ANALYSIS OF BAKERY PRODUCTS QUALITY – HOME MADE BREAD, GRAHAM BREAD AND BLACK BREAD

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Abstract

The current work has tried to emphasize the alimentary quality of the home made bread, of the graham bread and of the black bread as bakery products used in a person's nutrition in any moment of the day and in what developing countries are these products biologically loosened.

The quality of these products has been established on the basis of the organoleptic properties and on the actions of informing the consumers upon the importance of knowing these properties which stand at the basis of the consumption quality, parameters that can be observed easily the moment the product is bought.

In this work we have organoloeptically analyzed the raw materials as well as the finished products represented by the home made bread, graham bread and the black bread at a bakery unit in Cluj county, in order to promote the graham and the black bread due to their superior nutritional properties emphasized through the fiber content necessary in a balanced alimentary ration.

Key words: balanced nutrition, alimentary imbalances, non-caloric nutrients, nutrition anemies.

INTRODUCTION

The nutritious value of the bakery, loaf bread units, and floury products represents an important element for the level of the daily food ration and constitues the object of some large research in the nutrition field because they are products necessary to be used in nutrition even by diabetics mentioning that in this case and not only the glycemic index is appreciated, index which is influenced by the presence of the fibres be them in a small or big quantity. Thus the white bread has got a glycemic index of 95 whilst the graham bread which contains higher quantities of fibres has got a glycemic index of 35 reason for which we have taken into study the three types of bakery products above mentioned.

This value is conferred not only by the energetic contribution, based on the increased content of carbohydrates (carbon hydrates), proteins and lipids (fats) but also by the contribution of all the components in the respective products, these components representing forms which are easily assimilated by the human body.

MATERIAL AND METHOD

The quality analyses methods consisted in:

1. Organoleptic examination of the raw and auxiliary material
2. Oraganoleptic examination of the bakery products obtained from commerce – from the own retail sale shop
3. In order to realize the working variants a witness sample was established represented by the white bread which was compared with the graham and the black bread.

- The experimental analysis consisted in determining the sensorial properties (according to STAS 91-66) and physical-chemical ones (according to STAS 91-82 and SR 878) of 3 samples of bread as it follows:
- Determining the aspect of the crust, core, smell and taste;
- Determining the volume of the bread, its elasticity and its core porosity;
- Determining the water content

The organoleptic examination consists in evaluating the organoleptic features of the bakery products with the help of the sense organs. The determination of the volume of bakery products can be done through two methods, through the Fornet type device and through the gravimetric method.

The porosity is found out by determining the total volume of the holes from a known volume of core, knowing the core's mass and density.

The elasticity of the bread is determined by pressing a bread core of a determined form for a given period of time and measuring the comeback to the initial position after removing the pressing force.

The determination of the water content is realized through measuring the mass loss if heating the product at 103 ± 2°C.

RESULTS AND DISCUSSIONS

In order to emphasize the differences between the experimental variants each sample has been evaluated pointing out the differences in comparison with the other samples.

The sample represented by the white bread as well as the variants represented by the graham amd black bread have been evaluated by 11 tasters (ordinary consumers). The appreciation of each organoleptic feature has been done by according qualifiers: very good, good, satisfactory and bad. Table 1 presents one of the 11 tasting sheets of papers, all the papers being centralized in a centralizing table (table 2).

Table 1

Tasting sheet

Specification	White bread	Graham bread	Black bread
General, exterior aspect	Good	Very good	Good
Crust aspect	Good	Good	Very good
Core aspect (in the section)	Good	Very good	Very good
Flavor	Very good	Very good	Good
Taste	Very good	Very good	Very good

Then the results obtained after the centralization of the sheets shall be presented in table 2.

Table 2

Synoptic table for the tasting sheets

Specification	White bread	Graham bread	Black bread
General, exterior aspect	9B+1FB+1S	2B+9FB	9B+2FB
Crust aspect	6B+5FB	9B+2FB	2B+9FB
Core aspect (in section)	5B+6FB	3B+8FB	4B+7B
Flavor	3B+8FB	3B+8FB	5B+6FB
Taste	4B+7FB	3B+8FB	3B+8FB

In this synoptic table we have used the score sclae from 0-1 as it follows: 1 – for Very Good; 0,67 – for Good; 0,33 – for Satisfactory; 0,1 – for Bad.

After realizing the synoptic table we have calculated the scores for each vvariant according to table 3.

The average score realized leads to the appreciation of the product with the best organoleptic features.

Table 3.

Average score realized by the experimental variants

Specification	White bread (witness variant)	Graham bread (variant 1)	Black bread (variant 2)
General, exterior aspect	0,76	0,94	0,73
Crust aspect	0,82	0,73	0,94
Core aspect (in section)	0,81	0,91	0,88
Flavor	0,91	0,91	0,81
Taste	0,88	0,91	0,91

The results of the performed physical-chemical determinations are presented in tables 4,5,6,7.

Table 4

The determined values of the analyzed samples' volume

Sample	Determined volume [cm^3/100g]
Black bread	278
Graham bread	295
White bread	304

According to the experimental results presented in table 4 we can notice the following:

- the black bread (278 cm^3/100g) presents the lowest volume, being followed by the graham bread variant (295 cm^3/100g);
- the white bread sample registers a higher volume (304 cm^3/100g)

The results obtained to determine the porosity are presented in table 5.

Table 5

The determined values of the porosity for the analyzed samples

No of sample.	Determined porosity [%vol.]
Graham bread	75
Black bread	75
White bread	75

We can state the following about the determined porosity of the analyzed samples:

- the porosity is of 75% at the analyzed variants
- the experimenta variants fit the imposed requirements (min 73%).

The results of the determinations related to the elasticity are presented in table 6.

Table 6

The variation of elasticity according to the value of the determined samples

Specification	Elasticity [%]
Graham bread	93,60
Black bread	94,41
White bread	92

On the basis of the results presented in table 6 we can formulate the following statements:

- in this case too the sample represented by the white bread has got a slightly lower level than the admissibility (min. 93 %);

- The best variant is the variant represented by the black bread (94,41%);

- the sample represented by the graham bread respects the minimum limit of 93%.

The results of determinations related to the variation of water consumption are presented in table 7.

Table 7

The variation of water content at the analyzed samples

Specification	**Humidity [%]**
Graham bread	42,84
Black bread	43,54
White bread	38,81

According to the data presented we can assert the following about the water content:

That all the experimental variants correspond to the requirements for this criterion (core humidity – maximum 45%);

CONCLUSIONS

After the organoleptic checks performed we can conclude that, except for the aspect of the crust the sample represented by the black bread presents the best organoleptic and nutritional features. At the opposite pole is the sample represented by the white bread, sample that registers organoleptic properties less appreciated by the consumers.

According to the experimental results concerning the physical-chemical properties performed on the three types of bread, the lowest volume was registered for the black bread and the highest for the white bread. The porosity has registered equal values at all the three types of bread analyzed. The best elasticity was registered at the variant represented by the black bread.

The values of the water content are very close for the variants represented by the graham bread and by the black bread (under1,0 percentage point), still being at a great distance from the variant represented by the white bread which registers the lowest water content.

REFERENCES

1. Filimon, N., Gheorghiu V., Levinţa, G., Radu, P., Rapeanu, R., Aniţia, N., Dima, E., Tehnologia produselor alimentare, 1973, Editura Didactică şi Pedagogică Bucureşti, Modoran Constanţa, Tehnologia produselor făinoase, 2003, Editura Academic pres Cluj-Napoca;

2. Modoran Constanța, Fabricarea pâinii şi a produselor proaspete de patiserie, 2005, Editura EIKON, Cluj-Napoca;
3. Moldoveanu, GH., Tehnologia panificației, 1978, Editura Didactică şi Pedagigică Bucureşti;
Mugeanu, Alice, Adler, Tina, Singer, M, Tehnologia produselor alimentare, 1975, Editura Didactică şi Pedagogică Bucureşti;
4. Rasenescu, I., Otel, I., Îndrumător pentru industria alimentară vol.1 şi vol.11, 1987, Editura Tehnică Bucureşti.
5. Alexa, Ersilia, 2004. Tehnologia alimentelor făinoase. Editura Eurobit, Timişoara;
6. Banu, C., 1999 . Manualul inginerului de industrie alimentară, vol. I, II, Editura Tehnică;
7. Mencinicopschi, Gh., Raba, Diana, 2005. Siguranța alimentară autenticitate şi trasabilitate, Editura Mirton, Timişoara;
8. Moldoveanu, Gh., 1992. Tehnologia panificației, Editura Tehnică, Bucureşti;
9. Niculescu, N., 1980. Producerea modernă a alimentelor făinoase, Editura Ceres, Bucureşti;
10. Țucu, D., 1994. Panificația, sisteme tehnice şi structura produselor de panificație, Editura Tehnică.
11. ***Colecție Standarde Panificație.