

## DETERMINATION OF THE REAL NUTRITIONAL FACTOR OF VEGETABLES CULTIVATED IN TWO SYSTEMS OF CULTURE – ECOLOGICAL AND CONVETINAL AS QUALITATIVE FACTOR

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### **Abstract**

*In the present paper was analyzed in ensemble the qualitative parameters that concur to the establishing of the real nutritive factor in order to assure and certify the quality of the alimentary products of vegetal origin, because the alimentary industry is responsible for the assuring of the quality of the products that are designated for human consumption. The operation is special considering the fact that the quality alimentation enters in the daily life of the people, for always, its benefits being huge by the fact that the healthy alimentation and that of quality maintains the health condition on the entire period of life, improving the quality of life living longer and away from diseases. By this analysis of the nutritional quality of some vegetables frequently consumed by the majority of the population we try to contribute to the informing of those interested about the healthy alimentation, natural demands in assuring the health of the consumers, fact that can be accomplished by the analysis of the quality of products using the real nutritional factor.*

**Key words:** alimentary quality, real nutritional factor, the safety of the consumers, healthy alimentation

### **INTRODUCTION**

The healthy eating is the act by which the person assures the caloric demands necessary for the basic metabolism consuming products obtained by ecologic cultures from different vegetal and animal sources, using fresh products with a high degree of digestibility, as much appreciated as possible from the sensorial, compositional point of view, accomplishing a balance between the proportion of those of vegetal origin and those of animal origin.

In the present paper we gave attention to the quality of the vegetal products promoted pretty sketchy by the media of our days, even if these products occupy a significant percentage, 25-30 % of the daily alimentary ratio, as it is specified in the specialty literature.

The appreciation of the quality of the alimentary products imposes the research of some characteristics related to the exterior aspect, of the tasting properties, of smell, consistency, appreciations that impose the research of the content in nutrients of each alimentary product in part, from which it can be obtained the real nutritional factor and the biological value, the primordial quality parameters in establishing the health food and alimentation. For the performing of these researches and analyses are used different types of instruments, devices and techniques of laboratory, and some standards specific to some laboratory analyses.

## MATERIAL AND METHOD

The biologic material analyzed was represented by a group of vegetables obtained from a particular micro farm by comparison with the same group of vegetables purchased from the supermarket and from import. The group of vegetables analyzed was created of very early vegetables and frequently used by the consumers from the urban environment especially, from spring-summer vegetables and autumn vegetables. From the first group, that of very early vegetables were analyzed the spinach, green salad, radishes and the green onion, from the group of spring-summer vegetables were analyzed the tomatoes, bell peppers, cauliflower, the squashes, the kohlrabi, the green pea and the green bean and from the group of autumn vegetables were analyzed the cabbage, the eggplants, the beans.

The method of analysis of the quality of some vegetable products applied in this paper is represented by the real nutritional factor and the biologic value, method that implies the determination of the content in vitamin C, the determining of the content in carotene, cellulose, Ca and Fe, and of the protean content.

The calculation formula for the real nutritional factor according to Rinno, 1965, quoted by Indrea and collaborators, 2009 is the following:

$$\text{FNR} = \frac{\text{vit.C(mg)}}{20} + \text{carotenoides (mg)} + \text{cellulose (g)} + \frac{\text{Ca(mg)}}{100} + \frac{\text{Fe(mg)}}{2}$$

Another formula based on which is established the quality of some vegetable products is the biologic value according to Bielka, 1965, quoted by Indrea and collaborators, 2009 that includes in the calculation also the content of proteins from the vegetables, is:

$$\frac{VB}{2} = \frac{\text{vit.C(mg)}}{10} + \text{carotenoides (mg/100 g s.u.)} + 5 \times \text{protides (g)} + 5\text{Fe(mg)} + \frac{\text{Ca(mg)}}{5}$$

## RESULT AND DISCUSSIONS

Starting from the main reason of the research of the quality of the alimentary products and namely that to assure to the consumers of our days quality products by which the researchers from the alimentary industry to understand mainly the nutritional quality because due to the industrialization, the high growth of the pollution by the intensive chemistry of the agricultural horticultural cultures, the consumer is obliged to consume what the traders offer, trader with whom he is in direct contact, and less with the producer or the processor.

In order to formulate some useful conclusions in assuring and controlling the quality of the horticultural products we determined the FNR (real nutritional factor) of some vegetable products obtained from two culture systems.

Based on the data obtained following the biochemical determinations of the products studied was established the FNR that, as it can be observed in the table 1 and figure 1 is greater at all the vegetable obtained by ecologic cultures compared to those obtained by conventional cultures, that indicates the negative impact of the fertilizations on the quality of the nutritional factors from the product, manifested by the blocking of the accumulation of some quantities of nutrients in the products.

*Table 1*

FNR of the vegetables obtained in two systems of culture

Product	FNR	
	Ecological Vegetable (LE)	Conventional Vegetable (LC)
Spinach	13.7	10.24
Green salad	7.65	6.67
Radishes	3.17	2.49
Green onion	13.85	9.31
Tomatoes	3.95	2.66
Pepper	13.6	10.45
Cauliflower	4.91	4.16
Zucchini	6.5	3.94
Swedes	5.15	3.93
Green peas	6.45	4.78
Green beaus	3.45	2.49
Cabbage	10.3	7.86
Eggplant	1.88	1.16
Beans	9.5	7.21

By the determining of the FNR the agricultural producers assure the alimentary industry with quality raw materials with major implications in the alimentary safety.

In determining the biological value are important the following trophines: vitamin C, carotens, proteins and the content in Ca and Fe.

Following the determining of the VB (biological value) of the vegetables studied was observed that for all the vegetables obtained by ecologic cultures VB is greater than that for the vegetables obtained by conventional cultures (table 2 and figure 2), which indicates once more the qualitative superiority by the content in nutrients of the bio vegetables compared to the conventional vegetables.

Also we can affirm based on the results obtained by our analyses completed and underlined by the results of the researches in the field, that by the consumption of vegetal products of good nutritional quality is

assured a certain level of alimentary security and of protection of the consumers.

The negative impact of the fertilizers on the quality of the nutritional factors from the vegetal products is manifested earlier or later by different affections, and in a certain degree on the health of the consumers, among the most frequent are allergies.

*Table 2*

The biological value (VB) of the vegetables obtained in two systems of culture

Product	VB/2	
	Ecological Vegetable (LE)	Conventional Vegetable (LC)
Spinach	79.8	53.9
Green salad	31.4	29.5
Radishes	20.02	15.02
Green onion	30.5	21.1
Tomatoes	20.06	8.23
Pepper	33.4	26.1
Cauliflower	30.04	23.52
Zucchini	20.5	14.62
Swedes	32.3	24.5
Green peas	60.9	49.7
Green beaus	24.9	19.1
Cabbage	51.8	38.3
Eggplant	10.32	7.37
Beans	151.6	138.2

## CONCLUSIONS

The certification of the quality of an alimentary product imposes the analysis of all the physical, chemical and technological properties, following which is determined the nutritional value, namely the measure in which it can satisfy the physiological demands of food of the consumption. In order to be satisfied still these demands of consumption it is indicated that in the act of feeding to be used products that accomplish some quality conditions. These quality conditions for the vegetal products become complex due to the different designations that they have.

In order to formulate some useful conclusion in assuring and control the quality of the horticultural products is imposed as a mandatory parameter the determining of the FNR of the vegetables, so that the values of this parameter would sustain the nutritional superiority of the products used in the food of the human being.

The alimentary biological value of the vegetables is quantified based on the most important factors of nutrition assured (vitamin C, carotene, proteins, Fe and Ca).

FNR represents an important parameter in the determining and assuring the quality of the aliments designated for the consumers, and in the promoting of the consumption of healthy promoting products, and which eliminates the profits obtained by the traders from the non educated poor consumer from the point of view of judging the quality of the aliments, even if they contain nutritional data written on the label.

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