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A CRITICAL REVIEW OF HAIMVATI (IRIS GERMANICA) IN AYURVEDIC AND MODERN CONCEPT

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ABSTRACT

Background:
Iris germanica (Haimvati), commonly known as Orris root, is a controversial Ayurvedic drug often correlated with Sveta Vacha. It is described in classical texts under Lekhaniya Mahakashaya and Mustadi Gana, yet remains underutilized due to ambiguity in identity and limited clinical validation.

Methods:
A narrative review was conducted using classical Ayurvedic texts, including Charaka Samhita, Sushruta Samhita, Ashtanga Hridaya, and various Nighantus, along with modern scientific literature. Data on botanical features, pharmacological actions, phytochemical constituents, and experimental evidence were critically analyzed.

Results:
Haimvati possesses Katu-Tikta rasa, Laghu-Tikshna guna, Ushna virya, and Katu vipaka, with actions such as Deepana, Pachana, Lekhana, Medhya, and Vamaka. The rhizome is the primary medicinal part. Phytochemical studies reveal isoflavonoids, flavonoids, iridal-type triterpenoids, and steroids as key constituents. Experimental studies demonstrate antioxidant, anti-inflammatory, neuroprotective, hypoglycaemic, hypolipidaemic, antimicrobial, and immunomodulatory activities.

Conclusion:
Haimvati shows promising therapeutic potential, particularly in metabolic and neurodegenerative disorders. However, insufficient clinical evidence and safety data limit its application. Further well-designed studies are required to establish its efficacy, safety, and standardization for modern therapeutic use.

INTRODUCTION

Herbal medicine, sometimes known as herbalism or the application of herbs for their therapeutic or medical properties is known as botanical medicine. A herb is a plant or component of a plant that is prized for its savory, fragrant, or therapeutic properties. Numerous chemical substances that affect the body are produced and found in herb plants. The botanical description of the medicinal herbs first appeared during Nighantus' time. Haimvati (Iris germanica) is a controversial drug in Indian medicine well known for lekhana karma. Haimvati which is also known as Sweta vacha is a type of vacha. Vacha (Acorus calamus) is well known Medhya drug and there seems to be no controversy for that but when it comes to Sweta Vacha (Haimvati) it is controversial drug. Haimvati is commonly known as Orris root, a perennial herb from Iridaceae family. It is exceedingly common in Himalayas. Haimvati is not so commonly used ayurveda drug due to its controversial origin and existence. But still Haimvati is used in foreign countries for its great medicinal values. It is delineated under various therapeutical groups like 'Sixteen Mulini Dravyas', 'Lekhaniya Mahakashaya',by Acharya Charak [1], 'Mustadi Gana' by Acharya Sushruta[2] and Acharya Vagbhata[3], 'Haritakyadi Varga', 'Shatapuspadi Varga', 'Pippalyadi Varga', 'Aushadhi Varga' by various Nighantukaras[4,5,6]. The pharmacognostical characters of haimvati are described through various synonyms like 'Parasika Vacha'(Found in Persia), 'Shukla' (White in colour), 'Haimvati'(Grows in Himalayas), 'Medya' (brain tonic), 'Shadgrantha' (having six nodes), etc. It has important pharmacological properties like Deepana (Appetizer), Pachana (Digestive), Lekhana (Scraping), Vamaka (Emetic), Medhya (brain tonic), etc.

Vernacular name

Sanskrit : Parasika vacha, Shukla, Sveta vacha, Medya, Shadagrantha, Slesmaghni, Tikshnapatra, Jalaja, Ikshuputrika, Himavali
Hindi : Vacha,Bal vach, Khurasani vach, Safed vach
Gujarati :Godavaj, Bal vaj
Marathi : Bal vekhan, Vekhand, Pandhare Vekhand
Bengali : Vacha, Khorasani Vacha, Sweta vacha
Kannada: Vacha, Baje
Telugu : Vasa, Vadaj, Nalavasa
Tamil : Vasahambu
Malayalam : Vayambu

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Konkan : Ekhanda
Unani : Vacha, Bacch
Nepali : Bojho[7]
Japanese: Shobu[8]
English : Orris root
Latin : Iris germanica, Iris versicolor, Paris pollyphyla, Iris psudacorus, Iris ensata, Iris kumaonensis, Iris nepalensis
Persian : Agri-turki
Arabic : Irsa, Sosan
Kashmir : Majar posh, Majar munda

Classical Reference
Acharya Charak has categorized Haimvati in Mulini Varga and Lekhaniya Mahakashaya. Acharya Sushruta has mentioned in Mustadi Gana. Acharya Vaghbhat has mentioned in Mustadi Gana and Acharya vruddha Vaghbhat has mentioned in Mustadi Gana and Lekhaniya Mahakashaya.

Taxonomical Classification
- Kingdom: Plantae
- Subkingdom: Viridiplantae
- Infrakingdom: Streptophyta
- Super division: Embryophyta
- Division: Tracheophyta
- Subdivision: Spermatophytina
- Class:magnoliopsida
- Suborder: Lilianae
- Order: Asparagales
- Family: Iridaceae
- Genus: Iris L.
- Species: Germanica

Properties
- Rasa: Katu, Tikta
- Guna: Laghu, Tikshna
- Virya: Ushna
- Vipaka: Katu

Karma: **Dosha karma**: Vatakaphashamak, Pittavardhaka
Samanya Karma: Lekhaniya, Medhya, Deepaniya, Vamaka, Viryavardhaka, Krimihara, Ayuvardhaka

Botanical Description
Haimvati is a perennial herb growing in western Himalayas at altitudes of 5000-9000 feet of Iridaceae family. It is an aromatic marsh herb with creeping root stock. The seemingly numerous plants seen above ground in a population probably arise from a single plant connected by an extensive underground rhizome. This plant is seen growing near the tombs of the muslims in Kashmir, and hence it is called there Majar posh (majar means tomb and posh means a flower) and Majar mund (munda means root). In appearance it looks like Vacha (Acorus calamus) plant. It has white, blue and red flowers. Muslim hakims have called white flowered variety *Solsan* and blue flowered as *Irsa* . it is sold by the Hakims as Bekhson.

Rhizome: The root system comprises shallow, branching rhizomes that are stout and knobby. Tufts of basal leaves appear at intervals along these rhizomes, with coarse fibrous roots developing beneath them. The plant propagates through its rhizomes, which are long, indefinitely branched, smooth, and range in color from pinkish to pale green. Internally, the rhizome is whitish-pink and emits a pleasant citrus aroma, despite having a bitter taste.

Stems: The stems are tufted and may be short or grow up to about 45.16 cm in height. They can be either stout or slender depending on the growth conditions of the plant. Usually, the stems arise in clusters from the base and appear erect and firm. Their structure provides support to the leaves and reproductive parts of the plant. The variation in thickness and height is an important morphological characteristic used in plant identification.

Leaves: The leaves are linear in shape and exhibit a greenish-blue coloration. They are usually narrow, elongated, and arranged in a way that gives the plant a graceful appearance. The spathes are about 7.5–10 cm long and enclose the developing flowers. These

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structures help protect the floral parts during early growth. The distinctive leaf shape and long spathes are important morphological features used in identifying the plant.

Flowers: Flowers are lilac or whitish in colour. Sepals and petals with purplish veins stalked. Petals are oblanceolate in shape, erect, 6 mm broad. Stamens are 3 in number at the base of the outer perianth segments. Filaments are distinct anthres linear. Ovary 3 celled, capsule 6 ribbed beaked ribs rounded. Style dividing into 3 petaloid stigmatiferous portions. Tip sharpely bifid.

Fruits: Fruits are found small and berry like with few seeds.
Distribution: Iris germanica L. is extensively distributed all over the world, viz North America, Eurasia and North Africa. The genus Iris belong to the family Iridaceae which contains about 260 species. Iris germanica is primarily distributed in the Himalayan region of India, particularly in Kashmir, Ladakh and Himachal Pradesh. It is also found in other parts of India, including the Western Ghats(Nilgiri) and in moist, cultivated areas in Manipur and Nagaland.

Part used: The part used in most of experimental studies are roots (rhizome) of the plant. In traditional systems of medicine mostly the rhizomes are used.

Table 1: Table showing classification of Haimvati by different Acharya.

Samhita & Nighantu	Varga
Charak Samhita	Mulini Dravya Varga, Lekhaniya Mahakashaya
Sushruta Samhita	Mustadi Gana
Ashtanga Hridaya	Mustadi Gana
Ashtanga Sangraha	Lekhaniya Mahakashaya, Mustadi Gana
Bhavprakasha	Haritakyadi Varga
Dhanvantari Nighantu	Shatapushpadi Varga
Shodala Nighantu	Shatpushpadi Varga
Madanpala Nighantu	Shunthyadi Varga
Kaiyadev Nighantu	Aushadhi Varga
Bhavprakasha Nighantu	Haritakyadi Varga
Raj Nighantu	Pippalyadi Varga
Shaligram Nighantu	Haritakyadi Varga
Shankara Nighantu	Haritakyadi Varga
Mahaoushadi Nighantu	Mahaoushadi Varga
Priya Nighantu	Shatpushpadi Varga

Table 2: Karma (action) of Haimvati in various Samhita & Nighantu.

Karma	C.S	S.S	A.H	A.S	B.P	D.N	Sho.N	M.N	K.N	R.N	Sha.N	Maha.N	P.N	Bha.N
Lekhana	+			+										
Vamaka	+				+	+		+			+		+	+
Yonidoshahara		+	+	+										
Stanyashodhana		+	+	+										
Pachana		+	+	+										
Sleshmaghna		+			+	+	+			+	+		+	+
Swarakrut								+						
Vahnikara					+			+			+		+	+
Vataghna					+	+				+	+		+	+
Bhutaghna					+					+	+		+	+
Jantughna					+						+			+
Medhya						+	+		+	+	+		+	
Malavishodhana					+						+			+
Mutravishodhana					+						+			+
Vatanulomana													+	
Krimighna						+				+	+		+	
Rujapaha						+								
Kanthya						+					+			
Ayuvardhaka										+	+			
Viryajanaka											+			
Depana										+	+			
Vakprada											+			

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Matikara										+				
Samrudhidayaka										+				
Vrushya										+				

C.S- Charak Samhita; S.S- Sushruta Samhita; A.H- Ashtanga Hridaya; A.S- Ashtanga Sangraha; B.P- Bhavprakasha; D.N- Dhanvantari Nighantu; Sho.N- Shodhala Nighantu; M.N- Madanpala Nighantu; K.N- Kaiyadeva Nighantu; R.N- Raj Nighantu; Sha.N- Shaligram Nighantu; Maha.N- Mahaoushadi Nighantu; P.N- Priya Nighantu; Bha.N- Bhavprakasha Nighantu

Table 3: Rogaghnata (Therapeutic indication) of Haimvati in Various Nighantu.

Roga	D.N	Sho.N	M.N	K.N	R.N	Sha.N	Maha.N	P.N	Bha.N
Vibandha	+					+		+	+
Adhmana	+					+		+	+
Shoolanashak	+	+	+			+		+	+
Hrid roga	+								
Shotha						+			
Vata Jwara hara						+			
Apasmara			+			+		+	+
Unmada			+			+		+	+

D.N- Dhanvantari Nighantu; Sho.N- Shodhala Nighantu; M.N- Madanpala Nighantu; K.N- Kaiyadeva Nighantu; R.N- Raj Nighantu; Sha.N- Shaligram Nighantu; Maha.N- Mahaoushadi Nighantu; P.N- Priya Nighantu; Bha.N- Bhavprakasha Nighantu

Phytochemical Constituents

The dried rhizome of I. germanica has revealed the diverse distribution of phytoconstituents including flavonoids, iridal-type triterpenoids, isoflavones and steroids. Isoflavonoids are the main active constituents of this plant. In addition, these secondary metabolites were further screened for drug like properties (absorption, distribution, metabolism and excretion). The drug like properties consisted of small molecules that were orally active in humans and the success of small molecules to convert a drug. This analysis is an essential assessment for the selection of drug candidates in the early stages of drug discovery. According to the rule of Lipinski's rule of 5 (Ro5), an orally active drug molecule must have molecular mass less than 500 Da, maximux 10 H-acceptor bonds or less, maximum 5 H-donor bonds or less and log *P* not greater than 5. Further studies are needed to get secondary metabolites in this plant.

Isoflavones and Glycosylated Isoflavones

Isoflavonoids possess a characteristic 3-phenylchroman structure, which is biogenetically formed from the 2-phenylchroman backbone found in flavonoids. One of their key roles is acting as dietary antioxidants, helping to counter oxidative stress associated with inflammation and reactive nitrogen and oxygen species. The therapeutic properties of the rhizomes of Iris germanica are largely attributed to these isoflavones. Various species of *Iris* contain a wide range of isoflavones, occurring in both aglycone and glycosidic forms. Notably, isoflavones were among the earliest compounds to be isolated from *I. germanica*.

Flavonoids and Glycosylated Flavonoids

Flavonoids constitute a large class of plant secondary metabolites characterized by a benzopyran ring system attached to a benzene ring, and they exhibit a range of important biological activities. Different subclasses of flavonoids, including C-glycosylated variants, have been identified in Iris germanica.

Iridal-Type Terpenoids

Terpenoids constitute the largest and most widely distributed group of plant secondary metabolites, exhibiting diverse biological activities. Extracts of Iris are known to be particularly rich in these compounds. Among them are iridal-type triterpenoids, a class of C_{31} triterpenes formed from squalene through a distinctive biosynthetic route. These molecules typically possess a seco-ring-A structure and are categorized into monocyclic, bicyclic, and spirocyclic forms.

Steroids

Steroids are also found in the extracts of Iris plants.

Pharmacological Actions

Various in-vitro and in-vivo studies evaluated biological activities of I. germanica like Antioxidant and Antinociceptive effect, Anti-inflammatory and immunomodulatory effects, Neuroprotective effects, Hypoglycaemic effects, Hypolipidaemic effects, Antimicrobial effects, antiproliferative and cytotoxic effects.

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Side effects and Toxicity

Although the long history of medicinal uses of Iris species in many places in the world can suggest their safety, it should be considered that their long-term use may cause some problems. Currently, there is little evidence about toxicity of I. germanica. The aqueous ex tract of I. germanica showed toxicity and psychotropic activity in mice.

Reviewing the current literature demonstrates that there is not enough evidence related to serious adverse effects and toxic reactions for the consumption of I. germanica in human subjects. However, further animal and human studies are needed to verify its potential adverse effects.

Future scope and Conclusions

In conclusion, Iris germanica is a medicinal herb with a long-standing role in various traditional healing systems. This review highlights its botanical features, ethnomedicinal uses, phytochemical profile, and pharmacological properties. The therapeutically important parts of the plant are mainly its underground portions, particularly the rhizomes. Phytochemical studies indicate that these parts contain a variety of bioactive compounds such as flavonoids, isoflavones, iridal-type triterpenoids, and steroids, with isoflavonoids being the main active constituents.

Experimental studies, both *in vitro* and *in vivo*, demonstrate a broad spectrum of biological activities, including neuroprotective, hypoglycaemic, hypolipidaemic, antimicrobial, antioxidant, antiproliferative, anti-inflammatory, antiplasmodial, immunomodulatory, cytotoxic, and antimutagenic effects. In animal models of Alzheimer's disease, administration of *I. germanica* has shown improvement in cognitive function. Its antioxidant and acetylcholinesterase (AChE) inhibitory properties are attributed to its rich content of phenolics, flavonoids, and saponins, suggesting potential relevance in neurodegenerative conditions.

Flavonoids isolated from the plant exhibit antioxidant and α-amylase inhibitory activities, which help reduce postprandial blood glucose levels by limiting carbohydrate digestion, thereby indicating antidiabetic potential. Additionally, ethanolic extracts of the rhizomes have demonstrated beneficial effects in experimentally induced hyperlipidaemia. Various studies also suggest that *I. germanica* and its constituents—such as iridal and related triterpenoids—possess antimicrobial, antifungal, and antiplasmodial properties. The high isoflavonoid content contributes to its antioxidant and analgesic effects.

Compounds like irisolidone and irilone, isolated isoflavones from this plant, show notable anti-inflammatory and immunomodulatory actions, including effects on T-lymphocyte activity and cytokine production. Although some studies report antiproliferative and cytotoxic effects against cancer cell lines, the evidence remains inconsistent, necessitating further investigation to clarify its antitumor potential.

Despite promising preclinical findings, there is a lack of comprehensive pharmacokinetic, safety, and clinical studies on *I. germanica*. Therefore, further well-designed research is essential to establish its safety, efficacy, and potential application in human therapeutic formulations.

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Conflict of Interest

The authors declare that they have no conflict of interest to disclose.

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