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A COMPREHENSIVE REVIEW ON *AKARAKARBHA* (*SPILANTHUS ACMELLA*): AN AYURVEDIC HERB WITH MULTIFACETED THERAPEUTIC POTENTIAL

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ABSTRACT

Spilanthus acmella Murr., the botanical name for *Akarakarbha*, is a common medicinal plant in tribal and traditional *Ayurvedic* medicine. People have long used it to treat inflammatory conditions, dental conditions, and sexual insufficiency. It is well-known for its strong flavor and local anesthetic qualities. Many of its traditional claims have been confirmed by recent pharmacological studies, which have also identified new activities such as antibacterial, anti-inflammatory, antioxidant, and neuroprotective properties. The purpose of this review is to provide a comprehensive understanding of *Akarakarbha's* medicinal value and research potential by gathering and discussing its ethnomedicinal uses, phytochemistry, pharmacological activity, and therapeutic applications.

KEYWORDS: Akarkarbha, Ayurveda, Medicinal plant, antibacterial, analgesic, medicinal, pharmacological value.

INTRODUCTION

Often referred to as the "toothache plant" or *"Akarkara," Akarakarbha* (*Spilanthus acmella Murr.)* is a highly prized therapeutic herb in traditional medical systems, especially *Ayurveda,* and folk practices throughout India and Southeast Asia. Spilanthol, the plant's main bioactive ingredient, is responsible for the plant's distinctive tingling and numbing effects.[1] It has historically been used to treat toothaches, sore throats, mouth ulcers, and neuralgia because of this characteristic.[2,3]

Akarakarbha falls under the category of *Vajikarana Dravyas* in *Ayurveda,* which are a class of herbs used to improve fertility, vitality, and sexual power.[4] It is thought to boost libido, enhance semen quality, and stimulate the neurological system. The herb's usage in treating inflammatory illnesses, muscle ailments, and nervous debility is also mentioned in Unani and Siddha medical systems.[5,6]

In addition to discovering new pharmacological properties like antibacterial, antioxidant, anti-inflammatory, immunomodulatory, and neuroprotective benefits, recent scientific studies have confirmed many of these conventional claims.[7,8,9,10] As interest in natural treatments and integrative medicine grows, it is currently being investigated in cosmeceuticals, oral healthcare products, and male wellness formulations.[11]

Additionally, Akarakarbha is becoming a viable option for innovative drug delivery methods in both traditional and alternative medicine because of its quick action, low toxicity, and ability to be formulated into gels, lozenges, oils, and tinctures.[12, 13]

This review aims to comprehensively explore the botanical, traditional, phytochemical, pharmacological, and clinical aspects of *Spilanthus acmella*, highlight its therapeutic versatility, and identify areas for future research and development.

Ayurvedic Pharmacological Profile *(Dravya Guṇa Karma)*[14]

Table 1:

Parameter:	Description
Rasa (Taste):	*Katu* (Pungent)
Guṇa (Quality):	*Laghu* (Light), *Tikṣṇa* (Sharp)
Vīrya (Potency):	*Uṣṇa* (Hot)
Vipāka:	*Katu* (Pungent)
Doṣaghna:	*Kapha-Vāta Shamaka*
Karma:	*Vājīkaraṇa, Śūlahara, Krimighna, Rasāyana*

Botanical Description

Botanical Name: *Spilanthus acmella* Murr.

Sanskrit Name: *Akarakarbha*

Common Names: Toothache plant, Electric daisy

Family: *Asteraceae*

Parts used: Whole plant, mainly flowers and leaves

Habitat: Tropical and subtropical regions of India, especially in Maharashtra, Karnataka, and Tamil Nadu

Phytochemical Profile

Major bioactive constituents identified include:

Spilanthol – a pungent alkamide responsible for the tingling effect and local anesthetic action.[15]

Flavonoids – such as quercetin and rutin

Triterpenoids

Essential oils

Alkylamides

Sterols These compounds exhibit a wide range of biological activities including immune modulation, analgesic, antimicrobial, and antioxidant properties.[16,17,18]

Pharmacological Activities

1. *Vajīkaraṇa* (Aphrodisiac) and Spermatogenic Action

Classified under *Vṛṣya Dravya* (aphrodisiac) in *Bhāvaprakāśa Nighaṇṭu*.[19]

Action: Enhances *Shukra Dhātu* (reproductive tissue), improves semen quality and libido.

Modern Validation: In vivo studies in male rats showed increased testosterone levels, improved sperm count and motility.[20]

Use: Employed in male infertility, premature ejaculation, and general debility.

2. *Śūlahara* (Analgesic) and *Śothahara* (Anti-inflammatory)

Ayurvedic Action: *Tikṣṇa* and *Uṣṇa Guṇa* help reduce *Vāta* and *Kapha*, which are key doshas involved in pain and swelling.

Classical Use: Used in disorders like *Sandhivāta, Āmavāta*, and *Śopha.*

Modern Insight: Spilanthol and flavonoids exhibit NSAID-like anti-inflammatory and pain-relieving activity.[21,22]

3. *Krimighna* and *Raktashodhana* (Antimicrobial and Blood Purifier)

Mentioned as *Krimighna* in *Rājanighaṇṭu*.[23]

Action: Useful in oral infections, skin eruptions, and microbial infestations.

Modern Validation: Effective against *E. coli*, *S. aureus*, *Candida albicans*.[24,25]

4. *Śothahara* (Anti-inflammatory) and *Dantyashodhana* (Oral Health)

Classical Use: Chewed for *dantaśūla* (toothache), *mukhapāka* (stomatitis), and *dantamala* (plaque).

Textual Basis: *Tikta, Katu Rasa* with *Laghu, Tikṣṇa Guna* make it effective in clearing *Ama* and *Kapha*.

Modern Evidence: Local anesthetic and antiseptic action due to spilanthol, reducing dental pain and infections.[26]

5. *Māṁsagata Vāta* (Neuroprotective and Anticonvulsant)

Ayurvedic Correlation: Nervine tonic properties relate to *Vāta*-pacifying actions, helpful in *Pakṣaghāta* (paralysis) and *Apasmāra* (epilepsy).

Scientific Support: Acts via GABAergic modulation; may be useful in seizures and anxiety.[27]

6. *Rasāyana* and Immunomodulator

Ayurvedic Basis: Supports *Ojas* and *Vyādhi Kṣamatva* (immunity), especially due to its stimulating effect on *Agni* (digestive/metabolic fire).

Modern View: Enhances macrophage activity and cytokine production; reduces oxidative stress.[28,29]

Table 2:

Ayurvedic Condition	Modern Equivalent	Preparation/Use	Reference
Dantaśūla, Mukhapāka	Toothache, Stomatitis	Chewed raw flowers, gel or paste applied to gums	*Bhāvaprakāśa*[1]
Klaibya, Bījakṣhaya	Sexual debility, Low sperm count	*Vajīkaraṇa yoga*, combined with *Aśvagandhā, Gokṣura*	*Cikitsāsthāna (CS)*
Śopha, Vātavyādhi	Inflammation, Arthritis	Decoction or paste used in *Sandhivāta*	*Rājanighaṇṭu*[2]
Apasmāra, Unmāda	Seizures, Anxiety	Neuro-tonic formulations, *ghṛita* or capsule form	*Cakradatta* [CS]
Śīta jvara, Kṛmiroga	Fever with chills, Parasitic infections	Powder or extract with honey or ghee	*Bhaiṣajya Ratnāvali*
Tvak Vikāra, Pūyaśotha	Skin infections, Abscess	Topical application of fresh paste or extract	Ayurvedic folklore
Rasāyana & Ojasvardhaka	Immunity booster	Standardized extract in capsule/tincture form	[30,31,32]

Research Gaps and Future Prospects Despite promising pharmacological evidence, clinical studies in humans are limited. Standardization of extracts, dosage formulations, and long-term safety studies are necessary to promote its use in modern therapeutics. Its application in dental care, sexual wellness, and neuroprotection needs further validation through controlled trials.[33,34,35]

CONCLUSION

Akarakarbha (*Spilanthus acmella*) is a multipurpose medicinal herb that unites conventional knowledge with contemporary research. It may be used therapeutically to treat pain, dental issues, reproductive health issues, and neurological diseases due to its wide range of pharmacological characteristics. New medicine compositions based on *Ayurvedic* principles may result from more research.

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