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Ayurvedic, Phytochemical, Therapeutic and pharmacological Overview on *Vacha* (*Acorus calamus*)

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ABSTRACT:

Ayurveda is the most important systems of traditional medicines which are most reliable and widely practiced in India. *Acorus calamus* which also Known as *Vacha* in *Ayurveda* belongs to family *Araceae* and their roots and rhizomes have been used in Indian system of traditional medicine for hundreds of years. It is use medicinally for a wide multiplicity of ailments, and its aroma makes *calamus* essential oil esteemed in the perfume industry. *Acorus calamus* rhizome constituents, particularly α and β *asarone*, possess a wide range of pharmacological activities such as sedative, CNS depressant, behavior modifying, anticonvulsant, acetyl cholinesterase inhibitory & memory enhancing.

KEYWORDS: *Acorus calamus*, *Vacha*, Sweet flag, medicinal plants

INTRODUCTION :

In Ayurveda many medicinal plants are broadly used by usual practitioners for curing and overprotective a range of diseases. *Acorus calamus* is the significant herbs famous for its healing property. In the prehistoric remedy it was principally used for central nervous system. It is creeping rhizomes commonly known as sweet flag, perennial, aromatic herb with and contains a wide variety of active principals has many medicinal properties. Exploring these properties can lead to a path for new drug discovery. This review is an try to summarize the imperative pharmacological studies done on *Acorus calamus*.

Acorus calamus or Sweet flag', belongs to family Acoraceae. it has been an important herb in the Ayurvedic medicine and indigenous medical system for over 100 years. A partially aquatic herb, cultivated throughout the state ascending up to 1800 m in the Himalayas. Vacha rhizomes have been used as a single drug or as a component of certain compound drug preparations in the Indian Ayurvedic system of medicine for psychoneurosis, insomnia, hysteria, epilepsy and loss of memory (1, 2, 3). It is also use in the treatment of cough, fever, bronchitis, inflammation,

depression and other mental disorders, tumors, haemorrhoids, skin diseases, numbness and general debility (4), stimulant, emetic, carminative, stomachic, as antidotes for several poisoning (3). It is delineated under various therapeutical groups like *'Lekhaneeya', 'Triptighna', 'Arshoghna dashemani'* etc., by Acharya Charaka(5), 'Pippalyadi', 'Vachadi' etc., ganas by Acharya Sushruta(6) and 'Mustadi', 'Vatsakadi'etc., gana by Vagbhata(7).

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TAXONOMICAL CLASSIFICATION

- *Kingdom: Plantae*
- *Subkingdom: Tracheobionta*
- *Super division: Spermatophyta*
- *Division: Magnoliophyta*
- *Class: Liliopsida*
- *Subclass: Arecida*
- *Order: Arales*
- *Family: Acoraceae*
- *Genus: Acorus*
- *Species: Calamus[8]*

VERNACULAR NAMES

- *English- Sweet Flag*
- *Ayurvedic- Vacha*
- *Unani- Bacch*
- *Hindi- Bajai, Gora-bach, Vasa Bach*
- *Marathi- Vekhand*
- *Tamil- Vashambu*
- *Telugu- Vadaja, Vasa*
- *Kannada-Baje*
- *Malayalam-Vayambu*
- *Sanskrit- Bhutanashini, Jatila(9)*

Varieties: According to Bhavprakash there are four varieties of Vacha is found. These are as follows

1. *Ghona Vacha(Acorus calamus Linn)*
2. *Bala Vacha (Paris polyphylla Sm.) (also known as Majar ka Phool on basis of their flower colour i.e. White, Blue, Red)*
3. *Maha Vacha(Zinziber zerumbet Rosc.ex Smith)*
4. *Dwipantar Vacha(Smilax china Linn)*

Properties

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

***Karma : Dosha Karma** : Vata-Kaphahsama, Pittavardhak*

***SamanyaKarma :** Dipaniya , Medhya, Kanthya, Krmihara,Vamaka,*

Mala-Mutravisodhanl

BOTANICAL DESCRIPTION

Phytomorphology

Acorus calamus is the herbaceous perennial with a rhizome that is long indistinct branched, smooth, rose-coloured or pale green and leaf scars have brown white and soft roots. The leaves are little and distichously alternate and size is between 0.7 and 1.7 cm wide with average of 1 cm. The leaf of *Acorus calamus* is shorter than vegetative leaves. The flowers are 3 to 8 cm long, cylindrical, greenish brown and contains multitude of rounded spikes covering it.

The fruits are found to be small and berry likewith few seeds.[10]

Distribution

It is distributed throughout the tropics and subtropics, especially in India and Sri Lanka. It is found in marshes, wild or cultivated, ascending the Himalayas up to 1800 m in Sikkim. It is plentiful in marshy tracts of Kashmir and Sirmoor, in Manipur and Naga Hills. It is regularly

cultivated in Koratagere taluk in Karnataka. The plant is grown in clayey loams and light alluvial soil of river bank. It is now found widely wild on the margin of pounds and

rivers in most English countries.[11]

Parts Used

The parts used in most of the experimental studies are the leaves, roots (rhizomes) and stem of the plant. In Traditional systems of medicine mostly the rhizomes are used.[12]

PHYTOCHEMICAL CONSTITUENTS

Photochemical studies have reported the presence of glycosides, flavonoids, saponins, tannins, polyphenolic compounds, mucilage, volatile oil and bitter principle. The plant had reported that presence of glucoside, alkaloid and essential oil posses calamen, asarone clamenol, calameon, and sesquiterpenes. It also show bitter glycoside name acorine along with eugenol, pinene and camphene. The plant is extensively investigate and a number of chemical constituents from the rhizomes, leave and roots of the plant previous to reported which include β- asarone, α-asarone, β-cadinene, elemicine, cisisoelemicine, cis and trans isoeugenol and their methyl ethers, camphene, P-cymene, α-selinene, , 2, 5 dimethoxy benzoquinone , bgurjunene, 2-deca -4,7 dienol, camphor, terpinen-4-ol, aterpineol and a calacorene, acorone, acrenone, acoragermacrone, shyobunones, linalool and preisocalamendiol are also present. Acoradin, galangin, 2, 4, 5- trimethoxy benzaldehyde, calamendiol, spathulenol and sitosterol have been isolated from *Acorus calamus*. Alcoholic extracts of the triploid *A. calamus* were characterized by a higher percentage of β-asarone (11%), which was the main compound, followed by higher percentages of camphene (2.27%), enriched (E)-β-ocimene (3.28%), camphor (1.54%), calarene (1.42. The latter had higher percentages of isoshyobunone (8.62%), bsesquiphellandrene (3.28%), preiso calamendiol (22.81%) and acorone (26.33%).[13,14] Dong W *et al.*, isolated three new sesquiterpenes, 1 β , 7 α(H)-cadinane- 4α , 6 α,10α - t r i o l (1), 1α , 5 β-guaiane-10α-O-ethyl 4β,6 β-diol (2), and 6β,7β(H)- cadinane-1α,4α, 10α-triol (3), together with 25 known ones, from the rhizome of *Acorus calamus* L. Their chemical structures were established on the basis of interpretation of spectroscopic data and comparison with those of the related known compounds.[15]

TRADITIONAL MEDICINAL USES

The rhizomes of Vacha is used for numerous medicinal purposes. The herb is used internally and externally. In rheumatism, rheumatic fever and inflamed joints, the paste applied externally alleviates the pain and swelling. Internally Vacha is valuable in a vast range of diseases. It is effective for digestive ailments such as flatulence, loss of appetite, abdominal dull pain and worms. The powder of vacha given along with warm saltywater, induces vomiting and relieves phlegm, while easing coughs and asthma.

In epilepsy, the powders of sweet flag with Brahmi and jatamamsi shows the well effect, given with honey. The trendy Ayurvedic formulation Sarasvata Choorna, that contains sweet flag, is frequently used in epilepsy, hysteria and as a brain tonic. Granule Asabi (Unani preparation) is an brilliant nervine tonic which improve reminiscence, reception as well as the speech. As it stimulates the uterine contractions, so it is used to augment the labour pains. It is also salutary in dysmenorrhoeal.[16,17] Some popular market formulations of Sweet flag.

PHARMACOLOGICAL ACTIONS

Nootropic Activity

The neuropsycho-pharmacological effect of a polyherbal formulation Bramhi Ghrita (BG) on learning and memory processes in rats by elevated plus maze, and in mice by Morris water maze model. It contains *Acorus calamus*. Its effect has tested on learning and memory processes. Brami grita act on memory enhancer formulation and may also be helpful as a supportive adjuvant in the treatment of impair memory functions.[14]

Anti-diabetic Activity

Oral glucose tolerance test (OGTT) was performed in normal rats. Male albino rats had render diabetic by STZ (40 mg/kg, intra-peritoneally). 200 mg/kg of AC extract was administered orally to diabetic rats for 21 days to determine the anti-hyperglycaemic activity by estimating various biochemical parameters. Results showed significant restoration of the levels of blood glucose level. After 21 days of treatment, blood glucose, lipid profile, glucose 6-phosphatase, fructose 1, 6 bis phosphatise levels and hepatic markers enzymes were decreased when compared with diabetic control. Plasma insulin, tissue glycogen, glucose-6-phosphate dehydrogenase levels were increased significantly compared to diabetic control. parallel histopathological studies of the pancreas showed analogous regeneration by extract which were earlier necrosed by STZ.[15]

Anti-seizures Activity

To evaluate the efficacy of aqueous extract of *Acorus calamus* (AEAC) on electrical and chemical induced seizures in albino mice. Either normal saline or sodium valproate or AEAC was given sixty minutes prior to the experiment in acute study, whereas in chronic study, they were given twice daily for ten days and the last dose was given before lone hour to the contact of the animal either

to maximal electrical shock (MES) or pentylenetetrazole (PTZ) administration.

On acute administration, AEAC dose dependently dicreased the duration of tonic hind limb extension in MES induced seizure that was comparable to that produced by sodium valproate. In PTZ induced seizures, the test drug decreased the latency and increased the period of seizures and mortality. On repeated management the test drug extensively reduced the duration of tonic hind limb extension and also the clonus phase of MES induced seizures.[16]

Antidepressant Activity

In a clinical study in fifty cases of depression at OPD of S.S. Hospital BHU, Varanasi, *Acorus calamus* (500 mg in a dose of 2 tablets three times a day after meal with water)given for six weeks showed reduction in the degree of severity of depression and better rehabilitation. There was also a significant improvement in assessment based on rating of symptoms on Hamilton depression rating scale. The rate of improvement before and after treatment was significant ($P < 0.001$).[17]

Neuromodulatory Effect

Acorus calamus methanolic extract (ACME) and acetone extract (ACAE) pre-treatment at a range of doses against apomorphine (APM) induced stereotyped behavior and haloperidol induced catalepsy in mice was studied. ACME (20, 50 mg/kg BW p.o) considerably reversed stereotypy induced by APM, when administered before 6 h to APM. It is also found that ACME (50 mg/kg body weight, per oral) and ACAE (20, 50 mg/kg body weight, per oral)

administration significantly potentiated the haloperidol induced catalepsy in mice.[18]

Anticancer Activity

Gaidhani *et al.*, Evaluated anticancer activity of *Acorus calamus* rhizomes. They prepared hydro alcoholic extract of *Terminalia chebula*, rhizome of *Acorus calamus* and root of *Glycyrrhiza glabra* and further studied their anti-proliferative activity on anti cancer cell. Results predict the fact that all of these plant materials have significant anti-proliferative activity.[19]

Antioxidant Activity

The antioxidant activity of aqueous extract of *Acorus calamus* was determined by the following radical scavenging assays namely DPPH (2, 2-diphenyl-1-picrylhydrazyl) radical scavenging assay, nitric oxide scavenging assay, superoxide radical scavenging assay, ferrous chelating assay, reducing power assay and phosphomolybdenum assay. The aqueous extract showed powerful dose dependent reducing activity. The results showed that *Acorus calamus* exhibits free radical scavenging, reducing power and metal chelating property.[20]

Antihypertensive Effect

Hypertension in rats has induce by clamp the left renal artery for 4h by arterial clamp (2K1C). At the end of experiment animal were anesthetized with ketamine (50 mg/kg). Carotid artery was cannulated which was connected to

pressure transducer for estimation of blood pressure. Results shows Ethyl acetate extract of *Acorus calamus* rhizomes (EAAC) treated rats that underwent hypertension, demonstrated significant ($P < 0.01$) lower systolic blood pressure and diastolic blood pressure when compared with 2K1C rats indicated blood pressure lowering activity. In conclusions, EAAC treatment attenuated renal artery occlusion induced hypertension via nitric oxide generation and decreases the plasma rennin activity.[21]

Anti HIV Activity

Many traditional Asian medicinal plants were screened against HIV-1 reverse transcriptase. The results has show that the basic extracts from plants *Cinnamomum loureiroi* (stem bark), *Quercus infectoria* (fruit), *Plumbago indica* L. (root), and *Acorus calamus* L. (rhizomes) showed strong HIV-1 reverse transcriptase inhibition effects. The efficiency of anti-HIV-1RT activity was report as 50% inhibitory concentrations (IC50). This showed that the hexane crude extracts from *Acorus calamus* L. and *A. heterophyllus* Lam. restricted potent activity against HIV-1 RT.[22]

Cytotoxic Effect

Rajkumar *et al.*, used methanolic and aqueous extract of *Acorus calamus* plant and further studied cytotoxic result. From complete study they finished that it might be act against the cytotoxicity in time and concentration dependent manner.[23]

Immunosuppressive Activity

Mehrotra *et al.*, evaluated anti cellular and immunosuppressive potential of ethanolic extract of *Acorus calamus*. The ethanolic extract of *Acorus calamus* rhizome showed anti-proliferative property. This extract causes the tumor necrosis through which inhibits the proliferation of mitogen, antigen stimulated peripheral blood mononuclear cells in humans, nitric oxide and interleukins-2.[24]

Radioprotection and DNA Repair Activity

Whole-body exposure of mice to 4 Gy γ-irradiation resulted in considerable damage in the genomic DNA of peripheral Imam, *et al.*: Sweet flag: An overview October-December 2013 | International Journal of Green Pharmacy 292 blood leucocytes, bone marrow cells and splenocytes. An alkaline comet assay exposed that the nuclear DNA comet parameters of these cells, such as % DNA in tail, tail length, tail moment and olive tail moment, had increased following whole-body γ-irradiation. Administration of *Acorus calamus* extract (250 mg/kg body weight) orally to mice 1 h prior to hole-body γ-irradiation exposure prevented the increase in the comet parameters of cellular DNA. The comet parameters were found to decrease with post irradiation time, indicative of a reduce in radiation-induced DNA lesions due to DNA repair.[25]

Coronary Vasodilator Effect

Coronary vasodilator effect was studied in isolated bovine coronary arterial rings, suspended in tissue baths filled with Krebs solution, maintained at 37°C,

aerated with carbogen and responses were measured on Power Lab data acquisition system. In bovine coronary arterial preparations, crude extract of *Acorus calamus* (Ac.Cr) caused inhibition of U46619 (20 nM) pre contractions, Activity-directed fractionation revealed that endothelialderived hyperpolarizing factor (EDHF) -mediated activity is concentrated in the n-Hexane fraction. These data indicate that Ac. Cr mediates coronary vasodilator effect primarily through EDHF, responsible for the increase in coronary flow.[26]

Antispasmodic and Anti-diarrhoeal Effect

In rabbit jejunum preparation the crude extract (Ac. Cr), which tested positive for the attendance of alkaloid, saponins and tannins, caused inhibition of spontaneous and high K+ (80 mm) induced contractions, with respective EC50 values of 0.42 ± 0.06 and 0.13 ± 0.04 mg/mL, thus showing spasmolytic activity, mediate perhaps through calcium channel blockade (CCB). These results propose that the spasmolytic result of the plant extract is mediated through the presence of CCB-like constituent(s) which is concentrated in the n-hexane fraction and this study provides a strong mechanistic base for its usual use in gastrointestinal disorders such as colic pain and diarrhoea.[27]

Insulin Sensitizing Activity

To investigate the insulin sensitizing activity and anti-diabetic effects of the ethyl acetate fraction of *Acorus calamus* L. (ACE). Glucose consumption mediated by insulin was detected in L6 rat skeletal muscle cells. Diabetes and its complications related indexes were monitored after orally administrating to genetically obese diabetic C57BL/Ks db/db mice daily for 3 weeks. Results show ACE increased glucose consumption mediated by insulin in L6 cells ($P < 0.05$ and $P < 0.01$). In db/db mice, ACE (100 mg/kg) considerably reduced serum glucose, triglyceride, reinforce the decrease of total cholesterol. due to the ability of insulin sensitizing, ACE has the potential to be useful for the treatment of diabetes and cardiovascular difficulties without body weight gain.[28]

Wound-healing Activity

A wound was induced by an based wound model in rats of either sex on excision and incision. The extracts were applied topically once daily in conc. of 40% w/w and 20% w/w in the form of ointment and compared with a standard drug (povidion-iodine). The healing of the wound was assessed by the rate of wound closure, period of epithelialisation, tensile strength and weight of the granulation tissue, hydroxyproline content and histopathology of the granulation tissue. The ethanolic extract of *Acorus calamus* promote wound healing activity considerably in both the wound models studied. Enhanced wound contraction, decreased epithelialisation time, enlarged hydroxyproline content and histological characteristics suggest that *Acorus calamus* extract may have therapeutic benefits in wound healing.[29]

Anti-inflammatory Activity

Human Keratinocyte (HaCaT) cells treated with polyinosinic: Polycytidylic acid (polyI: C) and peptidoglycan (PGN) induced the inflammatory reactions. The anti-inflammatory actions of ACL had investigated using RT-PCR, ELISA assay, immunoblotting, and immunofluorescence staining. Result shows that the HaCaT cells induced the pro-inflammatory cytokines, interleukin-8 (IL-8) and/or interleukin-6 (IL-6) expressions after treatment with polyI: C or PGN. ACL inhibited the expression of IL-8 and IL-6 RNA and protein levels, and attenuated the activation of NF-κB (nuclear factor kappa-light-chain-enhancer of activated B cells) and IRF3 (Interferon regulatory factor 3) after poly I: C treatment. ACL also inhibited expression of IL-8 and activation of NF-κB following PGN induction.[30]

Synergistic Anthelmintic Activity

Merekar *et al*., reports the synergistic anthelmintic action of rhizomes of *Acorus calamus* and root part of *Vitex negundo*. The study shows that the ethanolic extract of *A. Calamus* and *V. negundo* shows dose responsibility anthelmintic activity against earthworms. Also the synergistic anthelmintic activity of *A. calamus* and *V. negundo* is important than the individual activity of both the plants. For this study marketed drug was used as a standard reference drug.[31]

Antihepatotoxic Activities

Palani S *et al*., evaluate the antihepatotoxic and antioxidant activities of ethanolic extract of *Acorus calamus* (AC) at two dose levels of 250 mg/kg and 500 mg/kg B/W on acetaminophen induced hepatotoxicity in rats. It observed that the ethanol extract of AC confers hepatoprotective and antioxidant activities by histopathological and observations against acetaminophen induced liver injury in rats. It observed that the ethanol extract AC confers hepatoprotective and antioxidant activities by biochemical and histopathological explanation against acetaminophen induced liver injury in rats. The activity of ethanol extract of AC (500 mg/kg B/W) is similar to the standard drug silymarin (25 mg/kg B/W).[32]

Anti-ischemic Heart Disease Activity

In the clinical trial on 45 patients of ischemic heart disease at the OPD of S.S Hospital BHU, the efficacy of the drug *Acorus calamus* was tested. The patient was divided randomly in the three groups. To the first group the trial drug in a dose of 1.5 3 g/day in divided dose for three month was given. The second d group was given purified 'guggulu' while the third group which was the control group was given a capsule containing lactose powder. There was an encouraging improvement in the first and second groups. The drug was found to be effective in the improvement of chest pain, dyspnoea on effort, reduction of body weight index, improving in ECG decreasing serum cholesterol, decreasing SLDL (serum low density lipoproteins) and increasing SHDL (serum high density lipoproteins).[33]

Antifungal Activity

Ethanolic extract of 40 upper plants representing 23 families have tested for

antifungal activity against a number of phytopathogenic fungi. The two mainly active plants showing potent antifungal activity were *Acorus calamus* and *Piper betel*. The rhizome extract of *A. calamus* exhibited maximum antifungal activity inhibit the mycelial growth completely (100%) against all the 6 test pathogens. *P. betel* exhibited more than 50% inhibition against most of the test fungi. The ethanolic extract of quite a few higher plants could be used as alternative source of antifungal agents for protection of plants or crops against fungal infection.[34]

Antibacterial Activity

Ethanolic and aqueous and extracts of *Acorus calamus* was evaluate for antibacterial activity beside clinically vital bacteria viz. *Bacillus subtilis* (MTCC 441), *Staphylococcus aureus* (MTCC 96), *Escherichia coli* (MTCC 443), *Proteus mirabilis* (MTCC 1429), *Pseudomonas aeruginosa* (MTCC 424). The in vitro antibacterial activity had performed by agar well dispersal method. The ethanolic extracts of *A. calamus* was vigorous against all the investigated bacterial strains while aqueous extract was completely inactive against the studied gram negative bacterial strains (*E. coli*, *P. mirabilis* and *P. aeruginosa*) and showed reasonable antibacterial activity against gram positive bacteria *B. subtilis* and *Stap. aureus* at high concentration (200ml).[35]

Analgesic Effect

The analgesic activity of the methanolic extract of the *Acorus calamus* and Oroxylum indicum at the dose of 250 and 500 mg/kg body weight was evaluate beside the standard drug - Diclofenac sodium, at a dose of 25 mg/kg body weight. Adult Swiss albino mice of any sex of five numbers in each group, was undertaken for study and evaluate by acetic acid induced writhing method. The methanol extract of *Acorus calamus* inhibited writhing reflex by 30.77% and 39.86% at the dose of 250 and 500 mg/kg body weight. The methanolic extract of *Acorus calamus* was found to be extra dynamic than Oroxylum indicum as a pain killer.[36]

Antipyretic Activity

Aqueous, dichloromethane and methanol extracts of *Acorus calamus* along with eight other plants were screened for larvicidal, antioxidant, *in vivo* antipyretic and *in vitro* antiplasmodial activities. The dichloromethane and methanol extracts significantly ($P \leq 0.05$) reduced pyrexia with activity increasing in a concentration dependent manner. The results support the use of these plants in folk medicine and suggest that these plants contained constituents that could be developed as potent anti-malarial drugs.[37]

Bronchodilatory Activity

A study was undertaken to provide a pharmacological basis for usual use of *Acorus calamus* in airways disorders. For this principle isolated guinea-pig trachea and atria were pendant in organ baths bubbled with carbogen and mechanisms were found using different parameters. Result shows simple extract of *Acorus calamus* was more efficient than carbachol in causing leisure of high K+

(80 mM) preconstruction's, similar to verapamil, suggesting blockade

of calcium channels.[38]

Licicidal Activity

Dried rhizomes of *A. Calamus* were subjected to comprehensive sequential removal with four solvents n-hexane, chloroform, methanol and distilled water respectively. All four fractions were studied for *in vitro* licicidal movement using Goat-lice *Damalinia caprae* (Trichodectidae) as experimental organism. Only n-hexane and chloroform fractions showed licicidal activity. Significant decrease in mean time necessary to kill the lice was observed at concentration 1% w/w and 10% w/w when compared to 1% w/w lindane solution.[39]

Mosquito Larvicidal Activity

Dried rhizomes of *A. Calamus* were subjected to soxhlet extraction with two solvents petroleum ether and ethyl alcohol. All two fractions were studied for *Aedes aegypti* larvicidal activity and determined lethal concentration which kills 50% and 90% population (LC50 and LC90 value). Petroleum ether extract exhibited LC50 at 57.32 ppm (parts per million), LC90 at 120.13 ppm, while ethyl alcohol extract exhibited LC50 at 64.22 ppm, LC90 at 130.37 ppm. This study indicated that *Acorus calamus* carry huge potential as a mosquito larvicide.[40]

Repellent and Oviposition Deterrent Activity

Repellent and oviposition deterrent effects of sweet flag (*Acorus calamus* L.) along with five other plant extracts each in petroleum ether, ethanol and acetone were evaluate at 2% concentration against peach fruit fly *Bactrocera zonata* in a free choice bioassay. Petroleum ether extract of *Curcuma longa,* ethanol and acetone extracts of *Peganum harmala* were the most promising repellents against Peach fruit fly. Acetone extract and ethanol extract of *Acorus calamus* L. Have shown effective repellence and oviposition deterrent.[41]

CONCLUSIONS:

The above studies support that *Vacha* (*Acorus calamus*)is the good *Ayurvedic* herb for medicinal purpose. is effective against bacteria and fungi and can be used as antibacterial and antifungal drug. *Vacha* is a very good brain tonic and possesses significant memory enhancer effect. It Experimental studies indicate that *Acorus calamus* is useful in the diabetes, as an anti-inflammatory, in IHD, Anti-cancer, anti-spasmodic, anti-bacterial, bronchodilator, anti-hepatotoxic activity and in depression. These all research works elaborates all indications mentioned in *Ayurvedic* classical texts.

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