promotion of naturist products both in alimentation and naturist medicine as well as in beauty industry.

The studied active principles obtained from these leaves are more efficient, even if they act slower, being easy to procure on a larger period of time, cheaper and at hand for people who want raw alimentary supplements, drugs and naturist treatments.

ACKNOWLEDGEMENTS

Medicago sativa can be a sure source of profit for many commercial entrepreneurs who can transform the known fodder plant in alimentary supplements and naturist products as tea, tinctures, powders, capsules.

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