

## RESEARCH ON THE CONTENT AND NECALORIGENI NUTRIENT HIGH CALORIE IN A STANDARD VEGETARIAN FOOD

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### Abstract

*Vegetarian diets are considered by the adepts of this type of nutrition the perfect healthy diet that ensures and maintains the body's state of health without risk of sickness, although they do not wish to admit that health means a diversified nutrition balanced by nutritional principles, without excesses, including physical activity. To state that this type of diet is perfect is a sign of emotional instability a disparagement of the reality of the benefits brought about by foods of animal origin (Roșan Cristina, 2015) through their protein content of a first class quality needed for the growth and repairs of all cells and organs in the body. The reality is that a food must produce an improvement of some physiological or psychological function or a biological activity of the body through its content of macro and micro nutrients.*

*In adopting this type of diet, the knowledge of principal forms of manifestation of the relationship food-man-environment is primordial, being a very important relationship for the maintaining of health and comfort of the body because besides air and water foods contain environmental factors essential for ensuring the supply of substances necessary for the running in good conditions of all vital processes.*

*This study was made to allow today's consumers to be informed and aware in regards to the nutritional content of a vegetarian diet available in the main stream media and to respond to the search of a greater number of the population regarding the nutritional qualities of a diet of foods with plant origins.*

**Keywords:** healthy diet, vegetarian diet, foods of plant origin, diversified diet

### INTRODUCTION

To analyze the benefits of a vegetarian diet in comparison with the rational diet we must know and accept that health means and is obtained through a diverse intake of food, balanced in nutritional principles, without excess. A diverse diet is a way of eating healthy and balanced, based on variety, with an optimal ratio of calories and essential bio components.

In a rational and balanced diet, a special importance is given to the variety of the foods taken in daily, to the appropriate mix of foods and not to its quantity. Currently, in regards to the statement: diet profoundly influences the modern men's pathology as a result of the imbalance between the contributed and the needed biologically active substances (Mencinicopschi, 2010) - the specialists' opinion is not unanimous.

A diversified diet is a way of eating healthy and balanced, based on variety, on an optimal contribution of calories and bio essential components

(van Straten, 2008). This way of eating is beneficial to man because the portions of food contain all essential principles needed for growth and the maintaining of correct and coherent vital functions.

The food intake sedates the sensation of hunger and to many it produces a sensation of satisfaction and pleasure because eating is in such strong connection with the body, it affects: metabolism, the digestive process and finally even our mental state. This is due to a complex array of factors – starting with the way certain foods influence chemical reactions in the brain to the way these are digested and interact with the immune system.

#### **MATERIAL AND METHOD**

The biological material was presented in daily files, records of all foods used in vegetarian diets consumed in a day over a period of seven days.

The techniques utilized depend on the objective and the length of study, on the level of precision demanded and the number of individuals researched and the cost.

The nutritional investigation is indispensable before any dietary recommendation, because dietary advice without a prior investigation represents, in fact, establishing either a standard diet or a list of banned foods.

The methods of analysis utilized in nutritional studies globally are represented by their evaluation of the content of all foods specific to each type of diet in the principal nutritional caloric and non-caloric factors.

These methods are represented by tests specific to the protocol of nutritional research and include the following below. The finding of the quantity of energy ingested where the dietary investigation represents one of the methods most widely used in current practice even if the precision of the results obtained rely heavily on the investigator's experience and the honesty and correctness of the people in the study (Mincu, 1992).

Calculating the energy value of a food product is done starting from the percentage of proteins, fats and carbohydrates.

The investigation method includes:

- Finding the contribution of proteins
- Finding the contribution of fats
- Finding the contribution of carbohydrates
- Finding the contribution of fiber
- Finding the contribution of calcium
- Finding the contribution of magnesium

Nutritional studies regarding diets, more precisely their nutritional value, require a research protocol which include the strict methods of

analysis mentioned above as only based on these methods can a diet can be evaluated nutritionally and a diet can be personalized.

### RESULTS AND DISCUSSION

In Table 1 one can observe that the proteic level has values of over 100 gr./day with the exception of Thursday when the proteic contribution obtained by ingesting foods from a vegetarian diet is of 73.7 gr./day which indicates a proteic contribution in ratio to the body weight of a normal weight adult of 80 kg. as being of 0.92 gr. per each kilogram of body weight and in the following days of investigation the proteic contribution to be between 1.29 gr. per each kilogram of body weight on Tuesday and 2.3 gr. per each kilogram of body weight on Sunday. This proteic contribution does not comply with the recommended nutritional levels in force today which specify a proteic contribution of 1 gr. of protein per each kilogram of body weight.

Keeping in mind the content of amino acids of foods of vegetal origin belonging to the second quality class, meaning they do not contain all essential amino acids or they are in insufficient quantities for the human body, we can state the purely vegetarian food is NOT perfectly healthy and it CANNOT lead to a healthy body without risk of disease.

*Table 1*

Total nutritional contribution of a vegetarian diet studied per day

Day	Total							
	P gr./day	L gr./day	G gr./day	Fibre gr./day	Ca mgr./day	Mg mgr./day	VC kcal./day	VE kcal./day
Monday	109.9	71.11	807.69	107.64	1871.28	1051.35	4198.56	5559.68
Tuesday	103.69	107.2	462.56	128.06	1006.45	621.92	3929.49	3403.58
Wednesday	132.77	120.11	512.99	99.98	1393.48	1138.49	3725.47	3786.49
Thursday	73.7	89.71	294.99	95.35	1386.92	516.48	3396.14	2233.51
Friday	105.88	109.6	456.68	87.37	2277.48	60.9	1790.28	3281.16
Saturday	129.57	204.89	502.08	238.46	1105.59	1146.94	4637.8	5286.1
Sunday	184.81	228.3	512.99	86.36	1635.52	927.07	4399.1	4980.96

In conformity with the nutritional recommendations in force, the quantity of fats/day is of 1 gr. per each kilogram of body weight and from our study it can be seen that this quantity was of 0.88 gr. per each kilogram of body weight on Monday reaching a quantity of 2.85 gr. per each kilogram of body weight on Sunday. Following this evaluation, only over two days the contribution of fats in ratio to each kilogram of body weight was within national standards, all other days we see heightened values of fats ingested.

Following analysis of the contribution of carbohydrates contained within the structure of the vegetarian diet it can be seen that this too had values reported per each kilogram of body weight between 3.68 gr. per each

kilogram of body weight on Thursday and 10.09 gr. per each kilogram of body weight on Monday.

In any nutrition research work it is necessary to evaluate the ratio between the caloric nutritional factors to check that the P:L:G ratio is conformant with the recommended 1:1:4. The vegetarian diet evaluated by this study has complied with this ratio only in three days out of seven (Tuesday, Thursday and Friday) and even in these days the ratio was slightly modified, the non-significant modifications being tolerated. This report looks like this:

- Monday – 1:0,64:7,34
- Tuesday - 1:1,03:4,46
- Wednesday – 1:0,91:3,86
- Thursday – 1:1,21:4
- Friday – 1:1,03:4,31
- Saturday – 1:1,58:3,87
- Sunday – 1:1,23:2,77

In Figure 1 we can see that the ingesting of fibre throughout the period under analysis has grown significantly this being helped by the vegetarian character of the diet; this is one basis for our argument for a rational scientific diet. This high fibre content affects the digestive system, primarily the stomach and the colon.

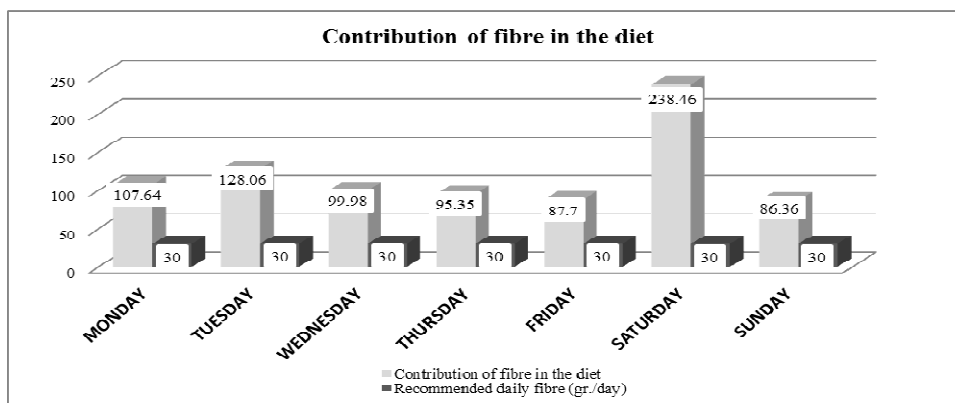


Figure 1. Contribution of fibre from the vegetarian diet compared with the recommended daily intake.

Comparing values obtained with the recommended contribution of minimum 30 gr. per day it is observed that this was ensured in a proportion of 287.86 % in the seventh day of observation, on Tuesday with a percent of 426.86 % and the biggest value, that also presents a danger for health, was recorded on Saturday when the content of fibre in the diet was in proportion of 794.86 %.

Table 2

Contribution of Ca from the vegetarian diet studied in ratio to the number of days

Day	Level of absorption of Ca			
	Ca total mg./day	Total absorption of Ca mg./day	Mg mg./day	Ca/Mg ratio
Monday	1871.28	1803.78	1051.35	1.72
Tuesday	1006.45	958.75	621.92	1.54
Wednesday	1393.48	1246.48	1138.49	1.09
Thursday	1386.92	1328.42	516.48	2.57
Friday	2277.48	2217.9	600.9	3.69
Saturday	1105.59	1049.59	1146.94	0.92
Sunday	1635.52	1616.77	927.07	1.74

In Table 2 it can be observed that the contribution of Ca in the vegetarian diets studied is satisfied in conformity with recommendations indicating a contribution of 800 mgr. per day therefore, the contribution of Calcium absorbed obtained in the last intake of foods of vegetable origin was satisfied in a proportion of 125.80% on Tuesday and 284.68% on Friday when the contribution is almost 3 times that necessary, contribution that can induce pathological modifications in the human body such as: constipation, renal calculi, stomach disturbances, flatulence, thickening of arterial blood vessels.

A small difference between the total quantity of Ca ingested through a vegetarian diet and the quantity of Ca absorbed is also noticeable. This difference is based on the different degrees of absorption of this element; foods from the cabbage group have a degree of absorption of 50%. In the cabbage group we find: white cabbage, leafy cabbage, red cabbage, Brussels sprouts, kale, cauliflower, and broccoli. Milk and derivative dairy products such as: soy milk, tofu, cottage cheese and yogurt have a degree of absorption of Calcium of 30% from their total quantity. There are two more food groups that Ca can be absorbed from in different proportion; from almonds, sesame, beans and sweet potatoes Ca is absorbed only in 20% compared with other products. Last group of foods present an absorption rate of 5% and these are: spinach, beetroot, rubarb, wheat bran, peanuts and strawberries that have the smallest degree of assimilation compared with other products from the vegetarian diet.

In figure 2 one can see that the contribution of Magnesium necessary to the human body is satisfied in quantities of up to 5 to 7 times more than the recommended 320 – 500 mgr. per day.

Magnesium in excess can occur when this is administered in big doses causing a symptomatology manifested as nausea, vomiting, arterial hypotension, bradycardia, urinary retention followed by electrocardiographic

changes, confusion, depression of the central nervous system and diminishing of osteo-tendonious reflexes.

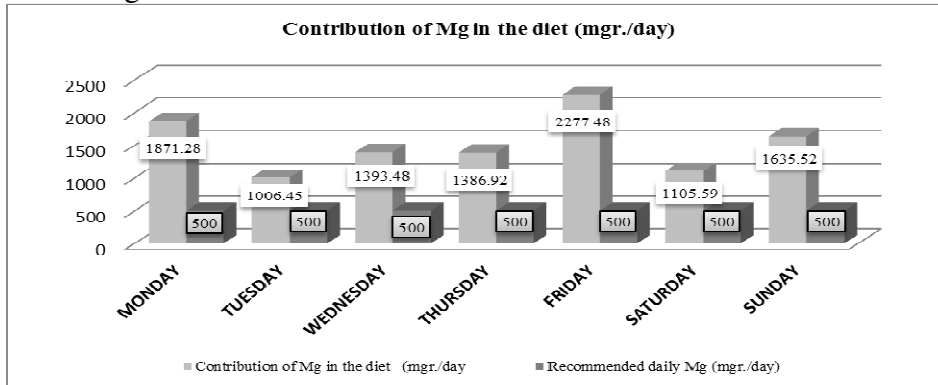


Figure 2. Contribution of Mg from the vegetarian diet compared with the recommended levels per day.

In severe cases even anesthesia and respiratory depression inducing coma and asystole. Such occurrences are seen especially in persons with renal insufficiency to whom Magnesium dietary supplements are not recommended.

In figure 3 is transposed the ratio between Ca and Mg in a vegetarian diet, ratio which in nutritional studies is of great importance because the absorption of Ca depends on this ratio recommended to be between 2 – 2.5. Following analysis of the ratio Ca/Mg, in figure 3 it can be seen that of all the seven days under analysis only in one day was this ratio optimal and that day is Thursday. On Friday the ratio was 47.6 % bigger than that recommended. Monday, Tuesday, Wednesday and Sunday the ratio was under 2 and Saturday was under 1 which can reduce the absorption of Ca to half of the ingested quantity.

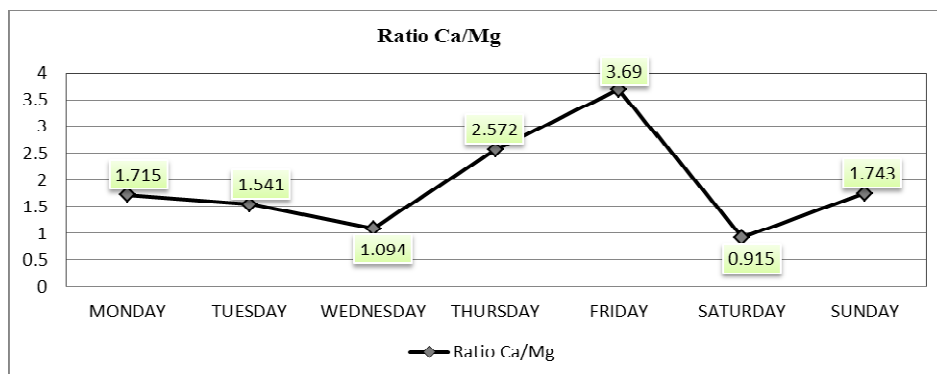


Fig. 3 The ratio between the contribution of Ca and Mg in the vegetarian diet over seven days.

The absorption of Ca in vegetarian diets can be stopped by other food components such as phytates and oxalates which bind  $\text{Fe}^{2+}$ ,  $\text{Cu}^{2+}$ ,  $\text{Mg}^{2+}$ ,  $\text{Ca}^{2+}$ , forming difficult to absorb complex substances impeding the good functioning of metabolism and the absorption of Ca in the body therefore affecting the health of bones. Oxalic acid has an anti-nutritional character causing formation of renal calculi of calcium oxalate.

All these results obtained in this study are of major importance in other studies regarding different diets adopted by today's consumers whom adopt various diets sourced from web sites, magazines and main stream media publications as being the pillars of health in the polluted environment that today is our way of life.

## CONCLUSION

1. The vegetarian diet, regardless of the methods of analysis and evaluation is void of vitamin B<sub>12</sub>, vitamin D and vitamin A, even if vitamin A is well represented in the form of  $\beta$ -caroten, the latter requiring lipids of animal origin to be metabolized and converted to retinol – the easily absorbed form of vitamin A.

2. A vegetarian diet creates symptoms which are not perceived rational by the adepts of this diet because of the so-called „emotional safety” present after the installation of a vitamin and mineral deficiency leading to: a poor immune system, continuous diarrhea and poorly formed movements, feelings of continuous hunger, insomnia, restless sleep in some cases, lack of motivation in completing the daily tasks, incapacity to sense the slow decline of health, and the occurrence of the yo-yo syndrome in people consuming only raw vegetable products manifested in an excess/purification or, alternatively, self-denial/self-indulge behavior.

3. It is good to know that it cannot be negated that vegetarian diets are rich in cereals, bread and derivatives and that glutinous proteins lead to the celiac disease as an answer of the immune system to these proteins.

4. Great consumption of cereal-based products increases the quantity of carbohydrates ingested, this leading to the hiperinsulinism named syndrome X manifested through the incapacity of the body to maintain a level of serum glucose (diabetes of type 2). This syndrome X can manifest through the incapacity of the pancreas to make insulin (diabetes of type 1).

5. Rich concentrations in protein through great consumption of legumes reduces syndrome X but leads to growth of LDL-c and a reduced HDL-c.

6. Vegetarian diets are not recommended to people whom cannot synthesize sufficient quantities of endogenous cholesterol in the liver and as a consequence must ingest products of animal origin which have cholesterol.

7. Following numerous research nutritional studies it has been signaled that many persons following a strictly vegetarian diet can be affected by obesity, hypothyroidism, diabetes, anemia, chronic fatigue and even gout.

8. Vegetarianism is recommended for short periods of time for the achievement of a detoxified body, and also recommended in some ailments such as gout. Strictly vegetarian diets are not recommended throughout the entire life because some nutrients can be found only in food products of animal origin and are indispensable for optimal health.

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