

# THE QUEEN OF HERBS: KUMARI (ALOE VERA) IN AYURVEDA – A COMPREHENSIVE REVIEW OF TRADITIONAL PHARMACODYNAMICS, THERAPEUTICS, AND MODERN PHYTOCHEMICAL VALIDATION

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## ABSTRACT

Aloe vera (L.) Burm. f., known as **Kumari** or **Ghritkumari** in Ayurveda, holds a revered position in traditional Indian medicine for its profound rejuvenating, detoxifying, and tonic properties, especially for the female reproductive system and the skin. This review provides a comprehensive analysis of Kumari's traditional uses, classical pharmacodynamics (Rasa, Guna, Vi<sup>ra</sup>ya, Vipa<sup>ka</sup>, Prabha<sup>va</sup>), therapeutic applications across various body systems (Srotas), and its principal Ayurvedic formulations as described in the Nighantus and Samhita<sup>s</sup>. A comparison is drawn between the classical actions, such as Bhedana (purgative), Rasa<sup>yana</sup> (rejuvenator), and Yakritottejaka (hepatic stimulant), and the modern scientific validation of its key phytochemicals, including anthraquinones (e.g., aloin, emodin), polysaccharides (e.g., acemannan), and glycoproteins. The article details Kumari's potent Trido<sup>sa</sup> balancing effect, primarily on Pitta and Kapha, and discusses the clinical relevance of distinguishing between the inner leaf gel and the bitter yellow latex (aloes). Finally, the review highlights contemporary research validating Kumari's role in wound healing, anti-inflammatory, anti-diabetic, and immune-modulating therapies, affirming its status as a vital polyherbal ingredient for holistic wellness and modern pharmaceutical development.

**Keywords:** Kumari, Aloe Vera, Ghritkumari, Ayurveda, Aloin, Acemannan, Immunomodulatory.

## 1. INTRODUCTION

### A. Etymology and Nomenclature

Aloe vera (L.) Burm. f. (*Aloe barbadensis* Miller) is a succulent plant belonging to the family Asphodelaceae (formerly Liliaceae), widely cultivated globally for its medicinal and cosmetic value [1]. In Ayurveda, this plant is primarily known by the Sanskrit name **Kumari** (meaning 'young girl' or 'maiden') [2]. This nomenclature reflects its profound association with feminine health, rejuvenation, and the restoration of youthful vitality. Synonyms found in Ayurvedic Nighantus (lexicons) include:

- **Ghritkumari** (Ghee-like maiden): Refers to the smooth, unctuous (snigdha) and cooling nature of the leaf pulp, which resembles Ghee (clarified butter) [3].
- **Kanya** (Maiden): Emphasizes its use in treating female reproductive disorders (Stri<sup>-</sup>roga) and achieving youthful appearance.
- **Sthūladala** (Thick-leaved): A descriptive synonym referring to the plant's characteristic fleshy leaves [4].
- **Vipulasravā** (Profuse flow): Denotes the abundant sap that oozes upon cutting the leaf.

### B. Historical Significance in Ayurvedic Classics

The use of Kumari in Indian medical tradition is ancient, though its detailed description is found more extensively in the post-Samhita<sup>-</sup> period, particularly in the Nighantus dating from the 8th century AD onwards [5]. While Kumari is not explicitly mentioned in the core Bṛhatrayī<sup>-</sup> (Charaka, Sushruta, and Ashtanga Hridaya Samhita<sup>s</sup>), it is thoroughly documented in later works:

- **Sodhalanighantu (12th Century AD):** Considered one of the earliest to detail Kumari, mentioning its properties like Pichchila (slimy), Tikta (bitter), S'ī<sup>ta</sup> (cold), and its action as Va<sup>-</sup>tahara (pacifier of Va<sup>-</sup>ta) [6].
- **Kaiyadev Nighantu (15th Century AD):** Describes Kumari as Bhedaniya (laxative), Netrya (beneficial for eyes), Balaka<sup>-</sup>raka (strength-promoting), Vṛṣya (aphrodisiac), and Rasa<sup>yana</sup> [7].
- **Bhāvaprakāśa Nighantu (16th Century AD):** Further elaborates its uses in Gulma (abdominal lump/tumor), Yakṛt-Pliha<sup>-</sup> Roga (liver/spleen disorders), and Rakta-Pitta (bleeding disorders) [8].

The collective classical testimony positions Kumari as an unparalleled herb for detoxification, cellular regeneration, and systemic balance [9].

### **Ayurvedic Pharmacodynamics (Rasa Panchaka)**

The therapeutic efficacy of Kumari is understood through the **Rasa Panchaka** (five pharmacological properties) of the drug. Crucially, its different parts—the inner gel and the leaf exudate (latex)—possess distinct, though overlapping, properties and actions [10].

#### **A. Rasa (Taste)**

The Rasa primarily associated with Kumari is:

- **Tikta** (Bitter): This taste is cooling, detoxifying, and Kapha-Pitta reducing, responsible for its actions as a blood purifier (Rakta-Prasa-dana) and digestive stimulant (Di-pana).
- **Madhura** (Sweet): The gelatinous pulp possesses a subtle sweet taste, contributing to its nourishing (Br̥hmaṇa) and rejuvenating (Rasa-yana) properties.

#### **B. Guna (Qualities)**

The physical and energetic qualities of Kumari are:

- **Guru** (Heavy): Contributes to its nourishing and stabilizing effect, primarily balancing Va-ta [11].
- **Snigdha** (Unctuous/Oily): Provides lubrication, especially beneficial for dry Va-ta conditions and skin hydration. This quality gives rise to the synonym Ghritkumari.
- **Picchila** (Slimy/Sticky): Responsible for its soothing, protective, and demulcent action on mucosal linings, particularly in the gastrointestinal tract and wounds.
- **Sara** (Mobile/Flowing): Contributes to its powerful laxative (Bhedana) and purgative (Virecana) action, enabling the downward movement of toxins.

#### **C. Virya (Potency)**

Classical texts present a dual view on Vi-rya:

- **Śīta (Cooling):** Predominantly attributed to the inner gel, responsible for its anti-inflammatory, burn-healing, and Pitta-pacifying effects (e.g., in Rakta-Pitta and fever) [12].
- **Uṣṇa (Heating):** The yellow latex (Aloes) and certain Samhita-descriptions emphasize a mild Uṣṇa Vi-rya [13]. This heat, combined with Sara and Tiksṇa (sharpness), drives its sharp purgative action and its ability to liquefy Kapha and A-ma (toxins).

#### **D. Vipaka (Post-Digestive Effect)**

The Vipa-ka of Kumari is generally cited as:

- **Kaṭu (Pungent):** Attributed to the anthraquinone content in the dried latex, which drives its intense purification and digestive Di-pana action [14].
- **Madhura (Sweet):** Attributed to the mucilaginous gel, which contributes to its nourishing, anabolic, and restorative effects on the Dha-tus (tissues) [15].

#### **E. Prabhava (Specific/Inimitable Action)**

The Prabhava of Kumari is the action that cannot be logically deduced from its Rasa, Guna, Vi-rya, or Vipaka, and is accepted based on clinical consistency (A-ptopades'a) [16]:

- **Strī-Roga Hara:** The unique ability to regulate the female menstrual cycle, induce menstruation (Rajah Pravartini), and act as a uterine tonic.
- **Rasāyana:** The rejuvenative effect that promotes longevity and cellular health, particularly noted for the Rasa and Rakta Dha-tus (plasma and blood tissue) [17].

#### **Impact on Tridoṣa and Dhātus**

Kumari is considered a **Tridoṣa balancer** when used appropriately, but its primary effect is:

- **Pitta Pacification:** Due to its Śīta Vi-rya and Tikta Rasa, it effectively cools and cleanses aggravated Pitta in the blood (Rakta) and digestive tract (Annavaha Srotas).
- **Kapha Pacification:** Due to its **Tikta Rasa** and sharp (Tiksṇa) action on digestion, it liquefies and eliminates excess Kapha and A-ma [18].
- **Vāta Balance:** Its **Snigdha** (unctuous) and **Guru** (heavy) Guna help counterbalance the dryness and mobility of Va-ta, while its purgative action clears the lower bowel (Apa-na Va-yu) [19].

On Dha-tus, Kumari is primarily a Rasa-yana for Rasa (plasma) and Rakta (blood), promoting healthy formation and detoxification [20].

### **Pharmacological Actions (Karma) and Therapeutic Uses (Āmayika Prayoga)**

Kumari's diverse Rasa Panchaka translates into a broad spectrum of pharmacological actions, making it highly versatile in clinical practice [21].

#### **A. Digestive and Hepatic System (Annavaha and Yakṛt Srotas)**

- **Bhedana/Virecana (Laxative/Purgative):** The anthraquinones in the latex stimulate intestinal peristalsis, providing a strong cleansing action, traditionally used for chronic constipation (Vibandha) [22].
- **Yakṛtottejaka (Hepatic Stimulant):** It clears bile congestion, stimulates the liver, and is a classical remedy for liver and spleen enlargement (Yakṛt-Plihā Vṛddhi), and jaundice (Kāmalā) [23].
- **Dīpana/Pācana (Appetizer/Digestive):** The bitter taste kindles Agni (digestive fire) and digests Āma.

#### **B. Female Reproductive System (Ārtavavaha Srotas)**

- **Rajah̄ Pravartinī (Emmenagogue):** Kumari is famous for regulating and initiating delayed or scanty menstrual flow (Rajorodha, Krcchrārtava) [24]. This action is due to its Uṣṇa Vīrya and Tiksṇa property when used as dried aloes, which stimulates the Apāna Vāyu [25].
- **Garbhāśaya Śodhana (Uterine Cleanser):** It cleanses the uterus after menstruation, acting as a powerful uterine tonic and vitalizing agent for feminine health [26].

#### **C. Skin and Wound Healing (Tvaca and Vraṇa)**

- **Kandūghna & Kuṣṭhaghna (Anti-pruritic & Anti-dermatotic):** Due to its Tikta, Sīta, and Raktas'odhaka (blood purifying) action, it is excellent for chronic skin diseases (Kuṣṭha), allergic reactions, acne, and eczema [27].
- **Agnidagdha & Vraṇa Ropāṇa (Burns & Wound Healing):** The inner gel's Picchila (slimy) Guna forms a protective layer, while its Sīta Vīrya provides immediate soothing and promotes rapid tissue regeneration [28].

#### **D. Systemic Actions**

- **Rasāyana (Rejuvenator):** The cumulative effect of detoxification and nourishment makes it a Rasāyana, particularly for enhancing strength (Balya) and vitality [29].
- **Viṣahara (Detoxifier):** Its potent blood-purifying and purgative action helps in eliminating various toxins from the body [30].
- **Cakṣuṣya (Beneficial for Eyes):** Classified as promoting good vision, used both internally and externally for eye disorders [31].

#### **Classical Ayurvedic Formulations**

Kumari is a crucial ingredient in numerous classical Yoga (formulations) [32]:

1. **Kumāryāsava:** An important fermentation preparation (Āsava) used for liver disorders, loss of appetite (Agnimāndya), Plīhā Roga, and general weakness.
2. **Rajah̄pravartinī Vati:** Tablets used specifically as an emmenagogue to induce menstrual flow, often containing Kumari latex with Hing (Asafoetida) and Tankana (Borax).
3. **Kumārī Ghrta:** Ghee prepared with Kumari juice, used internally for Apasmāra (epilepsy), palpitation, and externally for burns and wounds.
4. **Cūrṇa and Taila (Powders and Oils):** Used as a base for skin applications and as a constituent in medicated oils for hair growth and scalp health.

#### **Phytochemistry and Modern Scientific Correlation**

The extensive therapeutic profile of Kumari is supported by its rich and diverse phytochemical composition, which is segregated between the two main usable parts: the gel and the latex [33].

#### **A. Inner Leaf Gel (Pulp)**

The gel is 99% water, with the remaining solids containing **polysaccharides** (e.g., **Acemannan**), glycoproteins, vitamins (A, C, E, B12), minerals (calcium, magnesium, zinc), enzymes (bradykinase, amylase), and amino acids [34].

- **Correlation:**
  - **Acemannan:** A key polysaccharide, scientifically proven for its **immunomodulatory** and **wound-healing** properties, correlating with the Rasāyana and Vraṇa Ropāṇa actions [35].
  - **Glycoproteins and Bradykinase:** These compounds exhibit **anti-inflammatory** and analgesic activities, supporting the Sīta Vīrya and Vedanāsthāpana (pain-alleviating) effects [36].

- **Vitamins and Minerals:** Provide necessary micronutrients, contributing to its Bṛmhāṇa (nourishing) and general health (Balya) properties [37].

#### **B. Yellow Latex (Exudate)**

The latex, situated between the rind and the gel, is bitter and contains high concentrations of **anthraquinone glycosides**, primarily **Aloin A and B** (Barbaloin) [38].

- **Correlation:**

- **Anthraquinones (Aloin):** These are potent **stimulant laxatives**; they are metabolized in the colon to release active aloe-emodin, which increases water content and stimulates peristalsis [39]. This action directly validates the classical Bhedana and Virecana Karma of the dried aloes [40].
- **Toxicity/Side Effects:** The high concentration of aloin necessitates its careful use. Modern studies confirm the Ayurvedic caution against long-term, high-dose use due to the risk of intestinal cramping, diarrhea, and potential electrolyte imbalance, which aligns with the classification of Aloes as a sharp purgative (Tikṣṇa Virecaka) [41].

## **2. CONCLUSION**

Kumari or Aloe vera stands as a paradigm of Ayurvedic wisdom, where traditional pharmacological principles meticulously define the therapeutic application of a plant based on its elemental qualities. The herb's classical designation as a Rasa-yana, Stri-Roga Hara, Yakrtottejaka, and powerful Virecaka has been substantially affirmed by modern phytochemical research, which isolated anthraquinones for purgation and acemannan for immunomodulation and healing. Kumari's holistic Tridoṣa balancing action, especially its cooling and detoxifying effect on Pitta and Kapha at the Rasa and Rakta Dhaṭus, ensures its enduring relevance. Its application, whether as the unctuous, Sīta gel for topical healing and mild nourishment, or as the Katu, Uṣna latex for potent systemic cleansing, underscores the precision and scientific depth of Ayurvedic Dravyaguna [42]. As research continues to explore its efficacy in metabolic disorders like diabetes and its role as an immune adjuvant, Kumari solidifies its place as a 'miracle plant' indispensable to both traditional and modern systems of medicine [43].

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