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# THE INFLUENCE OF THE NUTRACEUTIC PREPARATE ON SOME PROPERTIES OF THE BREAD

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## Abstract

*In this paper are presented the influence of the nutraceutic preparates on the nutritional and sensorial properties of the bread. In the same time, it intended to evidence the way that it's use in the technological process leads to modifying some of the most important technological parameters. In order to do this, there have been analyzed 8 samples, four of them being products that have been added with 0.75%, 1.5% and, respectively, 2% nutraceutic preparate, one witness sample that has not been improved, and in three samples we used an usual improver. It also has determined the contents of microelements in the nutraceutic preparate.*

***Key words:*** *bread, nutraceutic preparate, spectrophotometry, metals.*

## Introduction

The major concept resulted after many nutrition studies and researches is defined as "balanced diet", as a result for the discovery of the nutrients and necessity of nutrients for growing, development and maintenance of the human body's physical and mental health. Health means both the absence of the disease and the psychological, mental and physical health.

The diet has to be made to assure the unique physiological and biochemical necessities, specific to each person. A best selection of the nutrients is made knowing the interactions between the genes, nutritional factors and the disease, because these determine the specific reaction, individual for each consumer, regarding the benefic or adverse response.

The functional foods cannot be defined or characterized as simple entities, but these include a variety of components, nutrients or non-nutrients, that affect some of the body's functions, relevant for the health state or for the rendering sick hazard reduction.

The functional food term has been created in Japan by the Japanese Foods for Specified Health Use. This concept includes several terms

like: nutraceutic foods, pharmafoods, medifoods, vitafoods, dietetic supplements, fortifying foods (Mencinicopschi, 2000 and 2005).

## Experimental

In order to determine the microelements content of the sample, we used the atomic absorption spectrophotometry. This method consists in the determination of the concentration of a chemical element in the analyzed sample, by measuring the absorption of a electromagnetic radiation with a certain wavelength, while it passes through the medium containing the free atoms of the analyzed solution that are in the shape of homogeneous distributed. For this medium it has used the flame resulting by burning a gaseous fuel mixed with another gaseous fuel in which solution of the sample is pulverized. For all determined elements the dry mineralization (calcinations) at 450°C, for 48 hours was used, until a white-gray ash, without coal plots are obtained. Over the resulted ash HCl was added and the mixture was heated on the sand bath. Then the solution was filtered with deionized water, using as witness the deionized water. For each series of determinations the standardized curve was drawn. The graphical representation of the absorption versus the concentration was used to calculate the concentration of measured element.

## Results and Discussions

The content of determined microelements compared with the witnesses content, the amount of bound microelements and the influence over the technological parameters are presented in tables 1-3 (Baeten, 2000; Workman, 2002). From table 1 the conclusion is that the free microelements content of the samples is much lower compared with the one of the powder nutraceutic preparate, but higher compared with the unimproved bread and in the same time close to the one of the samples manufactured with casual improver adding. The most of the amount is found bounded in different combinations, as could be see in table 2.

Also, besides the improvement of the products in analyzed microelements, we can observe in table 3 an improvement of the yeasting parameters, meaning the shortening of it's times, resulting an improved efficiency of the technological process, but also an increase of the dough acidity, which is benefic for the development of the product's flavor.

**Table 1.** The microelements content for the nutraceutic preparate (NP), for the witness samples, and for the ones in which an improver was used

| Sample | Ca [mg/g] | Mg [mg/g] | Na [mg/g] | K [mg/g] | Zn [μg/g] | Cr [μg/g] | Mn [μg/g] | Se [μg/g] |
|---|---|---|---|---|---|---|---|---|
| Nutraceutic preparate | 10.35 | 4.11 | 21.49 | 19.42 | 68.0 | 7.0 | 4.0 | 279 |
| Bread 0.75% NP | 0.33 | 0.2 | 12.9 | 2.59 | 5.64 | 0.19 | 0.51 | 53 |
| Bread 1.50% NP | 0.38 | 0.22 | 13.1 | 2.65 | 7.46 | 0.25 | 0.48 | 66 |
| Bread 2.00% NP | 0.42 | 0.25 | 13.4 | 2.81 | 8.12 | 0.30 | 0.44 | 83 |
| Unimproved bread | 0.17 | 0.15 | 9.86 | 1.66 | 6.28 | 0.06 | 0.50 | 50 |
| Bread 0.75% improver | 0.22 | 0.15 | 7.83 | 1.39 | 4.83 | 0.06 | 0.40 | 50 |
| Bread 1.50% improver | 0.23 | 0.17 | 8.05 | 1.42 | 6.04 | 0.07 | 0.46 | 52 |
| Bread 2.00% improver | 0.24 | 0.18 | 9.62 | 1.9 | 6.23 | 0.13 | 0.49 | 57 |

**Table 2.** The microelements amount of the nutraceutic preparate of the witness samples and for the ones in which nutraceutic preparate in combinated form were used.

| Sample | Ca [mg/g] | Mg [mg/g] | Na [mg/g] | K [mg/g] | Zn [μg/g] | Cr [μg/g] | Mn [μg/g] | Se [μg/g] |
|---|---|---|---|---|---|---|---|---|
| Nutraceutic preparate | 10.35 | 4.11 | 21.49 | 19.42 | 68.0 | 7.0 | 14.0 | 279 |
| Bread 0.75% NP | 10.02 | 3.81 | 8.59 | 16.83 | 62.4 | 6.81 | 8.92 | 226 |
| Bread 1.50% NP | 9.97 | 3.89 | 8.39 | 16.77 | 60.5 | 6.75 | 8.88 | 213 |
| Bread 2.00% NP | 9.22 | 3.86 | 8.09 | 17.61 | 60.9 | 6.70 | 8.58 | 196 |

**Table 3**. The influence of nutritive preparate over the yeasting parameters.

| Sample | Initial yeasting | | Final yeasting | |
|---|---|---|---|---|
| | Time (minutes) | Acidity (degrees) | Time (minutes) | Acidity (degrees) |
| Bread 0.75% NP | 25 | 2.7 | 20 | 3.7 |
| Bread 1.50% NP | 25 | 2.9 | 20 | 3.9 |
| Bread 2.00% NP | 25 | 3.3 | 20 | 4.2 |
| Unimproved bread | 40 | 2.3 | 35 | 3.3 |
| Bread 0.75% improver | 35 | 2.5 | 30 | 3.5 |
| Bread 1.50% improver | 35 | 2.5 | 30 | 3.5 |
| Bread 2.00% improver | 35 | 2.5 | 30 | 3.5 |

In the same time, from the studies made on the same samples, it was established an increase of the product's volume and porosity in the case of the ones in which the nutraceutic preparate was added, compared with the other ones. Also, the period that the packed samples containing the nutraceutic preparate maintained their freshness was 4 days in refrigeration conditions and 3 days in normal temperature and moisture conditions, compared with 3, respectively 2 days in the case of the other samples, also packed.

## Conclusions

Using the nutraceutic preparate for bread making leads to it's enrichment in metals like: Mg, Ca, Na, K, Zn, Cr, Mn, Se and increasing it's nutritive value. Also the nutraceutic preparate in the bread's manufacturing recipe leads to the increase of the efficiency in the technological process by shortening the final and initial yeasting times and has a benefic effect over it's sensorial qualities especially over it's taste.

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