**INTRODUCTION**

*Vacha* (*Acorus calamus* L.) is exceedingly influential and renowned drug in *Ayurveda* well known for *medhya karma* (that which improve memory & intellect). The rhizome of this plant has been indicated as brain tonic in weak memory (API). In Sanskrit the word *Vacha* means that which improves speech or enhances the power of speech. It is commonly known as Sweet flag, a tall perennial wetland monocot plant from the *Araceae* family. It is exceedingly common in Manipur and Naga Hills and on the edges of lakes & streams. It is found throughout India under cultivation as well as in the wild state, in plains, lower elevations and in Himalayan upto altitude of 2200 ml. The scented leaves and rhizomes of sweet flag have been traditionally used as a medicine and the dried and powdered rhizome has a spicy flavour and is used as a substitute for ginger, cinnamon and nutmeg for its odour. Due to varied uses, there has been demand for the plant. The rhizomes of *Acorus calamus* contain aromatic oil that has been used medicinally since ancient times and has been harvested commercially. The rhizomes are considered to possess anti-spasmodic, carminative, anthelmintic, aromatic, expectorant, nauseate, nerve, sedative, stimulant properties and also used for the treatment of epilepsy, mental ailments, chronic diarrhoea, dysentery, bronchial catarrh, intermittent fevers, glandular and abdominal tumors.

History of any drug gives insight into properties and therapeutic or dietary utility of any drug in different ailments. Thus detail literature review of *Vacha* has been compiled here to provide scope for more scientific researches on this drug in future.

**Vedic Era**

*Atharvaveda* provides a vivid description of the medicinal use of Vacha. The use of *Vacha* on the *Manovaha strotas* was known since the Vedic period. It is also mentioned as *Krimihara* (Anthelmintic) Medicine2.

**Samhita Era**

In *Samhita* period comprehensive depiction of *Vacha* is observed.

**Charaka Samhita**

*Charaka Samhita*, the backbone of *Ayurveda* provides around 100 references for the *Vacha*. The foremost important among them being quoted under the *Pratham* and *Dwitiya Brahmarasayana*3, *Indrarasayana*4, *Indrokarasayana* 5 etc. Various others are included in the chapters of *Unnada* (Insanity), *Apasamara* (Epilepsy), *Rajayakshma* (Consumption), *Jwara* (Fever) etc.

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Sushruta Samhita
Approximately 80 references can be quoted of Vacha in Sushruta Samhita. It is being utilized in various kalpa and yoga.

Important kalpa Hingavadi Gutika6, Syandana Taila7, Mahavajara Taila8, Dvitiya Brahmi swaras Rasayana9, Kalyanaka Ghrit10, Panchagavya Ghrit11 and Triphaladi Ghrit12 are mentioned.

Astanga Sangraha
About 100 different references of Vacha have been quoted in this treatise. It is also categorized under Vachadi Gana13, Vamana gana14, Sangyakarana gana15, Shirovirecana gana, etc16.

Ashtanga Hridaya
The Rasayana ghrit17 is one of the 109 different yoga of Vacha being quoted in Ashtanga Hridaya. Besides it is included in the yoga viz. Mahatikata ghrit18, Mahavajara ghrit19 indicated in Kushtha chikitsa chapter (Therapeutics of Dermatosis), Dhanwantar ghrit20, Sardul churna21, Balasya prasya leha22, Ashtanga ghrit23, Saraswata ghrit24, Siddartha ghrit25, Apasmara taila26, Brahma rasayana27 etc.

Kasyapa Samhita
Acharya Kasyapa shows a free hand while using the herb Vacha. Vacha has been mentioned in 69 different yogas. The important among them are Brahmi ghrit28, Medhajanaka ghrit28, Phala taila29 etc.

Bhela Samhita
The Bhela Samhita also utilizes the plant Vacha at 29 different places. It includes the yoga like Mahapaisachika ghrit30, Ayorajyana rasayanam31, Mahasneharasayana32 in Hridroga (Heart disease) Karviradi yoga33 in Kushtha (Skin disease) and so many.

Chakradatta
In Chakradatta various yoga like Ekvinsatiko guggula34, Panchatikta ghrit35, Mahatrina taila36, Brihata Marichiyadham tailam37, Visha taila38, Mahasinduradhyaa taila39 are mentioned under Kushtha chikitsa chapter (Therapeutics of Dermatosis). Root of Vacha, Vasa & Patola, and barks of Nimbi & Priyangu is externally applied in Kaphaja Kushtha40, also included in Aragyadhati etc. six pradeha (external application)41. In Nirdhapprakasha (Phimosis), paste of Vacha & Devadaru is introduced through open thicker tube to open the passage42.

Sarangdhara Samhita
Thirty eight different Yogas do include the drug Vacha in the Sharangdhara Samhita. The prime among these include the Haripusyadi churna43, Phala ghrit44, Pradhamana nasya45, Maharasnadi kwatha46, Manjishthadi kwatha47 and Chandraprabhavat48, Chandrodaya varti49 etc. Vacha is described as pramath dravya and lekhana (scrapping) dravya (drugs) in purvabhaga50.

Nighantu Era
Dhanvantari Nighantu
Its original form Dravyavali describes various synonyms of Vachan51. Here two types of Vacha i.e Vacha and Shweta Vacha, their synonyms, properties are described in Shatapushpadi Varga.

Shodala Nighantu
Vacha is described in Shatapushpadi Varga52. Two types Vacha and Shweta Vacha are mentioned. Vacha is described as Rakshogi, Medya and Shulagi.

Madanpal Nighantu
The synonyms and properties of Vacha are mentioned in Sunthyadi Varga53.

Kaiyadev Nighantu
Vacha is described in Oushadi Varga. It is considered as Rakshoga & Jantugoha54.

Bhavaprakasha Nighantu
In this Nighantu synonyms, properties, morphology, habitat, chemical composition and therapeutic indication of Vacha in Bhoon, Jantu and Vataja diseases has been explained under Haritakyadi Varga55.

Raj Nighantu
Vacha is mentioned in Pippalayadi Varga. Here Shweta Vacha is described as Krimi doshayagna56.

Shaligram Nighantu
In Haritakyadi Varga 3 types of Vacha, their synonyms and properties have been described. This Nighantu mentioned that on the day of Solar or Lunar eclipse, if a person eats Vacha churna in a dose of 1 pal he becomes intelligent57.

Mahaoushadi Nighantu
Vacha is mentioned in Mahaoushadi Varga as Jantuvara drug. Here along with the synonyms the guna karma of Vacha has been described58.

Brihat Nighantu Ratnakar
Vacha is mentioned in Vachadi, Pippalayadi and Mustadi Gana59.

Priya Nighantu
Here Vacha is mentioned in Shatapushpadi Varga. Four types of Vacha are described i.e Vacha (Ghorbach), Haimavati (specially found in Himalayan region), Kulanjan and Dwipantar Vacha. Vacha Churna is indicated as best in treating Apasmara, Unmada, Vibhanda and Bhoont bhada60.

Adarsh Nighantu
Vacha is mentioned as Krimihara in Vachadi varga61.

Gunaratnamala
Here Ghorbach, Sugandhi Vach and Shoolmula are mentioned 62.
Vanoushadi Chandrodya

Different names, family, morphology, usable parts, dose, chemical composition and properties of Vacha are described.

Gana (Groups)

Different Acharya have described Vacha in different Gana, which are described as follows:

Table 1 Table showing classification of Vacha by different Acharya

<table>
<thead>
<tr>
<th>Charaka Samhita</th>
<th>Virechan Varga; Lekhaniya, Triptighana, Arshoghna, Asthapanopaga, Sheetprashrmanana &amp; Sangyasthapan Mahakashaya; Shirowirechana Dravya, Tikta Skanda.</th>
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<tr>
<td>Sushruta Samhita</td>
<td>Pippalyadi, Vachadi, Mustadi Gana; Urdhavabhagahara &amp; Shirowirechana Dravya.</td>
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<td>Ashtanga Sangratha</td>
<td>Shirowirechana Gana, Lekhaniya Gana, Hridhya, Gana, Arshoghna Gana, Sheetprashrmanana Gana, Sangyasthapan Gana, Vatsakadi &amp; haridradi Gana.</td>
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<td>Priya Nighantu</td>
<td>Shatpushpadi Varga</td>
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Interpretation of Synonyms

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 intence smell.

Ugra - It is highly potent drug and produces burning sensation for longer time also.

Karshani - It reduces body weight.

Golomi - The rhizome covered by hairs similar to cow’s hair.

Shadagrantha - Its rhizome has six nodes i.e more number of nodes.

Shadparvika - It has numerous nodes and internodes.

Jatila - Its rhizome is dense hairy i.e known as Jatila.

Bodhaniya - It arouses consciousness.

Bhootnashi - It destroys bhootas or micro-organisms.

Mangalya - Generally it is regarded as auspicious.

Rakshogni - It destroys rakshashas or organisms.

Lomani - Due to its hairy rhizome.

Swaralu - It is used for improving voice.

Smaran - Because of arousing consciousness and memory it is reputed drug for epilepsy.

Shulagni - It reduces pain.

Types of Vacha

Two types of Vacha are mentioned in Samhita kala - Vacha (Acorus calamus L.) and Haimavati Vacha (Iris germanica Linn). However the types of Vacha were stressfully said by the nighantukaras. An overview of the types of Vacha shows that it is of two different kinds - Vacha and Shweta Vacha. Here the opinion of different Acharya has been mentioned:

Kaiyadeva Nighantu

1. Shweta or Parasika Vacha
2. Aruna

Bhavaprakash, Priya Nighantu & Dravyaguna Vignyana: (P.V. Sharma)

1. Vacha (Gohdavaca) - Acorus calamus Linn.
2. Parasika Vacha (Haimavati Vacha, Khurasani Vacha or Bala Vacha).
3. Iris germanica Linn.
4. Mahabhari Vacha (Kulanjan or Malaya Vacha) - Alpinia galanga Willd.
5. Shulagrunati - Zinziber zerumber Rosc. ex Smith (Mahabhara Vacha)
6. Dwipantara Vacha (Chopachini) - Smilex china Linn.

Sankara nighantu

1. Ghodavaca
2. Shweta Vacha or Khurasani Vacha

Vanousadicanrodraya

1. Ghodavaca
2. Shweta or Khurasani Vacha

Rasa Panchaka (Ayurveda Properties)

Rasa (taste): Katu (Pungent), tikta (bitter)

Virya (potency): Ushna (hot potency) Vipaka (end metabolism): Katu (Pungent) Prabhava (special action): Medhya

Doshaghna: Kaphavataghna (Alleliates kapha and vata)

Guna (Properties): Raksha (dry), Laghu (easy to digest), Tikshna (fast acting)

Karma (Action)

Vamaka (Emetic), Vanhikara (Digestive fire stimulant), Mala Vishodhan (Clears mala), Mata Vishodhana (Clears urine), Kaphagkhana (Alleliates kapka), Vatagkhana (Alleliates vata), Jantughna (Anti-microbial/Disinfectant), Kanthya (Beneficial for throat), Medhya (Intellect promoting), Krimighna (Antihelmintic), Ayushya (Life promoter), Amapachaka (Digestant), Vishyha (Aphrodisiac), Svaradayaka (that which improves voice), Vatanuloman (Carminative), Jivaniya (Vitalizer), Rakshoghna (Disinfectant), Dipana (Appetizer), Smritivardhak (Improves cognizance/recollection).

Rogagnhata (Therapeutic indication)

Vibhandha (Constipation), Adhamana (Flatulence), Shoolanashak (Pain reliever), Apasmara (Epilepsy), Unnada (Insanity), Hridya Roga (Heart disease), Granthi (localized swelling), Shotha (Edema), Vataja Jwara (Vatajja fever), Atisara (Diarrhea)
Table no 2 Karma (Action) of Vacha in various Nighantu

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Table no 3 Rogaghnata (Therapeutic indication) of Vacha in various Nighantu

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Modern Era

1. Dravyagunavijnana by PV Sharm: Different names, morphology, distribution, chemical constituents, pharmacodynamics, actions, properties and therapeutic uses are mentioned.
2. Dravyagunavijnana by JLN Sastry: Different names, morphology, distribution, chemistry, pharmacodynamics, properties and therapeutic uses are mentioned.
3. Database of Medicinal Plants: Detail explanation regarding Vacha has been given such as family, classical text, vernacular names, morphology, useful parts, along with pharmacognosy, chemical constituents, pharmacological activity, toxicity and therapeutic evaluation is explained.
4. Ayurvedic Pharmacopoeia of India: Macroscopic and microscopic structures of the drug noted, along with identity, purity, strength, constituents, properties and therapeutic uses.
5. Indian Medicinal Plants (Kirtikar & Basu): Different names, morphology and therapeutic uses of Vacha are mentioned.

6. Indian Materia Medica (A.K Nadkarni): Vernacular name and chemical constituent of the plant has been mentioned.

Vernacular names

Vernacular names of Vacha in some National Languages: Sanskrit - Vacha, Ugrayganda, Shadgrantha; Hindi - Bach, Gorbach, Gourbach; Gujarati - Vaj, Ghodavaj, Gandhilovaj; Marathi - Vekhand; English - Sweet flags

Taxonomic Classification 68

Kingdom: Plantae
Division: Sporomato phyta
Sub division: Angiospermae
Class: Monocotyledonae
Sub class: Nudiflorae
Order: Acorales
Family: Araceae
Genus: Acorus
Species: calamus

Botanical Description 69

It is an aromatic marshy herb; rootstock as thick as the middle finger, creeping and branching.

Leaves: Strongly aromatic, simple, alternate, distichous, very closely arranged, vertically oriented, linear to narrowly ensiform, two to three feet long and half to one inch broad, occasionally longer and broader, glossy bright green, with wavy margin, acute tip and broad amplexicolumn base.

Spadix: The spadix is sessile, cylindric, thick, greenish, slightly curved, obtuse and densely and compactly covered with a mass of numerous pale green flower.

Fruit: Turbinate prismatic, top pyramidal.

Seeds: Oblong, microproyle often fimbriate, albumen fleshy, embryo axile.

Rhizome: Rhizome is woody, branched, light brown, cylindrical to flatten and 10-15 mm. in diam. with distinct nodes and internodes. Nodal regions are broad with leaf scars and hair like fibres. Internodes 8-10 mm. in length ridged and furrowed. Under surface provided with zigzag line of circular root scars. Transversely cut surface cream in colour with pinkish ringed and differentiated into central and peripheral regions.

Phenology

Blooming & Fruiting time: May to June
Collection time: Late Autumn or spring

Chemical constituents

Asarone, beta-asarone, calamenol, calamine,calamenone, eugenol, methyl eugenol, alpha-pinen and camphene, two selinane type sesquiterpenes-acolamone and isoaco lamone, sugars, glucoside-acorine, calameon, calamenusone, various fatty acids, calamol, calamine acordin, azulene, a flavones-luteolin-6, 8-epidiglocuside, new natural products acoramone, saasaryaldehyde, carcinogen and epoxyisocorgermacrone are the main chemical constituents reported from this plant.
**Actions and Uses**

The rhizome is acrid, bitter, thermogenic, aromatic, intellect promoting, emetic, laxative, carminative, stomachic, anthemlinitic, emmenagogue, diuretic, anodyne, expectorant, antispasmodic, aphrodisiac, anticonvulsant, resuscitative, anti-inflammatory, antipyretic, insecticidal, tranquillising, nerve tonic, sedative. It is useful in stomatopathy, hoarseness, colic, flatulence, dyspepsia, amnorrhea, dysmenorrhea, nephropathy, calculi, strangury, cough, bronchitis, odontalgia, pectoralgia, hepatodynia, otalgia, gout, inflammation, epilepsy, amentia, convulsions, mental disorders, tumours and fever.

**Part Used:** Rhizome

**Doses:** 0.25 to 0.5 gm; for vanama (emesis) 1 to 2 gm

**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. LD50 of volatile oil of root rhizome for guinea pigs found to be 0.6275 ml/100 gm body weight.

**Substitute and Adulterants**

*Alpinia galanga* Willd. And *Alpinia officinarum* Hance are adulterants of *Vacha* and being sold in the name of *Bach* and *Ghorbach* in the local market apart from the genuine Calamus rhizomes.

**CONCLUSION**

The drug *Vacha* is used as nerve tonic, hypotensive, tranquilizer, sedative (with neuroleptic and antianxiety properties), analgesic, spasmodytic, anti convulsant and also used in bronchial catarrh, chronic diarrhoea and dysentery. 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. The drug has tremendous potency in treatment of wide array of diseases. Thus this review would help the researches to get a detailed Ayurvedic references about the drug *Vacha*.

**References**


68. https://en.wikipedia.org/wiki/Acorus_calamus, cited at date 03/09/2017 at time 11.45 am

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