



Medicinal and Ayurvedic Aspects of Resourceful Herb: Akarkara

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ABSTRACT

Akarkara (*Anacyclus pyrethrum*) is widely used as a drug in Indian Ayurveda and Unani medicines. It has numerous therapeutic properties and is one of the eleven sacred medicines as described in Ayurveda (Wealth of India). Pellitorine and alkyl amide are the major constituents. This paper reviews medicinal properties, traditional homemade remedies, and side effects of an excessive dose.

Keywords: *Anacyclus pyrethrum*, Anti-bacterial, Ayurvedic proprietary medicine, Pellitorine

INTRODUCTION

Akarkara is widely used in the Ayurvedic Indian and Unani systems of holistic health as herbal medicine (Kishore & Lalitha, 2012). Akarkara is extensively used for the treatment and management of sexual problems, erectile dysfunction, loss of libido, toothache, bleeding gums, digestive disorders, fever, asthma, indigestion, constipation, rheumatic arthritis, stress, anxiety, etc. Being rich in potential

biochemical constituents like essential oils and a major alkaloid pellitropine it is intensely used as an antibacterial, anti-inflammatory, and tonic to the nervous system (Tyagi et al., 2011). It has a positive effect on regulating the immune system (Sharma et al., 2010). It is commonly named African pyrethrum or Tigenhast by Moroccan people (Batanouny, 2005) in the Mediterranean flora and grows well on slimy and well-drained soils. It is native to

Arabia & distributed in North Africa, the Mediterranean region, Spain and India. It grows along the Himalayas, in Jammu & Kashmir, Bengal widely grows in Pilibhit in Uttar Pradesh and resembles Spanish Chamomile species in ecology and appearance. It grows best in alpine regions and rocky gardens.

Nomenclature Vernacular Name :

English: Pellitory,

Hindi: Akarkara,

Marathi: Akkirakaram

Sanskrit: Agragrahi, Akarkarbha

Taxonomy

Kingdom: Plantae

Division: Spermatophyta

Sub-Division: Angiospermae

Class : Dicotyledons

Sub class: Metachlamydeae

Order: Campanulatae

Family: Composite, Asteraceae

Genus : *Anacyclus*

Species: *pyrethrum*

Morphology

Akarkara is a small hairy perennial herb 3-4 feet high that grows in the plains of North India. The leaves are opposite, ovate, glamorous, and serrated. The pyrethrum roots are hard fusiform about the size of the little finger, cylindrical, tapering often terminated at the top by briestly remaining parts of leaves, and have only a couple of hair-like rootlets. Externally it has a rough brown shriveled surface (Puri et.al.,2003).

Medicinal Properties

The medicinal properties of akarkara are due to the presence of flavonoids, terpenoids, and coumarins (Harald,1978; Benitez et. al,2010; Hanane et. al,2014). Its effective secondary metabolite is pellitory extremely acrid resinous substance, yellow acrid oil, bits of gum, silica, and alumina (Qureshi et.al, 2022). The cortical part of the root contains 5% pyrethrin and crystallization of pellitonin from the resin of the dried roots of *Anacyclus pyrethrum*, pellitonine resembles piperovatin as described by Dymock et.al (2005). Some other compounds include tannins, gums,

and essential oil traces (Zaidi et.al, 2013, Sujith, et. al., 2012). Being rich in potent biochemical constituents and incredible therapeutic properties, it is used in the form of churns, kwath, gutka, rasa, and oil. The aerial parts of the akarkara plant mainly contain anacyclic. Other active constituents include inulin, sesamin alkyl amide, and hydrocarbon (Usmani et.al 2016). Alkyl amides have libido-stimulant and neuroprotective properties. It is used as an aphrodisiac, libido- stimulant. It is also used as an expectorant, diuretic, analgesic, spermatogenic, anti-convulsant, carminative, anti-inflammatory, anti-diabetic, adaptogenic, antipyretic, and muscle-relaxant.

Chemical Polymorphism

As Asteraceae family is known by chemical polymorphism i.e. synthesis of chemicals varies with the harvest period of the plant. The harvesting period influences both the chemical yield and quality of essential oil (Garneau,2001; Usmani

et.al.,2016). The best yielding time is the flowering stage as reported by Selles et.al.,2013, Bourkhiss et. al;2011)

Therapeutic uses

Akarkara in sexual problems: Intake of akarkara powder with a glass of milk at night increases libido. This effect is due to the presence of alkyl amide in akarkara. Narsimha churn-an Ayurvedic medicine prepared by mixing fox nuts, akarkara root, and kaunch seed is used as an excellent aphrodisiac. Divya Yauvanamrit Vati (Divya Yaunamrit Vati) is an ayurvedic proprietary medicine for men's health. It increases the blood flow to the genitals and treats erectile dysfunction (Basu, 2022). Massage of immersion to the genitalia (prepared by mixing 5 gm of root powder with 60 ml of coconut oil and keeping in the sunshine for 6-8 days) is effective in treating erectile debility. Flower head paste or root powder(500mg) cooked with milk acts as a sexual stimulant.

Akarkara as an immunity improver: Akarkara improves the immune system by

increasing the activity of macrophages in vivo (Dalila et.al 2010). Macrophages are defensive against foreign invasion and neoplastic disease.

Akarkara as dentifrice: As Akarkara has immense uses in the treatment of tooth decay, it is commonly named as a toothache plant. Akarkara is used for treating toothache, dental cavities, bleeding gums, loosening of teeth, etc. and gentle massage of root powder makes the teeth white. Akarkara is the major ingredient of kinds of toothpaste and powder. Root powder of akarkara when kept at the base of gums or decaying tooth relieves pain within 5-10 minutes. This mixture also relieves swelling as tooth decay occurs due to the growth of the bacteria *Streptococcus mutans*, akarkara has different uses for dental and periodontal diseases (Newman et al., 2012; Jalayer et al., 2012) Akarkara is used in preparing an effective homemade powder by mixing trikatu powder (pippali, dry ginger, and black pepper) and Triphala powder (Harad, basel, and amla) in equal

proportion. This mixture is added to akarkara powder in a ratio of 1:1 which is effective against excessive saliva, pyorrhea, and carious tooth massaging of gums. Another effective homemade remedy suggested by Dabur is prepared by mixing akarkara majuphaland tribal and mixing this mixture with mustard oil. This mixture cures tooth and gum-related diseases. To relieve bad odor, one gm of edible camphor is also added. This mixture can also be used as a mouthwash or mouth freshener.

Akarkara in curing Alzheimer's disease: In Akarkara presence of bioactive small molecule dibenzo-alpha-pyrone helps in the retention of memory. In vitro studies revealed that the ethanolic extract of Akarkara pyrethrum (Vichitra Kaushik et.al., 2013, Usmani et.al.2016) cures Alzheimer's disease by inhibiting the release of Acetylcholinesterase enzyme for the treatment of this disease. It is necessary to increase the acetylcholine level in the brain which is possible by inhibition of the

Acetylcholinesterase enzyme (Geriatrics et.al.,1999; Sujith et. al,2011) this ethanolic extract of akarkara is an ideal drug for Alzheimer's disease (Sujith et.al. 2013)

Akarkara as antidepressant agent

The potent antidepressant properties of the herb also help in calming the mind, reducing all sorts of physical and mental stress, and irritability, and improving energy and stamina. Akarkara has a significant effect in treating different psychotic problems like depression, dementia, etc. It pacifies the Vata and Pitta doshas in the body which in turn keeps the serotonin levels under control and reduces anxiety which includes uneasiness, restlessness, cold hands, feet, etc. Its antidepressant effect may be by increasing ambulatory activity (Qureshi et.al. 2022). It produces a significant antidepressant effect in both Forced Swim Test And Tail suspension test by reducing immobility; it is successful in reversing hypothermia produced by clonidine and reserpine and it

inhibited haloperidol-induced catalepsy (Badhe et.al.2010). Akarkara has anti-arthritis and anti-inflammatory properties as it balances vata doshas, and relieves pain and inflammation due to arthritis. Akarkara has strong dose-dependent myo- relaxant activity (Jayasree et.al. 2012). Powdered paste of root extract is effective against rheumatoid arthritis (Basu, 2022). Akarkara in diabetic control: Treatment with aqueous root extract of akarkara reverted back elevated blood glucose levels to normal levels in mice (Tyagi et.al., 2011). This extract lowers insulin dosages in patients suffering from insulin-dependent diabetes mellitus. When combined with *Heleborus niger* in the ratio of 1:3, it decreases cholesterol level and serum glucose levels (Selles, C; 2011) Akarkara in anticonvulsant activity: Pellitorine has a high gut permeating rate and crosses the blood-brain barrier, may be used to treat central nervous system (Qureshi et.al., 2022). Suganya et.al.

(2012) found that ethanolic extract of pellitorine root is effective in delaying convulsions in mice.

Akakara in cancer treatment

Ethanol extract of akarkara induced apoptosis in a human colorectal cell line (HCT) Mohammadi et.al (2016) suggested that it may be useful in cancer therapy.

Akarkara in childhood apraxia of speech

Akarkara being a nervine and brain tonic helps in treating this condition slowly. A gentle massage of the tongue with 125 mg of Akarkara root powder with honey cures delayed speech in children.

Akarkara in urinary treatment

As akarkara has diuretic properties so akarkara powder mixed with a spoon of ghee and by licking twice within 30 minutes cures urinary retention problems and makes the easy flow of urine.

Akarkara in treating tonsillitis: Gargle of akarkara root powder or flower head cures tonsillitis and sore throat. Akarkara in promoting tfv,flow of saliva: Akarkara

is used as a sialogogue (Annalakshmi et.al., 2012, Selles et.al. 2013) by increasing the secretion of saliva. Due to its carminative nature, it enhances the secretion of digestive juices, thus increasing the digestion of food, increases the absorption of nutrients through the intestine. It also reduces abdominal cramps by releasing abdominal gases.

Akarkara as anesthetic

A clinical study conducted on 200 dentistry patients suggests alcoholic extract of Akarkara has an effective anesthetic effect (Devasankariah et.al.1992). As a snuff: Powdered root of akarkara is used as a snuff that cures chronic catarrh of the head and nostrils and clears the brain by a free flow of nasal mucus and tears. It also clears the chest and nasal cavities and helps in controlling congestion (Basu,2022).

Side effects of Akarkara

Akarkara has a significant role in Ayurveda but it should be consumed with the advice of an Ayurvedic practitioner or doctor. Excessive intake of akarkara has

side effects like mouth ulcers, excessive salivation, heartburn, acidity, and excessive menstrual flow. It may lead to tremors; excessive stimulation of nerves even leads to loss of consciousness. Pregnant ladies and lactating mothers should avoid akarkara (Basu,2022). So, the medicine should be administered with the required dosages of antidotes.

CONCLUSION

Akarkara is one of the eleven sacred herbs mentioned in the Ayurvedic system (Wealth of India). It is used as a remedy for many disorders in human beings like decaying teeth and bleeding gums, anti-diabetic, anticonvulsant activity managing stress and anxiety, improves libido, improves fertility, increases memory retention power, relieves overall stamina and body immunity and thereby promotes an overall state of good health.

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Table 1: Therapeutic uses of Akarkara

Sr.No.	Different mixtures of Akarkara	Therapeutic uses
1	Akarkara powder and milk	Increases libido
2	Akarkara powder Fox nuts and kaunch seeds (Narasimha churna)	Aphrodisiac
3	Ingredient in Yauvanamrit vati(Basu,2022)	Improves men's health
4	Massage of immersion to genitalia (5gm.akarkara root powder, 60 ml.coconut oil, kept in sunshine for 6-8 days)	Treats erectile dysfunction
5	Akarkara root powder, cooked with milk	Sexual stimulant
6	Keep Akarkara root powder at base of gums	Relieves swelling and pain in gums
7	Mix trikatu powder with triphala powder (1:1) Then add equal proportion of akarkara root powder	As a Sialogogue Cures tooth decay, Carious teeth
8	Mixture of (Akarkara root powder, maju phal,tejbal),massage with mustard oil	Cures teeth and gums
9	Mixture of (Akarkara root powder, maju phal,tejbal),massage with mustard oil, add 1 gm.of edible camphor	Mouth freshener relieves from bad odour
10	Ethanoic extract of akarkara	Cures Alzheimer's disease
11	Aqueous extract of akarkara	Anti - diabetic
12	Aqueous extract of akarkara,Heleborus niger (1:3)	Reduces cholesterol level Serum glucose level
13	Massage of tongue (125 mg of Akarkara root powder with honey)	Cures delayed speech in children (Childhood apraxia of speech)
14	Licking of (Akarkara powder with one spoon ghee)	As a diuretic
15	Apply paste of akarkara root powder extract on knee, joints etc	Any type of rheumatic
16	Gargle with Akarkara root powder	Cures tonsillitis, sore throat
17	Snuff of akarkara powder	Cures catarrh of brain, clears nose by easy flow of mucus