INTERNATIONAL JOURNAL OF MULTIDISCIPLINARY HEALTH SCIENCES
ISSN: 2394 9406

"MEDICAL CHEMISTRY CLINICAL EFFICACY OF ASHOK:- CURRENT STATUS & FUTURE PERSPECTIVES"

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Abstract:

Ashoka is one of the most important medicinal plants in Ayurveda, belonging to the family **Fabaceae .** The stem bark is the principal medicinal part and is traditionally indicated for the management of gynecological disorders, particularly **Raktapradara (menorrhagia), Asrigdara (abnormal uterine bleeding), Kashtartava (dysmenorrhea), Shweta Pradara (leucorrhoea), and other uterine ailments**. Classical Ayurvedic texts describe Ashoka as having **Kashaya and Tikta Rasa, Laghu and Ruksha Guna, Sheeta Virya, and Katu Vipaka,** making it an effective **Pitta-Kapha Shamaka, Grahi,** and **Raktastambhaka d**rug. Phytochemical investigations have identified **catechin, epicatechin, quercetin, gallic acid, tannins, flavonoids, saponins, and β-sitosterol as** its major bioactive constituents. Experimental and clinical studies have demonstrated **uterine tonic, anti-menorrhagic, anti-inflammatory, analgesic, antioxidant, antimicrobial, hepatoprotective, antidiabetic, and wound-healing** activities, supporting many of its traditional therapeutic claims.

Key words – Ashoka, gynecological disorders ,

INTRODUCTION

Saraca asoca (Roxb.) De Wilde, commonly known as Ashoka, is one of the most important medicinal plants described in Ayurveda. It is traditionally indicated for **Stree Roga**, especially excessive uterine bleeding (Raktapradara), dysmenorrhea, leucorrhoea, and other gynecological disorders. Modern research has investigated its phytochemistry, pharmacological properties, and therapeutic potential, supporting many of its traditional applications.

Material & methods-

References of Ashoka (*Saraca asoca*) in Ayurvedic Samhitas and Nighantus

Ashoka is described in the **Bṛhat Trayī, Laghu Trayī**, and several important **Nighantus**. It is primarily recognized for its **Stambhana (hemostatic), Yoniroga-hara (beneficial in gynecological disorders), Vedanāsthāpana (analgesic), and Pitta-Kapha shamaka** properties.

Classical Text	Reference	Description / Classification
Charaka Samhita	Sutra Sthana 4 (Vedanasthapana	Classified under **Vedanasthapana**
	Mahakashaya); Vimana Sthana 8 (Kashaya Skandha)	**Mahakashaya** (pain-relieving drugs) and **Kashaya Skandha** (astringent drugs).
Sushruta Samhita	Sutra Sthana – Rodhradi Gana	Included in **Rodhradi Gana**, useful in wound healing, bleeding disorders, and gynecological diseases.
Ashtanga Hridaya	Sutra Sthana	Mentioned under **Rodhradi Gana** with similar indications as Sushruta.
Bhavaprakasha Nighantu	Pushpa Varga	Gives synonyms, pharmacological properties, and

Classical Text	Reference	Description / Classification
		therapeutic uses of Ashoka.
Dhanvantari Nighantu	Amradi Varga	Describes Ashoka as cooling, cardiotonic, fragrant, and useful in piles, worms, wounds, and scrofula.
Kaiyadeva Nighantu	Aushadhi Varga	Lists numerous synonyms and describes its medicinal properties.

Acc. To Bhavaprakasha Nighantu

Pushpa Varga

अशोको हेमपुष्पश्च वञ्जुलस्ताम्रपल्लवः ।
कङ्केलिपिण्डपुष्पश्च गन्धपुष्पो नटस्तथा ॥
अशोकः शीतलस्तिक्तो ग्राही वर्ण्यः कषायकः ।
दोषापचीतृषादाहकृमिशोषविषास्रजित् ॥

- Synonyms: Ashoka, Hemapushpa, Vanjula, Tamrapallava, Kankeli, Pindapushpa, Gandhapushpa, Nata.
- Properties: *Sheeta*, *Tikta*, *Kashaya*, *Grahi* , *Varnya*.
- Indications: Pacifies disorders due to **Pitta and Kapha**, relieves thirst, burning sensation, worm infestation, wasting, poisoning, and bleeding disorders

Habitat of Ashoka (*Saraca asoca*)

Ashoka (*Saraca asoca* (Roxb.) W.J. de Wilde) is an evergreen medicinal tree native to the Indian subcontinent. It naturally grows in **tropical and subtropical moist forests**, especially in **evergreen and semi-evergreen forests**.

Natural Habitat

- Prefers **evergreen, semi-evergreen, and moist deciduous forests**.
- Commonly found **along streams, riverbanks, and shaded valleys** with high humidity.
- Grows well in **well-drained, fertile, loamy soils** rich in organic matter.
- **Thrives under partial shade to filtered sunlight, particularly during its juvenile stage.**
- **Occurs from sea level up to about 750–1,000 m elevation, depending on local climate.**

Geographical Distribution *- Ashoka is naturally distributed in: -India (especially the* ***Western Ghats****, Eastern Himalayas, Odisha, West Bengal, Assam, Maharashtra, Karnataka, Kerala, Tamil Nadu, Andhra Pradesh, and Meghalaya) ,Nepal ,Bangladesh .Sri Lanka ,Myanmar*

Botanical Information

- **Botanical name:** *Saraca asoca* (Roxb.) De Wilde
- **Family:** Fabaceae (formerly Caesalpiniaceae)
- **Part used:** Stem bark (mainly), flowers, leaves, seeds
- **Ayurvedic properties:**
  - Rasa: Kashaya, Tikta
  - Guna: Laghu, Ruksha
  - Virya: Sheeta
  - Vipaka: Katu

Phytochemical Constituents

Several phytochemicals have been identified from the bark and other plant parts, including:

- Flavonoids (catechin, epicatechin)
- Tannins
- Saponins
- Sterols (β-sitosterol)
- Glycosides
- Lignans
- Phenolic compounds
- Gallic acid
- Quercetin derivatives

These constituents are responsible for antioxidant, anti-inflammatory, uterine tonic, antimicrobial, and analgesic activities.

Pharmacological Activities

Pharmacological Activity	Research Findings
Anti-menorrhagic	Reduces excessive menstrual bleeding through uterine-stabilizing action.
Uterine tonic	Improves uterine muscle tone and supports female reproductive health.
Anti-inflammatory	Reduces inflammatory mediators due to flavonoids and tannins.
Antioxidant	Strong free radical scavenging activity demonstrated in vitro.
Antimicrobial	Active against several Gram-positive and Gram-negative bacteria.
Analgesic	Reduces pain in experimental animal

Pharmacological Activity	Research Findings
	models.
Antidiabetic	Mild hypoglycemic activity reported in preclinical studies.
Anticancer	Some extracts show cytotoxic activity against cancer cell lines (preclinical).
Hepatoprotective	Protects liver tissue from oxidative injury in animal studies.

Action On Srotas –

According to Ayurvedic literature and modern pharmacological research, **Ashoka** acts on multiple body systems, although its principal therapeutic action is on the **female reproductive system**.

Body System	Systemic Uses
Female Reproductive System	Uterine tonic; indicated in menorrhagia (Raktapradara), dysmenorrhea (Kashtartava), metrorrhagia, leucorrhoea (Shweta Pradara), dysfunctional uterine bleeding (DUB), irregular menstruation, and postpartum uterine weakness.
Gastrointestinal System	Used in diarrhea (Atisara), dysentery (Pravahika), dyspepsia, intestinal worms, gastric ulcers, colic, and excessive thirst due to its astringent and anti-inflammatory properties.
Urinary System	Powdered seeds are traditionally used in dysuria (Mutrakrichra), urinary tract irritation, and urinary calculi (Ashmari).
Cardiovascular System	Flowers are used in edema, hemorrhagic conditions, and exhibit antioxidant and cardioprotective effects in experimental studies.
Musculoskeletal System	Possesses analgesic and anti-inflammatory activities; used for pain, swelling, and inflammatory conditions.
Skin	Used in skin diseases,

Body System	Systemic Uses
(Integumentary System)	wound healing, ulcers, and inflammatory skin disorders due to antimicrobial and antioxidant properties.
Nervous System	Experimental studies report mild CNS depressant and anxiolytic effects, though clinical evidence is limited.
Endocrine & Metabolic System	Demonstrates antidiabetic and antihyperglycemic activity in preclinical studies through antioxidant and glucose-lowering effects.
Immune System	Exhibits antioxidant, antimicrobial, and immunomodulatory activities, contributing to protection against oxidative stress and infections

Clinical Evidence

Clinical studies and traditional formulations indicate benefits in:

- Dysfunctional uterine bleeding (DUB)
- Menorrhagia
- Dysmenorrhea
- Leucorrhoea
- Uterine weakness
- Menstrual irregularities

However, most available studies involve small sample sizes, and more well-designed randomized controlled clinical trials are needed before firm clinical recommendations can be made.

Herbal Preparations of Ashoka (*Saraca asoca*)

Ashoka is a key ingredient in numerous classical Ayurvedic formulations, particularly those indicated for gynecological disorders, uterine health, and bleeding disorders. The stem bark is the most commonly used part, though flowers and leaves are also used in some preparations.

Preparation	Dosage Form	Main Indications
Ashokarishta	Fermented herbal preparation (Arishta)	Menorrhagia, dysfunctional uterine bleeding (DUB), dysmenorrhea, leucorrhoea, irregular menstruation

Preparation	Dosage Form	Main Indications
Ashoka Ghrita	Medicated ghee	Female infertility, uterine weakness, gynecological disorders
Ashoka Kashaya (Kwatha)	Decoction	Excessive uterine bleeding, leucorrhoea, inflammatory conditions
Ashoka Churna	Powder	Menstrual disorders, uterine tonic, bleeding disorders
Ashoka Vati	Tablet	Menstrual irregularities and uterine disorders
Nyagrodhadi Kashaya	Classical decoction containing Ashoka	Pradara (abnormal vaginal discharge), gynecological disorders
Ashoka Taila	Medicated oil	External application for inflammatory and painful conditions; also used in some gynecological therapies
Ashoka Syrup	Herbal syrup	Uterine tonic and menstrual health support
Ashoka Granules	Granules	Convenient oral dosage form for female reproductive health
Ashoka Ointment	Topical preparation	Wound healing and local inflammatory conditions (experimental/modern formulation)

Classical Dose

- **Churna (Powder):** 1–3 g twice daily
- **Kwatha (Decoction):** 40–80 mL
- **Ashokarishta:** 15–30 mL with an equal quantity of water after meals, twice daily (or as directed by an Ayurvedic physician).

Discussion –

The exact mechanism of action of *Saraca asoca* has not been fully elucidated; however, experimental and clinical studies suggest that its therapeutic effects result from the synergistic action of flavonoids, tannins, catechins, phenolic compounds, glycosides, and phytosterols. Its mode of action can be explained as follows:

Mechanism	Mode of Action	Therapeutic Effect
Uterine tonic action	Stimulates and strengthens uterine smooth muscle, improving uterine tone without producing excessive contractions.	Helps in dysfunctional uterine bleeding (DUB), menorrhagia, and postpartum uterine involution.
Hemostatic (anti-menorrhagic) action	Astringent tannins promote vasoconstriction and protein precipitation, reducing capillary permeability and bleeding.	Controls excessive menstrual and uterine bleeding.
Anti-inflammatory action	Flavonoids and phenolic compounds inhibit cyclooxygenase (COX), lipoxygenase (LOX), prostaglandins, nitric oxide, and inflammatory cytokines (TNF-α, IL-1β, IL-6).	Reduces pelvic inflammation, dysmenorrhea, pain, and edema.
Antioxidant action	Scavenges reactive oxygen species (ROS) and enhances antioxidant enzymes such as superoxide dismutase (SOD), catalase, and glutathione peroxidase.	Protects reproductive tissues from oxidative stress and promotes tissue repair.
Analgesic action	Suppresses prostaglandin-mediated pain pathways and	Relieves menstrual cramps and inflammatory pain.

Mechanism	Mode of Action	Therapeutic Effect
	inflammatory mediators.	
Phytoestrogenic activity	Plant polyphenols may exert weak estrogen-like effects, helping maintain endometrial integrity and menstrual regularity.	Supports normal female reproductive function (evidence is mainly preclinical).
Antimicrobial action	Polyphenols, tannins, and flavonoids disrupt microbial cell membranes and inhibit microbial enzymes.	Useful in leucorrhoea and reproductive tract infections.
Wound healing and tissue repair	Stimulates collagen synthesis, fibroblast proliferation	Promotes healing of uterine and other soft tissues.
	, and angiogenesis while reducing oxidative damage.	
Immunomodulatory action	Regulates inflammatory mediators and enhances host defense mechanisms.	Helps control chronic inflammatory conditions.

Phytochemicals Responsible for the Activity

- **Catechin and epicatechin** – Antioxidant, anti-inflammatory
- **Quercetin** – Anti-inflammatory, antioxidant
- **Gallic acid** – Antimicrobial, antioxidant
- **β-Sitosterol** – Anti-inflammatory
- **Tannins** – Astringent, hemostatic
- **Saponins** – Tissue repair and immunomodulatory effects
- **Flavonoids** – Antioxidant and uterine protective actions

Ashoka acts through **multiple complementary mechanisms** rather than a single pharmacological pathway. Its principal actions include:

- **Uterine tonic**
- **Hemostatic (anti-menorrhagic)**
- **Anti-inflammatory**
- **Antioxidant**
- **Analgesic**
- **Antimicrobial**
- **Wound healing and tissue repair**
- **Mild phytoestrogenic activity (preclinical evidence)**

Conclusion -

- Generally considered safe when used in recommended Ayurvedic doses.
- Limited long-term toxicity data are available.
- Use during pregnancy should be guided by qualified healthcare professionals because of reported uterine effects.

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