

## AMARANT - SOME FLAVONOIDS AND THEIR BIOLOGICAL ACTIVITY

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### ABSTRACT

*The article presents information about secondary metabolic compounds, namely flavonoids and phytosterols, as well as their properties in the components of the amaranth plant. The article also mentions the importance of amaranth in folk medicine and modern medicine.*

**KEYWORDS:** *Amaranth, Folk Medicine, Biologically Active Compounds, Flavonoids, Phytosterols.*

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### INTRODUCTION

It is known that human health and its protection is one of the main and important issues in the development of society. Today, one of the criteria determining the state of development of countries is the level of health of the population.

These days in our country also public health and it Special attention is paid by our government to protection issues.

Especially, the resolution of the President of October 12, 2018 "On measures to regulate the field of folk medicine in the Republic of Uzbekistan" indicates the attention paid to the representatives of this field. The resolution recognized the integration of folk medicine with modern medicine in public health. Also, the main directions of development of folk medicine were identified.

### MATERIALS AND METHODS

In particular, well-known scientists of our country, Doctor of Chemical Sciences, Professor I.R Asqarov and Doctor of Medical Sciences, Academic N. Mamasoliev discovered another new science "Folk Medicine" in the system of medical sciences with the code 14.00.41 and this science under the Cabinet of Ministers According to the letter of the Presidium of the Higher

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Attestation Commission, registration as a new subject shows how important it is to pay attention to this area [1].

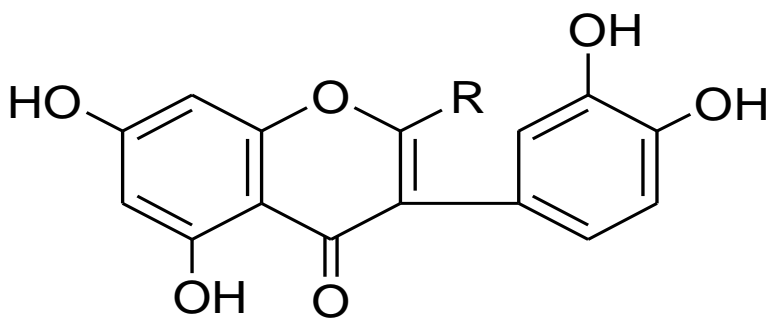
Today, in many countries of the world are using modern medical methods in the treatment of diseases, many methods of folk medicine have long been known, and the further development of these methods and their integration with modern medicine is one of the most important issues today [2].

One of the methods used in folk medicine in the treatment of diseases is treatment with these plants (phytotherapy). In this method, tinctures, ointments and bandages are prepared from the roots, stems, leaves, flowers and seeds of medicinal plants and are used in the treatment of various diseases.

One of the plants rich in biologically active compounds that exhibits such healing properties is the amaranth (*Amaranthus* L) plant. is one of the plants with high nutritional value and medicinal properties, which is currently being introduced in our country. This plant species are widely grown in Southeast Asian countries such as South America, Indonesia, China, India as a grain, vegetable, medicinal, ornamental, technical and fodder crop. *Amaranthus* (*Amaranthus* L) species has a high yield and is rich in proteins, vitamins, carbohydrates, fats, betalain pigments, pectins, micro- and macronutrients in seeds, stems, leaves and stems. In addition, the presence of secondary metabolites in the plant components, such as flavonoid glycosides, carotenoids, hydroxy acids, enhances its healing properties [3].

The total amount of phenolic acids in amaranth is 16.8 mg to 59.7 mg per 100 g of product, depending on the navigation of their seeds. Of these, soluble phenolic acids range from 7% to 61%.

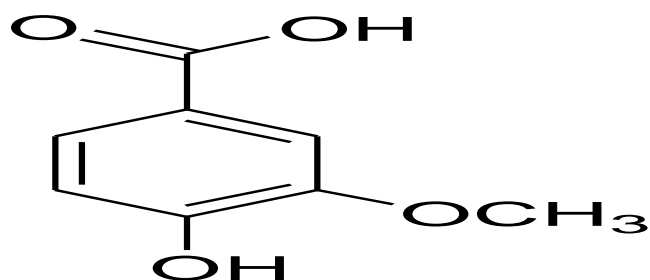
The natural bioflavonoid-rutin content of amaranth seeds and leaves is 0.08 -24.5 mg / kg depending on its species and region of cultivation [4].



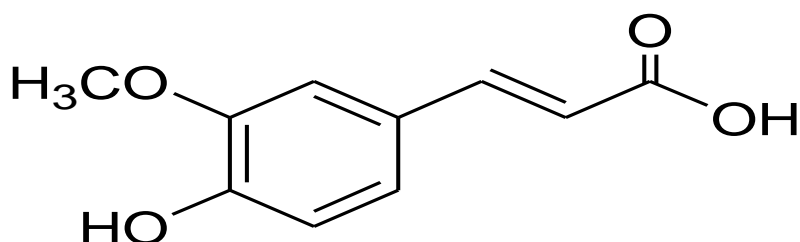
Rutin

Quercetin and its derivatives are more abundant in the ripe leaves of amaranth than in other parts [5].

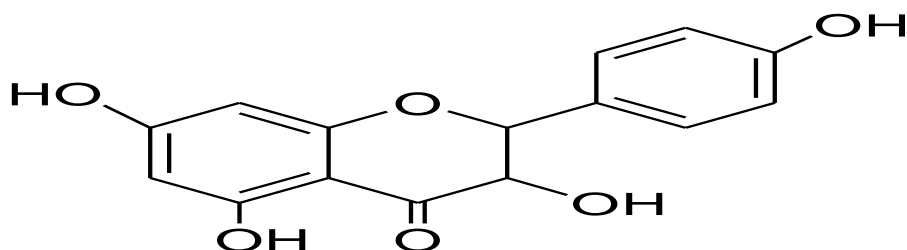
In addition, bioflavonoids such as vanilla, p-hydroxybenzoic acid, campherol and ferulic acid, depending on the type of amaranth, contain around 80 mg / kg, while caffeic acid is 5 mg / kg [6].



**Vanillic acid**



**Ferulic acid**



**kaempferol**

These compounds exhibit antioxidant properties in the body, as well as antidiabetic, hepatoprotective, immune system strengthening and many other biological activities.

Amaranth oil also contains phytosterols, ie tetracyclic alcohols, which are more abundant than other plants. Although these biologically active compounds are one of the main components of the cell membrane, they play an important role in cell metabolism. Phytosterols slow down the transfer of cholesterol into the bloodstream and reduce the risk of cardiovascular disease [7].

## CONCLUSION

Presently, in modern medicine and folk medicine amaranth is widely used in the treatment and prevention of cardiovascular diseases, liver disease, diabetes, osteoporosis, lowering blood cholesterol, cancer, some eye diseases, respiratory, oral and skin diseases.

Amaranth has a wide range of healing properties, but it can also be used as a multivitamin to maintain the balance of vitamins in the body.

Today in our region there are new varieties of amaranth belonging to the genus *Amaranthus*, adapted to local climatic conditions, Kharkiv, Lera, Andijan and Gelios.

The creation of new types of food additives based on these varieties, which are important for human health and harmless to the body, is one of the most important issues facing folk medicine, modern medicine, pharmaceuticals and chemists.

## REFERENCES

1. I.R.Asqarov. "Tabobat qomusi". Tashkent. "MUMTOZ SO`Z». 2019.1142 p.
2. I.R.Asqarov. "Sirli tabobat". Tashkent. "Fan va texnologiyalar nashriyot-matbaa uyi», 2021. 1084 p.
3. Gins V.K., Gins M.S., Torres Mino K.X., Pivovarov V.F., Kononkov P.F. Functional products of nutrition from seeds and amaranth lists. M.: VNISSOK, 2015.
4. Repo-Carrasco-Valencia R, Hellstrom JK, Pihlava JM, Mattila PH. 2010. "Flavonoids and other phenolic compounds in Andean indigenous grains: Quinoa (*Chenopodium quinoa*), kaniwa (*Chenopodium pallidicaule*) and kiwicha (*Amaranthus caudatus*). *Food Chem* 120: 128–33
5. Kalinova J, Dadakova E. 2009. Rutin and total quercetin content in amaranth (*Amaranthus* spp.). *Plant Food Hum Nutr* 64: 68–74
6. Ogrodowska D, Czaplicki S, Zadernowski R, Mattila P, Hellstrom J, Naczek M. 2012. Phenolic acids in seeds and products obtained from *Amaranthus cruentus*. *J Food Nutr Res* 51: 96–101.
7. Marcone, M.F., Kakuda, Y., and Yada, R.Y. (2003). Amaranth as a rich dietary source of beta-sitosterol and other phytosterols. *Plant Foods Hum. Nutr.* 58: 207–211.