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BIOCHEMICAL AND MEDICINAL VALUE OF CHAKANDA (HIPPOPHAE RHAMNOIDES L.) PLANT

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Abstract

This article provides information about some plants belonging to the flora of Surkhan found in the works of Abu Ali ibn Sina, in particular, about the medicinal plant - Hippophae rhamnoides L. Its botanical description, distribution area, bioecological and medicinal properties are discussed. The presence of beta-carotene (provitamin A) in chakanda helps the development of the human embryo, the pregnancy goes well, and the general condition and growth of the person is at a good level. Small amounts are also used against infectious diseases. After heavy surgical operations, it quickly repairs wounds, makes blood vessels elastic. A sufficient amount of tocopherol makes the heart normal. Opinions are given that preventive consumption of retail products helps people to be healthy.

Keywords: carotene, flora, population, bark, tocopherol, aeration, substrate.

Medicinal plants have been known to mankind since ancient times. Our forefathers have been looking for cures from nature since ancient times and used it wisely. In particular, our compatriot scholar Abu Ali ibn Sina wrote down valuable information about more than 900 medicinal plants in his works, and this information has not lost its value even today. More than 100 types of medicinal plants belonging to the flora of Surkhan, whose names are mentioned in the works of Ibn Sina, are still widely used in medicine, pharmaceuticals and folk medicine. One of such medicinal plants is Chakanda (Hippophae rhamnoides L.) plant belonging to the family of cycads.

Medicinal properties of the jumrut-like chakanda belonging to the Chakanda family, distributed in Boysun, Kentala, Qizilnavr regions of Surkhandarya region and the Topalang river basin, have been thoroughly studied. In the literature, 3 species of this genus are included, among which the most widespread and valuable medicinal species is the jumrut-like chakanda. The remaining 2 species are deciduous and Tibetan chakanda are found in the territories of Nepal and Bhutan and in the Tibetan Plateau at altitudes of 1800-4200 m. Jumrut-like chakanda grows in nature as a thorny bush or a small tree of 6-8 m. Chakanda is considered a forest plant and always grows in river basins and valleys close to the surface of the ground water, creating thick chakanda groves. In the countries of the Central Asian Region, the khakan has formed populations that differ from each other according to several biological and morphological characteristics. Among them, the Siberian population covered the valuable Baikal region and the Sayan-Altay mountain region, on the basis of which many cervithian, thornless and large-fruited varieties were created. In our republic, chakanda can be found in almost all mountain river basins, but its thickets are located in the Karadarya basin, which is the middle course of the Zarafshan river and its left tributary.

There are 50-55 t of organic fruit stocks for retail in 370 hectares of orchards in the Zarafshan reserve. Chakandani shrublands of industrial importance (150 ha) are located in the groves of the Kara Darya basin (the left tributary of Zarafshan) in the Samarkand region from Dakhbed fortress to Juma fortress. There are 12 ha in the Topolang river basin and 20 ha in the Aksuv river basin.

The bark of the body is dark gray, and the branches are greenish-silver in the spring, and by the end of the vegetation, the color is grayish-brown. The leaves are thin, long, lanceolate, 2-9 cm long and 3-15 mm wide, the upper part is gray-green, the lower part is silvery. The flowers are unisexual and develop at the same time as the leaf buds develop. It blooms in April-May. Chakanda is a dioecious and wind-pollinated plant. Maternal (seed) anthers develop separately from paternal (pollen) anthers. Flowers are single tube. The stem buds of the pollinator (father) plant are 2-3 times larger than the buds of the seed (mother) plant, collected in short silvery-brown spikes and covered with coins.

The seed flowers are yellower, solitary in the axils of the leaves. Pollen trees or shrubs have flowers collected in small petalless spikes, while seed trees or shrubs have 2-14 pistillate flowers in leaf axils. Flower buds are covered with scales, which reliably protect flower parts from winter frosts. That's why Chakanda gives a good harvest every year despite the vagaries of the weather [5].

Chakanda fruits ripen in August-September and are stored on the bush until late autumn-early winter. Chakanda fruit is berry, juicy, has a pleasant aroma reminiscent of pineapple and a sour-sweet taste. Fruits are spherical-round, oblong-oval, barrel-shaped and cylindrical in shape and are light yellow, fiery and reddish in color. Fruits

are formed mainly on 1-2-year-old branches and completely cover the branch, its Russian name “облепиха” is derived from the combination of words “облепляющие ветви”.

In nature, Chakanda begins to harvest after 4-6 years, if it is maintained in cultural conditions, this period can be reduced. It is observed that the yield of Chakanda bush is around 3-8 kg. The fruits are 5-11 mm long, 3-8 mm in diameter, and weigh 0.1-0.7 g. They are located on the branches in the form of small shingles through a short fruit band.

Chakanda belongs to the category of light-loving plants. Therefore, in the river valleys, on the shores of lakes and seas, sand, alluvial deposits and gravel are among the first to grow in soil structures that are compacted to varying degrees. Thus, these substrates have natural drainage and light mechanical composition and aeration. In such places, the sedum grows quickly from underground horizontal rhizomes and creates new young plants. Usually, sedums consist of only pollinating plants around the pollinating (father) bush, and seed-bearing plants around the seeding (mother) bush. A characteristic feature of wild mulberry is the presence of long thorns on its branches. The phenomenon of "mycorrhiza" characteristic of representatives of the family of jiydadoshas is also observed in retail. In the root system of the chakanda plant, there are nodular bacteria that absorb nitrogen from the air, they enrich the soil with nitrogen, like leguminous plants, and ensure that the chakanda grows easily even in low-fertility sandy-gravel soils [6].

This plant contains many vitamins and biologically active substances. Chakanda contains provitamin A. The development of the human embryo, the growth and condition of the person in general depends on the lack of this vitamin. Small amounts are also used against infectious diseases. Chakanda contains vitamin E - tocopherol. Under the influence of this vitamin, human aging slows down, activates the work of the heart and many internal organs. It resists diseases of respiratory organs and stomach. The composition of this plant contains fatty acids - linoleic and linolenic, which are biooxidants important for the human body [2].

Chakanda oil also contains vitamins E, K, provitamin A, stearin-like substances - sitosterol, phospholipids, choline, carotene, etc. were found in the oil residues. Chakanda contains a large amount of vitamin E. Chakanda fruit juice contains vitamins A, C, B_1, B_2, B_6, E, K. The amount of ascorbic acid is 37-268 mg/100 g of fruit. Chakanda fruits also contain amino acids, such as alanine, phenylalanine, glutamine, cysteine, leucine, lysine, arginine, serine, valine, and others. In addition, fruits contain essential oils, micro and macro elements. Chakanda fruits contain 15 trace elements, including iron, magnesium, manganese, copper, boron, sulfur, chlorine, aluminum, silicon, and others. In addition, 8% fat is found in the composition of the fruit, due to which it is considered a very good immunomodulator and immunoprotector [1, 2, 3].

The presence of beta-carotene (provitamin A) in chakanda helps the development of the human embryo, the pregnancy goes well, and the general condition and growth of the person is at a good level. Small amounts are also used against infectious diseases. After heavy surgical operations, it quickly repairs wounds, makes blood vessels elastic. A sufficient amount of tocopherol makes the heart normal. Preventive consumption of retail products helps people to be healthy [2].

In short, consumption of Chakanda (Hippophae rhamnoides L.), named in the works of Abu Ali ibn Sina, and its products have a positive effect on human health and enable the functioning of the human immune system and the normalization of the vitamin complex in the body.

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