THE VITAMINAS AND THE GERMINATION OF CEREAL SEEDS BIOCHEMICAL AND ELECTROGRAPHICS INVESTIGATIONS

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Abstract

The germination reprezents a complex biochemical process, which determines huge transformations in the quantitative and qualitative composition of the seeds. In our studies we analysed the reaction at germination of the wheat, species Triticum aestivum (types Arieşan and Dropia). We have germinated the seeds of these cereals at temperatures (10, 15, 20 degrees C) and we took samples at different times (at 2, 3, 4, 6, 8 days), which we dried and rended them in many types of flour. Those were analysed by biochemical methods and determined, to obtain the contain of vitamins (B1, B6, PP, C, E). In this study, we also used an energetical investigation which has emphasis the aura by ectrographic method.The invetigations about the level of some vitamins from germinated seeds of wheat determined the conclusion that by this process we can obtained the products with a big content in vitamins against the nongerminated seeds. The growth of the content of vitamins B in germinated seeds by 5-10 times, the synthesis of the ascorbic acid which forms „de novo" in a big quantity during the proces of germination, the growth of the content of vitamin E transforms the germinated seeds in remarcable source of byological active compounds for the protection, regeneration and methabolism of cells.
Keywords: *Germination; biochemical investigations; electrographics investigations; growth of the content of vitamins; aura.*

Introduction

Germination represents the most efficient method to value wholly the seeds because they substantially increase their nutritional value of their constantly enrichment of proteins, glucides and lipids and amino acids, vitamins, bioelements, enzyms and other biologically active elements.

The germination is a complex biochemical process, which determines huge transformations in the quantitative and qualitative composition of the seeds. As result of the mobilization of the compound of spare or of intense biosynthesis that took place for the formation of the new plant, determined a

major accumulation of active biological compounds. During the germination, intenses metabolics proces are taking place which are determined by the evolution of new plant. The proces of respiration are very important and they causes a significant increase of the oxidoreduction enzymes. The acumulation of these enzymatic systems establish the rise of the content of vitamins, which are the cophactors implicates in the redox mechanism.

Many studies mention the evolution of the content of vitamins during the germination proces of cereals.

The content of thiamine of some seeds of cereals rise by the germination of seeds of wheat (Triticum vulgare) for five days from 5,3 to 9, 8 μg g. and at barley the rise is from 4, 8 to 9 μg/g. The content of pyridoxine rise (by germination in five-six days) at wheat with 170% , at barley with 250 %, at corn with 110 % and at oat the rise is with 500%.

Tocopheroles also rise from 0, 24 to 1, 24 mg/100g at some varieties of seeds of pea and at some varieties of seeds of bean from 0,28 to 2, 3 mg 100g. One can notice that at cereals the rise is bigger.

The nongerminated seeds of cereals don't have practicaly ascorbic acid. The ascorbic acid forms „de novo" during the proces of germination in a big quantity.

Beginning from the theoretical considerations about the improvment of the nutritional qualities of the seeds through germination method, in this article we aimed to demonstrate that the germination seeds of cereals creates a notable acumulation of vitamins (B_1, B_6, PP, C, E). In this way it leads to an important increase of the nutritive value of the germinated seeds.

Experimental

In our studies we analysed the reaction at germination of the wheat, species Triticum aestivum (types Arieşan and Dropia), which have good germinative properties (the germinative energy is about 92% and the power of germination is about 98%). We have germinated the seeds of these cereals at temperatures (10, 15, 20 degrees C) and we took samples at different times (at 2, 3, 4, 6, 8 days), which we dried and rended them in many types of flour. Those were analysed by biochemical methods to determine the contain of vitamins (B_1, B_6, PP, C, E). In this study, we also used an energetical investigation which has emphasis aura by ectrographic method.

1. Biochemicals methods for the investigation of vitamins

To analyse the content of thiamine, vitamin B_6 we used the photocolorimetrical method. The determination of vitamin PP and the tocopherols - which can be analysed together - was made by colorimetrical method. The ascorbic acid (Vitamin C) was determined by titrimetrical method.

1.2. The electrographic method

The electrographic method reproduces the electric characterics of a physical corpus investigate by means of three essential ways:

1) quantification of electronic emission through electric tension of high values generated by a high tension, having values from 1kV to 40kV;

2) control of the electromagnetic field achived at very high tension impulse in the space between the electrodes;

3) the differentiated conversion of electron energy and of secondary particles through their conversion in a proportional luminescent flux.

The technique used in electrographic consists of the releasing to same high tension sparks between an aciform type electrode and a corpus situated on a plane electrode, through aeroion stratum adjacent to the corpus. By interposing of a radiological film put on the plane electrode, this one becomes a "photosensitive witness" witch takes part in the electrographic phenomenon.

Results and Discussion

1. The evolution of vitamins during germination

1.1.Vitamin B_1

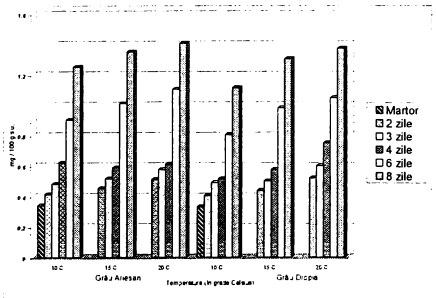

Fig. 1: The evolution of the content of Vitamin B_1 during germination

Information concerning the evolution of the content of thiamin at the species Titicum aestivum at the types Arieşan and Dropia are mentioned in figure 1. We can observe an ascendent evolution of the content of B_1 vitamin starting with day 2 from the actual beginning of germination until and day 8, the spectacular leap being registered day 6 of the beginning of the germination.

1.2. Vitamin B_6

At species Triticum aestivum, types Dropia and Arieşan, the evolution of the content of Vitamin B6 (figure 2) during germination rise starting with the first day till day 8.

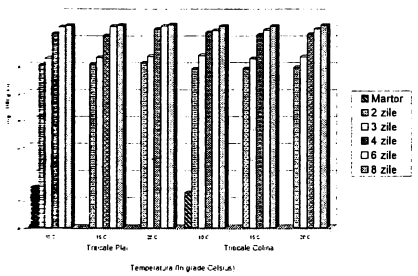

Fig. 2: The evolution of the content of Vitamin B6 during germination

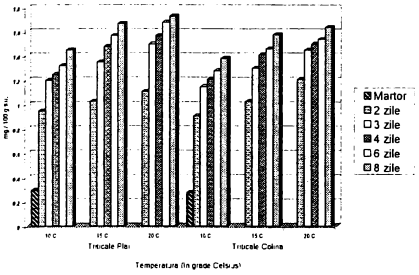

Fig. 3: The evolution of the content of Vitamin PP during germination

1.2. Vitamin PP

The results regarding the growth of the level of niacin in the process of germination at the species Triticum aestivum are mentioned in figure 3 one can observe a remarkable rise of the content of niacin in the second day after the initiation of the process of germination as compared with the ungerminated grains, respectively of 278%.

1.3. Vitamin C

The dynamic of the rising levels of vitamin C in the germinated wheat can be observed in figure 4. The analysis made indicate the absence of vitamin C at the ungerminated cereals the process of germination leading to a spectacular growth of ascorbic acid in day 2 of germination that culminates in day 3. Starting with day 4 the content of vitamin C decline inside of day 8. The ascorbic acid forms „de novo" during the proces of germination in a big quantity. This aparition of which compound rise very much in first 3 days of

germination at species Triticum aestivum - it is one consequence of the oxidoreduction process specific germination, where the vitamin C is the most important compound that doesn't have to miss.

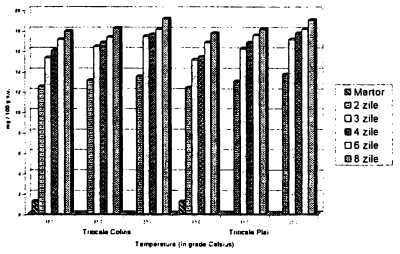

Fig. 4: The evolution of the content of vitamin C at the species Triticum estivum during germination

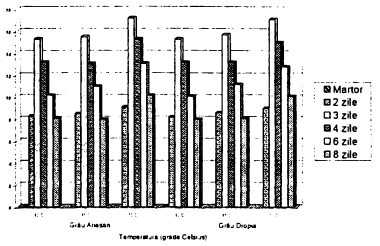

Fig. 5: The evolution of the content of vitamin E at the species Triticum estivum during germination

1.4. Vitamin E

Information gathered regarding the content of vitamin E of the germinated grains of wheat, species Triticum aestivum, types Arieşan and Dropia are showed in figure 5. We made analysis about the acumulation of vitamin E at differnt temperatures (10; 15; 20° C) and days (2, 3, 4, 6, 8).

One can notice an important increase of the content of vitamin E in day 2 from the beginnig of the germinaion which continous to rise until day 8. The vitamin E - by their antioxidant properties - supports the non-satureted fatty acids that exists in phospholipids from the membranes of cells. The formation of the new cellular structure also involves the biosynthesis of tocopherols which are localised at the level of cell.

2. The informational aspects of the seeds of germinated cereals

In figures 6 and 7 one can observe the elecrographic images of species Triticum aestivum, type Arieşan in anodic and catodic polarity at 100 seeds explorated by electrographic method.

The study about the informational aspects of seeds of the germinated cereals explorated electrographical relevated that the phenomenology is not an additional effect of biochimical phenomena, it is involved in the evolution of the living world. This one is manifesting in a specifical way, our reserch opens a new perspective in understanding the elecrobiogenesis phenomena of the live world. The electrographic analyses proves (through comparison)

the multitude of the biochemical changing which take place in the seeds through germination (inclusively the rise of the quantity of different viatamins) which can be visualised in two type of images (anodic and catodic) by the difference existing between 100 germinated and 100 non-germinated seeds, those can be deduced out of the forms strimers and their arrangement. We can see that in the biological world, there exist some codificated phenomenons, that go through the similar interfaces of different entities, so that the live food appears from itself, observing some informational codes.

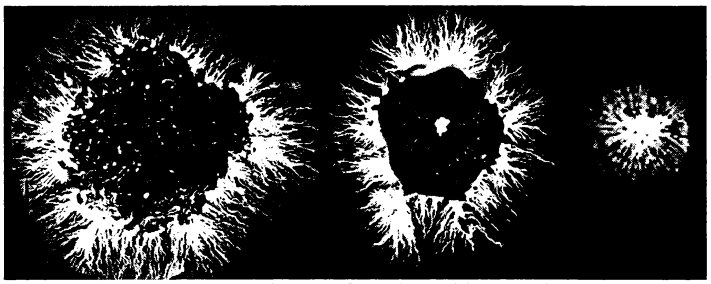

Fig. 6: Electrographic anodic image of species Triticum estivum, type Arieşan

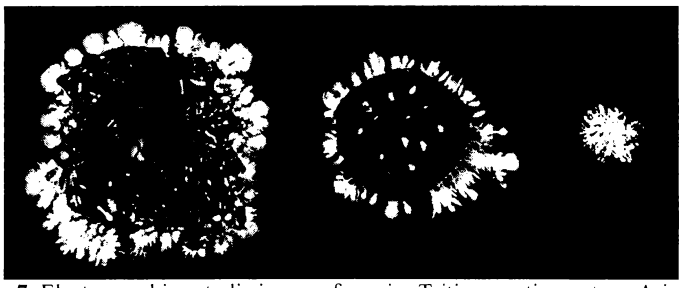

Fig. 7: Electrographic catodic image of species Triticum estivum, type Arieşan

Therefore, it is important to reconsider the methodologies of realizasion of aliments, to which we have to try and keep their live character, this fundemantal information which represents and will represent the essence of the human alimantation.

Conclusion

The invetigations about the level of some vitamins from germinated seeds of wheat determined the conclusion that by this process we can obtained the products with a big content in vitamins against the nongerminated seeds. The growth of the content of vitamins B in germinated seeds by 5-10 times, the synthesis of the ascorbic acid which forms „de novo" in a big quantity during the proces of germination, the growth of the content of vitamin E transforms the germinated seeds in remarcable source of byological active compounds for the protection, regeneration and methabolism of cells.

Therefore, the biochemical transformations which are generated by the germination of the seeds triggers an acumulation of a series of biological and active substances, with biogenic and healty action. The germinated seeds are an very important vector of revitalization of human body The seeds of germinated cereals constitutes are a natural souce of energy with good effects about heath: the cholesterol is lower and the immunity of human body increases.

All the physiological processes of digestive and metabolic utilization of the aliments are integration processes and they are reduced at the informational-energetic transfer of the aliment, by resonance at the adequate level of frequency of the energetic biofield of human body.

This article whises to be an impulse addresed to the food industry to create and promote new types of food, which contain germinated seeds with high nutritional value. The population from our country is no so much informed about keeping heathy and so the increase of the germinated seeds in the daily diet is not much accepted by most of them.

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