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Review Article

Amalaki (*Phyllanthus Emblica* L.): An Ayurvedic Rasayana with Contemporary Pharmacological Potential

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A B S T R A C T

Amalaki, commonly known as Indian gooseberry, is an important medicinal fruit extensively described in the classical literature of Ayurveda. Botanically identified as *Phyllanthus emblica* L., synonym *Emblica officinalis* Gaertn., it belongs to the family Phyllanthaceae. Ayurveda considers Amalaki one of the foremost Rasayana drugs and identifies it as an Agrya Dravya for Vayasthapana, the maintenance of youthfulness and healthy ageing. It possesses five tastes, excluding Lavana Rasa, with predominance of Amla Rasa, along with Laghu, Ruksha and Sara Gunas, Shita Virya and Madhura Vipaka. This distinctive pharmacodynamic profile enables Amalaki to pacify all three Doshas through different attributes. Classical texts recommend Amalaki for the treatment of Prameha, Jwara, Pandu, Kamala, Raktapitta, Kasa, Hikka, Vatarakta, Daha, Chardi, Shopha, and various disorders affecting the hair, eyes, and reproductive tissue. Its fruits contain tannins, phenolic compounds, flavonoids, gallic acid, ellagic acid, chebulagic acid, rutin, β-sitosterol and ascorbic acid. Experimental and clinical studies cited in the available literature suggest antioxidant, immunomodulatory, antimicrobial, antihyperlipidaemic, pancreatoprotective, cardioprotective, anti-photoageing and neuropharmacological activities. This review presents the Ayurvedic pharmacology, botanical identity, therapeutic administration, phytochemistry, formulations and research evidence related to Amalaki. Although preliminary findings are promising, well-designed clinical trials, authenticated raw materials, standardised extracts and systematic pharmacovigilance are required to establish its therapeutic effectiveness for specific clinical indications.

Keywords: Amalaki, *Phyllanthus emblica*, Indian gooseberry, Rasayana, Vayasthapana, Ayurveda, Antioxidant Prameha, Phytochemistry

Introduction

Medicinal plants occupy a central position in Ayurveda, where their therapeutic actions are understood through the integrated principles of Rasa, Guna, Virya, Vipaka, Prabhava and Doshakarma. Among the numerous medicinal plants described in classical texts, Amalaki has received

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special importance because of its nutritional, preventive, rejuvenative and therapeutic applications.

Amalaki is commonly known as the Indian gooseberry and is botanically identified as *Phyllanthus emblica* L. The botanical synonym *Emblica officinalis* Gaertn. is also widely used in Ayurvedic and pharmacological literature. The fruit is the principal medicinally used part of the plant.

Amalaki is distinguished by its broad range of actions, including Rasayana, Vayasthapana, Pramehaghna, Jwaraghna, Vrishya, Dahahara, Chardighna, Shophaghna, Ruchya, Medohara, Bhagnasandhanakara, Keshya, Chakshushya and Kushthaghna effects. Its classification as the foremost Vayasthapana Dravya indicates its importance in preserving vitality, tissue integrity, functional capacity and healthy longevity.

The presence of phenolic compounds, tannins, flavonoids and vitamin C has generated substantial interest in the possible antioxidant, metabolic, antimicrobial, hepatoprotective, cardioprotective and anti-ageing properties of the fruit. Consequently, Amalaki represents an important subject for integrative examination through both classical Ayurvedic principles and contemporary biomedical research.

Aim and Objectives

The present article aims to provide a structured review of Amalaki based on its classical Ayurvedic description and reported pharmacological evidence.

The specific objectives are:

- To describe the botanical identity, vernacular names, morphology and varieties of Amalaki.
- To explain its Rasapanchaka, Doshakarma, Agrya Karma and therapeutic actions.
- To compile its major classical therapeutic applications.
- To summarize its important phytochemical constituents and reported pharmacological activities.
- To describe important classical formulations containing Amalaki.
- To critically examine the available experimental and clinical research evidence.

Botanical Identity

- **Botanical name:** *Phyllanthus emblica* L.
- **Synonym:** *Emblica officinalis* Gaertn.
- **Family:**Phyllanthaceae
- **Common English name:** Indian gooseberry
- **Part used:** Fruit—Phala

The term *Emblica* is considered to be derived from the Sanskrit expression associated with Amlika, indicating the sour nature of the fruit. The designation *officinalis* traditionally denotes a medicinal substance available through the drug trade.

Table 1.Vernacular names

Language	Name
Sanskrit	Amalaki, Dhatri, Vayasya, Amrita, Amritaphala
English	Indian gooseberry
Hindi	Amla/Avala
Kannada	Nellikai
Malayalam	Nelli
Marathi	Avale

Distribution and Habitat

Amalaki is cultivated throughout India and is also found growing in the wild. The source material particularly mentions its cultivation in Tamil Nadu and Andhra Pradesh. It is adaptable to diverse geographical conditions and is widely available as a medicinal and nutritional fruit.

External Morphology

Amalaki is a deciduous, small- to medium-sized tree with a crooked trunk and spreading branches. Its branchlets are glabrous or finely pubescent, approximately 10–20 cm long, and frequently deciduous.

The leaves are subsessile, closely arranged along the branchlets, and give the appearance of pinnate foliage. They are light green, narrow, linear, and obtuse.

The flowers are greenish-yellow and occur in axillary fascicles on leaf-bearing branchlets. Male flowers are numerous and borne on short, slender pedicels. Female flowers are fewer and subsessile, with a three-celled ovary. The fruits are fleshy, globose, pale or yellowish-green, and possess six obscure vertical furrows. The mature fruit contains a firm three-celled nut, with two seeds in each cell. The seeds are angular or three-lobed.

Varieties

Classical descriptions recognize different varieties or forms of Amalaki.

Vanya Amalaki

Vanya Amalaki is generally small, hard and associated with the wild-growing variety.

Gramya Amalaki

Gramya Amalaki is comparatively larger, softer, fleshier and commonly cultivated.

Kshudramalaka or Kashtha Dhatri

Raja Nighantu describes Kshudramalaka, also called Kashtha Dhatri, as a smaller variety with comparatively prominent

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Kashaya and Katu characteristics. It is described as Shita and beneficial in Pitta- and Rakta-related disorders.

Grahya Lakshana: Characteristics of Genuine Drug

The dried fruit is globular or subhexagonal and may measure up to approximately 1.5 cm in diameter. Its external surface is wrinkled and yellowish-brown to greyish-black. It breaks relatively easily, exposing dried pulp and a hard nut containing triangular, yellowish-brown seeds.

The fresh fruit is globular, fleshy and obscurely six-lobed. It commonly measures approximately 2–3 cm in diameter. Its surface is smooth and pale green or yellowish-green. The juicy pulp encloses a triangular, three-celled nut containing two seeds in each cell.

These macroscopic features are useful in the authentication and quality evaluation of the medicinal fruit.

Classical Classification

Amalaki has been classified under several therapeutic groups in the Ayurvedic texts.

Classification according to Charaka

Amalaki is included in:

- Vayasthapana Mahakashaya
- Jwarahara group
- Kasahara group
- Kushthaghna group
- Virechanopaga group

Classification according to Sushruta

Amalaki is described under:

- Amalakyadi Gana
- Parushakadi Gana
- Triphala

Classification according to Bhavaprakasha Nighantu

It is described in the Haritakyadi Varga.

The placement of Amalaki in multiple therapeutic groups reflects its extensive clinical utility and broad spectrum of action.

Synonyms and Their Therapeutic Significance

The synonyms of Amalaki communicate its morphology, actions and traditional importance.

Dhatri

The word Dhatri signifies a nourishing or sustaining mother. The fruit is regarded as supportive of the Dhatus and is compared metaphorically to maternal nourishment.

Vayasya

Vayasya denotes that which promotes longevity and maintains age-related health.

Amrita and Amritaphala

These terms compare the fruit to Amrita, or nectar, because of its rejuvenating and health-promoting properties.

Vrishya

Vrishya indicates its traditional action of supporting Shukra Dhatu and reproductive vitality.

Shitaphala

Shitaphala denotes the cooling potency or Shita Virya of the fruit.

Vrittaphala

The name Vrittaphala refers to the globose shape of the fruit.

These synonyms are not merely linguistic alternatives; they indicate the perceived pharmacological, nutritional and rejuvenative characteristics of the drug.

Rasapanchaka

Although Amalaki possesses five Rasas, Amla Rasa is predominant. The absence of Lavana Rasa is a distinctive feature.

Table 2.The Ayurvedic pharmacodynamic profile of Amalaki

Parameter	Description
Rasa	Amla-dominant Pancharasa, possessing all tastes except Lavana
Guna	Laghu, Ruksha and Sara
Virya	Shita
Vipaka	Madhura
Doshakarma	Tridoshahara
Principal action	Rasayana and Vayasthapana

Tridoshahara Action

Amalaki is considered Tridoshahara because different attributes act on different Doshas.

Effect on Vata

Its Amla Rasa assists in reducing aggravated Vata.

Effect on Pitta

Its Shita Virya and Madhura Vipaka contribute to Pitta-pacifying activity.

Effect on Kapha

Its Ruksha Guna and Kashaya Rasa contribute to Kapha-reducing action.

This multidimensional Doshic action explains the wide therapeutic application of Amalaki in disorders involving

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different Doshas. Nevertheless, its use should be individualized according to the patient's Prakriti, Vikriti, Agni, Bala, age, season and associated therapeutic substances.

Agrya Karma and Rasayana Significance

Charaka identifies Amalaki as the foremost substance among Vayasthapana drugs. Vayasthapana does not simply imply reversal of chronological age. In the Ayurvedic context, it encompasses preservation of functional ability, tissue nourishment, complexion, sensory competence, vitality, immunity and resistance to age-associated deterioration.

The Rasayana effect of Amalaki may be interpreted through its capacity to support Dhatu nourishment, maintain metabolic balance, promote Ojas and protect the body from progressive degeneration. Its traditional identification as Dhatri and Amritaphala further reinforces its role as a nourishing and rejuvenative fruit.

Principal Therapeutic Actions

The major actions attributed to Amalaki include:

- Rasayana
- Vayasthapana
- Pramehaghna
- Jwaraghna
- Vrishya
- Dahahara
- Chardighna
- Shophaghna
- Ruchya
- Medohara
- Bhagnasandhanakara
- Keshya
- Chakshushya
- Kushthaghna

These actions indicate its application in metabolic, febrile, inflammatory, haematological, hepatobiliary, respiratory, dermatological, ophthalmic, musculoskeletal and reproductive conditions.

Classical Therapeutic Indications

Amalaki is traditionally indicated in:

- Prameha
- Jwara
- Pandu
- Kamala
- Raktapitta
- Daha
- Chardi
- Hikka
- Kasa
- Vatarakta
- Shopha
- Shukra Daurbalya
- Kesha Vikara
- Bhagna
- Kushtha
- Meda-related disorders

The following therapeutic administrations are described in the supplied classical material.

Prameha

Fresh juice of Amalaki administered with Haridra is described in the management of Prameha. This combination is popularly known in practice as Nishamalaki and is traditionally used in metabolic and urinary disorders.

Classical reference: Charaka Chikitsa Sthana 6/26.

Jwara

Amalaki fruit juice processed with Ghrita is described as beneficial in Jwara.

Classical reference: Charaka Chikitsa Sthana 3/230.

Pandu

Amalaki Churna mixed with Madhu is recommended in Pandu.

Classical reference: Sushruta Uttara Tantra 44/27.

Kamala

The combined juice of Amalaki and Mridvika, or grapes, is recommended in Kamala.

Classical reference: Charaka Chikitsa Sthana 16/114.

Raktapitta

Amalaki powder or juice administered with an adequate quantity of honey and sugar is described in the therapeutic management of Raktapitta, including its use in a Virechana-oriented approach.

Classical reference: Charaka Chikitsa Sthana 4/57–58.

Hikka

The juice of Amalaki and Kapittha, combined with Pippali Churna and Madhu, is described for Hikka.

Classical reference: Charaka Chikitsa Sthana 17/135.

Kasa

Amalaki Churna cooked with milk and administered with Ghrita is recommended in Kasa.

Classical reference: Ashtanga Hridaya Chikitsa Sthana 3/78.

Vatarakta

A decoction prepared from Amalaki and Haridra is described in the management of Vatarakta.

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Classical reference: Sushruta Chikitsa Sthana 5/10.

These examples demonstrate that Amalaki may be administered as Swarasa, Churna or Kashaya and combined with suitable Anupana or Sahapana according to the disease and therapeutic objective.

Dose

The exact dose should be determined according to the formulation, age, digestive capacity, strength of the patient, disease condition and supervision of a qualified physician.

Table 3.The traditional dose ranges provided in the source material are

Preparation	Dose
Phala Churna	3–10 g
Kashaya	30–100 ml
Swarasa	10–20 ml

Phytochemical Constituents

Amalaki fruit contains a wide range of phytochemical constituents. The important compounds described in the supplied material include:

- Gallic acid
- Ellagic acid
- Chebulic acid
- Chebulinic acid
- Chebulagic acid
- Digallic acid
- Ethyl gallate
- Amlaic acid
- Phyllantine
- Phyllantidine
- Phyllemblic acid
- Phyllemblin
- Emblicol
- Flavonoids
- Rutin
- Kaempferol
- β-sitosterol
- Triterpenes
- Lupeol
- Zeatin
- Zeatin nucleotide
- Zeatin riboside
- Tannins
- Ascorbic acid
- Carbohydrates
- Proteins
- Fats
- Calcium

The fruit is described as containing approximately 28% tannins. The bark contains around 10–20% tannins, while the leaves contain approximately 22% tannins. It is also traditionally described as a rich source of vitamin C.

The biological activities of Amalaki are likely to result from the combined action of multiple constituents rather than a single isolated chemical compound.

Reported Pharmacological Activities

The source material attributes the following pharmacological activities to Amalaki:

- Antioxidant
- Immunomodulatory
- Antiulcerogenic
- Anticarcinogenic
- Antihypercholesterolaemic
- Pancreatoprotective
- Antimicrobial
- Anti-photoageing
- Cardioprotective
- Neuropharmacological activity

Antioxidant and anti-photoageing activity

An experimental study on human skin fibroblasts reported that Amalaki fruit protected against ultraviolet-B-induced photoageing. The effect was associated with scavenging of reactive oxygen species and protection of cellular components from oxidative damage.

This observation is relevant to the traditional Vayasthapana and Rasayana descriptions of Amalaki, although anti-photoageing in cultured cells should not be considered equivalent to clinically established anti-ageing efficacy in humans.

Hypolipidaemic activity

A comparative clinical study evaluated Amalaki and simvastatin for their hypolipidaemic effects. Amalaki was reported to reduce lipid parameters and was also associated with a reduction in blood pressure.

The finding suggests possible utility in dyslipidaemia and cardiovascular risk reduction. However, the available material does not establish that Amalaki can replace standard lipid-lowering therapy. Larger and methodologically rigorous clinical studies are required.

Hepatocellular antioxidant effects

An aqueous extract of Amalaki was studied in the HepG2 human hepatoma cell line for its influence on cellular growth and antioxidant defence mechanisms. Such experimental findings indicate potential hepatocellular and oxidative stress-modulating effects.

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Clinical hepatoprotective claims require confirmation through trials involving patients with defined hepatic disorders.

Antidepressant-like activity

Animal research has reported antidepressant-like activity of aqueous Amalaki fruit extract. Proposed mechanisms included an influence on monoaminergic neurotransmission and antioxidant pathways.

Since the study was conducted in experimental animals, it provides mechanistic evidence but not definitive proof of effectiveness in human depressive disorders.

Cardioprotective activity in diabetes

Amalaki fruit juice was studied in experimental diabetes-induced myocardial dysfunction in rats. The findings suggested a preventive or protective effect against cardiac dysfunction associated with diabetes.

This evidence may support further investigation of Amalaki as an adjunct in diabetes-related cardiovascular complications.

Antimicrobial activity

Aqueous and methanolic extracts of Amalaki fruit demonstrated antimicrobial activity against selected pathogenic bacteria. The aqueous preparation showed activity against organisms including *Enterobacter cloacae*, *Escherichia coli* and *Klebsiella pneumoniae*. Differences in activity were observed according to the solvent used for extraction.

The presence of tannins, phenols, flavonoids, terpenoids and saponins was proposed to contribute to its antimicrobial effect. Nevertheless, in-vitro antimicrobial activity should not be interpreted as a substitute for clinically indicated antimicrobial treatment.

Integrative Interpretation of Ayurvedic and Contemporary Evidence

The classical and contemporary descriptions of Amalaki show several areas of conceptual convergence.

Its Rasayana and Vayasthapana actions may be examined in relation to antioxidant defence, protection from oxidative stress and maintenance of cellular function. Its Medohara and Pramehaghna applications correspond with research examining lipid metabolism, pancreatic protection and complications of experimental diabetes.

Its Keshya and Chakshushya actions may partly relate to nutritional support and antioxidant activity, although direct clinical evidence for specific hair and eye disorders remains limited. Similarly, its use in Kamala and Pandu has a strong classical basis, but modern clinical evaluation should distinguish among the diverse biomedical causes of jaundice and anaemia.

Ayurvedic indications are based on Dosha, Dushya, Agni, Srotas, stage of disease and patient-specific factors. They should therefore not be equated mechanically with individual modern diagnostic categories. Integrative interpretation requires respect for the conceptual framework of Ayurveda while applying contemporary standards of pharmacological and clinical research.

Important Formulations Containing Amalaki

Amalaki is also a major constituent of Triphala, one of the most extensively used polyherbal formulations in Ayurveda.

Table 4.Principal traditional indications containing Amalaki

Formulation	Principal traditional indication
Amalaki Kashaya	Pitta Gulma
Amalaki Rasayana	Varnya and Buddhivardhaka
Amalakyavaleha	Pandu and Kamala
Amalakyadi Kwatha	Sarvajwara and Kapha Vikara
Bhringamalakadi Taila	Kesha Vikara and Netra Roga
Triphala Kwatha	Jwara and Kasa
Triphala Ghrita	Timira and Netra Roga
Dhatryarishta	Pandu, Kamala and Hridroga

Safety and Rational Use

Amalaki is widely consumed as a food and medicinal fruit. However, medicinal administration should remain individualized. Important considerations include:

- The form of administration—fresh juice, powder, decoction, Avaleha or fermented preparation
- Dose and duration
- Digestive strength of the patient
- Dosha predominance
- Concomitant medicines
- Presence of diabetes, bleeding disorders or gastrointestinal sensitivity
- Quality and authenticity of the raw material

Preparations containing honey, sugar, Ghrita or other adjuvants may not be equally suitable for every patient. Classical combinations should be prescribed after considering the complete clinical condition rather than using a single ingredient solely on the basis of a disease name.

Limitations of Existing Evidence

The scientific studies presented in the source material are promising but have several limitations.

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A substantial proportion of the evidence is derived from in-vitro experiments, cell lines or animal models. Such studies are valuable for identifying biological activity and possible mechanisms but cannot independently establish clinical effectiveness.

The number of clinical studies is comparatively limited. Differences in botanical authentication, extraction procedure, dose, duration, processing method and outcome assessment may affect reproducibility. Traditional Amalaki formulations may also differ substantially from isolated extracts used in experimental studies.

Future investigations should employ:

- Authenticated botanical raw materials.
- Standardized extraction and preparation methods.
- Clearly defined phytochemical markers.
- Adequately powered randomized controlled trials.
- Appropriate control groups.
- Clinically meaningful outcomes.
- Long-term safety monitoring.
- Documentation of herb–drug interactions.
- Ayurvedic patient stratification wherever relevant.
- Comparative study of classical formulations and isolated extracts.

Future Research Directions

Future research on Amalaki should focus on:

- Rasayana effects in healthy ageing
- Metabolic syndrome and dyslipidaemia
- Prediabetes and diabetes-associated complications
- Oxidative stress-related conditions
- Hepatic dysfunction
- Dermatological photoageing
- Immune modulation
- Standardization of Nishamalaki
- Clinical evaluation of Amalakyavaleha and Dhatryarishta
- Pharmacokinetic and pharmacodynamic studies
- Effects of Ayurvedic processing methods on phytochemical availability
- Safety during prolonged administration
- Interactions with antidiabetic, antihypertensive, anticoagulant and lipid-lowering medicines

Studies integrating Ayurvedic diagnostic variables with biomedical outcomes may provide a more appropriate framework for evaluating its traditional therapeutic role.

Conclusion

Amalaki is one of the most significant medicinal fruits described in Ayurveda. Its Amla-dominant Pancharasa, Laghu–Ruksha–Sara Guna, Shita Virya, and Madhura Vipaka collectively contribute to its Tridoshahara action. Its recognition as the foremost Vayasthapana Dravya and its repeated inclusion in Rasayana therapy demonstrate its importance in maintaining health, vitality and longevity.

Classical literature recommends Amalaki in a wide range of conditions, including Prameha, Jwara, Pandu, Kamala, Raktapitta, Kasa, Hikka, Vatarakta, Daha, Chardi and Shopha. Its phytochemical profile includes tannins, phenolic acids, flavonoids, sterols, and ascorbic acid. Experimental investigations support antioxidant, antimicrobial, metabolic, cardioprotective, anti-photoageing, and neuropharmacological potential.

Despite encouraging findings, much of the available evidence remains preliminary. Amalaki should therefore be viewed as a promising Ayurvedic medicinal and nutritional substance whose disease-specific applications require further validation through standardized, clinically rigorous and integrative research.

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