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Unlocking Nutritional Potential: Enriched Barley In Functional Nutrition

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Abstract
This article explores the significance of incorporating enriched food in Functional Nutrition, with a specific focus on the versatile applications of barley. It sheds light on the valuable aspects of harvested barley, emphasizing its nutritional benefits and potential contributions to a balanced diet. Furthermore, the article provides insights into the preparation and utilization of barley malt at home, offering practical guidance for individuals seeking to harness the nutritional richness of this grain. Additionally, recommendations are offered for maximizing the home use of harvested barley, empowering readers to integrate this nutritious ingredient into their culinary repertoire with confidence.
Keywords: enriched food, biologically active additive, harvested barley, vitamins, macroelements, microelements, nutrients.

Introduction

Currently, it is known that 70% of the average population needs special fortified food products due to unfavourable environmental conditions and chronic diseases. The creation of new types of food products with high nutritional and biological value, satisfying the population's need for substances affecting adequate development, is becoming one of the urgent problems. The need to create functional products enriched with high-quality proteins, minerals, vitamins and other biologically active substances is growing. Increasing the variety of enriched products for functional nutrition is enrichment with natural food products and the use of natural sources of biologically active substances. An example of this is the use of harvested barley. Scientists have developed a wide range of products based on barley, wheat, rye, rye, and corn malts. Examples of them are malt extract, malt flour and cereals [1].

It is in the harvested spiked grains that there are important amino acids and polyphenol compounds, enzymes, mineral substances, and hormones, such as lysine, methionine, tryptophan, histidine, and arginine, which regulate the processes of metabolism in the body. Milled barley grains contain easily digestible polysaccharides - products of starch hydrolysis (dextrins, maltotetrose, maltotriose, glucose) and a large amount of C, E and B group vitamins. When grains germinate, the activity of vitamin E increases several times, and vitamin C is synthesized in the process of enzymatic hydrolysis. A distinctive feature of harvested grains is that the amount of plant enzymes amylase, protease, and lipase increases during grain harvesting [2]. The highest activity of amylolytic enzymes is observed among legumes and grains, more in barley and wheat. These enzymes help to saccharify starch and increase its digestibility. When using milled barley grains, it is important to study the effect of by-products on the organoleptic characteristics of the product. It is also important to determine the optimal dose of harvested grains, and the effect on the shelf life of the finished product [3].

Milled barley malt is ground into flour. In the enrichment with additives, the flour of harvested barley grain is mainly used. 1.5%, 3% and a maximum of 6% are added to products from milled barley flour.

Fresh barley grass can be used as a vitamin food supplement. This biologically active supplement can be taken before breakfast by adding it to water, juices, and kampots. It can also be eaten with other foods that are not heat-treated (salads, fruit and vegetable purees, ready-made soups, muesli). Various vitamins, cocktails, and yoghurts are produced based on the biologically active additive of milled barley. Creams and scrubs are also made in cosmetics. 100 g of this biological supplement contains:

– Calories - 299 kcal / 1252 kDj;
– Proteins - 13.8 g;
– Fats - 2.8 g, as well as saturated fats - 0.6 g;

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– Carbohydrates - 34.1 g, sugar - 8 g;
– Plant fibers - 41.6;
– Salts - 0.06.

The large number of exchangeable amino acids in the malted barley makes it a convenient, inexpensive additive for use in food fortification. The table below shows the amounts of exchangeable amino acids in barley and hulled barley grains:

Table 1. Exchangeable amino acids in barley and hulled barley grains

Nutrients	*Amount*	*Amount*
alanine	0.43 gr	0.239 gr
aspartic acid	0.59 gr	0.328 gr
glycine	0.41 gr	0.228 gr
glutamic acid	2.58 gr	1.433 gr
proline	1.18 gr	0.656 gr
cool	0.43 gr	0.239 gr
tyrosine	0.36 gr	0.2 gr
cysteine	0.22 gr	0.122 gr
sterols		
beta sitosterol	120 mg	66,667 mg

Brewed barley malt is recommended in the treatment of cardiovascular diseases. Brewed barley tincture has been used since ancient times. It is mainly used in gastritis with high acidity, in the treatment of stomach ulcers and duodenal ulcers. It is also used as a diuretic and laxative. In most cases, it is appropriate to prepare kvass from harvested barley [4].

Products enriched with barley malt are one of the dieter and functional foods. Milled barley is a very rich source of micronutrients. Therefore, natural nutritional dyes are also obtained from it. Because such natural dyes are used in the production of soft drinks, yoghurts and confectionery products. This helps to make these food products more useful and healing.

This drink is a useful food for patients with diabetes, and stomach and duodenal ulcers. It is also recommended to use harvested barley and harvested wheat grains to treat various stages of cancer tumours, polyarthritis, encephalitis, heart disease, hypertension, asthma, pulmonary tuberculosis, diabetes, epilepsy, kidney and gallstone diseases [5].

Malting in the laboratory or at home: 1. Barley grain is thoroughly washed, put in a bowl and water is poured over it until the top of the grain is 6-7 cm.

2. Garbage on the grain is removed.
3. Grain is poured with water at 10-15 ℃ and soaked for 2 hours.
4. After 2 hours, it is washed again and kept in water for 24 hours.
5. After pouring water, the grain is thoroughly washed and spread on gauze 2 cm thick and soaked in a dark place 3 times a day (water is sprayed).
6. Barley grain is collected for 3-5 days, barley grain for 5-7 days and made into malt [6].

To obtain such powder, it is enriched with malted wheat, barley, rye, sorghum, corn, oats, dried fruits and berries to increase the quality of taste. Attention should be paid to the fact that all the ingredients are in the form of flour. This product is considered a functional food. In this case, grains are harvested in a special traditional way (collected at 18-25 ℃, 36-56 hours in humid conditions) 0.5 mm buds are dried by heat treatment after germination. The mixture of grains is crushed to a size of 3-5 mm. Then fruits and berries in such volume are crushed and added to cereals. Such a product is considered a biologically active substance and has a long shelf life. Ready talkan can be easily consumed with water or milk. Here are the different foods you can get from flour:

1. Add 50-60 grams of flour to 20-30 grams of butter and lightly fry on low heat. Add 1 tablespoon of honey and wait until a thick mass is formed. Then these mixtures are dried into the desired shapes.

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2. Cocktail: add 2 teaspoons of talkon to 1 cup of yogurt or yogurt and leave for 30 minutes. This cocktail is effective in getting rid of excess weight.
3. Unmilled barley grains can be used instead of rice in liquid foods.
4. Dessert with talc: add 1 tablespoon of collected barley talc to 150 ml of sour cream or ice cream and mix with honey to taste. Various fruits can be added to it.
5. A little salt and 1-2 tablespoons of butter are added to 0.5 cups of black tea. Barley flour is added to a paste and can be dried into shapes or eaten directly.
6. Holva: 0.5 cups of sugar, and 0.5 cups of vegetable oil are mixed well and 200 grams of talcum powder are added and mixed until a homogeneous mass is formed. The result is soft and sweet halwa.
7. Cutlets: 200 g of flour is boiled in 3 cups of soup. Cutlets are formed and fried by adding 0.5 cups of vegetable oil, 3 eggs, finely chopped onion and 2 garlic cloves

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