

## AN OVERVIEW ON A TREMENDOUS DRUG VACHA AND IT'S TYPES

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### ABSTRACT

*Vacha* – *Acorus calamus* is very rich in medicinal values, used in *Ayurvedic* medicines since the ancient times. *Vacha* is an tremendous herb having various health benefits. The name “*Vacha*” in *Sanskrit* means speaking clearly because this plant stimulates intelligence and expression. In *Ayurveda*, *Vacha* is known as rejuvenating herb because of its effect on the nervous system. It is bitter in taste, *Katu* in *Vipaka*, *Ushna* in *Virya* and *Medhya* in *Prabhav*. It is used in the dried form. It having antiinflammatory, analgesic, antipyretic, immunomodulations and adaptogenic properties. It is used in diarrhea, slurred speech, headache, edema, skin diseases, eye diseases, colic,

piles, indigestion, acid gastritis, heart disease and ear diseases. *Vacha* is mentioned as one of the *Rasayana dravya* and its regular intake is said to make one endowed with sharp intellect and sweet voice and also as brain tonic. The chemical constituent reveals the presence of asarone, beta-asarone, eugenol, methyl eugenol, tannins and essential oil in it. Here an attempt has been made to compile the information of the drug *Vacha* giving a scope for further researches on *Vacha* and there types.

**KEYWORDS:-** *Vacha*, *Acorus calamus*, *Hemavati*, *Kulanjan*, *Mahabhari*, *Dvipantara Vacha*.

## INTRODUCTION

The plant is designated the name *Vacha* because of its ability to improve the power of speech. *Vacha* is one of the oldest herbs used in mental disorders since ages. For the first time, it was described in *Atharva Veda*. It is widely used in other systems of medicines like Chinese, European, and Greek for many ailments. The native American tribes used it as an anesthetic drug for toothache and headaches. The ancient Chinese used it in swelling and constipation.

*Acorus calamus* (sweet flag) belongs to the araceae family, It is tall perennial wetland monocot of the araceae family. It grows wild on the swamps, on the bank of rivers and ponds.

The rhizomes as well as leaves have a pleasant slightly sweet odour that is caused by the content of an essential oil, dried roots have been used in medicinal preparation as antispasmodic, antiulcer, antioxidant potential and for the flavouring of bitter liqueurs and appetizers, dried and powdered rhizome has been used as a substitute for ginger, cinnamon and nutmeg. Sweet flag from the sweet fragrance of the bruised leaves, and their similarity to the leaves of iris, also known as sweet flag.

### Latine name

*Acorus calamus* - *Acorus* – The name “acorus is derived from the Greek word “acoron,” which in turn was derived from “coreon” meaning “pupil,” because it was used in herbal medicine as a treatment for inflammation of eye. *Calamus*- was derived from the Greek kalamos, meaning “reed.”

### Varga

*Dhanvantari Nighantu* - *Shatapushpadi Varga*

*Shodala Nighantu* - *Shatpushpadi Varga*

*Madanpala Nighantu*- *Shuntyadi Varga*

*Kaiyadev Nighantu* - *Oushadi Varga*

*Bhavprakash Nighantu* - *Haritakyadi Varga*

*Raj Nighantu* - *Pippalyadi Varga*

*Shaligram Nighantu* - *Haritakyadi Varga*

*Shankara Nighantu* - *Haritakyadi Varga*

*Mahaoushadi Nighantu* - *Mahaoushadi Varga*

*Brihat Nighantu Ratnakara* - *Vachadi, Pippalyadi & Mustadi Gana*

*Nighantu Adarsha* - *Vachadi Varga*

*Priya Nighantu - Shatpushpadi Varga*

### Vernacular name

Assamese: Bach

Bengali: Vach, Safed Vach

Gujarati: Val Chodabaj, Gandhilovaj

Kannada Baje, Naru Berua, Vaje gida

Kashmiri: Vahi, Mazar posh, Mazarmund

Malayalam: Vayambu

Marathi: Vaca Vekhandas, Vekhand Panjabi: Varch, Varaj, Bariboj

Sindhi: Kini kathi

Tamil: Vasambu, Pillai maruntho

Telugu: Vasa, Vadaje

Urdu: Waja-e-Turk

### Taxonomical classification

Rank	Scientific name	Common name
Kingdom	Plantae	Plantes, Vegetal, Plants
Subkingdom	Viridiplantae	
Infrakingdom	Streptophyta	Land plants
Superdivision	Embryophyta	
Division	Tracheophyta	Vascular plants
Subdivision	Spermatophytina	Spermatophytes, Seed palnts
Class	Magnoliopsida	
Superorder	Liliana monocots,	Monocotyledon
Ordor	Acorales	
Family	Araceae	Sweet-flag
Genus	Acorus L	Sweet flag, sweet-flag
Species	Acorus calamus L	Sweet flag, calamus

### Gana

*Charaka Samhita-* Virechan Varga; Lekhaniya, Triptighana, Arshoghna, Asthapanopaga, Sheetaprashamana & Sangyasthapan Mahakashaya; Shirovirechana Dravya, Tikta Skanda.

*Sushruta Samhita-* Pippalyadi, Vachadi, Mustadi Gana; Urdhavabhagahara & Shirovirechana Dravya.

*Ashtanga Hridaya-* Tikta Skanda, Vachadi Gana, Mustadi Gana, Vamaka Gana, Vastakada Gana, Niruha Gana.

*Ashtanga Sangraha- Vamaka & Virechaka Gana, Niruha Gana, Shirovirechana Gana, Lekhaniya Gana, Hridhya, Gana, Arshoghna Gana, Sheetaprashamana Gana, Sangyasthapana Gana, Vatsakadi & haridradi Gana.*

### Family

Araceae family-common name is arum family, members are often colloquially known as aroids.

Key points- spadix and spathe.

- It is a family of monocotyledons flowering plants.
- Species in this family are often rhizomatous or tuberous and are often contain calcium oxalate crystals or raphides.
- Diversity: Worldwide: 110 genera, 1800 species.
- Habitat- aquatic, wetlands.
- Spadix is usually organized with flower attached, female flowers towards the Bottom and Male flower towards the top.
- Leaves are alternate, simple or compound, petiolate, sometime very large.
- Flowers are highly reduced, are of little value for identification.
- Sexuality-bisexual or unisexual.
- Inflorescence is composed of a spadix, which is almost surrounded by a modified leaf called a spathe.

### Synonyms

Addition to 'sweet flag' and 'calamus' other common name include beewort, bitter pepper root, calamus root, flag root, gladdon, myrtle sedge, pine root, rat root, sea sedge, sweet cane, sweet cinnamon, sweet grass, sweet rush.

- *Golomi*: The rhizome is studded with minute hairs as present in cow's body.
- *Jatila*: Its rhizome is dense and hairy.
- *Kshudrapatra*: The plant has linear-shaped leaves,
- *Mangalya*: The rhizome is regarded as auspicious
- *Shadgrantha*: It has six nodes, ie, more number of nodes.
- *Shataparvika*: It has numerous nodes and internodes
- *Uragandha*: It has strong odor or intense smell.
- *Vacha* – It provides good speech or enhances the power of speech.

- *Aruna* – Due to its Aruna or reddish brown rhizome called Aruna.
- *Ugragandha* – It has strong odour or intense smell.
- *Ugra* – It is highly potent drug and produces burning sensation for longer time also.
- *Karshani* – It reduces body weight.
- *Bodhaniya* – It arouses consciousness.
- *Bhootnashi* – It destroys bhootas or micro-organisms.
- *Rakshogni* – It destroys rakshasas or organisms.
- *Lomani* – Due to its hairy rhizome.
- *Swaralu* – It is used for improving voice.
- *Smarani* – Because of arousing consciousness and memory it is reputed drug for epilepsy.

### Types of *vacha*

*Dhanvantari Nighantu*: Two types:

- *Vacha*
- *Shweta Vacha*

*Raj Nighantu*: Three types:

- *Vacha*,
- *Shweta vacha*,
- *Kulanjana*

*Bhavaprakash Nighantu*: Four types:

- *Vacha (Gohdavaca)* – *Acorus calamus* Linn.
- *Hemavati (Parsikvacha or Swetavacha)* – *Iris germanica* Linn.
- *Maha bhari vacha (Kulanjan or Malaya Vacha)*– *Alpinia galanga* Willd
- *Dvipantara Vacha (Chopchini)*– *Smilax china* Linn.

<i>Vacha</i>	<i>Parsik Vacha</i>	<i>Kulanjan Vacha</i>	<i>Maha bhari Vacha</i>	<i>Dvipantara Vacha</i>
<i>Acorus calamus</i>	<i>Iris germanica</i>	<i>Alpinia galanga</i>	<i>Zingiber zerumbet</i>	<i>Smilax china</i>
Araceae	Iridaceae	Zingiberace	Zingiberace	Liliaceae
<i>Golomi, Shadgrantha, Ugragandha</i>	<i>Hemavati, Bal Vacha, Khurasanivacha, Swetavacha</i>	<i>Kulanjan, Badha Kulanjan, Sugandha, Ugrangandha</i>	<i>Maha bhari vacha, Kulanjan bhed, Kachur, Narkachur</i>	<i>Chopchini, Topchini, Kumarika</i>
<i>Kshup</i>	<i>Kshup</i>	<i>Kshup Ama</i>	<i>Kshup is 3-</i>	Creeper

Outer- brown Intra-white is spongy.	leave- green Flower-blue color Root- <i>Shuklavarana</i> noded	Turmeric Shaped 6- 7feet high Leave-green 1-2 inches long Root-brown Bloodhound Scented	5feet in height like Sugarcane.	(thorny) Leave -oval or circular Fruit-red Root – thick lumpy, pinkish
<i>Sangyasthapana, Vedna sthapana, Shothahar, Deepan, Kanthya, Svedjanan.</i>	<i>Kaphavatashamak</i> specially <i>Vata</i> <i>dosha.</i>	<i>Raktavahini</i> <i>Vistarak</i> , it helps in removal of the bronchial constriction, <i>Vatanulomak</i> , <i>Vrishya</i> , <i>Balya.</i>	<i>Krimighana</i> , <i>Swash</i> , <i>Kasahar</i> , <i>Kushthghana</i> and other skin disorders.	<i>Svedal</i> , <i>Snehan</i> , <i>Uttejaka</i> , <i>Balya</i> , <i>Vajikar</i> , <i>firangahar.</i>

### Habitat

Occurs in wetland, shallow water in ditches around marshes river edges and ponds. It prefers full sun and a pH range from 5 to 7. Plains from the cost to 1200m.

### Distribution

Probably indigenous to india, *Acorus calamus* is now found across Europe, in southern Russia, China, Japan, Burma, Shrilanka, Canada, Australia and northern USA.

The plant is native to North America and Northern, eastern Asia, naturalized in Southern Asia and Europe from ancient cultivation. It is found throughout India under cultivation as well as in the wild state, ascending up to an altitude of 2.200 m. It grows vigorously at the waterside in dumpy.

### *Rasa panchaka* (Ayurveda properties)

*Rasa: Katu, tikta*

*Virya: Ushna*

*Vipaka: Katu*

*Prabhava: Medhya*

*Doshaghnata: Kaphavataghna*

*Guna: Ruksha, Laghu, Tikshna.*

**Macroscopic**

Drug occurs in simple or rarely with thumb-like branches at nodes, sub cylindrical to slightly flattened, somewhat tortuous or rarely straight. Cut pieces of 1-5cm long and .5-1.5cm thick, upper side marked with alternately arranged, large, broadly, triangular, transverse leaf scars which almost encircle the rhizome, at nodes leaf sheath mostly having an appearance present. Lower side shows elevated tubercular spots of roots scars, light-brown with reddish-tinge to pinkish externally, buff coloured internally, fracture, short, odour, aromatic, taste, pungent and bitter.

Leaves– On base alternate, stalkless, 80-150cm long. Blade sword shaped, linear, often slightly arched, with tapered tip, rigid, with entire margins, wavy on one edge, glabrous, shiny. Single prominent mid vein and on both side slightly raised veins.

Inflorescence– dense abundantly flowered, slightly arched, green-brownish. 6-10 cm long spadix, which looks halfway up stem.

Flower- Perianth regular (Actinomorphic), green very small (Spadix). Flowering time = july-august.

Fruit- Berry, dry Outside and Jelly-like inside, containing 1 to 3 seeds.

Seed- Narrow, 3mm-4mm.

Root- Aromatic, spicy, creeping with brownish-red bark and white, fleshy interior, usually it thick, it can spread several feet in mature plant.

**Microscopic**

**Rhizome-** Shows single layered epidermis, cortex composed of spherical to oblong, thin-walled cells of various sizes, cells towards periphery, smaller, somewhat, collenchymatous, more or less closely arranged cells towards inner side, rounded and form a network of chains of single row of cells, enclosing large air spaces, fibro-vascular bundles and secreting cells having light yellowish-brown contents present in this.

**Powder-** Buff coloured, shows fibres, reticulate, annular vessels and simple spherical starch grains measuring 3-6u in diameter.

**Chemical composition**

Volatile oil found in vacha.

Leaves- Aliphatics and oxygenated more terpenes and asarone and its isomer.

Root- Calamenone, calamine, calamol, azulene, isoeugenol and camphor, palmitic acid, heptylic acid.

Rhizome- Acolamone, acerone, cis and trans asarone, beta and alpha asarone, azulene, calamenol, calamine, beta-garjume, camphene, eugenol, preisocalamendial, acoric acid, calemen diol etc.

### Pharmacological activity

Cyto-protective and anti-ulcer activity= Use of ethanol extract of rhizome in rats proved effectiveness in protecting gastro-duodenal mucosa from injuries.

Antispasmodic activity= Due to its essential oil contains beta-asarone. Act on uterus, tracheal chain, bronchial muscles, blood vasculature.

Analgesic activity=and It also has mild sedative and hypotensive activity.

Anti-inflammatory activity

Anticonvulsant activity= using acorus calamus rhizome in a poly-herb reportedly reduced epileptic attacks by almost 50 percent due to alpha and beta-asarone.

Anti-bacterial activity= inhibit growth of cultured gram positive and gram negative organism due to +nce of essential oil.

Anti-oxidant activity= ethyl Acetate and Methanolic extract of AC against noise stress induced change in rat brain.

Anti-proliferative activity= inhibit growth of cell in mouse and human. Inhibit production of nitric oxide (No), tumors necrosis factor-alpha.

Insulin sensitization= used in hypoglycemia (Insulin Releasing and Alpha-glucosidase inhibitory property of acorus calamus).

Neuroprotective activity

### Usage

- Calamus is greatly valued herb in *Ayurveda*, as its stimulating aroma rejuvenates the brain and the nervous system.
- Effective against digestive disorders.
- Root internally used to treat bronchitis, sinusitis.
- Chewing of root of *Acorus calamus* helps fight tobacco addiction. It kills the taste for tobacco over time.
- Due to its aroma oil much valued in perfume industry.
- .Chewing the rootstock of plant can cause visual hallucination ,due to presence of alpha and beta –asarone.
- Calamus cause muscle relaxation and sedation.



### Traditional uses

- In *Ayurveda* this herb is used for improving memory.
- It blown in nose of coma patients for regaining conscience.
- Mixture of *Vacha* powder and ghee on 7<sup>th</sup> day give to new born to enhance speech development and intellect.
- In TCM (Traditional chinese medicine) sweet flag is used to treat deafness, dizziness and epilepsy.
- Chinese use it for vomiting, diarrhea, abdominal pain, dyspepsia, dysentery and lungs disorder.
- Steaming the roots of calamus the home is believed by many to cure certain types of sickness.
- *Ayurvedic* medicine *Vacha* – Speaking more clearly. Promotes circulation to the brain, sharpen memory and enhance awareness.
- It induces uterine contractions. Hence used in inducing delivery, during difficult delivery, it is administrated along with black pepper root and saffron.

### Side effects

The oil of calamus contain aserone which has high toxicity, in high doses it is hallucinogenic. Avoid in pregnancy and during lactation. It can be used in very minute quantity in children because of its hot effects. Some people with *Pitta* body type may find it difficult to tolerate it. To counter its effects *Saunf* mixed with lemon juice is administrated.

### Theraputic uses

#### External use

1. *Vranashodhana* (Wound cleansing): Decoction of *Vacha* mixed with camphor is used for cleansing of wounds and ulcer.
2. *Medoroga* (Obesity): The dry powder massage (*Udvardana*) is beneficial in reducing excessive fat.
3. *Tarunyapidika* (Acne vulgaris): Local application of *Lodhra*, *Dhanyaka*, and *Vacha* paste removes acne.
4. *Shotha* (Inflammatory diseases: Application of *Vacha Sarsapa* paste removes edema.
5. *Ardhavabhedaka* (Hemicrania): *Avpeeda nasya* of *Vacha* and *Pippali* is advised.

**Internal use**

1. *Vamanarth* (To induce emesis): One to two grams *Vacha* powder with lukewarm salt water induces vomiting, relieves phlegm, and eases cough and asthma.
2. *Apasmara* (Epilepsy) *Parana ghrita* prepared with *Vacha*, *Brahmi*, *Sankhapushpi*, and *Kushta* alleviates epilepsy, *Vacha Churna* taken with *Madhu* is also recommended in epilepsy.
3. *Medhya* (Memory enhancer): Regular licking of *Vacha* powder with honey twice a day for 6 months enhances memory in newborn.
4. *Atisaar* (Diarrhea): One should take water boiled with *Vacha* and *Prativisha* to control diarrhea.
5. *Shool* (Colic): Intake of powder prepared with *Vacha*, *Sauvarchal*, *Hingu*, *Kushta*, *Ativisha Haritaka*, and *Indrayava* alleviates colic immediately.
6. *Swasa, Kasa* (Asthma and cough): Decoction of *Vacha* or powder with honey is useful in cough, asthma, bronchitis, dyspepsia, and tertian fever.

**Toxicology**

The primary toxicologic concern focuses on the carcinogenic effect of isoasarone, a major component of the volatile oil of calamus. Because of mutagenic properties, calamus derivatives are not used in foods in the US.

Some adverse effects like disturbed digestion, gastroenteritis, Persistent constipation followed by bleeding diarrhea are observed in some cases. Long-term use can cause genotoxicity.

Part used – Rhizome (root)

***Vacha* processing or *shodhan***

*Chakradatta* and *Bhaishaja Ratnavali* explained it- For purification, acorus rhizome boiled successively in *Gomutra*, *Kashaya* of *Alambusha* (*Sphaeranthus indicus*) and *Panchapallava Kashayam*.

This is followed by *Vashpa Sweda* with *Surabhi Toya*- A decoction prepared with cinnamon, *Musta*, *Bala*, *Kushta*, *Patraka*, *Usheera*.

Other method rhizome dipped in cow milk or supernatant liquid of curd overnight, then washed in hot water, dried and preserved.

Dose = 60-120mg/day powder

For Vomit = 1-2 gm

### Formulation and Preparation

- *Vacadi Tail*
- *Hinguvacadi Churna*
- *Vacadi Churna*
- *Vaca lasunadi Tail*
- *Sarasvata Pista*
- *Khadiradi Vati*
- *Chandrody Varti*
- *Brahmi Vati*
- *Candra prabha Vati*
- *Manasamitra*
- *Vacha* along with other herbs such as *Jatamansi*, *Agaru*, sandalwood, camphor etc is used for preparation of *Arishta* and *Asava*.

### Substitutes and Adulterants

In the markets, *Vacha* is available under the name of *Bach* and *Ghorbach*. Rhizomes of *Alpinia galega*, *Alpinia officinarum*, and *Acorus gramineus* Soland are used as its adulterants.

### CONCLUSION

The drug *Vacha* is one of the important medicinal plants used in *Ayurveda* traditional medicine to treat different ailments and maintain health condition. *Vacha* (*Acorus calamus* L.) is a herb extensively used in the Indian system of medicine belongs to the family Araceae. Almost all the authors described *Vacha* having *Katu*, *Tikta Rasa*, *Katu Vipaka* and *Ushna Virya* making the drug acting more prominent on *Kapha Vata Dosha* predominant diseases. Detailed description of types of *Vacha*. As traditional medicine, the plant is used as nervine tonic, hypotensive, tranquilizer, sedative, analgesic, spasmolytic, anti convulsant, chronic diarrhoea and in Slurred speech, Headache, Edema, Skin diseases, Eye diseases, Colic, Piles, Indigestion, Acid gastritis, Heart disease and Ear diseases. *Vacha* is mentioned as one of the *Rasayana Dravya* and its regular intake is said to make one endowed with sharp intellect and sweet voice. Thus this review would help the researches to get a detailed *Ayurvedic* references about the tremendous drug *Vacha*.

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