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The Significance and Biological Definition of Shotut and Balkhi Tut In the National Economy

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ANNOTATION

Balkhi used the juice of yellow mulberry leaves to relieve gums (angina) and toothache. In folk medicine, Balkhi mulberry fruits are used as an antipyretic, a blood donor, and a decoction of the bark is used as a wound healing, softening of the lungs, expectorant and diuretic. The fruits of shotut together with the fruits of jilan jiida are used to make an ointment for gout and rubella, and for inflammation and injuries of the oral cavity, gargle with a decoction prepared from the fruits of shotut, it soothes pain. In addition, Shotut reduces fever and quenches thirst, and also has a positive result in improving the lethargy of the kidneys.

Enter. Along with the leaves of the mulberry tree, its fruit, seeds and fiber are economically important. Mulberry fruit is rich in sugar and vitamins.

The grandfather of medicine, Abu Ali ibn Sina, used mulberry juice in the treatment of diseases of the mouth and throat, swellings and chills, and as a diuretic.

Balkhi used mulberry yellow leaf juice to relieve gum (angina) and toothache. In folk medicine, Balkhi mulberry fruit is used as a febrifuge reducer, as a blood-enhancing agent, and a decoction made from the bark is used as a wound-healer, lung softener, expectorant, and diuretic. Shotut fruit, together with the fruit of jilan jiida, is an ointment for gout and rubella, and when the oral cavity is inflamed and injured, gargle with a decoction made from the shotut fruit, it soothes the pain. Apart from these, Shotut has a positive result in improving the sluggishness of the kidneys, as well as reducing the temperature and quenching thirst.

Mulberry wood is kept in water for several years, and then very durable, elastic combs called shamshad are made. The bark of the mulberry tree is ripe, flexible and contains a substance that is used for tying vine branches and grafts. Valuable dye can be obtained from mulberry bark, and the branches and branches left after worm feeding are used to weave baskets, mattresses, and light chairs.

When the mulberry tree is planted mixed with other trees, it protects crops from the effects of hot and cold winds, and acts as a hedge. The leaves of the planted mulberries of this type can be partially used as food for silkworms, and seeds can be taken from the fruits and seedlings can be grown. On the other hand, mulberry and other trees help to reduce groundwater level by evaporating

underground water from their bodies and improve land reclamation. Mulberry trees are very important against salinity and waterlogging.

Abu Ali Ibn Sina, the founder of medicine in the East, often mentioned the medicinal properties of White Mulberry and Shatut in his book "The Laws of Medicine", that is, their fruit is a very healing medicine for treating patients with high blood pressure

Ibn Sina calls Shotut "sour mulberry" or "Syrian mulberry". In particular, Ibn Sina focused more on Shotut than white mulberry and mentioned the following information about its healing properties.

In fact, White Mulberry is heat and Shatut is cold. It is said that after boiling the leaves of the birch tree together with the vine and black figs in rainwater, it was used to dye the hair black. The fruit is a medicine that stops swelling in the mouth and throat, and the leaf is a cure for sore throat.

Therefore, it is described that the juice obtained from raisins and fresh fruits is used to treat wounds, the boiled juice is used to treat mouth ulcers, cracks in the lips and tongue, and the juice squeezed from its leaves is used to relieve toothache.

In fact, the fruit of Shotut contains sugar, dyes and pectin substances, carbohydrates, mineral salts, glucose, sucrose, fructose, apple, lemon, phosphoric acids, as well as iron substances.

The taste of Shotut fruit, which replaces strawberries, lemons, apples and figs, increases appetite.

The leaf of rye has extremely useful properties, it contains the nutrients C and B 2 vitamins. For example, eating a dried shotut leaf crushed and mixed with food or yogurt is a cure for diabetes. Including boiling it and drinking it to patients with fever or cold. Its fruit and juice are used to treat inflammation. The root and bark are considered to be healing for liver and diabetes diseases. The fruit is round and larger than the white mulberry. The color is dark, the large seeds are dark-purple in color, sweet and fragrant.

Its ripening lasts for a long time from June to September. With this feature, it is fundamentally different from other mulberries.

Shotut fruit can be dried and stored for a long time, and various confectionary products, juice drinks, vitamins, acids and medicines are made from the freshly picked fruit.

Especially, in order to preserve freshly picked Shotut fruit for a long time, it is carefully washed and soaked in sugar, and then put in jars, steamed for 10-15 minutes and tightly closed with a lid.

Shotut preserves prepared in this way can be stored for a long time. The fruits of the second and third varieties of shotut are used to make wine.

According to scientists, this wine is ruby-red in color, sweet and delicious, has a unique delicious smell, and is highly appreciated by experts compared to wine made from apples and plums. From a biological point of view, this species is characterized by high polyploidy. It has 11 times more chromosomes than white mulberry.

Among them, Shotut arouses great interest among botanists, biochemists, geneticists, breeders and people working in the field of tobacco. Despite the fact that black mulberry has been known since ancient times, it has not been found growing wild until now.

According to most scholars, Shotut's homeland is Iran, while Ya. Ammal analyzes that his homeland is Central China.

According to the classification of G. Koydzumi (1923), the female flower belonging to the black mulberry genus is large, has a short pedicel, a long beak, a ball flower and a ball fruit band is very short, when grown in favorable conditions, its height reaches 10-15 cm.

Black mulberry branches are spherical, branched and distinguished from White mulberry by their dark black leaves.

The skin of the body is dark brown in color and has longitudinal cracks. The stem is thickly hairy, short-jointed; the bud is large, oblong, dark brown in color, and lags far behind the growth of the stem compared to white mulberry.

The leaf of this mulberry is heart-shaped, with large teeth, solid or often notched, with a short blunt tip, the surface of the leaf is rough, dark green, the back is very hard, and the flesh is rough. The length of the leaf is 50-120 mm, the width is 40-100 mm, the length of the leaf band is 10-25 mm, it is pointed, long, triangular.

Therefore, the edge of the leaf blade is large, sharp saw-like or serrated.

The wood part of the hornbeam tree consists of round-shaped tubes and is very strong. The cell of the mechanical tissue is larger than that of the white cell.

Conductor tubes are smaller in diameter and less in number than other types. Tubes are of two types: the diameter of tubes in younger wood tissue is wider and in older ones, they are scattered, and sometimes they form the central cylinder of the stem with the core. Although the structure of a black mulberry branch is similar to that of a white mulberry, its wood is scattered, which indicates the slow growth of a mulberry branch. If the volume of transmissive elements increases in triploid and tetraploid mulberry, then the process of transferring water and mineral substances together improves.

Table 1The structure of white and black mulberry leaf forms, µm

A type of mulberry	Height	Eni	**Gistologik elementlar**					thick ness of the
			k/e	yu/e	o‘/t	g‘/t	m	
White mulberry	18,02+0.21	30.39+0,21	9.5	23.3	30.4	41.9	92.3	125.2
Black mulberry	37.97+0.81	14.21+0.63	24.9	53.3	86.8	88.9	177.9	235.1

Note: UYaX - a cell close to the upper (oral), p/x - lower epidermis, yu/e - upper epidermis, u/t - columnar tissue, g'/t - porous tissue, m - mesophyll.

At the same time, strong growth of branches is ensured. In comparison with diploid mulberries, the volume of water-conducting elements is smaller in the mulberry.

Because of this, the annual growth of the black mulberry branch is slow. In view of this, high polyploidity of Shotut causes the increase in cell size and other organs, as shown in Table 1.

The cells and tissues of black mulberry are larger than those of white mulberry. The mesophyll in the leaves of ryegrass is very soft, with more intercellular spaces and large protrusions of the histoliths (capsular substance), which causes the upper part of the leaf blade to be wrinkled. The cells of black mulberry close to the surface are twice as large as those of white mulberry, but less in number. However, the polyploidy of black mulberry is clearly visible from the morphological structure of its generative (flower) organs. The flower of thistle is a large monoecious, ear-shaped panicle, composed of four (hairy) green leaves, four two-chambered yellow stamens in the corolla, and four stamens that hold them.

A man's penis is located in the form of a large cylinder. The female flower is distinguished from other species by the length of its oval-shaped corolla attached to the branch. Buds start to write leaves and fruit 10-15 days later than white mulberry.

The flowering period lasts one and a half to two weeks, and the ripening of the fruit lasts from the end of June to September, and the white mulberry ripens in June.

Indeed, Shotut fruit is a large (up to 4.0 cm) dense, elongated, oval-shaped sweet fruit cluster that is difficult to separate from the larger cluster. (Table 2)

Table 2 Chemical structure of mulberry fruits.

Chemical structure (wet), in %	Mulberry species		
	White	Black	Red
Water	81.84	83.95	81.56
Insoluble substances	4.28	5.97	3.17
Soluble substances	16.27	10.28	15.07
The sum of sugars	10.91	5.52	14.08
Invert sugars	10.32	5.09	13.25
Sucrose	0.59	0.42	0.83
Acidity (compared to malic acid)	0.62	0.83	0.94
Additives	0.082	0.157	0.106
Klechatka	1.67	2.68	1.08
Nitrogenous substances	1.46	1.39	1.29
Ash	0.90	0.86	0.89
Phosphate acid	0.120	0.116	0.098

Invert sugars are aqueous solutions of glucose and sucrose obtained by hydrolysis of sugar cane.

Therefore, black mulberry is a dioecious plant of some sexes, which is propagated only by vegetative means, and the choice of fertile forms affects its sex.

Currently, black mulberry has more female (fruiting) flowers than male flowers. This plant has been propagated vegetatively for a long time and due to the lack of selection for its seed yield, the percentage of seeds obtained from its fruit is low.

It differs from white mulberry dust by its size and abundance, some dust grains are irregularly round. Examination of black mulberry pollinator viability reveals that white mulberry has several higher (in diploid) and several lower triploid forms.

The mulberry tree is pollinated from the outside, and a few hours after the pollen of the male flower falls on the female bud, the pollen tube grows and enters the female node, where the seed fertilizes the mulberry. In black mulberry, the size of the seed coat and its elements is also larger than that of white mulberry. The black mulberry seed consists of a light brown jagged nut, inside the seed there is a horseshoe-shaped pod and endosperm.

However, the shell of the black mulberry seed is thicker than that of the white mulberry. Unripe seeds make up a higher percentage of Shotut and they float on the surface of the water during the washing of the seeds from the fruit, helping to separate the overripe seeds.

In fact, the cells in the epidermal shell of Shotut are larger than those of white mulberry.

In general, Shotut seeds are 1.5-2 times larger than other types. If the average weight of 1000 seeds in Shotut is 2.5-2.6 g, then there are 320 seeds in 1 g, and white mulberry (in Khasak) is 1.4-1.5 g and up to 700 seeds in 1 g. The size of a blackberry seed is 3.0 x 2.8 mm, and a white mulberry is 2.0 x 1.8 mm.

At first, mulberry seeds were included in the protein types, that is, the scientific research conducted by M.I. Grebinskaya shows that it is necessary to include mulberry seeds in the type of protein-oil plants.

From the histochemical reaction to determine the level of oiliness, it was found that Shotut seeds contain a certain amount of oil in addition to aleurone grains.

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