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HING *(Ferula foetida* Regel): A potent Unani Herb with its descriptive parameters of Pharmacognosy and Pharmacology

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Abstract: *Asafoetida (Ferula asafetida Linn.), commonly known as hing ,is an oleo- gum-resin obtained from several Ferula species native to Central asia1,2. In Unani medicine, it is described as a diuretic, antidiabetic, emmenagogue, digestive aid, and antispasmodic, and is used for respiratory disorders, gastrointestinal complaints, menstrual irregularities, infertility, and infections3,4. Its strong odor and taste derive from active constituents such as resins, gums, and essential oils. Modern studies highlight antimicrobial , hepatoprotective, neuroprotective, and anxiolytic properties, supporting its traditional applications. Asafoetida thus holds value as both a Unani medicinal plant and a functional food additive. Hyperpimentation occours when the skin makes too much melanin, leading to dark spots. Melanocytes generate two types of melanin : pheomelanin (yellow-red) and eumelanin(brown-black).*

Keywords: Hing, *Ferula foetida*, Unani

I. INTRODUCTION

Herbal medicines are gaining importance because they are considered safer and less toxic than modern synthetic drugs.India is home to nearly 20,000 medicinal plants species, of which about 800 are commonly used by traditional healers in thousand of folk remedies. More than 1.5 million practitioners and around 7,800 manufacturing units make use of these plants, requiring nearly 2,000 tons of herbs each year. Among them, Ferula asafetida (Hing), from the Apiaceae family,is highly valued. The resin is collected from the roots or stems of species like F.asafetida and F.alliacea , and is found in both the mass and tear forms. Though it has a pungent sulfur-like smell , it remains an essential flavoring in Indian cooking.

1.1 Unani System Of Medicine

Asafoetida, commonly called Hing or Hiltit, is a traditional Unani herb obtained from the Ferula plant and is well known for its healing qualities. It is mainly used to improve digestion, relieve bloating and gas, support brain and nerve health, regulate blood sugar levels, and fight infections due to its antimicrobial and anti-inflammatory nature5. In Unani practice , its is prescribed for problems related to the stomach, lungs and skin, and is often blended with other herbs to enhance its effects. Its medicinal value comes from natural compounds like essential oils, resin, and gum, which together provide strong therapeutic benefits.

1.2 Synonyms

Vernacular Names of the Ferula asafoetida

Language	Folk Names
Arabic	Tyib
Marathi	Hing
Gujarati	Hing
Kashmiri	Yang-sap

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Malayalam	Kayam
Tamil	Perungaayam
Oriya	Hengu
Sanskrit	Badika
Telugu	Inguva
Turkish	Seytan, tersi,Seytan boku
French	Ase-fetida
Spanish	Ase-fetida
Russian	Asafoetida
Pakistan	Kama,Anguza
Nepali	Hing,Hingu
Italian	Asafoetida
Hindi	Hing,Hingu
English	Asafoetida,Devil's dung
Chinese	A-wei
Afghan	Kama,Anguza

1.3 Biological source

Asafoetida is a natural oleo-gum-resin that is collected from roots and rhizomes of plants belonging to the genus Ferula (family- Apiaceae)6,7.The main species that yield this resin are Ferula asafetida Linn, Ferula foetida Regel , and Ferula narthex Boiss.

When the root is cut or incised, a milky exudate seeps out, which hardens upon exposure to air and forms the crude drug known as asafetida.

1.4 Geographical source

In India , the Ferula plants do not grow naturally on a large ,but asafetida is imported – mainly from Afghanistan and Iran – and then processed and marketed in northern states such as Jammu and Kashmir and Punjab8.These countries have the ideal climate and soil conditions for growth of Ferula species. Smaller quantities are also obtained from Turkmenistan, Uzbekistan, and some parts of Pakistan.

1.5 Taxonomy

Taxonomical Classification of F.asafoetida plant-

Rank	Taxonomic Classification
Kingdom	Plantae

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Sub-Kingdom	Tracheobionta(Vascular Plants)
Division	Magnoliopsida(Flowering Plants)
Class	Magnoliopsida(Dicotyledons)
Order	Apiales
Family	Apiaceae(Umbelliferae)
Genus	Ferula
Species	Ferula asafetida Linn.

1.6 Collection

Asafoetida is a gum resin obtained from the roots of Ferula asafoetida plant. The collection usually takes place around June, using plants that are about four years old and have not yet produced flowers. The roots are carefully exposed and cut to allow the milky latex to flow out.The incised roots are then shaded for several weeks, during which the exuded latex gradually solidifies into a resinous mass. Once hardened, the resin is scraped off in reddish lumps, sun-dried, and stored in leather bags for transport. The collected product is sometimes sent to trading centres such as Herat, where it may be processed further before marketing. A superior type, known as Kandaharre Hing, is obtained from the leaf bud at the centre of the root and is characterized by reddish-yellow flakes that release a fragrant oil when pressed.

The final resin is often cleaned, powdered, or mixed with flour before packaging for use.

1.7 Chemical Constituents

It contain the chemical fractions include resins (40-60%), gums about(25%), and essential oils (10-17%)9,10.The resin portion contains ferulic acid, umbelliferone, and coumarin derivatives and different terpenoids. The gum part mainly include sugars and glycoproteins, while the volatile section is dominated by monoterpenes and sulphur-based compounds.

1.8 Uses

It is used as Anti-diabetic, Hepatoprotective, Neuroprotective, Anti-Microbial, Antioxidant, Anti-parasitic, Anti-inflammatory and also used to prevent Hyperpigmentation.

Chemical Constituent

The asafoetida is conventionally separated into three broad fractions: (A complex mixture of phenolic derivatives and coumarin- like compounds), gum (polysaccharides), and volatile oil (a mixture of sulfur-containing molecules and terpenes). The proportions and precise molecules vary with species, harvest location, and processing.

1) Resins

The resins are (approximately 40- 65%)of dry gum-resin contain phenolic acids (ferulic acid), sesquiterpenes- type coumarin derivatives, and resinous esters. The fraction carries many of the bioactive, non-volatile constituents linked with anti-inflammatory and spasmolytic actions.

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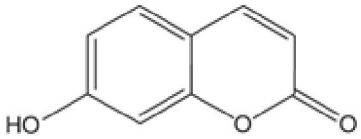
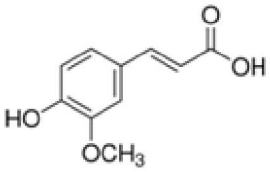
The resins such as Ferulic acid esters, Coumarins(like, Umbelliferone) and others are Sesquiterpene ethers and Asaresinotannols.



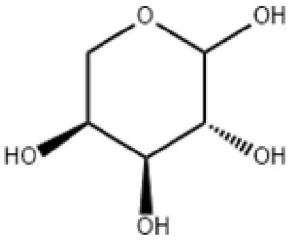
Umbelliferone



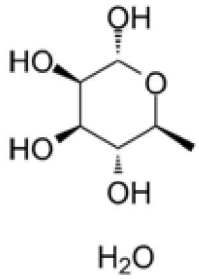
Ferulic acid

2) Gum

It has about (approx 20-30%) complex polysaccharides made up of sugars such as Arabinose, Galactose, Rhamnose and Glucoronic acid they have water- binding and emulsifying properties. Gums help to preserve the uniformity of the mixture during storage.



Arabinose

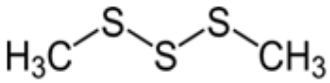


Rhamnose

3) Volatile oils

The volatile oils are present about (approx. 5 – 20%) and dominated by the sulfurous organosulphur compounds plus monoterpenes and other small terpenoids, this fraction gives asafoetida its characteristic sharp odor and many antimicrobial effects.

Oleic Acid



Dimethyl Trisulfide

Pharmacological actions

These are some pharmacological actions of asafoetida-

1) Anti-Bacterial-

The dried gum resin of Ferula asafoetida shows notable antibacterial activity effectively inhibiting the growth of Clostridium perfringens and Clostridium sporogenes in agar plate tests11. This indicates the presence of active compounds with potential antimicrobial properties in the plant.This activity is believed to result from the presence of sulfur- containing volatile compounds in the resin, which disrupt bacterial cell functions.

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2) Anti-Carcinogenic-

The anti-carcinogenic activity of asafoetida was studied by giving us dried resin orally to Sprague-Dawley rats at doses of 1.25% and 2.5% (w/w) in their diet12. The treatment reduced the number of size of N-methyl-N-nitrosourea (MNU)-induced mammary tumors13.

3) Anti-Fungal-

The essential oil obtained from Ferula asafoetida showed strong antifungal activity against several fungal species. Its ethanolic extract also exhibited noticeable effects in agar plate tests. These results suggest that F. asafoetida possesses promising natural antifungal properties. The asafoetida extract shows about 5 to 10 mg concentration as inhibitory activity14.

4) Antioxidant-

This effect was evidenced by lower levels of thiobarbituric acid-reactive substances (TBARS), indicating decreased oxidative damage. Overall, the finding suggest that F. asafoetida may serve as an effective natural antioxidant and help protect against oxidative stress14.

5) Hyperpigmention-

Asafoetida is sometimes used in topically in DIY face masks or skin treatments to brighten the skin and reduce the dark spots. Its antioxidant and cell generating properties may help to improve the skin tone.

6) Anti-Convulsant-

In anticonvulsant testing using the PTZ-induced seizure model, none of the extracts showed protective effects. The findings indicate that Ferula extracts possess cytotoxic but lack anticonvulsant activity.

7) Anti-Parasitic-

Treated groups showed a significant improvement compared to the infected control group. The demonstrated the most notable decrease in worm load and egg count. Microscopic and tissue examinations further verified its higher antiparasitic effectiveness than the oil preparation15.

Other Biological Activities

It has other activities such as-

Anticholesterolemic , Antihypertensive, Antiparasitic , Anti-inflammatory, Antispasmodic, Anti-haemolytic and many more.

II. CONCLUSION

Ferula asafoetida (HING) has been used for centuries in Unani and other traditional medicine systems treat various aliments. Modern phytochemical, experimental and clinical studies have revealed a wide range of biological and pharmacological activities including antioxidant, antifungal, chemopreventive, nephroprotective, antimicrobial, anticonvulsant, antiparasitic, antidiabetic, and antihyperlipidemic effects. These scientific investigations support many of the traditional medicinal claims associated with Hing. Despite these findings, more detailed clinical research is needed to fully explore and validate its therapeutic potential.

REFERENCES

[1]. Iranshah,M.,&Iranshahi,M.(2011)Traditional uses,phytochemistry ,and pharmacology, and pharmacology of Asafoetida (Ferulaassa-foetida-oleo-gum)- A review .Journal of Ethnopharmacology,1349(1),1-10.
[2]. Nadkarni, K.M.(2009).Indian Materia Medica (Vol.1).Mumbai:Popular Prakashan.
[3]. AI-Rawi,A.H.,&Chakravarty,H.L.(1998).Medicinal Plants of Iraq. Ministry of Agriculture and Irrigation,Baghdad.
[4]. Khare, C.P.(2007).Indian Medicinal Plants: An Illustrated Dictionary.Springer. 5.Ahmad,W.,et al. (2005). Unani approach to gastrointestinal disorders: A review.
[5]. International Journal of Unani and Integrative Medicine, 3(2),45-52. 6.Evans,W.C.(2009).Trease and Evans Pharmacognosy (16th ed).Saunders Elsevier.
[6]. Tyler,V.E.,Brady,L.R.,&Robbers,J.E.(1998).Pharmacognosy.Lea & Febiger.
[7]. Chopra, R.N.., Nayer, S.L.,& Chopra ,I. C. (1956). Glossary of Indian Medicinal Plants .CSIR, New Delhi.

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[8]. Iranshahy, M., & Iranshahi, M. (2011). Journal of Ethnopharmacology, 134(1),1-10. 10.Kataria, S., Khatri ,S.,& Garg,M. (2018) . A review on pharmacological activities of Ferula asafoetida. International Journal of Pharmaceutical Sciences Review and Reaserch, 50(1),74-80.

[9]. Morteza-Semnani,K.,et al (2003). Antibacterial activity of essential oils of Ferula assa- foetida. Phytotherapy Research,17(8),842-843.

[10]. Devsena,T.,& Menon,V.P.(2002).Inhibitory effects of Ferula asafoetida on experimental mammary carcinogenesis.Pharmacological Research,45(6),557-562.

[11]. Koul ,S., et al (2011). Sesquiteroene coumarins from Ferula asafoetida induce apoptosis in human cancer cells. Phytomedicine, 18(1), 33-40.

[12]. Iranshahi, M., Rezaee,R., & Najaf Najafi,M. (2009). Antioxidant activity of Ferula species. Food Chemistry, 115(2), 820-825.

[13]. Rahnama, M., et al. (2004). Antiparasitic and anti-inflammatory properties of Ferula assa-foetida. Parasitology Research, 113(3), 1121-1128.