

Formulation development of functional biscuits

Gjore Nakov, Nastia Ivanova, Stanka Damynova, Viktorija Stamatovska, Ljupka Necinoca, Valentina Chonova, Bodan Gjeorgiev, Iliana Kostova

Abstract: Functional foods is quickly entering the everyday life of every person who wants to eat healthy food. Functional food is the one that besides the basic requirements for food, is ensuring additional health effects on health. Functional foods usually contain components that have a beneficial effect on the intestinal microflora of the body or contain oligosaccharides, which are rich source of dietary fiber and also have a positive effect on the microorganisms in the digestive tract. In this paper is given a definition of functional food, and its division, the raw materials of which are made each functional biscuits and production scheme for producing functional biscuits.

Key words: *Functional food, biscuits.*

Functional Food

The term "functional food" for the first time has been used in Japan in 1980 and related to the food products enriched with dietary supplements, that have positive impact on the physiological condition of the human body. Ministry of Health of Japan has introduced rules for the approval of specific categories of health food - FOSHU (Food for Specified Health Uses) [5]:

- Food which is expected due to its composition has particular portion impact on health or food from which allergens are removed;
- Foods in which the intake of supplements or removing some components have a positive effect on health;
- Food can be called functional anytime, except when basic nutritional value can positively affect one or more functions of the body or to reduce the risk of certain diseases;
- According to the International Food Information Council functional food is one from which there was more health benefit than the usual food;
- FUFOS (The European Commission Concerted Action of Functional Food Science in Europe) provides definitions of functional foods and functional foods should be:
 - normally and daily;
 - consumed as part of the daily diet;
 - has a natural composition composed of components that can be naturally present in food or added in higher concentrations than usual;
 - has positive effect on physiological functions;
 - improving the health or reducing the risk of disease.

There are four types of functional foods [4]:

1. Strengthened products - additionally enriched with natural bioactive present component (eg. fruit juice with added vitamin C);
2. Enriched products- added new components, which are naturally present (eg. Margarine with phytosterols);
3. Changed products - the harmful components are diminished or excluded or replaced with components that have a positive effect on health (eg. Dietary fiber or carrots instead of fat in processed meat products);
4. Improved products - the beneficial components are enhanced by the genetic manipulation, changing the conditions of cultivation / feed (eg. eggs with omega-3-fatty acids).

In the Bulgarian report of "Healthy and safe food for the future" of 2008 in which competent persons were surveyed, it is indicated that the functional food are between the three sectors that have applied technology sector leading companies for. Also, the survey shows that the areas biotechnology, functional foods and food packaging ,are most important in terms of economic development [3].

Raw materials used in manufacture of functional biscuits

Rye grain flour

Integral rye flour is a healthy food, rich in minerals and vitamins. Made from whole grain, and contains the most valuable nutrients, vitamins and minerals, derived from the shell of the grain without additives and preservatives.

Integral rye flour strengthens the body and improves the level of iron in the blood after a short period of consumption [6].

Buckwheat flour

Buckwheat is a natural source of minerals and vitamins of which: iron (helps in formation of red blood cells and hemoglobin in the blood and allows a normal supply of energy metabolism), zinc (helps maintain normal metabolism of carbohydrates and reproductive systems) calcium, iodine, phosphorus, boron, zinc, magnesium, organic acids, pectin, and contains vitamins B vitamins and vitamin A.

Buckwheat is a rich source of proteins (one portion contains 13.2gr. proteins (27% of the recommended daily intake)), needed to maintain muscle mass and normal bones. It contains amino acids such as: lysine, tryptophan, threonine, phenylalanine and valine. It represents a treasure trove of dietary fiber [6].

Oat flakes

Oat flakes are balanced, natural and untreated food. Made of whole grain and itself retains the nutritional value: proteins, vitamins (group B, K, E, D and provitamin A), carbohydrates and minerals (Ca, P, K, Fe, Zn, Mn, Na, Mg, S, J, F, B), and essential amino acids, which stimulates the formation of red blood cells. Oats contain growth hormone, so it is recommended for children consumption, as well. Showing excellent results in the treatment of diabetes (a similar effect to insulin), because it is an excellent food obols of diabetis. Don't contain cholesterol. They are rich in fiber. Suitable for diabetics [6].

Flaxseed

Flaxseed is one of the richest sources of Omega 3 and Omega 6 fatty acids, as well as vitamins A, C, E, B2, B3, B12, biotin and dietary fiber.

The procedure for grinding flaxseed allows the body maximal usage of all nutritional substances naturally present in flax, which positively affect:

- reduction of cholesterol - the presence of Omega 3 and Omega-6 unsaturated essential fatty acids act in reducing cholesterol, thereby protecting from cardiovascular diseases;
- regulation of constipation - fiber present in flax overcome problems with constipation and reduces symptoms that occur when inflammation of the stomach and intestines [6].

Olive oil

The quality olive oil has a sweet-bitter taste, greenish color and smells like fruit. The heavy smell of oil is a sign of low quality and outdated oil.

We can differ 3 types of olive oil:

- virgin olive oil (olio vergine) – the healthiest and best olive oil, which is produced with the first cold pressing of the healthy olives, during which the olive seed must not be crushed. During the draining procedure, it must not lead to usage of heat, so is permitted only etc. "Cold pressing". Virgin olive oil has less than 1% free fatty acids.

Nutritionists, extra-virgin olive oil, considere as very healthy food, rich in chlorophyll, carotene, lecithin (a natural antioxidant who stimulates the metabolism of fats, sugars and proteins), polyphenols (antioxidants) and essential vitamins D, E and K;

- Provençe oil (named after the southeastern region of France, where it is cultivated) - It is the second in quality oil, whose extraction goes until crushing the seeds of the fruit, but also in this process of draining heat is not used;

- Wooden oil is an oil with the lowest quality, is produced by re-extraction of the residue in the production of "provence" oil under the influence of heat. The resulting oil is used exclusively for the production of soaps and for technical oils.

- Virgin olive oil is very healthy because it contains a lot of useful nutrients, which are potent antioxidants. Therefore, the oil attributable and anticancer properties [9,10].

Sesame seed

Contains 43% polyunsaturated fatty acids, 43% monounsaturated fatty acids and 12% saturated fat. They are rich in protein, containing all essential amino acids, particularly methionine. In the seeds there is one special ingredient named sesamine, which lowers cholesterol in a way that reduces absorption from the intestine and speeds up digestion. Sesame seeds contain vitamin E which is one of the strongest antioxidants. It is rich in magnesium, zinc, potassium and iron. It is considered a healing food that can slow down the aging process [6].

Sugar (fructose)

Fructose is a natural, high soluble sugar sweetening power is the strongest of all types of sugars, both in terms of white sugar has twice the sweetening power.

With consumption of fructose before meals is reduced the feeling of hunger, which is useful in case you want to adjust the weight. Its beneficial properties are expressed and in sports, as obesity and diet in diabetes without insulin dependence. Fructose can be used alone or in combination with other sweeteners. It is an excellent sweetener of sports drinks (helps rehydration because rapidly digested), especially recommended for athletes [6].

Water

Water constitutes a basic solvent to other components (most) salts. Of dissolved salts, natural water contains mostly calcium and magnesium salts. In the water there are different mechanical impurities, gases and microorganisms. These solids before usage of water in the food industry should be separated ie the water must be purified. From technological point of view, very high importance has the water hardness, because salts affect the physical properties of gluten and dough [1].

Sodium bicarbonate (NaHCO_3)

Sodium bicarbonate, or baking soda (NaHCO_3) is a white crystalline powder with low odor and low alkaline salty taste. It contains at least 99% sodium hydrogen carbonate. It is hygroscopic, readily soluble in water and the pH of the solution is about 7.5. The temperature of 90°C decomposes the sodium bicarbonate, to carbon dioxide and water. Gasses formed during baking affect the formation of the structure of the product [8].

Salt

Natural salt NaCl represents with very small admixture of other salts. It has white to slightly blue colour. The taste is highly saline to slightly bitter. To the touch it should be dry, with no signs of moisture. Salt is well dissolved in water. The solubility almost does not change depending on the temperature of the water. Aqueous solution should be clear. Salt has great hygroscopic value [1].

Cinnamon

Cinnamon has a positive effect on the blood sugar and cholesterol. Cinnamon crust contains essential oils and tannins, which among other stimulate the circulation and speed up the metabolism. Especially effective is the ingredient methyl-hydroxy - calc-polymer, which is reminiscent of natural insulin and prevents fast declining blood sugar, so the feeling of hunger is delayed.

The cinnamon can help diabetics because it increases insulin sensitivity and thus regulate the level of sugar in the blood. It stimulates insulin receptors while inhibiting enzymes that inactivate the insulin. This double action of cinnamon enhances the use of glucose into cells [11].

Fibergum

The structure contains 100% of acacia gum, containing more than 90% soluble fiber. Fubergum has high solubility, but does not improve viscosity making it easily applicable in baked goods, grain products and other products. Also acacia resin improves the shelf life of the product.

Advantages of using Fubergum are:

- ✓ nutritional and health effect of acacia gum;
- ✓ bifidogen proven effect;
- ✓ High-intestinal tolerance up to 50g / day;
- ✓ lower calorific value;
- ✓ safe for teeth [7].

The technological scheme for production of functional biscuits

Confectionery food products are characterized by nice and attractive appearance, pleasant smell and taste. The confectionery group of dry pasta confectionery also includes biscuits which are products with a mass of 5 to 25g [2].

Figure 1 is a scheme for the production of biscuits "Fructi + Fibregum"

Scheme for biscuits "Fructi + Fibregum"

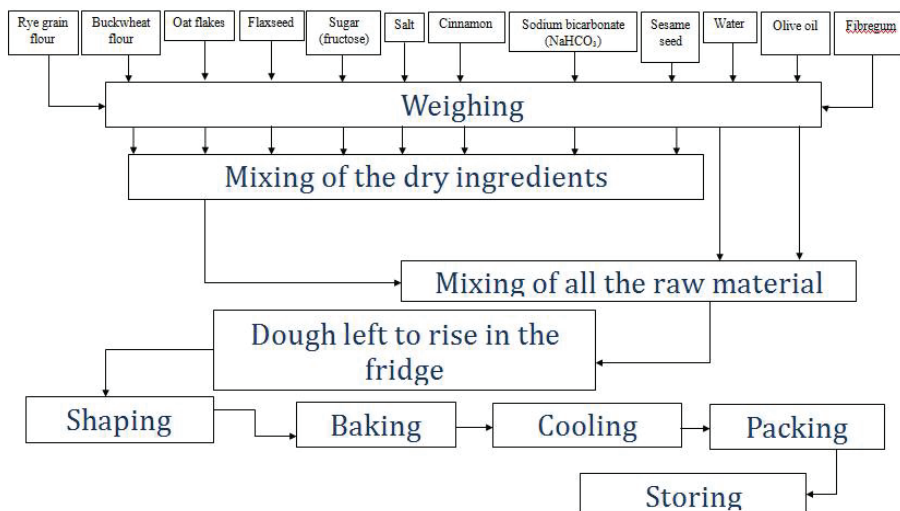


Figure 1. Scheme for biscuits "Fructi+Fibregum"

CONCLUSION

Functional food represents food enriched with additives that have a positive impact on the physiological state of the human body.

According to FUFOS functional food should be a common, every day, to consume as part of the daily diet, to have a natural composition and positive effect on the physiological functions of the organism.

There are four types of functional foods:

1. Strengthened products;
2. Enriched products;
3. Changed products;

4. Improved products.

The confectionery group of dry pasta confectionery also includes biscuits which are products with a mass of 5 to 25g.

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About the authors:

Eng.technology's Gjore Nakov , Department of Biotechnology and Food Technologies, University of Ruse "Angel Kanchev", Branch Razgrad, Bulgaria e-mail: gore_nakov@hotmail.com

Nastia Ivanova, Department of Biotechnology and Food Technologies, University of Ruse "Angel Kanchev", Branch Razgrad, Bulgaria, e-mail: nastiav2001@yahoo.com

Stanka Damyanova, Department of Biotechnology and Food Technologies, University of Ruse "Angel Kanchev", Branch Razgrad, Bulgaria, e-mail: sdamianova@uni-ruse.bg

Viktorija Stamatovska, Assistant Professor, PhD, University St. Kliment Ohridski- Bitola, Faculty of Technology and Technical Sciences - Veles,, Dimitar Vlahov bb, 1400 Veles, Republic of Macedonia, e-mail: vikistam2@gmail.com

Eng.technology's Ljupka Necinova, Veles, Republic of Macedonia, e-mail: ljupka.necinova@gmail.com

Valentina Milkova Chonova, Assoc. Prof., PhD Eng., University of Food Technologies, Department by Technology of grain, fodder, bread and confectionery products, 26 Maritsa blvd., 4000 Plovdiv, Bulgaria, e-mail: chonovi@yahoo.com

Eng.technology's Bodan Gjorgovski - Zito Luks AD, Skopje. Zito Luks Head office building, factory 8mi Mart, Bld. Makedonsko Kosovska Brigada, no.44, 1000 Skopje, Republic of Macedonia, e-mail: bodan_karpas@hotmail.com

Iliana Kostova, Department of Biotechnology and Food Technologies, University of Ruse "Angel Kanchev", Branch Razgrad, Bulgaria, e-mail: ikostova@uni-ruse.bg

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