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VACHA (ACORUS CALAMUS LINN.)- A MEDICINAL RHIZOME WITH MULTIPLE USE- REVIEW

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ABSTRACT

Acorus calamus Linn., commonly known as Vacha, is an important medicinal plant belonging to the family Araceae. It has been extensively used in classical Ayurvedic medicine for the management of disorders related to the nervous system, digestive system, respiratory system, and speech impairment. Traditionally, Vacha is indicated in conditions such as Agnimandya, Grahani, Apasmara, Unmada, Kasa, Shwasa, Medhya disorders, and Vata-Kapha predominant diseases. Phytochemical investigations of *Acorus calamus* have revealed the presence of phenylpropanoids (α-asarone and β-asarone), essential oils, terpenoids, flavonoids, tannins, glycosides, saponins, and carbohydrates. Several bioactive compounds have been isolated and evaluated for their medicinal potential. Pharmacological studies have demonstrated that *Acorus calamus* possesses neuroprotective, memory-enhancing, anticonvulsant, anti-inflammatory, antioxidant, antimicrobial, anti-ulcer, digestive stimulant, and anxiolytic activities. The findings of various experimental and pharmacological studies support the traditional claims of Vacha described in Ayurvedic literature. The present review aims to discuss the classical Ayurvedic descriptions, chemical constituents, pharmacological activities, and therapeutic significance of *Acorus calamus* Linn., highlighting its importance as a potential medicinal drug.

KEYWORDS: *Vaca, Acorus calamus, Ayurveda, Medhya.*

INTRODUCTION

Medicinal plants have been the foundation of traditional healthcare systems since antiquity, and Ayurveda, the ancient science of life, has extensively documented the therapeutic potential of numerous herbal drugs based on their pharmacodynamic principles. Among these, *Vacha* (*Acorus calamus* Linn.) occupies a distinctive position due to its wide spectrum of therapeutic applications and its profound influence on the nervous and digestive systems. Known for its aromatic rhizome and potent bioactivity, Vacha has been described in almost all major classical Ayurvedic treatises and has been traditionally employed as a *Medhya* drug to enhance intellect, speech, and memory.

Classical Ayurvedic literature such as the *Charaka Samhita*, *Sushruta Samhita*, *Ashtanga Hridaya*, and *Bhavaprakasha* elaborates on the properties of Vacha. The drug is characterized by *Tikta* and *Kashaya Rasa*, *Laghu* and *Tikshna Guna*, *Ushna Veerya*, and *Katu Vipaka*, which collectively contribute to its *Vata-Kapha hara*, *Dipaniya*, *Grahani*, and *Medhya* actions. Traditionally, Vacha has been prescribed in various disease conditions including *Agnimandya*, *Grahani*, *Apasmara*, *Unmada*, *Kasa*, *Shwasa*, and disorders of speech and cognition, highlighting its multifaceted therapeutic relevance.

In the context of modern science, *Acorus calamus* has attracted considerable attention due to the presence of biologically active phytoconstituents such as α-asarone, β-asarone, essential oils, flavonoids, and terpenoids. Numerous experimental and pharmacological studies have demonstrated its neuroprotective, antioxidant, anti-inflammatory, antimicrobial, anticonvulsant, and digestive stimulant activities, thereby providing scientific validation for many of its traditional uses. However, concerns regarding the safety and toxicity of certain constituents, particularly β-asarone, underscore the need for critical evaluation, standardization, and rational therapeutic application.

In view of its extensive traditional usage and growing scientific evidence, a comprehensive review integrating classical Ayurvedic knowledge with modern pharmacognostic and pharmacological findings is essential. The present article aims to systematically compile and critically analyse the classical references, Varieties, Ayurvedic pharmacological attributes, phytochemical composition and therapeutic significance of *Vacha* (*Acorus calamus* Linn.), thereby providing a holistic perspective on its medicinal potential and future research prospects.

MATERIALS AND METHODS

A systematic review of Vacha was carried out by referring to various classical Ayurvedic textbooks, compiled translations, websites, research articles, PubMed, and scientific journals. The collected information was critically analysed and systematically presented in this article.

RESULTS AND DISCUSSION

HISTORIC REVIEW

Vacha has been used as an important medicinal drug since ancient times and is repeatedly mentioned in major Ayurvedic treatises.

VEDIC ERA

The medicinal significance of Vacha is distinctly highlighted in the Atharvaveda, where its therapeutic applications are described in detail. Its action on the Manovaha Srotas was well recognized in ancient times, and the drug has also been described for its Krimihara (anthelmintic) property.

SAMHITA ERA

A more elaborate and comprehensive account of Vacha is found in the Ayurvedic literature of the Samhita period.

Charaka Samhita

Vacha was one of the most widely used drugs during the Samhita period, with Charaka employing it in about 101 formulations for various diseases. It is included in several groups such as Virechanavarga, Lekhaneeya, Triptighna, Arshoghna etc. It is indicated in conditions like Jvara, Prameha, Kushta, Apasmara, Unmada, Udara, Arshas, and Visha, and is also used as a Rakshoghna drug in Dhooma form in Sutika roga. Additionally, it is a key ingredient of Prathama and Dwitiya Brahma Rasayana, promoting Medha, Smriti, and Dharana.[1,2,3]

Susrutha Samhita

Acharya Sushruta classifies Vacha under Vachadi, Haridradi, Mustadi, Pippalyadi, Vamana, Shirovirechana, and Virechaneeya Gana. The drug is extensively indicated in conditions such as Jvara, Atisara, Vatavyadhi, Bhagandara, Kushta, Hridroga, Shwasa, Mukharoga, and Balagraha, and is also used as a Medhya drug administered with Ghrita and Ksheera. Overall, Vacha is reported to be used in approximately 92 formulations in the Sushruta Samhita, including its single-drug use for enhancement of Smriti (memory).

Kashyapa samhitha

Acharya Kashyapa extensively utilized Vacha and described it in nearly 69 different formulations. Notable among these is Brahmi Ghrita[4], Medhajanaka Ghrita[4], Phala Taila[5] etc. highlighting its significant role in therapeutic formulations.

Sharangadhara samhitha

In the Sharangadhara Samhita, Vacha is mentioned in approximately 38 formulations, with important preparations such as Hapushyadi Churna[6], Phala Ghrita[7], Pradhamana Nasya[8], Maharasnadi Kwatha[9], Manjisthadi Kwatha[10], Chandraprabha Vati[11], Chandrodaya Varti[12] etc. The text also describes Vacha as a Pramathi and Lekhaneeya drug in the Purvabhaga, emphasizing its scraping and channel-clearing properties.[13]

SANGRAHA ERA

Ashtanga Hridaya

Acharya Vagbhata includes Vacha as an important ingredient in several formulations, such as Saraswatarishta, which is used to enhance Medha and Smriti. Other notable preparations containing Vacha are Mahatiktaka Ghrita[14], Mahavajaraka Ghrita[15] (for Kushtha chikitsa), Dhanwantara Ghrita[16], Sardul Churna[17], Balasya Prasya Leha[18], Ashtanga Ghrita[19], Saraswata Ghrita[20], and Siddhartaka Ghrita[21], reflecting its wide therapeutic application.

Chakradatha

In the Chakradatta, Vacha is included in key formulations such as Ekvinsatiko Guggulu, Panchatikta Ghrita, Mahatrina Taila, Brihata Marichyadham Taila, Visha Taila, and Mahasinduradhya Taila for Kushtha chikitsa. Its roots, along with Vasa, Patola, and the barks of Nimba and Priyangu, are used externally in Kaphaja Kushtha and six other Pradeha applications, including Aragvadhadi. Additionally, a paste of Vacha and Devadaru is applied in Niruddhaprakasha (phimosis) to aid passage clearance.

NIGHANTU ERA

Vacha has been described in numerous Nighantus including Dhanwantari, Shodhala, Madanapala, Kaiyyadeva, Bhavaprakasha, Raja, Saligrama, Abhidhana Ratnamala, Nighantu Adarsha, and Dravyaguna Hastamalaka, where it is placed under different Vargas with several synonyms and varieties. These texts elaborate its Rasapanchaka, Guna, Karma, and therapeutic uses, especially in improving Agni, Medha, speech, and in conditions like

Unmada, Apasmara, Shula, Vibandha, Adhmana, and diseases of the mouth and throat. Various varieties such as Vacha, Kulanjana, Parasika Vacha, and others are described along with their synonyms, reflecting the extensive recognition of Vacha in Ayurvedic lexicons[22,23,24.25,26,27,28,29,30,31]

BOTANIACL IDENTITY AND CLSSICAL NOMENCLATURE

Botanical name: Acorus calamus Linn

Family: Araceae

Sanskrit Synonyms

The synonyms pertaining to the habit of the plant, features of rhizome, Shape of leaves and fruits helps in easy identification of the drug.

Table 1: Synonyms and interpretation of Vacha.

Synonyms	Interpretation
Vacha	It provides good speech or enhances the power of speech.
Aruna	Rhizome of vcha has reddish brown colour.
Golomi	Rhizome has hair over it resembling the hair of cow.
Lomashi	The rhizome is hairy.
Jatila	The rhizome has hair.
Shataparvika	Rhizome has numerous nodes
Shadgrantha	Rhizome of vacha has more than six nodes in it.
Ugragandha	Rhizome of vacha has very strong odour.
Ugra	Vacha has got very strong qualities.
Mangalya	Vacha is regarded as an auspicious drug.
Karshani	Vacha if used reduces weight
Rakshoghna	It destroys rakshasa and organisms

Classical categorisation

Table 2: Classical categorization.

Sl No	Nighantu	Varga/Skanda/Gana
1	Caraka Samhita	Lekhaniya varga, Triptighna varga, Arshoghna varga, Asthapanopaga varga, Seethaprasamana varga, Sanjasthapana varga.
2	Susruta Samhita	Pippalyadi gana, Vachadi gana, Mustadi gana.
3	Ashtanga Sangraha	Lekhaniya varga, Triptoghna varga, Arshoghna varga, Seetasamana varga, Vatsakadi gana, Vacaharidradi gna, Mustadi gana, Pippalyadi gana, Tikta skanda.
4	Ashtanga Hridaya	Tikta skanda, Chardana gana, Niruhag ana, Vacha haridradi gana, Mustadi gana.
5	Dhanwantari Nighantu	Satapushpadi varga

6	Shodala Nighantu	Satapushpadi varga
7	Madanapala Nighantu	Suntyadi varga
8	Kaiyadeva Nighantu	Aushadhi varga
9	Raja Nighantu	Pippalyadi varga
10	Bhavaprakasa Nighantu	Haritakyadi varga
11	Saligrama nighantu	Haritakyadi varga
12	Nighantu Adarsha	Vachadi varga
13	Abhidhana Manjari	Vatsakadi gana, Madanadi gana, Madanakutajadi gana, Vacadi gna, Mustadi gana.
14	Priya Nighantu	Satapushpadi varga

VARIETIES

Table 3: varieties of drug Vacha.

Name of Nighantu	Types
Bhavaprakasa Nighantu	1.Vacha-Acorus calamus 2. parasika vacha- *Iris germanica* 3. Kulanjana- Alpinia galanga 4.Sthulagranthi vacha- *Zingiber zerumbet* 5.Dwipantara vaca/Copcini-*Smilax china*
Raja Nighantu	1.Vacha- A*corus calamus* 2.Medhya (sweta vaca) 3.Kulanjana- *Alpinia galanga*
Dhanwantari Nighantu	1.Vacha 2.Sweta vacha
Shodala Nighantu	1.Vaca 2.Sweta vacha

RASAPANCHAKA

Table 4: Rasa panchaka of Vaca.

Nighantu	Rasa	Guna	Virya	Vipaka	Karma
Dhanwantari nighantu	Katu, Tikta	Ruksha, Laghu	Ushna	-	Medhya
Madanapala Nighantu	Katu, Tikta	-	Ushna	-	-
Raja Nighantu	Katu	Teekshna	Ushna	-	-
Kaiyyadeva Nighantu	Katu, Tikta	-	Ushna	Katu	Medhya
Bhavaprakasa Nighantu	Katu, Tikta	-	Ushna	-	-
Saligrama Nighantu	Katu, Tikta	Teekshna	Ushna	-	-
Nighantu Adarsha	Katu, Tikta	-	Ushna	Katu	Medhya
Priya Nighantu	Katu, Tikta	-	Atyushna	-	Medhya
The Ayuvedic Pharmacopoeia of India	Katu, Tikta	Laghu,Teekshna	Ushna	Katu	Medhya

KARMA

Table 5: Karma (Ayurvedic pharmacological actions) of Vacha[32]

Action on Dosha	Kaphahara (pacify kapha) Kapha-Vatahara (pacify kapha and Vata) Vatanulomana (Restores normal movement of vata) Vatahara (Pacify vata)	
Action on Mala	Mala-Mutra vishodhini (Cleanses excretory products)	
Action on Agni	Deepana (Stimulates digestive fire) Vahnivardhini (Stimulates digestive fire)	
Action on Ama	Amapachana (Aid digestion of undigested food)	
Action on Avayava	Kanda (Throat)	Kandya (Promotes health and functioning of throat)
	Vak (Eloquence)	Vakshakti vardhana (enhance eloquence) Vakprada (enhance eloquence)
	Swara (Voice)	Swaraprada (Improves voice) Swarakrit (Improves voice)
Action on Buddhi	Buddhi vardhana (Cognition enhancer)	
Action on Smriti	Smriti Vardhana (Memory enhancer)	
Sodhana (Purificatory) action	Vamaka (Induces emesis)	
Action on Sarva sareera	Jeevaniya (Vivify life) Rakshoghna (Protective) Rujapaha (Relieves pain) Ayushya (Increases lifespan)	
Action on Krimi	Krimihara (Anti-helminthic) Janthughna (Anti-helminthic)	

ROGAGHNATA (Therapeutic indications)

Vibandha (Constipation), Adhamana (Flatulence), Shoolanashak (Pain reliever), Apasmara (Epilepsy), Unmada (Insanity), Hridya Roga (Heartdisease), Granthi (localized swelling), Shotha (Edema), Vataja Jwara (Vataja fever), Atisara (Diarrhea)

VERNACULAR NAME

Sanskrit - Vacha, Ugraganda, Shadgrantha

Malayalam- Vayambu

Hindi - Bach, Gorbach, Ghourbach

Gujrati - Vaj, Ghodavaj, Gandhilovaj

Marathi - Vekhand

English - Sweet flags

TAXONOMIC CLASSIFICATION

Kingdom - Plantae

Division - Spermatophyta

Sub division - Angiospermae

Class - Monocotyledonae

Sub class - Nudiflorae

Order - Acorales

Family - Araceae

Genus - Acorus

Species - calamus

BOTANICAL DESCRIPTION

A semi aquatic strongly aromatic, gregarious perennial tall herb

Rhizome is tortuous, creeping partially underground and much branched, half inch in diameter, rather spongy and powerfully aromatic.Stem is Erect, glabrous, grooved at one side and ribbed at the opposite. The leaves arise from a partially underground creeping and branching rhizome. Two-ranked, distichous, sword shaped (ensiform), erect, sharp pointed, closely sheathing each other, midrib is stouts, striate parallel venation, leaves are glabrous, weakly differentiated into petiole and blade.Inflorescence is Spadix, scapes 3-angled, keeled on the back, spathe is leaf-like long, green, narrow.Flower densely covers the entire spadix, bisexual, trimerous, compactly arranged, actinomorphic, hypogynous, greenish yellow. Fruits are turbinate, prismatic and top pyramidal.

HABITAT AND PHENOLOGY

Vaca is cultivated throughout India. It is also found wild in Himalayan region and Sikkim. Blooming & Fruiting occurs from May to June and Collection time is in Late Autumn or spring.

CHEMICAL CONSTITUENTS

Asarone, beta-asarone, calamenol, calamine, calamenone, eugenol, methyl eugenol, alpha-pinene and camphene, two selinane type sesquiterpenes-acolamone and isoacolamone, sugars, glucoside-acorine, calameon, calamusenone, various fatty acids, calamol, calamine acoradin, azulene, a flavonesluteolin-6, 8-c-diglucoside, new natural products acoramone, sasarylaldehyde, carcinogen and epoxyisoacoragermacrone.

PHARMACOLOGICAL ACTION

The rhizome is acrid, bitter, thermogenic, aromatic, intellect promoting, emetic, laxative,

carminative, stomachic, anthelmintic, emmenagogue, diuretic, anodyne, expectorant, antispasmodic, aphrodisiac, anticonvulsant, resuscitative, anti-inflammatory, antipyretic, insecticidal, tranquilising, nervine tonic, sedative.

DOSE: 60- 120 mg of the drug in powder form.

TOXICOLOGY

Calamus oil and extract are prohibited from use in human food due to its toxicity. Acute toxicity studies in rats revealed that near toxic doses of asarone caused ataxia, hypnosis and loss of righting reflex whereas beta-asarone failed to induce any of three responses.[33]

SUBSTITUTES AND ADULTERANTS

Alpinia galanga and Alpinia officinarum are the substitutes for Vaca.[34]

CONCLUSION

Vacha (*Acorus calamus* Linn.) is an important medicinal drug widely documented in classical Ayurvedic literature for its therapeutic utility, especially in disorders of the nervous system, digestion, and Vata–Kapha predominance. Classical texts describe its properties through Rasapanchaka and emphasize its use as a Medhya, Dipaniya, Grahani, and Vata-Kapha hara drug. Modern scientific studies have identified several bioactive constituents, including asarones and volatile oils, which exhibit neuroprotective, antioxidant, anti-inflammatory, antimicrobial, and cognitive-enhancing activities, supporting its traditional applications.

Although experimental and pharmacological studies provide substantial evidence for its medicinal potential, issues related to standardization, dosage, and safety, particularly concerning β-asarone, remain important. Therefore, further systematic pharmacological and clinical studies are required to establish its safety and therapeutic efficacy. An integrated evaluation of classical Ayurvedic knowledge and modern scientific research may facilitate the rational and evidence-based use of Vacha in contemporary healthcare.

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