



PROSPECTS FOR THE PHARMACEUTICAL APPLICATION OF *TRIBULUS* *TERRESTRIS* L.

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Relevance. In the pharmaceutical industry, the demand for natural, low-toxicity, and effective phytopreparations is increasing. This interest is associated with the fact that plant-derived substances, compared to synthetic drugs, are generally safer and more accessible. For many centuries, the practice of traditional medicine has demonstrated the positive effects of medicinal plants in the treatment and prevention of various diseases.

One of the key directions in the search for new sources of biologically active substances is the systematic study of underexplored plants of Kazakhstan's flora. Among such plants is *Tribulus terrestris* L., which is adapted to grow in various geographical regions of Kazakhstan. Its composition includes saponins, flavonoids, tannins, phenolcarboxylic acids, steroid compounds, glycosides, lipids, as well as macro- and microelements. These biologically active compounds provide grounds to consider this plant as a promising raw material for the development of new pharmaceutical products.

Objective: To evaluate the prospects of using *Tribulus terrestris* L. in pharmaceutical practice and to provide a brief overview of its botanical characteristics, chemical composition, and pharmacological activity.

Materials and Methods: A review and analytical analysis of publications by domestic and foreign authors over the last 10 years was conducted.

Results: *Tribulus terrestris* L. is an annual herbaceous plant 15–60 cm tall. The stem is branched, pubescent, and creeping. The root is long, thin, with lateral branches. The leaves are ovate, opposite, and consist of 6–7 pairs of leaflets. The flowers are small and yellow; the fruits are star-shaped and covered with small spines.

The plant is adapted to temperate and subtropical climates. In Kazakhstan, it is found along the banks of the Irtysh, Caspian Sea, and Lake Balkhash, in the Moiynkum Desert, on the Mangyshlak Peninsula, in the Karatau Mountains, and in the Ili, Dzungarian, and Kungei Alatau ranges.

The chemical composition of *Tribulus terrestris* L. includes saponins (dioscin, protodioscin), flavonoids (rutin 39.12%, rosavin 21.41%, luteolin 8.01%, dihydroquercetin 1.57%, quercetin 1.51%), macroelements (Na, K, Ca), microelements, amino acids (alanine, threonine), fatty acids, phenolcarboxylic acids, and steroid compounds.

As a medicinal plant, *Tribulus terrestris* has been known since the Middle Ages and has been widely used in folk medicine. At present, due to its anti-urolithic, immunomodulatory, antidiabetic, aphrodisiac, cardiogenic, hypolipidemic, hepatoprotective, analgesic, spasmolytic, anthelmintic, and anticarcinogenic properties, the plant attracts considerable interest in the pharmaceutical field.

Conclusion: The results of this study show that *Tribulus terrestris* L. has high potential as a source of raw material for pharmaceuticals. Since the plant grows in Kazakhstan, its use as a basis for drug development can contribute to the advancement of the domestic pharmaceutical industry and reduce dependence on imports. However, further research is required to fully realize the potential of *Tribulus terrestris*.