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**CHEMICAL COMPOSITION OF PEGANUM HARMALA L. PLANT AND OIL  
EXTRACT OF SEED**

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**ANNOTATION:** This article provides information about the frankincense (*Peganum harmala* L) plant and its chemical composition and medicinal uses.

**Key words:** *Peganum*, garmin, harmaline, harmalol, quinozoline, deoxypeganine, peganine, tetrazoline, extraction, substance, pill, spectrometry.

## **INTRODUCTION**

Currently, a number of higher education institutions and research institutes are conducting large-scale research on the search for medicinal natural products and studying their chemical composition and use in medicine. In this regard, it is of urgent importance to extract biologically active substances from local raw materials and create cheap and effective new drugs and biologically active supplements (BFQ) based on them that replace imports, and for this, the creation of raw material bases of medicinal plants. Effective use of the achievements of folk medicine in the creation of new drugs and biologically active supplementary (BFQ) products will definitely bring positive results.

The reason for the widespread use of the *Peganum harmala* L plant in Uzbekistan is the presence of alkaloids, peganol, peganidin, garmin, harmaline, various oils, and flavoring substances in its composition. As an example of the above substances, garmin is used to calm the nervous system, to treat tremors, a complication of inflammation of the brain, and as a hypnotic (medicine). Frankincense also has diuretic, toothache, diaphoretic, flu prevention, and gastrointestinal properties. The plant has about ten names. It is known as "hazar ispan" in Iran and Tajikistan, "yuzarlik" in Azerbaijan and Turkmenistan, "adiraspan" in Kazakhstan, "isiriq" in Uzbekistan and Kyrgyzstan, and is usually used as a pain reliever in folk medicine, for colds. and against influenza, used during mass epidemics. Abu Bakr al-Razi's work entitled "Book about Smallpox and Measles" states that burning incense has a positive effect on the prevention and treatment of infectious diseases such as measles and malaria. Although there is no scientific evidence confirming the effectiveness of incense smoke against the coronavirus, its use in the prevention of infectious diseases has a positive effect. Because incense smoke does not allow various viruses to enter the human body.

## **THEORETICAL PART**

*Peganum harmala* L - (Zygoryllaceae) is a group of perennial plants belonging to the incense family. Height 60-70 cm. The stem is several, branched. The leaves are gray or green. The flowers are yellow-white, at the end of the branch. The fruit is a round bag, six types are known. One

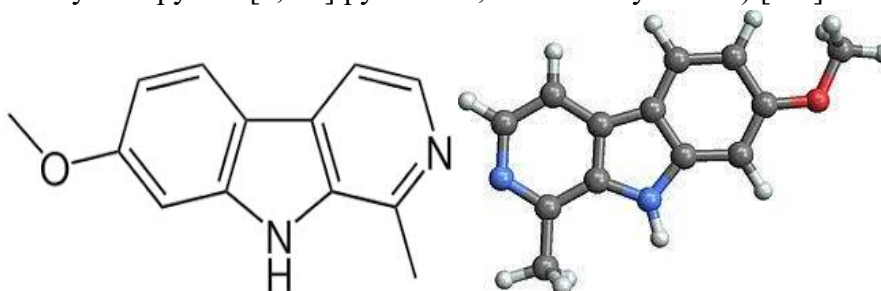
species (*R. harmala*) grows in Uzbekistan. It is found in deserts and semi-deserts, inhabited lands, among crops and on mountain slopes (Fig. 1).



**Figure 1.** Appearance of *Peganum harmala* L plant

The plant *Peganum harmala* L contains 1.5-3% (2.15-2.70% in the root, 3.5-6% in the seed) alkaloids of indole (harmine, harmaline, harmalol) and quinozoline (deoxypeganine, peganine, tetrazoline) types.

**Garmin** is an alkaloid, first isolated from harmala (*Peganum harmala*) (up to 3% of the dry weight of the roots). Name Garmin (4,9-dihydro-7-methoxy-1-methyl-3H-pyrido[3,4-b]indole) chemical formula  $C_{13}H_{12}N_2O$  Garmin is a base and forms crystalline salts with strong acids. Like all carbolines, harmine fluoresces when exposed to ultraviolet light; Garmin is reduced to tetrahydroharmine in ethanol with sodium, and brominated to tetrabromoharmine. When boiled in hydrochloric acid vapor, the methoxy bond is cleaved to form harmalol. The methyl group of harmine located in the  $\alpha$ -position of the pyridine nitrogen is activated: harmine undergoes condensation reactions with aromatic aldehydes and forms benzylidene derivatives. Oxidation of garmin with strong oxidizing agents leads to the degradation of the benzene part of the molecule: therefore, during oxidation with chromic anhydride in acetic acid, garmin is oxidized to garminic acid (7-methyl-1H-pyrrole[2,3-c] pyridine-2,3 -dicarboxylic acid) [1-6].



**Figure 1.** Chemical and conformational structure of garmin (4,9-dihydro-7-methoxy-1-methyl-3H-pyrido[3,4-b]indole)

Chlorohydrate salts of Garmin alkaloids have been used in the treatment of complications of encephalitis, seizures, tremors, and Parkinson's disease. Deoxypeganine hydrochloride solution in an ampoule is used for myasthenia, myopathy and other muscle diseases, as well as nerve diseases - neuritis (mononeuritis, polyneuritis) [1-6].

The plant *Peganum harmala* L (Isiriq) has been widely used in medicine since ancient times. Ibn Sina ordered to crush the upper part of the frankincense to the painful places when the joints hurt and the nerves are cold [1-6].

*Peganum harmala* L is a plant widely used in folk medicine. For example, it is used in the form of incense in the treatment of influenza, as a disinfectant.

A decoction prepared from its surface is used among the people as a sedative, hypnotic and pain reliever for gout, malaria, seizures, insomnia, colds and other diseases. This decoction also cures scabies and other skin diseases. Also, the decoction of the upper part of the earth has a diaphoretic and diuretic effect

It is recommended to drink decoction of frankincense seeds with flax decoction in case of shortness of breath and difficulty in breathing, and in case of wounds and ulcers, decoction of frankincense seeds with pepper seed decoction. In addition, "Peganum harmala L" has been used in the Middle East and North Africa as an abortifacient and to speed up the lunar day[1-6].

Peganum harmala L (Isiriq) plant is widely used in folk medicine according to the literature. If you burn incense and smell it a little, headache will disappear; A decoction of frankincense seeds is a cure when it is difficult to breathe, when mixed with flax seeds, it is a cure for shortness of breath; Frankincense can be used as a sedative and for insomnia; The juice of the plant is very effective in cataracts (wash the face with its decoction); Houses can be set on fire for the purpose of disinfection; If the milky sap of the incense is soaked in medical cotton and applied to the places suffering from itching for 10 days, it will cure itching; In order to improve the functioning of the heart, equal amounts of frankincense, cedar, camphor, pepper, parsley, black cumin, saffron are taken and mixed. It is drunk once a day with the addition of honey or sugar; If you mix incense, parsley seeds, mint, ginger, etc. and drink it at rest, it will heal;

The great physician Abu Ali ibn Sina used the Peganum harmala L (Isiriq) plant as a pain reliever for nerve colds, knee and bone pain. For this purpose, it is recommended to crush the above-ground part of incense on the burnt ground. Intoxication is used as a powerful diuretic. In folk medicine, a decoction made from the surface of frankincense is used to treat malaria, seizures, insomnia, colds and other ailments. Apart from these, it also cures acne, acne and other skin diseases.

Treatment of Peganum harmala L (Isiriq) plant with kainatma linseed kainatma prepared from its seeds in the treatment of shortness of breath, difficult breathing, pepper seed decoction in the treatment of zam and bod diseases. Medicinal properties of frankincense: it clears the bowels, analyzes blackness, gives sexual energy to people with cold menstruation, makes the body fat, makes urine, sweat, milk and menstruation smooth [1-6].

## **DISCUSSION OF THE RESULTS**

Since we obtained the oil extracts of Peganum harmala L (Isiriq) plant based on sunflower oil-Oleum Heuanth<sup>1</sup>, we presented the chemical composition of sunflower seeds and sunflower oil. Sunflower seeds contain up to 38% oil, chlorogen, citric, tartaric acids, carotenoids, phytin, 13.5-19.1% protein, 26.55% carbohydrates, flavoring and other substances. The oil used in medicine is extracted from the seeds by cold pressing. Sunflower oil is a pale yellow or clear and thick liquid with a characteristic smell and a pleasant taste. Sunflower oil belongs to semi-hardening oils. The chemical composition of sunflower oil contains glycerides of palmitic, stearic, arachin, lignocerin, oleic and linoleic acids. The density of sunflower oil is 0.921-0.931, refraction number 1.4736-1.4762, saponification number 185-198 and iodine number 104-144., acid number should not exceed 2.25.

Peganum harmala L (Isiriq) plant seeds to obtain an oil-based extract, Peganum harmala L plant seeds were ground, immersed in 96% ethanol, extracted in a water bath, using a reverse cooler,

and then sunflower oil was extracted in a water bath with the help of a reverse cooler, during this extraction the solvent (etanol) was removed and the extract of the plant was filtered, left in the refrigerator for 24 hours and filtered again. oil was obtained and named Peganum harmala oil. The seed oil of Peganum harmala L. is a light red oily liquid with a characteristic smell, miscible in ethanol, glycerin, some organic solvents, white in water creates a cloudy color but does not mix.

#### **CONCLUSION**

1. Peganum harmala L (Frankincense) plant as disinfectant, flatulence and flu, cardiovascular, nervous system, gastrointestinal, antimicrobial, antidiabetic, osteogenic, immunomodulatory, among many other pharmacological effects. has an effect.
2. Peganum harmala L (Isiriq) plant seed oil extract was obtained and named Peganum harmala oil.

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