

The importance of the amaranth plant in the production of gluten-free foods

Khalilova Saidakhon

doctoral student of Tashkent state Agrarian university

Andijan, Uzbekistan

Egamberdiyev Oybek

assistant of Andijan Institute of Agriculture and agrotechnologies

Andijan, Uzbekistan

Dehkanova Shaxnoza

assistant of Andijan Institute of Agriculture and agrotechnologies

Andijan, Uzbekistan

A.Bozorboyev

student of Andijan Institute of Agriculture and agrotechnologies

Andijan, Uzbekistan

Abstract. The problem of today is explained by the fact that the increase in the population increases the demand for food. In addition, we are living in a period when various drastic changes in the climate, food products containing artificial substances, are observed to increase production. Scientists and researchers have been tirelessly consuming products that have been grown and produced in different ways, let alone Bong beat about safe food, safe product. As agriculture, like other industries, has developed, there is an increasing demand for organic products, an order of cultivation that, regardless of age, the body can easily assimilate, without GMOs and various chemicals. Introduction. The greatest impact on human health is related to the products it consumes. Of course, the change in the atmosphere will have its effect on the whole individual. However, it is no secret that the cultivation, storage and processing of agricultural products is the only task facing representatives of the industry - the safety of consumer life. Also, Khali is not to harm the world of flora and fauna, which has not been fully studied, is an environmental phenomenon. Today, in many states, the inability to absorb gluten poses a threat to the younger generation of humanity, like other serious diseases. This is considered of particular serious importance among women.

Keywords. amaranth seed, nutritional supplements, free gluten, safe food products.

Introduction. For a thousand years, the role of bread for humanity has been assessed separately. The demand for bread and flour products varies from state to state. Bread is the most important product throughout human history, mainly in Europe, West Asia, Urta Asia and North Africa. Today it does not play the same role as 1000 years ago, but it still remains one of the most popular products on the planet. At this point, it is worth saying that the presence of substances in flour and to what extent Hot Bread has an impact on human health is a current topic today. Somehow, modern medicine explains that due to gluten in bread, weight gain and problems with the gallbladder and gastrointestinal diseases, the lack of growth of stature in children increases every day. The body cannot take cereals such as wheat, rye, oats, millet and barley - that is, it signs with diarrhea, nausea. This fan is called celiacia. In developed countries, it is currently recommended to eat gluten-free bread (Bhattarai, 2018). A clinical picture of celiac or gluten enteropathy was first published in 1888 by Samuel guy, a physician at Bartholomew's hospital in London. For the first time, it was found to be accompanied by height growth lag, diarrhea, and eating disorders syndrome. Nevertheless to this day, many scientific papers continue to be published on the alarming hidden clinical signs of this disease and the dramatic results of gluten-free treatment. The prevalence is highest in Italy, with 1 in 366 children of early and school age in our God, compared to 1 in about 300 in European countries.

Unlike acute diarrhea, which has an infectious character of celiac disease, prolonged diarrhea in most cases is associated with non-infectious factors i.e. non-digestion of food and impaired absorption in the intestines. Celiacia is a congenital, multi-sign and worsening disease caused by damage to the mucous membrane of the small intestine by the action of the protein gliadin, the protein of spleen grains. It is

accompanied by a violation of food absorption in the affected part of the mucous membrane of the small intestine. The clinical picture is dominated by steatorrhea, which causes severe syndrome of large amounts of fluid departure of the inside and impaired absorption in the intestine.

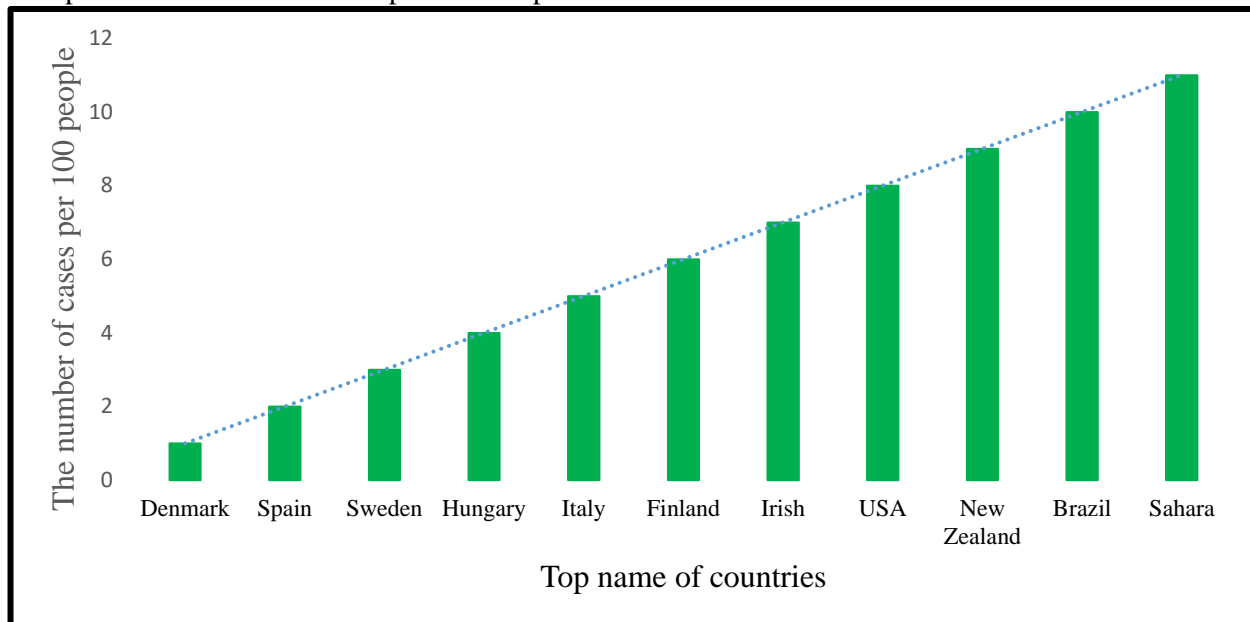


Figure 1. Countries diagnosed with celiac disease

Celiac is diagnosed late, which is due to certain difficulties in carrying out morphological and instrumental examinations in children, especially children under 3 years of age, atypical course of the disease, the degree of occurrence of non-intestinal signs. As a result of late diagnosis of the disease, severe metabolic disorders occur in the body that threaten the life of the patient. The diagnosis of celiac disease placed on the child means that he is disabled. For this reason, early diagnosis is very difficult, since the fact that the disease is strained increases the risk of developing malignant tumors in the intestine in addition to leading to disability and, as a result, leads to an increase in the death of children.

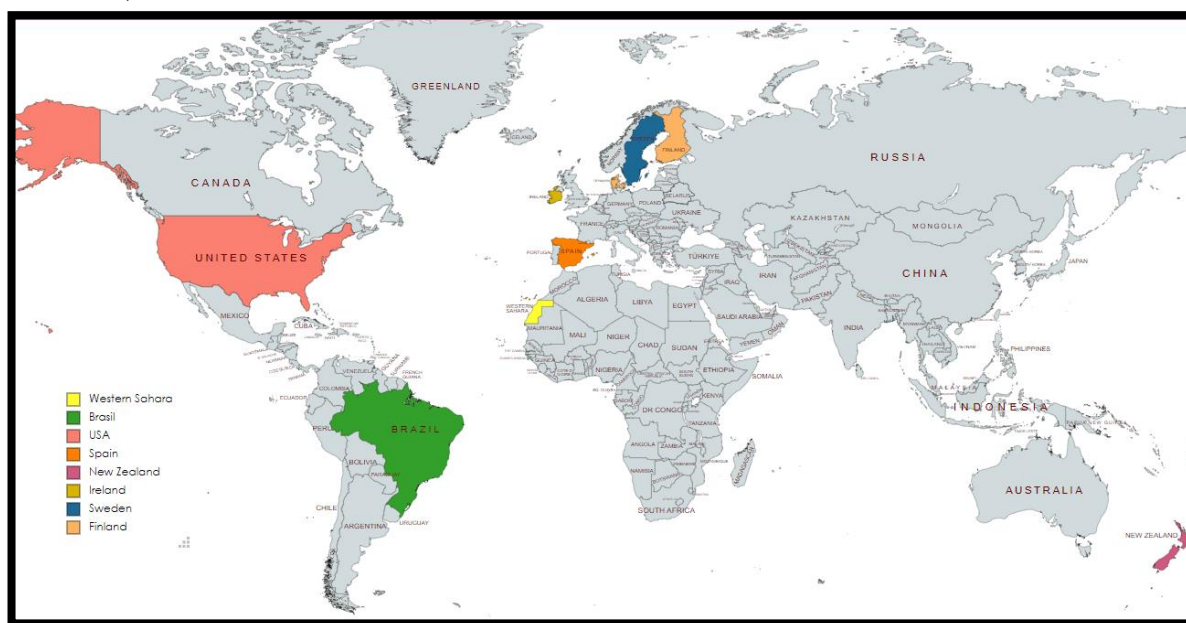


Figure 2. Countries where the disease of inability to absorb gluten in bread has been observed

The inability to digest the grains of legumes is one of the most common forms of indigestion. In 5 of the large number of Spike plants used by mankind, humans with a strong sensitivity in the body have gluten and

proteins similar to it, which have a toxic effect on the mucous membrane of the small intestine. These include wheat, rye, oats, millet, and barley, which have the property of causing a severe disease called celiac. Spike crops under the influence of gluten protein thin the mucous membrane of the small intestine, the intestinal suckers are flattened. This sharply reduces the surface of the intestinal sucker, resulting in a violation of the absorption of all nutrients, especially fats. The "classic" form of the disease manifests itself after 4-8 weeks in clinical terms. Most often, Manny porridge or a decoction of Hercules, biscuits, bread give such signs. Most often, the disease begins in the second year of a child's life, (in some cases, under the influence of factors that allow genetic defects to occur, it begins late for intestinal infections or other acute diseases, ruxiy-exciting cases and headsets).

Methodology.

When conducting scientific research, it is used to compare the content of gluten-containing agricultural crops and the content of gluten-containing agricultural crops that do not contain gluten, reflect in tables, reflect the prevalence rate of gluten-unable disease on maps and carry out satatistical analyzes, and calculate the economic efficiency that is obtained when processing the recommended gluten-free plant. Each result obtained is reflected in the Microsoft Exel program.Re-edited to CSV and RIS format. The Vosviewer 1.6.18 software, Zotero software,www.mapchart.net/ software.

Results and discussion.

Gluten is the common name for a group of proteins found in cereal plants. Their main property is to give adhesion to the substances with which they interact, which is why they are also called gluten.

Table 1.

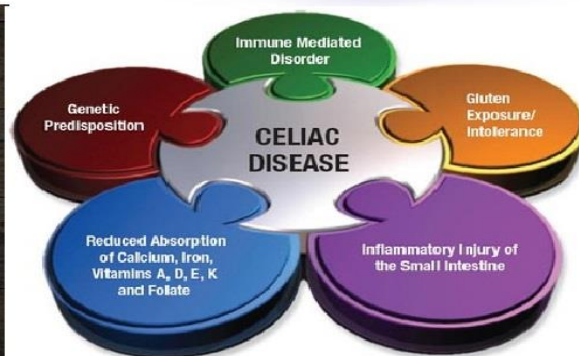
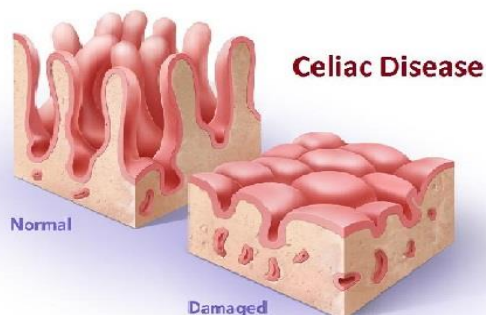
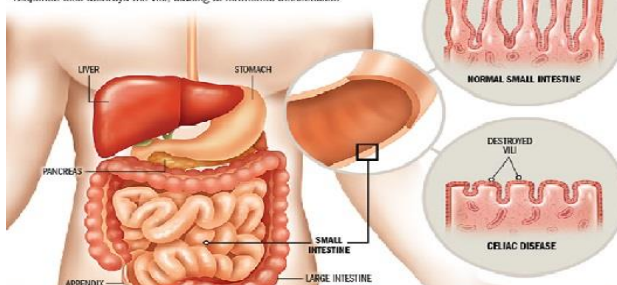
group includes the following plant substances:	
at	in (other name glutenin)
	lin
hum	in
cale	enin

Gluten-containing plants

Gluten gives the products a stickiness because it is insoluble in water. Thanks to gluten, the dough has a thick consistency. For a different diet, the body needs different proteins – proteins from both the animal and the plant have been found to benefit the human body from the harm of raw Ham. Historically, cereals formed a large part of the human ration. Although today wheat flour is not consumed as much as our distant ancestors ate, the proportion of nutrients in it has not changed. However, the content of wheat, rye, oats and barley is not limited to one substance. Gluten is considered serious for patients with diseases such as dysbacteriosis, gastritis and inability to absorb gluten, although it is not at risk to an absolutely healthy person. (Chauhan A. Saxena D.C.2015)but it is also not permissible to completely exclude gluten from the diet. Gluten has an hos role in the human body, giving it an excess of protein as well as satiety. However, today's markets are enriched with gluten-free products. (Reference Sapone, Bai and Ciacci.2012), (Reference Igbinedion, Ansari and Vasikaran) because the consumer's demand today is.

Damage from celiac disease

In a healthy small intestine, tiny hairlike projections called villi absorb nutrients from food. When people with celiac disease eat foods containing wheat, barley, or rye, the body's immune system attacks the gluten proteins. This immune response also destroys the villi, leading to nutritional deficiencies.



Since gluten is often used as a thickener or stabilizer in food production, it can be found in a variety of finished products and semi-finished products. After various studies, it was found that wheat flour could be replaced by another plant grain and that it was much safer and more effective. That is, the ingredients in bread made from wheat flour can be obtained from gluten-free products (such as lentils, amaranth, quinoa). *Technological benefits than diet.*

Gluten actually brings more technological benefits than diet. But it is a pity that the inability to absorb UG in the body is much observed in most children and women of childbearing age. One of the main issues facing the representatives of the agricultural sector is that the cultivation of safe and high-quality products should also be economically efficient. It is necessary that the technological processes of processing are based on the application of energy-saving and convenient materials, the choice of local varieties is practical and theoretical. Relying on FAO data, amaranth has been proven in science that iron has properties that can satisfy such requirements.

Gluten-free products

Gluten-free products are becoming more and more in demand, and gluten-free bread is not only preferred by consumers suffering from celiac disease, but also makes sure that it is safer and healthier than the traditional type of bread. For example, in the United States, gluten-free bread accounts for 75% of the total number of consumers (Zharkova I.M.2019). In addition, it is important for the elderly (low in sodium), for expectant mothers (with folic acid) to be enriched with products. For example, folic acid must be added to bread in more than 50 countries around the world, including the United States and Canada. In the preparation of bakery products in Australia, it is mandatory to enrich flour with folic acid. (Centeno Tablante E., 2019) nevertheless, consumers are the main factor in the development of the assortment of fortified bakery products in Western countries. The main factors of this growth are explained by the increase in the consumption of healthy bakery products and pasta, the rapid and easy succession of functional foods from sales stalls, as well as the continuous supply of various products in a wide range.

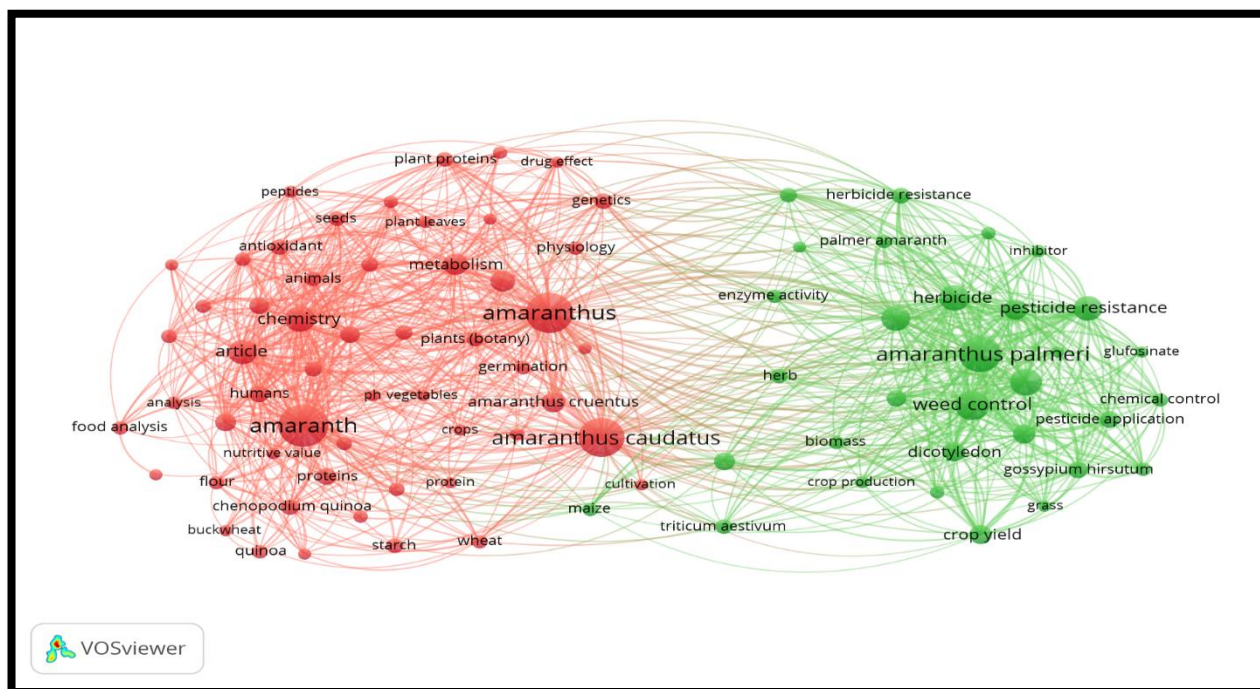


Figure 3. Production of flour products from amaranth and comparison with other flours

One way to increase the nutritional value of bakery products is to use unconventional raw materials for baking, which contain a balanced complex of proteins, lipids, minerals and vitamins. Amaranth is valuable for its nutritional and therapeutic and prophylactic properties. Amaranth's homeland is South America, where its species, varieties and forms grow the most. From there it was brought to North America, India and other countries. The secondary center of formation was Northern India and China, where a large number of Amaranth species are now also located (Kurmangalieva A.R. 2018) Amaranth seed is often referred to as grain. They contain a large amount of calcium, as well as magnesium, manganese, phosphorus, potassium and vitamin C, and amaranth satisfies 29% of the daily iron intake. Its protein content is 13-14%, compared to other cereals yuqori. Ba some studies show that amaranth reduces inflammation and reduces some risk factors for cardiovascular disease. A glass (246 grams) of cooked amaranth contains 5 grams of fiber and 9 grams of protein. You can use amaranth grain as a substitute for other grains such as rice or flour. In confectionery and food production, corn can also be used instead of starch as a thickener.

Table 2.

Types of nutrients	For the amount of nutrient in the product		
	at flour	flour	ranth flour
Proteins	0		5
Carbohydrates	0	0	5
Dietary fiber	0	0	
Vitamin (B ₁)			
Thiamine (B ₂)			
Pantoic acid (B ₅)			
Nicotinamide (B ₆)			
Biotin (B ₇)			
Choline (PP)			
Tocopherol (E)			

orbic acid (C)			
ssium			
ium			
nesium			
um			
sphorus			
nium			

Chemical composition of various flours

Conclusion.

However, despite the obvious advantages of this plant, it is still not fully covered as a food product. Often in agriculture, siderates or silage for livestock products are grown for the purpose of obtaining products. For example, the physical properties of amaranth flour have significant differences from traditional types of flour. The starch that makes up the bulk of amaranth flour has very small granules (an average diameter of 1 micron) and high water absorption capacity (Aksenova o.I.2019; Alekseeva E.I. 2012), which affects the quality of the bread and, accordingly, limits its use in cooking. The result of scientific research shows that bread and bakery products covered with amaranth flour (pies and pasta, cakes and biscuits) did not differ in quality from products made from wheat flour. (Voropaeva A.A.2019; Zvyagin A.A.2015; Osmanyanyan R.G. 2011). Some varieties of amaranth have dark colored seeds, and their mixture of rye and wheat flour is recommended to be used in bread recipes (Gins V.K.2017). With this, wheat flour is not completely dispensed with. However, the product prepared for consumption is enriched with useful properties, and its safety increases. Especially in individuals who have a problem with not being able to absorb gluten, there will be a high chance of preventing the disease and taking Prevention earlier. (Centeno Tablante E. 2019) this disease is mainly carried out in Europe, which does not mean that in other countries it is absent. On the territory of Uzbekistan, there is practically no scale of production of products that are presented to a patient with such a disease. However, one in every 2,000 young children have this problem. With this in mind, it will be advisable to process and send to consumption the amaranth plant hom in the production of mahsus bread and bakery products for individuals with a predisposition to celiacia in the immune system for preventive purposes, preventing a disease that is at risk of expanding like this in Central Asia. It is important that parents always remember that celiac is a lifelong disease. Most parents accept a breadless diet hesitantly, which they believe the child cannot be eaten without bread. They must always understand: bread, which is a benefit for other children, makes them poisonous for their children. The flour product from the plant, which we recommend to manufacturers, is able not only to eliminate cases of inability to absorb gluten in children and older people, but also to bring many useful elements into the body. The flour from amaranth grain is rich in vitamins and carbohydrates that are not inferior to raw wheat flour. This asossan is considered a convenient and inexpensive product for people on a diet. In addition, energy-saving raw materials for the manufacturer. This product is also incomparable in the treatment of anemia, which is becoming relevant in Central Asia.

Acknowledgements

We express our gratitude to the Ministry of Higher Education and innovation of the Republic of Uzbekistan, the Ministry of Agriculture, The Tashkent State Agrarian University, the Andijan Institute of Agriculture and Agrotechnology in conducting scientific research.

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