

Хомидов Иномидин Илмидинович
кандидат химических наук, доцент
Андижанский государственный медицинский институт
Узбекистан, г. Андижан

ПРОТИВОРАКОВЫЕ СВОЙСТВА КОСТОЧЕК PRUNUS ARMENIACA

Аннотация: Предполагается, что природные противораковые средства безопасны, поскольку они содержатся в растительной пище, и считаются более желанными, чем их синтетические аналоги. Природные противораковые средства содержатся не во всех высших растениях, а в ядре абрикоса содержится такие вещества. В статье анализируются антиоксидантные свойства ядер абрикоса и предложена биологически важная пищевая добавка на его основе.

Ключевые слова: миндаль, горький миндаль, *Prunus dulcis var. Амара*, жирные кислоты, фенольные соединения, витамины, антиоксидантная активность.

Khamidov Inomidin
PhD of Chemistry, Andijan Region State Medical Institute,
Uzbekistan, Andijan

ANTI-CANCER PROPERTIES OF PRUNUS ARMENIACA BONES

Abstract: The article presents the composition of apricot bones, its medicinal properties, the relationship between the chemical composition and physiological activity, the use of apricot-based drugs in folk and traditional medicine, the analysis of the results of the research. The article analyzes the anti-cancer properties of apricot kernels and suggests a biologically important dietary supplement based on it.

Keywords: apricot, apricot bones, *Prunus armeniaca*, protein, carbohydrates, sugar, trace elements, amygdalin, tumor, emulsifier, vitamins.

The public in need of production of products, vegetables and fruits can take precautionary measures, such as regulation of legislation, natural production of products, ensuring its production, production of vegetables and fruits. You are calculating a long, lasting, therapeutic point of view. Also, in our country, more attention is paid year after year to the need for the most efficient use of fruit "waste". Apricot kernels are such a fruit "waste", which in most cases is ignored. In fact, apricot kernels have no equal in folk medicine medicinal remedies are being used and are used in medicine more efficiently.

Apricot is a narrow, cultured plant that is 5-10 meters tall, resistant to waterlessness. Wild - growing apricot is preserved in the khimolay, Tyan-Shan Mountains, North Caucasus [1].

Apricot is a plant of the order Prunus, which is part of the family Rosaceae, and its homeland is Armenia. Therefore, the Latin name of the apricot is called *Prunus armeniaca*. 19 different hybrid varieties have been created between the Caucasian growing species of apricot and the Central Asian growing species.

Although apricot belongs to the same family (Rosaceae) and one category (Prunus) with fruit plants such as almonds, peaches, there is a striking difference between their fruits: the peel

of the peach fruit is eaten, the kernel is not eaten, the peel of the almond fruit is not eaten, the kernel is eaten, and an apricot is eaten with the peel of the kernel, the kernel of the apricot is sweet, eaten.

Apricot kernel, like other nuts, contains a large amount of proteins, exchangeable and non-exchangeable amino acids, fats, saturated and unsaturated fatty acids, carbohydrates and many trace elements [2].

The authors studied 9 types of apricots growing in Uzbekistan and found the following in their fruit core: amygdalin, vitamin RR, fats, unsaturated fatty acids: oleic (29%), linoleic (11%), linolenic (3%) acids, palmitic from saturated fatty acids. acid, proteins, carbohydrates, trace elements such as Mg, K, Na, P, Ca, Fe, phospholipids, tocopherols.

One of the advantages of apricot kernel is the large amount of linoleic and linoleic acids, which are considered to be olein and especially vitamin-like substances from unsaturated fatty acids, which control cholesterol metabolism in the body and prevent the formation of blood clots.

Apricot pulp, like other fruits of the Prunus genus, has antioxidant properties due to the fatty acids, vitamins, and tocopherols contained in it. Antioxidants ensure healthy skin, eye tissues, and immune system in living organisms. The presence of Mg and K is useful for the cardiovascular system, it ensures the strength of muscles, heart muscles and nerve vessels in the body, control of the heartbeat rhythm, and helps in normalizing blood pressure. And Fe participates in the production of erythrocytes and prevents anemia. Sa and R in apricot kernels ensure strong bones and teeth.

Apricot kernels contain amygdalin in small amounts. Sometimes there is an extremely bitter taste among the kernels of apricots. It is the kernel that contains more amygdalin. It is better not to eat such a kernel.

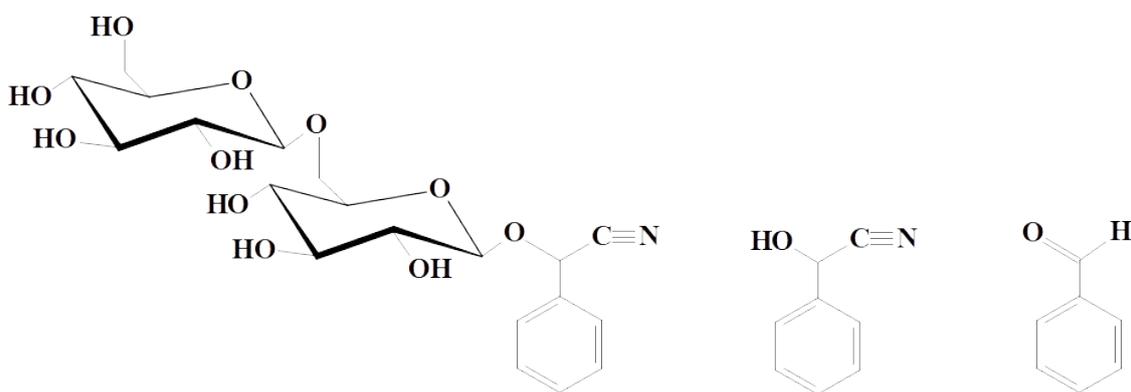
Chemical composition of apricot kernel (dry)

Proteins 20 gr	Oils 22.7 gr	Carbohydrates 46.3 gr	Essential amino- acids	Fatty acids: Oleic, linoleic, linolenic, palmitic acids
(Contains 100 g of nuts)				

Amygdalin 3-5 %	Vitamins PP, A, C, B	Micronutrients: Mg, K, Na, P, Ca, Fe	Phospholipids	Tocopherol
---------------------------	--------------------------------	--	----------------------	-------------------

Amygdalin (Latin amygdala - "almond") was first isolated from almond kernel, and it is a natural glycoside containing 2 molecules of glucose in the carbohydrate part and mandelonitrile as the aglycon part. In it, mandenonitrile is connected to disaccharide by β -glycosidic bond. Scientists have found that a small amount of amygdalin has medicinal properties and has anti-tumor properties.

In the human body, amygdalin is hydrolyzed by β -glycosidase in a mixture of enzymes called emulsin and produces a toxic substance.



Amygdalin

Mandelonitrile

Benzaldehyde

According to the information presented in the literature, tumor cells contain a large amount of β -glucosidase enzyme. In healthy cells, its amount is less than 100 times. Therefore, tumor cells hydrolyze amygdalin in large quantities and die by producing a large amount of a substance that is harmful to them. Also, some organs, such as the kidney, liver, and endocrine glands, also contain β -glycosidase. But they do not have the harmful effects of amygdalin. This is due to the fact that healthy cells contain the rhodanase enzyme, which has the property of neutralizing the harmful substance produced by the hydrolysis of amygdalin. In tumor cells, there is almost no rhodanase, so they also have no neutralizing properties. The second product of amygdalin hydrolysis is benzaldehyde, which is also harmful to cells. In healthy cells, benzaldehyde is oxidized to benzoic acid, and this product has an analgesic effect. Tumor cells undergo anaerobic oxidation due to lack of O_2 . In such an environment, benzaldehyde is not oxidized and has a harmful effect on tumor cells. Thus, amygdalin has a harmful effect only on tumor cells, even if it is small in quantity. And healthy cells can neutralize the harmful substance produced by the hydrolysis of amygdalin.

A group of scientists studied the chemical composition of apricot kernels and isolated 4.9% amygdalin as one of the main substances. It is also mentioned that unsaturated oleic, linoleic and linolenic acids, non-exchangeable essential amino acids, emulsin enzyme, vitamins and microelements are obtained in large quantities. According to them, in the future, based on amygdalin, more effective drugs can be created in the treatment of tumor disease [3]. Chemotherapy is known to have serious side effects. Therefore, the use of natural products containing amygdalin as an alternative method in tumor prevention and tumor treatment gives very positive results. For example, scientists from the United Kingdom reported that they received positive results by giving apricot kernels to some of the patients with tumor disease, Australian doctors recommended apricot kernels to patients with breast cancer and colon cancer, and noted that the patients had a much better change. Turkish scientists have been effectively using oil obtained from apricot kernels in the treatment of small intestine cancer. Aqueous, ethylacetate, and hydromethanolic extracts of apricot kernels are known to inhibit the growth of NALM-6 and KG-1 acute leukemia cells. In this case, ethylacetate extract containing 0.67% amygdalin showed

the highest activity. It was observed that MCF-7, HDF and MDA-MB-231 human mammary tumor cells significantly stopped developing under the influence of ethanol extract [4]. Also, a group of scientists noted that the growth of PANC-1 tumor cells in the human pancreas stopped due to the amygdalin contained in the ethanolic extract of apricot kernels, and that the extract had a positive effect [5].

Apricot kernel contains unsaturated fatty acids, especially linoleic, linolenic acids and their esters, which have a vitamin-like nature, a large amount of biologically important trace elements such as Mg, K, Na, P, Ca, Fe, physiologically active glycoside called amygdalin and its metabolic changes taking into account the presence of the emulsin enzyme, it is suggested to develop and put into practice a food supplement that prevents and helps in the treatment of tumors based on apricot kernels.

Used literature

1. Майоров С. Р. // Абрикос // Большая российская энциклопедия / С. Л. Кравец. // - М.: Бол. Рос. энциклопедия, 2005. -Т. 1. - С. 33 - 34. - 768 с.
2. Лобанов В.Г. // Биохимия и товароведение масличного сырья. // Учебник. -7-е изд., стер. - СПб.: Издательство «Лань», 2016. — 392 с.
3. Dusanka Kitic, Vojana Miladinovic at all. // Anticancer Potential and Other Pharmacological Properties of Prunus armeniaca L. // Plants (Basel), - 2022. – 11 (14). – 1885.
4. Mahmoudi, E.; Abolfathi, M.; Hassanzadeh, N.; Milasi, Y.E.; Dehghani-Samani, M.; Khaledi, M.; Kerdarian, H.; Najafipour, M.; Arshi, A. Prunus armeniaca effects on expression of genes related to apoptosis in human breast cancer cells // Transl. Med. Commun.2019, 4, 5.
5. Amazadeh, F.; Barar, J.; Saadat, Y.R.; Ostadrahimi, A. In vitro evaluation of cytotoxic and apoptotic activities of ethanolic extract of sweet apricot kernel on PANC-1 pancreatic cancer cells // Nutrition & Food Science, 2021, 52, 12–25.