

Modern Research and Prospects for the Use of Creeping Anchors – *Tribulus Terrestris* L

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Annotation

The article describes the biology, morphology, growth and pharmacological properties of the annual herbaceous plant *Tribulus terrestris* L. The botanical description, classification of the genus, distribution, chemical composition, application in folk medicine, cosmetology, historical information, as well as application in traditional medicine and drugs used in medicine are given.

Keywords: creeping anchors, *Tribulus terrestris* L., application of anchors, botanical description of anchors, chemical composition of anchors, etc

Research on the discovery of new sources of effective and safe herbal medicines is an urgent task.

One of the promising types of medicinal plant raw materials is the herb of creeping anchors – *Tribulus terrestris* herba.

In Uzbekistan, creeping anchors – *Tribulus terrestris* L. are common in steppe and semi-desert zones, are a weed plant. They are found in the semi-deserts of Central Asia, in Kazakhstan, Uzbekistan, Tajikistan, Dagestan, Azerbaijan [3], in the southern part of Bulgaria [8], in India [7], in the countries of the Near and Middle East (Syria, Bahrain, Iraq, Iran, Yemen, Qatar, Kuwait, Lebanon, Oman, Palestine, Saudi Arabia, United Arab Emirates, Turkey, Lebanon).

The grass of the creeping anchors has a hypolipidemic, general toning, analgesic, anti-inflammatory and diuretic effect. It is used to stimulate the function of the sex glands, treat andrological diseases, promotes the natural production of testosterone, and also stimulates the secretion of gastric juice and enhances intestinal peristalsis.

The rich chemical composition of raw materials is the basis for the creation of promising herbal preparations enriched with saponins and flavonoids.

Research on the study of anchors of creeping grass was carried out by domestic and foreign scientists. The raw material base and chemical composition of creeping anchors were studied. The presence of steroid saponins and substances of phenolic nature has been proven. From the anchors of the creeping grass, the Bulgarian company Sofarma JSC obtained the drug

"Tribestan", which has a general toning effect, stimulates the functions of the reproductive system. In men, it restores and improves sexual libido, lengthens the erection time. Stimulates spermatogenesis by increasing the number of spermatozoa and their mobility. It has a hypolipidemic effect. The genus of Anchors – *Tribulus* L. of the family of Artichoke – *Zygophyllaceae* includes up to 20 species of plants [1]. The generic name *Tribulus* comes from the Greek name of the plant "tribolos", which translates as "thorn, prong" [2, 3].

The genus of anchors includes herbaceous plants with recumbent branched stems, paired-feathered leaves with 3 to 10 pairs of leaflets. Stipules from lanceolate to awl-shaped. The leaflets are elongated-ovate or elliptical. Single small flowers, yellow or rarely white, are in the axils of the leaves. Representatives of the genus have a characteristic fruit: coenocarp, dry, fractional, decaying into five fruits, equipped with thorns and spikes on the outside or bearing comb-toothed wings along the edges [2, 6, 8].

This genus includes species:

1. *Tribulus alatus* Del. (*Tribulus longipetalus* subsp. *Longipetalus*, *Tribulus mollis* Ehrenbg Boiss macropterus.) [2, 3, 8]

2. *Tribulus bimucronatus* Viv. – Double-pointed anchors (*Tribulus parvispinus* Presl., *Tribulus pentandrus* Forssk.)

3. *Tribulus cistoides* L.

4. *Tribulus megistopterus* Kralik

5. *Tribulus ochroleucus* (Maire) Ozendra
6. *Tribulus terrestris* L. – Creeping anchors [2,6, 8]

In the world, only one species is used in scientific medicine – *Tribulus terrestris* L., the raw material of which is the herb – *Tribuli terrestris herba* [7]. The specific epithet *terrestris* is derived from the Latin *terrestre*

— terrestrial, since the stems of the plant creep along the ground [4, 5].

In a number of countries, for example, in Japan and India, fruits are the raw materials of anchors creeping for obtaining medicines [5, 6, 7].

The raw material base of the creeping anchors is provided with wild plants. Homeland – North Africa. The plant is cosmopolitan, grows on all continents – in Southern Europe, South Asia, North Africa (Morocco, Algeria, Egypt, Libya, Sudan), northern Australia, prefers dry sandy soils [2, 3, 5, 7].

On the territory of Uzbekistan, creeping anchors grow in dry, sandy and stony steppes on clay – silty, saline, sandy loam soils, moist meadows, along river valleys, near roads.

Based on the literature data [1, 2, 3, 4, 6, 8] we have compiled a morphological description of creeping anchors.

Creeping anchors (*Tribulus terrestris* L., family of double-leaved –Zygophyllaceae) is an annual short—pubescent herbaceous plant. It has a taproot system up to 2.6 m with a network of fibrous lateral roots. Stems with short internodes are spread out on the ground, branched from the base, 10 – 120 (300) cm long (Fig.1). The leaves are opposite, paired – pinnate, 3-8 cm long, with 6-8 pairs of small oblong (lanceolate) leaflets, have a whole edge of Flowers, few, small, single, regular, yellow, on short, upward-standing pedicels, 1 – 1.2 cm in diameter, located in the axils of the leaves.



Fig.1. Creeping anchors, general view of the plant



Fig.2. Leaves, flower of creeping anchors

The perianth, easily falling five-membered, the calyx consists of 5 ovate-lanceolate, long-pointed, externally pressed-hairy sepals 4 - 5 mm long, 1 - 1.3 mm wide. There are 5 corolla petals, they are obovate, 5-7 mm long, about 3 mm wide, 10 stamens (Fig. 2).

The fruit is discoid, cenocarp, dry, fractional, decaying when ripe into 5 star-shaped angular mericarpia (fruits) (Fig. 3, A).

The fruits are triangular-wedge-shaped, hard, bumpy on the outside, covered with small and large bristly hairs and with two pairs of long, sharp, horizontally diverging spikes; 2 upper spikes are longer, 2 lower ones are short (Fig. 3, p).

A



B



Fig.3. Fruits of creeping anchors

Creeping anchors are widely used in folk medicine in many countries [7]. Decoction and infusion of herbs are recommended in folk medicine of the East as a tonic, laxative and diuretic, for gonorrhoea, headaches, conjunctivitis [4]. In Bulgarian folk medicine, the plant is used to treat impotence [7]. In Nepal, local herbalists, in the form of a decoction inside, for infections of the genitourinary tract [6].

In Indian medicine, a decoction of anchors is used for lower back pain, sciatica, inflammation of the pelvic organs and sacrum, dry cough and respiratory disorders [8].

Folk medicine of Kyrgyzstan uses the grass of creeping anchors as a wound healing and diuretic [7].

The powder of dried fruits of anchors creeping in folk medicine of Central Asia is smoked for syphilis, gonorrhoea, in addition, they recommend boiling the roots of anchors in milk and drinking with chronic malaria as a means of relieving the feeling of general fatigue, weakness [7].

In Tibetan medicine, anchors were used, creeping as part of multicomponent recipes for the treatment of poisoning [8].

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