УНИВЕРСИТЕТ ПО ХРАНИТЕЛНИ ТЕХНОЛОГИИ - ПЛОВДИВ

UNIVERSITY OF FOOD TECHNOLOGIES - PLOVDIV

SCIENTIFIC WORKS
Volume LV, Issue 1
Plovdiv, October 24-25, 2008

НАУЧНА КОНФЕРЕНЦИЯ С МЕЖДУНАРОДНО УЧАСТИЕ

"ХРАНИТЕЛНА НАУКА, ТЕХНИКА И ТЕХНОЛОГИИ 2008"

'FOOD SCIENCE, ENGINEERING AND TECHNOLOGIES 2008'

НАУЧНИ ТРУДОВЕ

Том LV, Свитък 1

Пловдив, 24 - 25 октомври 2008

Използуване на корнеплодни зеленчуци при производството на хляб

N. Kordzaya

В статията са разгледани и обосновани предимствата от повишение на биологичната и хранителна ценност на хляба, получен от цяло зърно пшеница за сметка на въвеждане в състава му съставките от растителен произход – кореноплодни зеленчуци, а именно коренови глави от целина, магданоз, пащънак.

Приведени са резултатите на изследования на органолептични и физико-химични свойства на новите сортове на обогатен хлеб, полученият от цяло зърно пшеница.

Ключови думи: хлеб, цяло зърно, коренеплодни зеленчуци, целина, магданоз, пащънак, рецептура, органолептични, физико-химични свойства.

Utilization of root crops in a panification

N. Kordzaya

The advantages of raising of biological and food value of bread made from whole grain by enriching it with natural additives of vegetative origin are examined and proved in the article.

The results of the research of an organoleptic properties of new grades of bread made from whole grain enriched whith the root crops are given in the report.

Dietary products are the major source of human's vital energy, the basis of making and maintenance of his physical state, one of the major factors of his intellectual activity.

Human's diet contents about 60 ester, 60 amino - and fatty acids, various carbohydrate, minerals, vitamins, ballast substances etc. However there are no dietary product containing all these elements necessary for the human's body. Therefore, for satisfaction of person's physiological needs the food ration should be rather various.

Insufficience receipt of vitamins, vital mineral substances and trace minerals in food causes essential health damage, reduces physical and intellectual resistibility to various diseases, strengthens negative influence on an organism of the adverse conditions, a nervously-emotional pressure and stress, increases a professional traumatism, sensitivity of an organism radiation effect, promotes development of various infringements of a metabolism, fast wear out process of the body, reduces duration of an active able-bodied life.

One of the ways of liquidation of deficiency of vitamins and others micronutrients confirmed by world and domestic experience and expedient from the economic, social, hygienic and technological points of view, is inclusion in a daily food ration various specialized dietary products, additionaly enriched with missing vitamins, trace elements and macrocells up to a level of the person's physiological needs.

Undoubtedly, breads and bakeries which are a daily dietary products of our population and its purposeful to enrich it with scarce micronutrients. Besides bread - the cheapest and accessible dietary product, that serve one of the basic sources of food substances necessary for the human's body, vegetable proteins, carbohydrate, macrocells and trace elements, dietary fiber.

Today a baking industry has a special task to improve an assortment and quality of production, expansion of production products with high food and biological value. These problems can be solved with the help of utilization of nonconventional sources of a plant raw material. These are products of an animal and a vegetive origin, rich in valuable biologically active and food substances, for example, soya bean, bran, buds of wheat, a flour from flax, a Jerusalem artichoke, malt extracts, the fermented cereal products, medical grasses, a leafy vegetables and others. [1]

Now, on department of the study of merchendize and examinations of goods of the Odessa national academy of food technologies are carried out researches on optimization of compounding of bread made from whole wheat grain improved food and biological value.

Food and biological value of a new product improves by bringing in contents of bread various vegetative additives.

Advantage of bread made of whole grain is that it contains dietary fiber, folic acid and its salts, the selenium, polynonsaturated fats, etc., i.e. all natural components of initial grain. Besides in comparison with "flour" kinds, grain bread contains much more, approximately in 1,5 times, potassium, iodine, fluorine, approximately in 2-5 times more iron, phosphorus, magnesium.

Furthermore the whole-grain bread is emerging as a dietary constituent that delivers significant health benefits. Several observational studies have provided strong support for a beneficial role of whole-grain intake in reducing the risk of coronary heart disease, diabetes mellitus, hypertension, gastrointestinal tract diseases and some types of cancer by 30-35 %.

As the components improving food value of new kinds of bread, it is offered to use the scalded root crops, in particular, roots of parsley, celery and parsnip.

These products are distinguished themselves in contents of vitamin C, lipochromes, vitamins B1, B2, PP, salts of potassium, sodium, phosphorus, iron, as well as glycosides. The protein content in these products varies from 1,3 to 1,5 %.

The more detailed chemical composition of root crops of celery, parsley and parsnip on 100 g of a product is presented in table 1. [3]

Table 1 - the Chemical composition of root crops of celery, parsley and parsnip (on 100 g)

Parameters	Root crops		
	celery	parsley	parsnip
Caloricity, kcal	32.3	49.3	44.6
Water, g	87.7	83.0	83.0
Fibers, g	1.3	1.5	1.4
Fats, g,	0.3	0.6	0.5
Carbohydrate , g	6.5	10.1	9.2
Nonsaturated fatty acids, g	0.1	0.2	0.1
Mono-and disaccharides, g	5.5	6.1	5.2
Starch, g	1.0	4.0	4.0

Continuing table 1

Food filaments, g	3.1	3.2	4.5
Organic acids, g	0.1	0.1	0.1
Ashes, g	1.0	1.5	1.3
Vitamin A mg	0. 010	0. 010	0.02
Vitamin B1 mg	0.03	0.08	0.08
Vitamin B2 mg	0.06	0.1	0.09
Vitamin B6, mkg	7.0	24.0	20.0
Vitamin C mg	8.0	35.0	20.0
Vitamin H mg	0.1	-	0.1
Vitamin PP mg	0.9	1.0	0.9
Iron, mg	0.5	0.7	0.6
Potassium mg	393.0	342.0	529.0
Calcium mg	63.0	57.0	27.0
Magnesium mg	33.0	22.0	22.0
Sodium mg	77.0	8.0	4.0
Phosphorus mg	27.0	73.0	53.0

Processing of root vegetables by blanching allows to slow down and even to stop the activity of enzymes at all which in the future can promote the oxidizing processes destroying flavor, color and structure of the products received. In addition, heat processing promotes destruction of many undesirable microorganisms which causes the damage of product, and as well as occurrence of off-tastes.

Moreover, besides of rich chemical composition root crops have medical property which are transferred also to a new product.

So, these vegetables reduce a blood pressure, expand blood vessels of heart, possess diuretic properts, promote strengthening of sight, and also removing slags, sand and stones from an organism of, strengthen activity of a maw and an intestines, stimulate allocation of digestive enzymes. Very widely root vegetables are applied at frustration of the central nervous system, impotence, prostate diseases, excessive weight.

Besides they possess toning up property, strengthen physical and intellectual working capacity, and also are applied at the general breakdown. In addition the given root crops are deservedly recognized as powerful aphrodisiac.

The process of receiving the new bread grades made from whole wheat grain, which are enriched with vegetative additives practically, does not differ from existing ways of production.

The early studies have shown an opportunity for introduction of offered components into the contents of bread at the stage of panary fermentation in quantity of 10-15 % to the total dough mass.

The research of quality of received bread grades have shown, that the given product has improved properties required by consumers. It is expressed in increasing both the organoleptic (taste, flavour, appearance), and physical and chemical (porosity) properties of the product.

The comparative analysis of a consumer properties of new kinds of bread made from whole wheat grain enriched by root vegetables and traditional one is presented on figure 1.

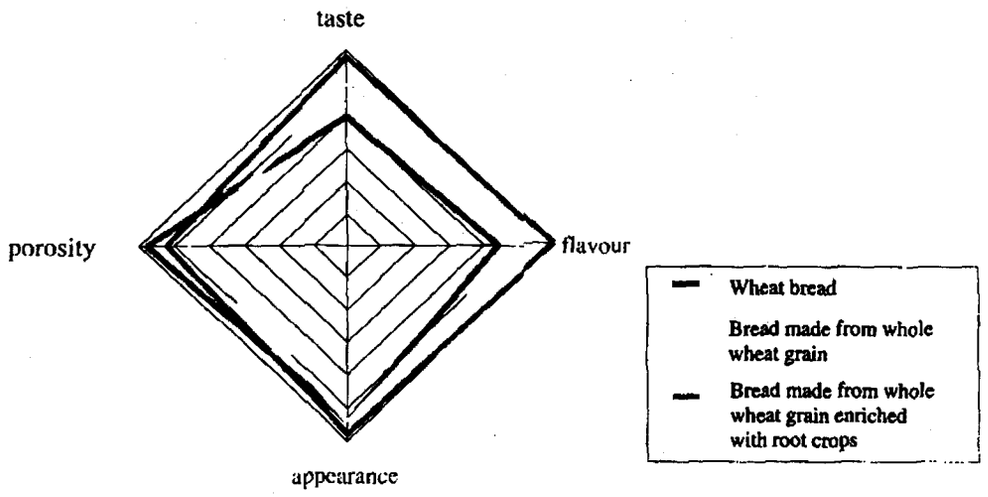

Figure 1. - The comparative analysis of a consumer properties of new kinds of bread made from whole grain enriched whith root vegetables and traditional kinds of bread

Thus, it is possible to make a conclusion, that addition of the slashed and scalded root vegetables (a celery, a parsley, a parsnip) in content of new cultivars of bread made of whole wheat grain allows to expand essentially assortment and to improve food and biological value and consumer properties of finished products.

Moreover, consumption of bread enriched with vegetables will allow to receive social effect expressed in improvement of health of the population, under condition of consumption of such products.

References

1. Kapreljants L., Yorgachova K, Functional products - Odessa: Druk, 2003. - 312
2. Pismeniy V., Cherkashin A., Skribina L., Sotnikova S. etc., Bread with vegetable powders // Bread baking of Russia, 2006, №4.
3. The Chemical compound of foodstuff: help tables of the cores food substances and energy value food products/. Skurihina I, Volgareva M. – 2 add.., 1987

E-mail: natela_k@ukr.net