



CULTIVATION AGROTECHNOLOGY OF THE MEDICINAL AMARANTH PLANT (AMARANTHUS) AND ITS MEDICINAL PROPERTIES IN MEDICAL APPLICATIONS

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Abstract

In medicine, oil obtained from amaranth (*Amaranthus*) is used widely to alleviate gastric and intestinal ulcers, treat skin diseases, accelerate the healing of incised wounds, and manage radiation-related illnesses. Notably, amaranth seeds are extensively employed as a medicinal agent to help prevent the growth and promote the resorption of malignant tumours associated with cancer. Medicinal amaranth belongs to the group of therapeutically valuable plants. This thesis discusses the plant's medicinal properties and methods of cultivation.

Keywords: Medicine, plant composition, skin diseases, medical treatment, seeds, composition, medicinal properties, cultivation methods, diseases, therapeutic approaches.

Introduction

Amaranth plant is currently of great importance in the world for its use as food, fodder, siderat crops, and for obtaining biologically active substances due to its high productivity and valuable chemical composition. It is extremely important and urgent to create a single base of scientific research on the cultivation and processing of medicinal plants and to study advanced scientific developments of foreign countries. Amaranthaceae – The Amaranth family, a member of the class of dicotyledons, consists of 65 genera and about 900 species. Among them, the



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Amaranthus genus is widespread, and its representatives are mainly annual herbs. There are 7 species of amaranth found in our republic. The most common one is *Amaranthus blitum* L - known by other names as cowpea, machin, saltwort, pigweed and others, and is known to many as a weed in fields.

Amaranth It belongs to the *Amaranthaceae* family, described by Antoine-Laurent de Jussieu in 1789. The internal taxonomic order of this family has been variously revised and reorganized in recent years. According to the authors, between 2 and 10 families are recognized. These subfamilies include *Amaranthoideae*, *Gomphrenoideae*, *Chenopodioideae*, and *Salsoloideae*.

The wide geographical distribution of amaranth indicates its adaptability to various natural regions, as well as to high temperatures, saline and nitrogen-poor (low-fertility) soils, and drought conditions. 17 species of this plant are found in the flora of the former Soviet Union.

Native to South America, amaranth has been cultivated for its seeds for 8,000 years.

Amaranth is widespread throughout the world, from South America to North America, to India, and from there to Asian countries.

Currently, there are many varieties of amaranth in India and China, which are considered the second homeland of amaranth. In these countries, the amaranth plant is widely used in local medicine, national cuisine, and industry.

The amaranth flower is called "rooster's crown" among our people because it is a small, pink, dark pink, red, and dark red flower, resembling a rooster's crown.

Most species of the *Amaranthaceae* family are characterized by such important features as high photosynthesis rate, heat and drought resistance, ecological adaptability, and high protein and other valuable compounds. Amaranth is widely grown as a crop in arid regions of Latin America, India, and Africa. One of the features characteristic of amaranth is the efficient use of water and its adaptation to low humidity conditions. At the same time, it is drought-resistant, and plants belonging to the amaranth family are widely used in the construction of gardens. In other words, amaranth can be grown in agro-ecological regions due to its drought resistance at different altitudes.



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Species of the *Amaranthus* genus are mostly annual herbaceous plants. The cultivated species of this genus are called amaranth, and the wild species are called machin.



In Uzbekistan, all species of the amaranth genus grow as weeds in fields, along ditches, and along roadsides.

Biological properties. The most valuable and healing part of amaranth is its seeds. Recent studies have shown that amaranth grain surpasses the main traditional food crops in terms of the qualitative composition of protein, amino acids, vitamins, macro- and microelements, biologically active substances, and lipids.



Extraction and use of oil from amaranth grains is also currently one of the urgent tasks in medicine. The lipid composition of amaranth seeds differs from other traditional oil plants in that it contains balanced fatty acids, biologically active



substances, and a high content of squalene, tocopherol, sterol, and phospholipids, which are rare in plants.

Medicinal properties and composition

Amaranth oil has the property of healing stomach and intestinal ulcers, is used to accelerate the healing of skin diseases, cuts, and patients suffering from radiation sickness. Its oil is not inferior to oblepikha oil. Amaranth leaves contain up to 30% protein and 270-350 mg / kg of coratin. They contain riboflavin, vitamins, ascorbic acid, K, E, D and other vitamins.

Usage: The leaves, seeds, and stems of the amaranth plant are considered medicinal and can be used as a medicine for anemia, atherosclerosis, adenoma, hemorrhoids, and cardiovascular damage, as well as liver and kidney dysfunction. Its leaves, when drunk as tea, are very beneficial in boosting human immunity. Amaranth is widely used in particular for the purpose of holistic health, rejuvenation, and strengthening of the body. In addition, amaranth seeds are effective against hair loss and graying. Amaranth oil has the property of healing stomach and intestinal ulcers, and is used to accelerate the healing of skin diseases, cuts, and patients suffering from radiation sickness. Its oil is not inferior to oblepikha oil and has been used to treat a number of diseases. Amaranth seeds help prevent the growth of malignant tumors caused by cancer and help them dissolve.

Vegetable amaranth is very common mainly in the countries of the East, and is included in the daily diet as a green vegetable. Its seeds are widely used in various areas of confectionery, in addition to medicine. In India, Pakistan, Nepal and China, porridge is prepared from the seeds of cereal and vegetable amaranths, mixed with sweet corn. Tall varieties are grown as fodder for livestock.

Amaranth protein is characterized by a high amino acid content compared to other feed crops. According to expert assessments, amaranth protein is equivalent to 75 units accepted according to the quality table (scale).



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Although the medicinal properties of the plant have not been sufficiently studied by medical professionals in our republic and have not been scientifically substantiated, there is information that it has been widely used in our national medicine since ancient times.

It is known from history that our grandfather Abu Ali ibn Sina widely used amaranth to heal wounds and ulcers from the sword, skin diseases (measles, rubella), bad breath, and other diseases.

Amaranth seeds and leaves, added to food products, are widely used as a healing food. They are especially useful when added to the diet of patients suffering from cardiovascular diseases.

Amaranth oil contains up to 10% of squalene, a substance with a high therapeutic, various antitumor and bactericidal effect. The function of squalene is to balance proliferative processes, based not only on its internal concentration in the cell, but also on its effect on the activity of enzymes, as well as on the catalysis of the synthesis of its own molecules and the biogenesis of common precursors of all active isoprenoids.





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Amaranth oil is a renewable alternative source of this valuable substance. The scope of application of amaranth oil covers not only the food industry, but also the perfumery and cosmetic, pharmaceutical and various fields of medicine.

Amaranth oil has the property of healing stomach and intestinal ulcers, is used to accelerate the healing of skin diseases, cuts and burns, and in the treatment of patients with radiation sickness. Its oil is not inferior to oblepikha oil and has been used to treat a number of diseases. Amaranth seeds are used in medicine to prevent the growth of malignant tumors caused by cancer and help them dissolve. The presence of squalene (C₃₀H₅₀) in large quantities in amaranth oil is a scientific discovery, and this substance was first extracted from the liver of whales and sharks in 1961, and this environmentally friendly process continues to this day. There is hope that this valuable substance, which rejuvenates the human body and is effective in various diseases, will be even more abundant in amaranth oil grown in sunny Andijan. Such initiatives carried out by Andijan scientists will naturally contribute to improving human health in the medical field, new opportunities in animal husbandry, soil health, and effective profitability in agriculture.

Agricultural Machinery

The fields where it will be sown are plowed in the fall to a depth of 25-28 centimeters. Before plowing, the soil is fertilized with organic and mineral fertilizers. In early spring, the land is leveled and cleared of weeds. Amaranth is recommended to be sown in stable warm weather (April-May), when the soil at the depth of seeding warms up to 10-12 degrees. In addition to heat, the soil where the seeds are sown must contain sufficient moisture for germination. Since the seeds of amaranth are covered with a hard coating, they require sufficient water. It is advisable to sow it in rows with a spacing of 30, 45, 60 centimeters, and in areas planted for seed collection, a spacing of 70 centimeters is used to sow amaranth seeds. Amaranth plants develop very slowly in the initial stage of the growing season. Later, their growth and development accelerates. Since the amaranth plant is very demanding on nutrients, its growth and development in the



control variant were very slow. Amaranth is a short-day plant. However, in the experiment, the duration of the growing season of amaranth was almost the same when planted in spring and autumn. Usually, short-day plants shorten their growing season as the day shortens, accelerating their ripening. However, since amaranth is a very demanding plant on temperature, the cooling of the air in autumn may have slowed down its ripening. Amaranth is a thermophilic and light-loving plant. This plant is considered an annual and grows 2-3 meters tall. The stem is 8-10 centimeters thick, the leaves are elongated and elliptical, and are arranged in a row on the stem with a long stem. The flowers are small, inconspicuous, and form a large panicle-like inflorescence that can reach half a meter in length. The seeds are small, spherical, brown or yellow, and 1000 seeds weigh only 0.4-0.6 grams. Up to 0.5 kilograms of seeds can be obtained from one plant. The plant blooms in June, and the seeds ripen in July. During the season, amaranth is watered 3-4 times and fed with 90-100 kg of nitrogen, 70 kg of phosphorus, and 50 kg of potassium per hectare. When its height reaches 70-80 centimeters, the last feeding is completed with nitrogen and potassium fertilizers. The growing season is 80-90 days for early varieties, 100-110 days for mid-season varieties, and 120-125 days for late-season varieties. In local conditions, when all agrotechnical measures are carried out in a timely and high-quality manner, it has been observed that fully ripe grain can be obtained from it in 70-75 days.

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