

Review on *Cyperus scariosus*: A Potential Medicinal Plant

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Abstract

Saad kofi or *Cyperus scariosus*, known as *Nagarmotha* in India, is a delicate grass which is an angiosperm belonging to family *Cyperaceae*. Indian species of this plant is called *motha*. The best quality of *saad* is heavy in weight, rough from outside with strong aroma, whitish inside, highly bitter in taste. Its root extracts and volatile oil are used for medicinal purposes. *Nagarmotha* is also prescribed by local herbal medicine practitioners to treat a variety of diseases including diarrhea, epilepsy, gonorrhea, syphilis and liver damage. The active constituents of root extracts and volatile oil are sesquiterpenes and cyperone, selinene, cyperene, etc. which show various pharmacological properties like antibacterial, antioxidant, antidepressant, antinociceptive, antihyperglycaemic and immunosuppressive activity. Clinical trials regarding this drug are also reported. Animal and human study-based reviews are presented here but meanwhile further clinical trial is needed to explore its quality for further recommendation to improve quality of life.

Keywords: *Saad kofi*, *Cyperus scariosus*, root, phytochemical modules, pharmacological properties

INTRODUCTION

Saad kofi or *Cyperus scariosus*, known as *Nagarmotha* in India, is a delicate grass which is an angiosperm belonging to family *Cyperaceae* (Figure 1) [1–3], widely present in and around rivers, waterfall and other damp places [3, 4]. The plant requires sun and moist conditions for its growth [3]. It is widely distributed in India and found in various parts of the country. It is also found in South Africa, China and Pacific Islands. The plant is well known for its uses in the traditional systems of medicine [4].

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TAXONOMICAL CLASSIFICATION

Kingdom: Plantae

Order: Poales

Genus: *Cyperus* [5]

Family: *Cyperaceae* [5–7]

Species: *scariosus* [5]

Botanical name: *Cyperus scariosus* [7, 8]

Vernaculars

Arabic: *Saad Kofi*, Persian: *Mushkzerezamin*, Hindi: *Motha*, *Nagarmotha* [8, 9] Urdu: *Saad Kofi*, Bengali: *Mutha*, *Musta*, Gujarati: *Moth*, *Nagarmotha*, Kannad: *Konnari*, *Gadde*, Tamil: *Korai*, *Korai-Kizhangu*, Malayalam: *Muthanga*, *Kari Mustan*, Marathi: *Moth*, *Nagarmoth*, *Motha*, *Bimbal* [9, 10], *Lawala* [11], Punjabi: *Mutha*, *Motha*, Telugu: *Tungamustalu* [9], Hindi: *Nagar moth*; Sanskrit: *Nagarmusta* [11].

MAHIYAT (DESCRIPTION IN UNANI LITERATURE)

Saad refers to root of plant which is long and round shaped. Outer surface is rough and blackish and inner part is whitish. According to Antaki, it is reddish from outside. Root gives strong fragrance and bitter in taste. This plant can be cultivated or may grow wild. Wild variety is smaller than the cultivated variety. Indian species of this plant is called *motha*. It is cultivated in wet soil, ponds or streams. Wild variety grows in sandy soil or wet soil. The best quality of *saad* is heavy in weight, rough from outside with strong aroma, whitish inside, highly bitter in taste and those grow in non-watery areas [8, 9, 12].



Figure 1. *Saad kofi* plant, root and powder.

Part Used

Root [13].

Mizaj (Temperament)

Hot and Dry [12, 14]

Af'al (Actions)

Mudirbaul (diuretic), *Mufattehsudad* (deobstruent), *Mufattithisat* (lithotriptic), *Muqawwiemeda* (stomach tonic), *Muqawwiedimagh* (brain tonic), *Hazim* (digestive), *Mufarreh*, *Qabiz* (astringent), *mudirhaiz* (emmenagogue) [12], *Muqawiqalb* (cardiotonic) [12, 13], *Muharrariq* (stimulant), *Muqawiasab* (nervine tonic) [13], *Qatereeha* (carminative) [12, 13], *Mushtai* (appetizer) [13], *Maneqai* (antiemetic) [12, 13], *Muqawwiebaah* (aphrodisiac) [13], *Muqawwiemasana* (bladder tonic) [12, 13].

Iste'malat (Therapeutic Uses)

- It is used to breaks renal calculi [12].
- It is kept in the uterus to cure the abnormal cold temperament of the uterus.
- It is useful in palpitation and jaundice.
- It relives headache.
- It improves the skin complexion [10, 12].
- It helps in bad breath due to ingestion [12, 14].
- It is used to kill intestinal worms.
- It is useful to cure haemorrhoids.
- It is useful in dripping of urine [10, 12].
- It is useful in chronic fever.
- Its tooth powder is used for strengthening of teeth and jaws.
- It provides *hararat* to stomach and liver.
- It is useful in fever and stomach problems [14].

Miqdarekhurak (Dosage)

3–9 g or 1–4 g [12].

Muzir (Adverse Effect)

Harmful for throat and voice quality, produces cough, eating in hot temperament produces fever [12].

Musleh (Corrective)

Sirka and honey, sugar, sandal, anisun, aabkahu or aabkheera [12].

Taste

Bitter [6]

ETHNOBOTANICAL DESCRIPTION

Habitat

In India, *Cyperus scariosus* is widely distributed in Chhattisgarh, Bihar, Orissa, in damp places in Uttar Pradesh, Madhya Pradesh and Bengal [4]. It is also found in South Africa, China and Pacific Islands [4, 5]. It has been found to grow in marshy land, river and canal banks and low or damp type areas of different parts of the country [3].

Actions

The tubers are attributed with astringent, diuretic [15, 16], desiccant, diaphoretic, cordial stomach ache, emmenagogue and vermifuge properties [16], anti-inflammatory, antimicrobial, hypotensive, stimulant of central nervous system [15], exhilarant, deobstruent, aphrodisiac properties.

Uses

Nagarmotha is prescribed by local herbal medicine practitioners to treat a variety of diseases, including diarrhoea, epilepsy, gonorrhoea, syphilis and liver damage [15–18]. Rhizomes are used for washing hair and as antidote to snake bite. Oil obtained from tubers (rhizomes) is used by perfumers as fixative. It forms good substitute for patchouli oil in soap and other perfumes. Oil is also used as hair tonic [15]. Rhizome is widely used as a phytotherapeutic agent against dysentery, essential oil and the extract of the tuber is used as a remedy for fever, diarrhoea, dysentery, cholera and vomiting [19].

PHYTOCHEMICAL PROPERTIES

Phytochemical analysis of root extracts revealed the presence of alkaloids, anthraquinone glycosides, phenols, flavonoids, tannins, saponins, steroids and terpenoids [4], sesquiterpenes and steroidal saponins. The main active component appears to be the sesquiterpenes. The active constituents which are found in the volatile oil of *Cyperus* rhizomes are cyperone, selinene, cyperene, cyperotundone, patchulenone, sugeonol, kobusone and isokobusone, pinene (monoterpene) derivatives of sesquiterpenes such as cyperol, isocyperol and cyperone. Alcohol, aldehyde, ester, terpenes, hydrocarbon, ketone and other compounds were tentatively identified by several workers [3].

PHARMACOLOGICAL STUDIES

Anti-oxidant Activity

Hydroalcoholic extract of *C. scariosus* Linn found to be effective for prevention as well as for treatment of gentamicin-induced acute kidney injury, which might be attributed to its antioxidant properties [16]. *C. scariosus* showed significant lipid lowering and antioxidant activity in animal model [17]. The 50% methanolic extracts of *C. scariosus* exhibited significant potential for preventing oxidative DNA damage and radical scavenging activity [5].

Anti-nociceptive Activity

Methanolic leaf extract of *Cyperus scariosus* showed dose dependent significant pain inhibition compared to aspirin in acetic acid induced writhing assay in mice [2].

Anti-hyperglycemic Activity

Methanolic leaf extract of *Cyperus scariosus* showed significant hypoglycemic activity in mice loaded with glucose [2].

Immunosuppressive Activity

Chloroform fraction of *C. scariosus* inhibits T cell responses in Balb/c mice in both humoral and cell mediated immune responses significantly confirming marked immunosuppressive activity [11].

Anti-depressant Activity

N-hexane extract of *Cyperus scariosus* oil significantly reduced the immobility time in both dose level at Forced Swim Test and Tail Suspension Test in mice [1].

Antibacterial Activity

Longiverbenone isolated from the rhizome of *Cyperus scariosus* showed moderate to good antibacterial activity against eleven potential human pathogenic bacteria [19].

CONCLUSION

Cyperus scariosus is a potential medicinal plant; root and volatile oil of this plant have various active constituents, alkaloids, steroidal saponins etc. display numerous medicinal properties on the basis of human and animal studies. This review explores the various pharmacological effects of *saad kofi* but further study is desirable to inquest its quality for further recommendation.

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