

**PHARMACEUTICAL AND AGRICULTURAL SIGNIFICANCE OF THE
MEDICINAL PLANT FERULA ASSA-FOETIDA**

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Annotation

This article talks about the importance of the medicinal plant *Ferula assa-foetida* in pharmaceuticals and agriculture. Extensive reforms are being carried out in the field of pharmaceuticals and agriculture in our republic, and great attention is being paid to strengthening the raw material base of medicinal plants.

Keywords: *Ferula assa-foetida*, medicinal plant, pharmaceuticals, agriculture, celeriac, root, grain, resin, estrogenic activity, animal diet.

Introduction

It is known that approximately 50% of drugs produced in pharmaceutical enterprises worldwide are made from raw medicinal plants. The rapid development of the pharmaceutical industry in many countries, including the Republic of Uzbekistan, causes a sharp increase in the demand for medicinal plant raw materials from such enterprises.

Pursuant to the Decision PD-3617 of the President of the Republic of Uzbekistan dated March 20, 2018 "On the establishment of kavrak plantations in the Republic and measures to increase the volume of processing and export of their raw materials", the establishment of kavrak plantations and their raw materials the association of material processing was established.

Kovrak - (*Ferula*) is a perennial herbaceous plant belonging to the Apiaceae (Umbelliferae) family. There are more than 160 species of cowries on earth, 104 species in Central Asian republics and 50 species in our country. Resin-glue types such as sassik koravki and Kuhiston koravki are used. Kovrak grows in the sandy deserts, hills, mountains and sub-mountainous plains of our republic's Tashkent, Surkhandarya, Kashkadarya, Jizzakh, Navoi, and Bukhara regions, as well as on sandy soils.

Ferula assa-foetida L. is widespread in nature, and glue-tar is mainly obtained from this species. This medicinal plant is a biologically active substance that has a positive effect on the patient's body in treatment. Roots, leaves, bark, flowers, fruits, sap and other parts of plants are used as medicinals.



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On the basis of programmatic measures carried out in this direction, drugs "Panoferol", "Tefestrol", "Kufestrol" and "Ferulen" from *Ferula L.* species were created and produced. [2;4] For the establishment of seed nurseries of promising species of the *Ferula L.* series, the farms "Oq Kovrak" of Pakhtakor district of Jizzakh region, "Shifo Kovrak" and "Sardor Valijonov" of Arnasoy district, "Chuchchigudug" of Kashkadarya district of Dehqonabad district and As a result of its implementation in the state forestry territory of Bakhmal district of Jizzakh region, it was possible to establish a total of 300 hectares of industrial plantations of *F. foetida*, *F. kuhistanica*, *F. kokanica* species, which are in high demand in the local and foreign pharmaceutical markets. [2;5]

When Ferulani is added to the diet of laboratory animals in small amounts, its estrogenic activity is observed. [4;7] Later, Iranian scientists (S.Bagheri and others) continued scientific work in this direction in rats.

Assafoetida in small amounts (25-50 ml/kg) has been scientifically proven to increase the number of spermatozoa and improve their motility, as well as to normalize egg cells, while large amounts of 200 mg/kg have a negative effect on egg cells and spermatogenesis. [7;8] The main reason for the use of *F. foetida* as a medicinal plant is the accumulation of various phenolic compounds in its root and grain. oil (4-20%) and also contains vanillin, free ferulic acids and other biologically active components. Accumulation of the amount of these substances in a plant depends on its type, place of growth and development, as well as the vegetative period. Two drugs were isolated from their species that grow in different places, that is, tefestirol is used in the treatment of various gynecological diseases, and panaferol is used to increase egg production in chickens and prevent infertility in horned animals. [3;4;8]



Greek healers used this plant to relieve fatigue and increase potency. Indian scientists, Avitsena and Al-Antaki, have been extracting drugs from ferula and other medicinal plants for many



years to treat infertility. They confirm that this plant has aphrodisiac properties. This assertion was scientifically substantiated in 2009 by E.Kasis and others in rats and humans. It was found that pregnancy (17%), sexual arousal increased by 60% and sexual desire increased by 80% in people who took Ferula drug for two months.

No adverse effects of the drug were identified. Scientists claim that the main substances affecting sexual arousal are the presence of sesquiterpene coumarins - ferutinins, teferdinins, tenuferdinins and ferulic acid. [2;4] Ferula glue has been used in the treatment of infertility in women (Upadhyay P.K 2017), impotence in men and erectile dysfunction (Kassis E 2009), in addition, in modern researches of sassi carpet, it has been found that it has anti-tumor properties [2,3].

F. hermonis plant extract has been found to increase sexual activity in rats. [3;4] Ferula assafoetida plant gum stimulates sperm production (Bagheri S. 2015), plant root and grain extracts increase sexual activity in men and treat erectile dysfunction [2,2].

On the basis of the biologically active substances contained in Ferula assafoetida plant, in recent years, at the Institute of Chemistry of the Academy of Sciences of Uzbekistan and the Tashkent Pharmaceutical Plant, 4 medicines, tefestrol, panaferol, kufestrol and zafarol, widely used in livestock and poultry, have been produced, of which tefestrol is used in medicine in the treatment of gynecological diseases, while panaferol, kufestrol and zafarol are widely used in veterinary practice to increase reproductive activity in chicken farms, prevent infertility in sheep and cows [2;5].

Compilation of botanical, complex, morphological, and natural resource mapping of Ferula L. plants, solves theoretical and practical problems in the pharmaceutical industry (receiving and preparing drugs) and identifies the natural resources of these plants, at the same time allows for wide application in the field [3;5]. Analysis of the literature shows that 96 species belonging to the Ferula L family have been identified in the flora growing in our region (Rakhmonkulov U., 1999).

It is worth noting that 28 flora belonging to the Ferula L. family growing in Central Asia are considered endemic, especially the kovark and the endangered Bukhara sunbuli, which are listed in the "Red Book" is of great practical importance.

Many researchers are interested in the terpenoids contained in the Ferula assafoetida plant because they, like other natural compounds, have specific effects on humans, animals and microorganisms. In addition, it also has an estrogenic effect along with many properties, from which panaferol and tefestrol estrogens were isolated [2;3;5].

Panaferol, kufestrol and zafarol drugs are widely used in veterinary practice to increase egg production in chickens and prevent infertility in sheep and cows.

The drug Tefestrol is used for sexual diseases, i.e. dysmenorrhea, ovarian hypofunction, impotence, infertility, dysfunctional uterine bleeding. [2;4;5] S.Y.Yunusov's research (1974) showed that the quality and quantity of alkaloids in a number of plants vary according to their vegetative periods, as well as the region and environment where the plant grows as it affects a lot.



In the following years, from several plants belonging to the *Ferula L.* family, flavonin, which protects liver function, sinaroside drugs, which are widely used in the treatment of kidney diseases and kufestrol, which has an estrogen effect, were created. [2;3]

Extraction of synaroside from the above-ground part of the Shair plant and kufestrol from the above-ground part of Kukhistan carpet was studied, the factors affecting the extraction of flavonoids and complex esters from raw materials were analyzed by mathematical planning using the Box-Wilson method, and the main factors of the purification process of synaroside and kufestrol were determined. On the basis of the results of the conducted experiments, technologies for obtaining sinoroside with hypoazotemic activity and cufestrol with estrogen effect were developed. [2;3;4] Its root is considered medicinal, tefestrol, "Zofarol" preparations are obtained from it, and the drugs are used in gynecology for ovarian dysfunction, alinorrhea, impotence, climax, etc. [1;2;4;5]

In the following years, medicinal substances made from plants belonging to the *Ferula L.* family were tested in rats and guinea pigs to prevent pregnancy in the uterus, but it was not useful. A drug made from *Ferula assafoetida* and *Melia azedarach* plants was very effective when applied to rats, guinea pigs and prostitutes, this method was used for 1-7 days, and there was no pregnancy at all. These methods were applied to animals for 1, 5, 6 days and the results were confirmed to be positive. [4;5;7]



The annual volume of resin exported from *Ferula* species in Uzbekistan is 150-200 tons. High-quality tar is obtained from *Ferula tadshicorum*.

Next is *Ferula foetida*. The growing demand for medicines obtained from the *Ferula tadshicorum* Pimenov plant is causing a decrease in plant biodiversity and their reserves. *Ferula tadshicorum* Pimenov is an endemic species of Pamir-Oloy. Its area is Southern Tajikistan and the southern regions of Uzbekistan. Tadjiferin and tadjicorin, two terpenoid coumarins, isolated from the fruits of *F. tadshicorum*. Later, deacetyltajicorin was also isolated from the acetone extract of *F. tadshicorum* roots.

Asafoetida has its own properties in traditional medicine. It has anti-viral, anti-bacterial, anti-inflammatory sedative AB and diuretic properties.

Its most important health benefit is to reduce bloating and other stomach problems. Medicinally, it helps to reduce asthma, lower blood pressure levels, relieve menstrual pain,



reduce headaches, reduce acne, Good hair conditioner, anti-cancer, anti-bacterial, anti-fungal and anti-microbial and protects brain health. It is known that species of the genus *Kovark* reproduce in nature by means of seeds.

According to the literature, monocarpic carpets bloom and germinate in 5-8 years of life. Taking into account that propagation from seeds is required for a long time, today, in order to prevent this problem, we are carrying out scientific works to reproduce and effectively use this rare plant using new biotechnological methods, especially in vitro microcloning method we are going. In vitro propagation of *F. tadshicorum* has several advantages. Firstly, it is effective, secondly, it takes a short time, and thirdly, in the process of reproduction, from each callus cell, under favorable conditions of culture, random buds are formed that give rise to a plant. In addition, we can achieve great economic efficiency by exporting these products.

Conclusions. The analysis of the data presented above shows that *Ferula assafoetida*, which grows in the sandy deserts, hills, mountains and foothills of the Tashkent, Surkhandarya, Kashkadarya, Jizzakh, Navoi, Bukhara regions of our republic and the Republic of Karakalpakstan. It is of great scientific and practical importance to study the effect of fiber on the fertility of animals and to determine the norms and amounts of *Ferula assafoetida* plant grain in the diet of chickens.

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