



REVIEW OF ATIVISHA (ACONITUM HETEROPHYLLUM) – AND ITS THERAPEUTIC POTENTIAL

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ABSTRACT

India possesses a rich medical heritage, with references to medicinal plants dating back to the Vedic period. Ayurveda, regarded as an Upaveda, describes six thousand medicinal plants. Among these, *Ativisha* (*Aconitum heterophyllum* Wall. ex-Royle) is an important therapeutic herb widely used in classical Ayurvedic literature. The dried tuberous roots of this plant are traditionally indicated in fever, gastrointestinal disorders, and paediatric conditions. Phytochemically, the plant is rich in diterpenoid alkaloids such as atisine, heteratisine, and aconitine, along with flavonoids and phenolic compounds. These constituents contribute to its diverse pharmacological activities including anti-inflammatory, analgesic, antipyretic, antimicrobial, and immunomodulatory effects. Despite its therapeutic potential, the presence of toxic alkaloids necessitates careful processing and dosage regulation. This review compiles classical references, phytochemistry, pharmacological actions, and therapeutic applications of *Ativisha* to highlight its significance and future research scope.

KEYWORDS: *Ativisha*, *Aconitum heterophyllum*, Ayurveda, Alkaloids, Pharmacology

INTRODUCTION

The use of medicinal plants in India dates to the Vedic era. The *Rigveda* documents early therapeutic practices, followed by detailed descriptions in Ayurveda, which recognizes thousands of medicinal plants¹. Among them, *Ativisha* holds significant importance for its wide therapeutic utility.

Aconitum heterophyllum (Family: Ranunculaceae) is a perennial herb found in the Western Himalayas at altitudes of 2500–four thousand meters. The drug consists of dried tuberous roots containing diterpenoid alkaloids such as atisine and related compounds².

Traditionally, *Ativisha* is described as Deepana (appetizer), Pachana (digestive), Sangrahaka (absorbent), and Jwaraghna (antipyretic). It is particularly valued in pediatric disorders and post-febrile debility³. Classical texts including *Charaka Samhita*, *Sushruta Samhita*, and

Ashtanga Hridaya mention its extensive use in various formulations⁴.

CLASSICAL CLASSIFICATION

In Ayurvedic texts:

- Charaka Samhita: Included in *Lekhaniya Mahakashaya*, *Arshoghna Mahakashaya*, and *Tikta Skandha*
- Sushruta Samhita: Mentioned in *Pippalyadi*, *Vachadi*, *Mustadi Gana*, and *Shirovirechana Dravya*
- Ashtanga Hridaya: Classified under *Tikta Skandha* and various Ganas.

These classifications highlight its role in metabolism, detoxification, and disease management.

SYNONYMS AND PROPERTIES

Ativisha is known by several synonyms reflecting its properties⁵:

- Shuklakanda – white tuber
- Shishubhaishajya – beneficial in pediatric diseases
- Atisaraghi – useful in diarrhea

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Pharmacodynamic attributes (Ayurveda):

- Rasa: Tikta, Katu
- Guna: Laghu
- Veerya: Ushna
- Karma: Deepana, Pachana, Sangrahaka

CHEMISTRY

Aconitum heterophyllum contains 0.7–0.8% diterpenoid alkaloids, with atisine (0.4%) being the major component⁷.

Key constituents include:

- Atisine
- Atidine
- Heterophylline
- Heteratisine
- Hetisinone

The alkaloids are distributed in:

- Weak base fraction
- Strong base fraction
- Very strong base fraction⁹

Other constituents include tannins, starch, fatty acids, and carbohydrates¹⁰.

PHYTOCHEMISTRY

The plant contains diverse bioactive compounds¹⁴:

1. Alkaloids

- Atisine
- Aconitine
- Heteratisine
- Heterophylline

These are responsible for major pharmacological actions^{16–17}.

2. Flavonoids

- Quercetin
- Kaempferol

Provide antioxidant and anti-inflammatory effects¹⁸.

3. Phenolic Compounds

- Catechins
- Gallic acid derivatives

Contribute to antimicrobial and antioxidant properties¹⁹.

4. Terpenoids and Others

- Glycosides
- Steroids

- Carbohydrates²⁰

TRADITIONAL USES

Ativisha has been widely used in Ayurveda and traditional medicine systems²³:

- Fever (Jwara): Antipyretic action reduces body temperature⁴³.
- Digestive disorders: Indigestion, flatulence, and abdominal pain²⁴
- Respiratory disorders: Asthma, bronchitis, cough²⁵
- Diarrhea and dysentery: Due to astringent properties²⁷
- Anti-inflammatory and analgesic: Used in arthritis and pain²⁶.
- Gastrointestinal disorders: Nausea, colic, and cramps²⁸
- Antispasmodic: Relieves muscle spasms²⁹
- Malaria and febrile conditions: Traditional antipyretic use³⁰

PHARMACOLOGICAL ACTIVITIES

Modern studies support its traditional uses:

1. Anti-inflammatory and Analgesic

Alkaloids like atisine interact with CNS receptors, reducing pain and inflammation³³.

2. Antipyretic

Acts on hypothalamic thermoregulation to reduce fever³⁴.

3. Antimicrobial

Shows activity against bacteria, fungi, and pathogens³⁵.

4. Immunomodulatory

Enhances immune response and resistance to infections³⁶.

5. Antioxidant

Flavonoids neutralize free radicals and reduce oxidative stress³⁷.

6. Cardiovascular Effects

May exhibit vasodilatory properties, influencing blood pressure³⁸.

7. Anticancer Potential

Demonstrates cytotoxic activity against cancer cell

lines³⁹.

IDENTIFICATION AND STANDARDIZATION

Adulteration is a major concern in Ativisha. Pharmacognostic and chromatographic methods are used for identification¹³.

- Paper chromatography: RF values help identify alkaloids.
- TLC and HPLC: Used for precise chemical profiling.

Proper identification is essential for therapeutic efficacy and safety.

SAFETY AND TOXICITY

Despite its therapeutic value, Ativisha contains toxic alkaloids:

Aconitine Toxicity

Symptoms include:

- Nausea, vomiting
- Cardiac arrhythmias
- Respiratory depression
- Neurological disturbances⁴¹

Detoxification

Traditional processing methods include:

- Boiling
- Washing
- Drying

These reduce toxicity and enhance safety⁴².

DISCUSSION

Ativisha represents a classical Ayurvedic drug with strong therapeutic relevance. Its traditional indications are increasingly supported by pharmacological research. The presence of diterpenoid alkaloids provides a scientific basis for its anti-inflammatory, antipyretic, and antimicrobial properties.

However, variability in alkaloid content, risk of adulteration, and inherent toxicity remain significant challenges. Standardization, proper identification, and controlled dosage are essential for safe clinical application.

Further clinical trials and pharmacokinetic studies are required to validate its efficacy and establish safety guidelines.

CONCLUSION

Ativisha (*Aconitum heterophyllum*) is an important Ayurvedic medicinal plant with significant pharmacological potential. However, due to its toxic alkaloids, proper processing and standardization are essential, and further clinical research is needed for safe therapeutic use.

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