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RESEARCH ARTICLE

SAKBEENAJ (FERULA PERSICA WILLD.): AN IMPORTANT DRUG OF UNANI SYSTEM OF MEDICINE

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Abstract

Since ancient times, the plant *Ferula Persica Willd* (Family - *Apiaceae*), also known as sakbeenaj, has been utilized in traditional medicinal system to cure a variety of ailments. Its descriptions as a Detergent, purgatives, diuretic and emmenagogue in ethnomedical literature demonstrate the plant's range of biological and pharmacological properties. It is used to treat *Dīq al-Nafas* (bronchial asthma), *Bawāsīr* (Hemorrhoid) and *Hasāh al-kulya* (renal-stone).

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Introduction:-

Unani medicine is an antiquated system of medicine which was revealed from Greece.[1] It is a well-known medical system in the nation that has worked hard over the years to prevent and treat a wide range of illnesses[2]. Sakbeenaj is an essential component of unani system of medicine which has many pharmacological benefits. An oily substance called *ferula persica* is more prevalent in Iran's mountains. It has a reddish-yellow exterior and is filled with white fluid inside. It is imported from Iran to Mumbai. Although it also comes in semi-transparent granular form, this resin is dark brown in color.[3] In traditional medicine, *ferula persica* has been used to treat indigestion, bloating, and constipation using an antispasmodic, anti-bloating, and laxative agent. It has also been used to treat neurological disorders, epilepsy, and a variety of aches, including joint pain.[4]

Collection:

Ferula Persica's oleo-gum resin is extracted from the plant's root. The method of collection differs depending on the location. In southern Iran (Fars and Kerman), this practice is common to remove a tiny layer of dirt, the root's tip is chopped off. OGR progressively leaks from the incision site onto the surface, which is collected after four days, and then a tiny layer is cut away from the root apex once more. To collect cumulative OGR once every four days, this technique is done at least 14 times at intervals of four days. Locally called as *Kokh*, the OGR derived from the initial cut's exudation is collected and sold separately.[5]

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Distribution:

It's commonly found in hilly areas of Iran,Arabistan[6],Greater Khorasan,Esfahan,Armenia and Azerbaijan.[3]

Selected local names:

Sakbeenj(Arabic),Sakbeena(Persian)[7],Aktariyun(Romen)[8],Sakbekh[9],Sagapenum(English)[10],Ferula Persica willd(Botanical name)[11],Kandal(Hindi)[12],Kanala[13],Kundhal(Sindhi)[14].

Description of drug in Unani literature

Sakbeenaj is a unani word and "Sagafiyun" and "Sageneen" are other unani words for this drug. Sagapenum is a gum and it means "carminative". It's a oleo resin of pine which after a long time becomes "sakbeenaj".It is similar like a oleo resin pine's tree.It originates in "Maah" which is near to "Isfahan"[8].Sagapenum's flower is shaped like a crown.A gum comes out of its wood which gets stuck.This gum is clear, transparent, viscous, yellow, red on the inside and white on the outside, strong smelling, greasy and slightly bitter this kind of gum is best.It disolves quickly in water.According to some people it is red or yellow on the outside and white on the inside.Apparently,fluid is found in it.It has a medium smell between asafoetida and oleo resin pine and also it has a strong taste.Sagapenum has four types based on those types that sagapenum is considered to be good which has all the above qualities besides the fragrance of asafoetida.But isfahaniSakbeenaj is considered to be best.some people divided it in only two categories red and white.According to this category white sakbeenj is light mucilagenous in taste And it has also two types one is "isfahani" and other one is "khorasani". Khorasani sagapenum is better than isfahani.Sakbeenaj is durable and strong for twenty years[15].

Taba'iKhususiyat (morphological characteristics):**Rang (colour):**

It is red on the outside and white on the inside with fluid[16].

Bu (odour):

Strong and similar to asafoetida[16].

Qiwam (consistency):

Clear and viscous[15].

Maza (taste):

Bitter and bad[17].

Shakal (shape):

Looks like a cucumber tree[7].

Tahlil (dissolution):

Easily soluble in water[18].

Mizaj (temperament):

It has a third-degree hot temperament and a second-degree dry temperament[19].

Af'al(action):

Kāsir-i-Riyāh (Carminative),Mulattif(demulcent), Muhallil(resolvent)[20] and Sagapenum also has other features like Qabid (Astringent) [21], Jali(detergent), Musakkin(analgesic).[19]

Iste'malat (uses):

It is useful in cold diseases of nervous system like paralysis,epilepsy,rheumatoid arthritis.[22,23]Also,beneficial in cataract,chronic splenitis,can be used as a paste in scorpion bite[22]and its paste is also favourable in tumor cases[24].This drug is useful in apoplex patient in the form of ma 'jun[25].It can reduce the ill temperament of liver.[26]Sagapenum can be used in abnormal moist temperament[27].It is beneficial in intestinal colic and tapeworm.[28]It helps in reduces of gastric pain.[29]

MiqdarKhurak (dose):

316 mg to 3.5 gm are listed as the recommended therapeutic doses [15].

Mazarrat (adverse effects):

It leads to abnormalities in the bladder, kidney, intestine, and liver[18].

Musleh (correctives):

Katira (gum tragacanth) and Roghan-i-Badam (almond oil)[6].

Badal (substitute):

Ushq(Dorena Ammoricum)[30],Behroza(Pinus Longifolia)[17].



Fig:- Showing Illustration of Sakbeenaj (*FERULA PERSICA* WILLD.) Fresh plant's leaves, dry leaves, flowers and whole plant.

Table:- Compound preparations containing SAKBEENAJ (*FERULA PERSICA* WILLD.) as one of the important ingredients with their dosage forms, indication and dose.

S.No	Compound formulations	Dosage form	Indications	Dose	Reference
1	Habb-iMuqil	Pills	Hemorrhoid and constipation	2 pills	31,32
2	Habb-i Hindi	Pills	Bronchial asthma	2 pills	33
3	Mā'jūnchobchini	Semi-solid	Joint pain, gout, sciatica	5-10 gm	34
4	Roghan-ikalan	Liquid (oil)	Paralysis, tremors	As needed for Massage	35
5	Ayāraj-iLoghāziya	Semi-solid	Epilepsy, apoplexy, Bell's palsy and tremors	18gm with honey water	36
6	Zimad-ikibreet	Semi-solid	Inflammation, splenomegaly	As needed for local application	37,38
7	Habb-iAafiat	Pills	Headache, joint pain and ear-	2 pills	39

			ache		
8	Habb-e-MushilIstisqae	Pills	Contipation	2-4 pills	40
9	Habb-iMuqilMulayyin	Pills	Hemorrhoid and constipation	2-4 pills	41
10	Ayāraj-iJalinoos	Semi-solid	Epilepsy, Paralysis, tremors and apoplexy	8-10 gm	42

Chemical constituents:

Numerous groups have investigated the chemical components of plants in the genus ferula. Chemical constituents of *F. Persica* Willd are Volatile oil, Bassorin, Gum, Resin, Turpentine and Phenol [3]. Aerial parts of *Ferula Persica* contains Essential oil, Phenylpropanoids, Oxygenated monoterpenes, Monoterpene hydrocarbons, Sesquiterpene hydrocarbons, Oxygenated sesquiterpenes. [43] The compounds typically found in *F. Persica* are sesquiterpenes, sesquiterpene coumarin and sulphur containing compounds. [44]

Pharmacological studies:

Antimicrobial Property:

Shahverdi et al. assessed the antibacterial properties of water and chloroform extracts of *F. persica* roots in 2005. While the water extract lacked antibacterial action, the chloroform extract did. They identified and described the active component umbelliprenin as they carried out and completed their investigation. [45] The maximum activity of this coumarin was against *Bacillus subtilis*, *Bacillus cereus*, *Escherichia coli*, *Klebsiella pneumoniae*, *Salmonella typhi*, *Staphylococcus aureus*, and *Staphylococcus epidermidis* at a dosage of 500 g/ml. On *Serratia marcescens*, umbelliprenin also had an anti-pigmentation effect. A Gram-negative bacterium called *S. marcescens* infects both plant and animal hosts with illness. Because prodigiosin is present, environmental *S. marcescens* strains frequently have a reddish color. It is generally known that several medications can cause bacterial pigmentation.

Anti-inflammatory and lipoxygenase inhibitory activity:

Osteoporosis, atherosclerosis, asthma, and chronic obstructive pulmonary disease (COPD) can all be treated well by inhibiting lipoxygenase. By inhibiting the signaling processes required for tumor growth, substances that disrupt the action catalyzed by lipoxygenase may be useful in the fight against cancer. [46] Umbelliprenin in its synthesized form shown anti-inflammatory and lipoxygenase inhibitory activity in 2009. [46] According to Iranshahi et al. Umbelliprenin underwent preliminary testing for its ability to block the family of iron-containing lipoxygenases that turn the arachidonic acid found in membrane phospholipids into leukotriene pro-inflammatory mediators. [47] According to research by Iranshahi and colleagues, Umbelliprenin significantly inhibits soybean lipoxygenase with an IC₅₀ value of 0.0725 M. In the second stage of the test, a clinical model of inflammation called carrageenan-induced mouse paw edema was used to assess umbelliprenin's anti-inflammatory effectiveness. Again, umbelliprenin reduced inflammation by up to 39% (against indomethacin, the reference control, which reduced inflammation by 47%). [48] All of the mono-isopentenyl-, -geranyl-, and -farnesyl derivatives of coumarin were created by Iranshahi et al in 2012 [49] and their inhibitory effectiveness against the enzymes soybean 15-lipoxygenase (SLO) and human 15-lipoxygenase-1 (HLO-1) was assessed. The strongest SLO inhibitor among the synthesized derivatives was 5-farnesylcoumarin (IC₅₀ = 0.8 M), while the strongest HLO-1 inhibitor was 6-farnesylcoumarin (IC₅₀ = 1.3 M) The farnesyl analogs' IC₅₀ fluctuations for HLO-1 (1.3 to 75 M) were significantly higher than those seen for SLO (0.8-5.8 M).

We can infer that several flavonoids, such luteolin 7-O-glucoside, and the coumarin umbelliprenin found in *F. persica* have antioxidant and anti-inflammatory properties.

Antihypertensive activity:

Traditional medicine has utilized *F. persica* to treat high blood pressure. Acute and chronic effects of an aqueous extract of *F. persica* on the blood pressure (BP) of hypertensive rats were studied by Ghanbari et al. They discovered that chronic administration of *F. persica* has no effect on blood pressure, but intravenous injection of the herb significantly lowers hypertensive rats' blood pressure (P 0.001). [50]

Conclusion:-

Various uses of this plant have been made in conventional medicine. Sakbeenaj is one of the best plant-origin drugs for anal issues and is helpful in case of haemorrhoids. The traditional uses of *F. persica* as an antibacterial, anti-

inflammatory, and antihypertensive have almost been validated by new pharmacological research. It is firmly considered that information provided in this review on the phytochemical and biological activities of *F. persica* gives certain evidence in support of the usage of this plant in various medications.

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