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HISTORICAL AND PHARMACOLOGICAL REVIEW OF VIDANGA (*EMBELIA RIBES* BURM. F.): IN BRIHATRAYI AND NIGHANTUS

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Abstract

Vidanga (*Embelia ribes* Burm. f.) is a highly esteemed medicinal plant in Ayurveda, utilized for the treatment of Krimi Roga and several gastrointestinal ailments. It has had a significant position in traditional Ayurvedic literature from the Samhita period to the Nighantu period, when its pharmacological qualities, medicinal uses, and formulations are extensively detailed. Phytochemical investigations have revealed the existence of embelin, vilangin, embeliol, quercitol, flavonoids, tannins, alkaloids, and phenolic substances that contribute to various biological functions. Experimental and clinical investigations have demonstrated substantial anthelmintic, antimicrobial, antioxidant, anti-inflammatory, antidiabetic, antihyperlipidemic, hepatoprotective, cardioprotective, anticancer, wound healing, and anti-obesity effects. The pharmacological qualities substantiate the ancient Ayurvedic assertions concerning Vidanga. This study seeks to objectively examine the historical development, ancient accounts in Brihatrayi and Nighantus, Ayurvedic pharmacological characteristics, phytochemistry, and empirically substantiated pharmacological effects of Vidanga.

Keywords: Vidanga, *Embelia ribes*, Brihatrayi, Nighantu, Krimighna, Embelin, Ayurveda, Pharmacology.

Introduction

Ayurveda, the ancient Indian medical system, delineates several medicinal plants with preventative, promotive, and therapeutic attributes. Vidanga (*Embelia ribes* Burm. f.) holds a prominent status due to its exceptional effectiveness against intestinal parasites and digestive ailments.[1] The substance is well recorded in traditional Ayurvedic literature from the Samhita period onward, illustrating its continuous medicinal significance for over two millennia. Vidanga is derived from the botanical source *Embelia ribes* Burm. f., which is part of the Primulaceae family (formerly classified as Myrsinaceae). It is a substantial woody climbing shrub found in the tropical and subtropical woods of India, especially in the Western Ghats, Eastern Himalayas, and central Indian areas. The desiccated fruits serve as the primary therapeutic component and have been utilized historically in various Ayurvedic preparations. [2]

The initial mentions of Vidanga are found in the Brihatrayi, namely in the Charaka Samhita, Sushruta Samhita, and Ashtanga Hridaya, where the substance is referenced in various therapeutic situations. Acharya Charaka identified Vidanga as the preeminent Krimighna Dravya, highlighting its unmatched effectiveness against intestinal parasites and microbial infections.[3] It is included in many Mahakashayas and multiple formulations recommended for digestive ailments, obesity, dermatological conditions, fever, poisoning, and metabolic irregularities. Acharya Sushruta included Vidanga into several Ganas and formulations beneficial for the treatment of surgical illnesses, wound infections, dermatological conditions, urinary problems, and parasite infestations. Acharya Vagbhata thoroughly synthesized these insights and broadened their applications within complete treatment procedures.[4]

Materials and Methods

This research was performed by an extensive literature survey of old Ayurvedic texts and modern scientific papers. Classical references were compiled from the Brihatrayi, Laghutryi Nighantus, and other authorized literature of Dravyaguna Vigyana. The accessible comments were examined to comprehend the therapeutic context and interpretations of Vidanga in classical Ayurveda. Contemporary scientific literature was gathered from indexed electronic databases, including PubMed, Scopus, Google Scholar, ScienceDirect, and other peer-reviewed sources, utilizing keywords such as "Embelia ribes," "Vidanga," "embelin," "Ayurveda," "pharmacology," "phytochemistry," and "anthelmintic activity.

Historical Review of Vidanga in the Brihatrayi

The Brihatrayi, consisting of the Charaka Samhita, Sushruta Samhita, and Ashtanga Hridaya, is the essential body of traditional Ayurvedic literature. These works jointly delineate the therapeutic importance of Vidanga (*Embelia ribes* Burm. f.) by providing comprehensive explanations of its pharmacological attributes, indications, formulations, and therapeutic uses. Among all therapeutic plants referenced in Ayurveda, Vidanga holds a distinctive position due to its remarkable effectiveness against Krimi (parasitic infestations).[5] The advancement of its medicinal uses since the Samhita period illustrates the gradual history of Ayurvedic pharmacology. Acharya Charaka identified Vidanga as the preeminent Krimighna medication, whereas Acharya Sushruta highlighted its efficacy in surgical conditions, wound care, dermatological ailments, and toxicology. Acharya Vagbhata integrated the knowledge of both traditions and enhanced its application in extensive therapeutic treatments.

Vidanga in Charaka Samhita[6]

Among the Brihatrayi, the Charaka Samhita offers the most extensive exposition of Vidanga. Acharya Charaka consistently underscores its significance in both preventative and therapeutic medicine. Vidanga is categorized as a significant Phala Dravya and is advised in detoxification therapy due to its capacity to eradicate accumulated Doshas while concurrently eliminating intestinal parasites. It is included among the pharmaceuticals beneficial for Shirovirechana, signifying its purifying effect on the organs above to the clavicle. These early references demonstrate that Charaka regarded Vidanga not only as an anthelmintic but also as a potent bio-purificatory agent facilitating systemic detoxification.

Acharya Charaka identified Vidanga as the preeminent (Agrya) Krimighna Dravya, designating it as the preferred remedy for intestinal worms and microbial infections. This distinction is exceptional as only a limited number of medicinal plants attain Agrya classification in the Charaka Samhita. According to Ayurvedic principles, Krimi arise from diminished digestive fire (Mandagni), the accumulation of Ama, excessive Kapha, and inappropriate dietary practices. Vidanga rectifies these pathological alterations through its Deepana, Pachana, Lekhana, and Krimighna attributes. Consequently, its function beyond the mere elimination of parasites and encompasses the rectification of the underlying diseased conditions that facilitate their proliferation.

In Krimi Chikitsa, Charaka thoroughly endorses Vidanga both as a standalone remedy and as a key component of composite compositions. Formulations with Vidanga are recommended post-purification therapy to eliminate intestinal parasites, enhance digestive function,

alleviate stomach discomfort, mitigate bloating, and rejuvenate appetite. These formulations integrate Vidanga with substances such as Pippali, Maricha, Shunthi, Chitraka, Musta, and Ativisha to yield synergistic medicinal outcomes. These combinations illustrate the sophisticated pharmaceutical understanding of ancient Ayurveda, wherein medications with complimentary pharmacological properties are carefully mixed to augment efficacy and reduce bad effects.[7]

Vidanga in Sushruta Samhita[8]

Acharya Sushruta, renowned for his contributions to surgery (Shalya Tantra), also offers significant allusions to Vidanga. Charaka focuses on internal medicine, but Sushruta broadens the therapeutic applications of Vidanga to include surgical problems, wound treatment, dermatological illnesses, toxicology, and urine infections. These passages suggest that Vidanga held considerable significance within the surgical school of Ayurveda.

Sushruta delineates Vidanga in many formulations aimed at treating Krimi, Kushtha, Vrana (wounds), Prameha, Shotha (inflammation), and Visha (poisoning). Vidanga aids in eliminating microbial contamination in infected wounds, stimulates wound debridement, and supports the creation of healthy granulation tissue. The antibacterial, anti-inflammatory, and wound-healing characteristics identified in contemporary pharmacological research substantiate these traditional medicinal uses.

Sushruta advocates for the use of Vidanga in conditions characterized by high Kapha buildup and compromised digestion. The medication revitalizes Agni and eliminates Ama, so reinstating normal metabolic function and inhibiting illness advancement. Moreover, preparations containing Vidanga are recommended for chronic dermatological conditions, as its antibacterial, antipruritic, and detoxifying properties facilitate therapeutic enhancement. These descriptions indicate that Sushruta saw Vidanga as significant for both internal and exterior medicinal applications.

Vidanga in Ashtanga Hridaya[9]

Acharya Vagbhata synthesized the doctrines of Charaka and Sushruta in the Ashtanga Hridaya, resulting in a highly structured exposition of Ayurvedic therapies. The mentions of Vidanga in this literature illustrate the persistence of classical knowledge while also broadening its therapeutic uses.

Vagbhata consistently advocates for the use of Vidanga in the treatment of Krimi Roga, gastrointestinal problems, obesity, dermatological conditions, urinary ailments, febrile states, toxicity, and metabolic irregularities.

The medication is included in many formulations designed to enhance digestion, eradicate Ama, diminish Kapha, and restore Doshic balance. Like Charaka, Vagbhata underscores that effective treatment of parasitic disorders necessitates the rectification of intestinal dysfunction alongside the eradication of parasites. Vidanga achieves both aims through its synergistic Deepana, Pachana, and Krimighna properties.

Historically, the Brihatrayi recognized Vidanga as a major medicinal herb in Ayurveda. Their recurrent application in many illness states suggests that ancient doctors acknowledged its extensive pharmacological range much before the emergence of contemporary phytochemical and pharmacological research. Recent research evidencing anthelmintic, antibacterial, antioxidant, anti-inflammatory, hepatoprotective, antihyperlipidemic, antidiabetic, wound-healing, and anti-obesity properties offer significant scientific validation for these traditional findings.

Review of Vidanga in Nighantus

Vidanga in Dhanvantari Nighantu[10]

Dhanvantari Nighantu, regarded as one of the earliest Ayurvedic lexicons, offers one of the initial systematic descriptions of Vidanga. The book enumerates other names such as Vidanga, Jantunashana, Krimighna, and Tandula, each emphasizing a distinct therapeutic attribute. The synonym Jantunashana highlights its remarkable capacity to eradicate parasites and harmful organisms, whereas Krimighna explicitly signifies its efficacy against intestinal worms.

Vidanga in Madanapala Nighantu[11]

The Madanapala Nighantu provides a comprehensive pharmacological description of Vidanga, highlighting its therapeutic preeminence among Krimighna substances. The literature meticulously documents its botanical traits, synonyms, medicinal attributes, and indications for use. It reaffirms the traditional perspective that Vidanga has significant digestive, carminative, anthelmintic, and detoxifying properties. The pharmacodynamic profile shown herein is mainly congruent with prior authorities, underscoring the notable stability of Ayurvedic knowledge concerning this therapeutic plant.

Madanapala Nighantu emphasizes Vidanga as a superior Deepana and Pachana agent that enhances digestive efficacy while concurrently eradicating harmful organisms. Impaired digestion leads to the creation of Ama, which in turn exacerbates Kapha and contributes to the emergence of Krimi. By rectifying Agnimandya and metabolizing Ama, Vidanga not only eradicates parasites but also eliminates the diseased circumstances that contribute to their recurrence. This argument closely parallels contemporary notions of rectifying the intestinal milieu while eradicating pathogenic organisms.

Vidanga in Kaiyadeva Nighantu[12]

Kaiyadeva Nighantu offers one of the most comprehensive analyses of Vidanga among medieval Ayurvedic texts. The author thoroughly delineates its synonyms, pharmacological properties, and medicinal uses, while also underscoring accurate botanical identification. The presence of many regional names illustrates the extensive geographical range and medicinal popularity of Vidanga across the Indian subcontinent.

Kaiyadeva identifies Vidanga as a substance that enhances tissue metabolism and facilitates optimal food absorption. The plant promotes physiological equilibrium by improving digestive efficiency and eliminating Ama, so reducing the return of chronic ailments. These discoveries illustrate a nuanced comprehension of the interplay among digestion, metabolism, immunity, and overall health.

Vidanga in Raj Nighantu[13]

Raja Nighantu provides a comprehensive description of Vidanga among medicinal plants with considerable therapeutic value. The text enumerates many aliases that highlight the herb's morphology, pharmacological properties, and medicinal importance. The Raja Nighantu specifically emphasizes the efficacy of Vidanga in eradicating intestinal parasites, enhancing digestive function, mitigating Kapha buildup, and fostering a healthy metabolism. Vidanga is characterized as having detoxifying capabilities beneficial in cases of poisoning and persistent systemic illnesses. These discoveries indicate that medieval Ayurvedic physicians acknowledged the herb's capacity to eradicate endogenous poisons produced by dysfunctional metabolism, as well as to neutralize external toxic chemicals.

Vidanga in Bhavaprakasha Nighantu[14]

Bhavaprakasha Nighantu provides a very thorough and therapeutically applicable explanation of Vidanga compared to all Ayurvedic dictionaries. Bhavamishra provides a

detailed analysis of the medicine's pharmacological characteristics, therapeutic uses, botanical identification, and synonyms in Haritakyadi Varga.

Vidanga, according to Bhavamishra, offers several benefits, including the elimination of parasites, the digestion of Ama, the elimination of intestinal toxins, enhanced nutritional absorption, and the restoration of physiological equilibrium. This all-encompassing view is in harmony with the basic tenet of Ayurveda, which states that metabolic dysfunction and poor digestion are the root causes of illness. As a result, Vidanga is a medicinal plant that may be used for both treatment and prevention.

Vidanga in Shodhala Nighantu[15]

Vidanga is also acknowledged by Shodhala Nighantu as a prime Krimighna medicinal herb. The conventional pharmacodynamic profile is reaffirmed in the text, which also places extra focus on medicinal purity and botanical identity. Because using subpar medications can reduce the effectiveness of treatment, Shodhala argues that accurate diagnosis of Vidanga is crucial. Gulma, Krimi, Kushtha, Prameha, Shotha, Visha, Arsha, and digestive issues are among the therapeutic indications outlined in this vocabulary. Because of its Tikshna and Ushna qualities, it is strongly emphasized in the text for its purifying function. Vidanga prevents illness recurrence and restores normal physiological functioning by stimulating Agni and eliminating Ama.

Vidanga in Priya Nighantu[16]

Vidanga is prescribed by Priya Nighantu for cases of poisoning, obesity, skin ailments, chronic digestive disorders, intestinal parasite infestations, and disorders affecting the urinary tract and the digestive system. From the beginning of Ayurveda to the Middle Ages, the medicinal repute of Vidanga was consistent, as seen in the succession of Nighantus. The credibility and validity of the traditional knowledge surrounding this therapeutic plant are bolstered by the striking agreement among ancient authors.

SYNONYMS:[17]

The traditional method of describing medicinal plants relied on a wide range of synonyms that gave clues about the plant's physical traits, activities, habitat, therapeutic purposes, unique natural qualities, etc. Therefore, it is crucial to know the pharmacological synonyms in order to identify plants botanically nowadays.

- Vidanga
- Krimijit
- Vella
- Jantughna
- Mrigagamini
- Krimihantru
- Chitratandula
- Amogha
- Tandula
- Ghosha
- Bhutaghna
- Vatari

Raspanchak-[18]

Parameter	Description
Rasa	Katu (Pungent), Kashaya (Astringent)
Guna	Laghu (Light), Ruksha (Dry), Tikshna (Sharp)
Virya	Ushna (Hot)
Vipaka	Katu
Prabhava	Krimighna (Anthelmintic)
Doshaghna	Kapha-Vata Shamaka
Karma	Deepana, Pachana, Krimighna, Medohara, Lekhana, Grahi, Vishaghna, Kushthaghna

ROGAGHNATA:-[19]

Krimidanta, Dantashoola, Agnimandya, Ajeerna, Chhardi, Krimi, Udarshoola,Adhmana, Gandamala, Kushtha, Vibandha, Arsha, Kamala, Pratisyaya,Raktavikara, Shiroroga, Akshepaka, Apasmar Pakshaghata.

Taxonomical position:[20] (Acco.Bantham & Hooker)

Kingdom –Plantae

Division–Spermatophyta

Subdivision–Angiospermae

Class – Dicotyledons

Subclass–Gamopetalae

Series – Heteromerae

Order –Primulates

Family–Myrsinaceae

Genus-Embelia

Species– *ribes*

Botanicalname- *Embelia ribes* C.B.Clarke

BOTANICAL DESCRIPTION [21]:-

A large scandent shrub with long slender, flexible terete branches; bark studded with linticles.

Leaves : Coriacious 5-9 * 2-3.8 cm Elliptic or elliptic-lanceolate, shortly and obtusely acuminate, intire, glabrous, the whole surface is covered with scattered minute reddish sunkan glands, base rounded or acute.

Flowers : Pentamerous, numerous ,small in panicled racemes, terminal,White or greenish yellow coloured.

Fruit : Globose 3-4 mm diameter Globose, wrinkled or warty ,dull red to nearly black, a short pedicel often present, usually one seeded , seeds globose.

• **Colour :-** purplish red.

PARTS USED [22]:-

Fruit

Root Leaf

DISTRIBUTION: [23]

It is found throughout India up to an altitude of 1600 m, from Central Himalaya to Konkan, Deccan, Western Ghats, and South India.

SUBSTITUTE AND ADULTERATION [24]:-

Embelia robusta Burm f.

Therapeutic Indications According to Classical Ayurveda[25]

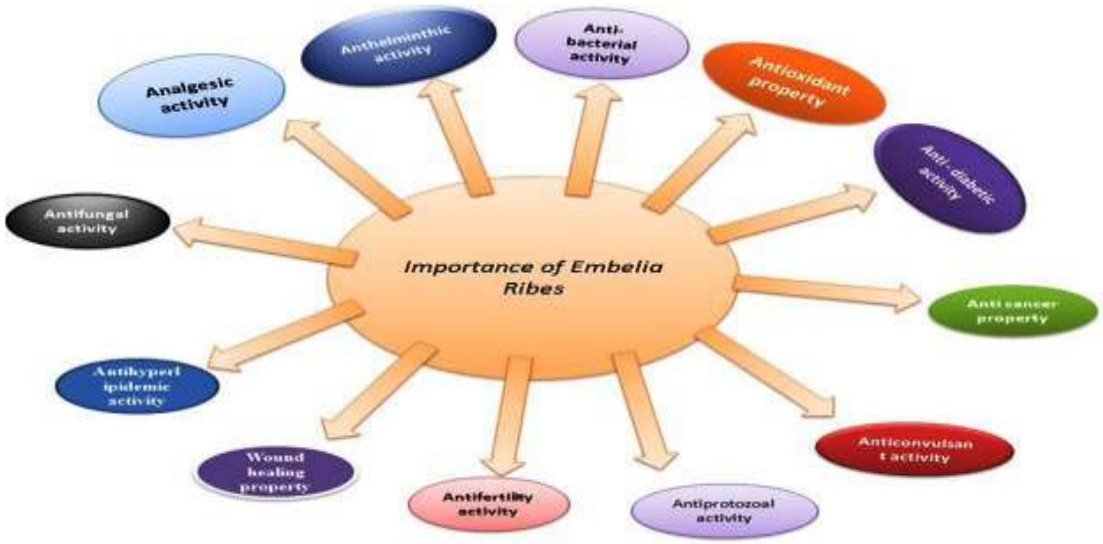
The medicinal applications of Vidanga outlined in the Brihatrayi and principal Nighantus cover a diverse array of ailments impacting many physiological systems. It is chiefly prescribed for Krimi Roga, where it eradicates intestinal parasites and rectifies the digestive dysfunction that contributes to their recurrence. The plant is often recommended for

Grahani, Ajirna, Atisara, Aruchi, Adhmana, and Udara Roga due to its Deepana-Pachana properties. The Medohara feature renders it beneficial for Sthaulya (obesity), while its Kapha-reducing actions aid in the treatment of Prameha and associated metabolic diseases. Vidanga is advised for Kushtha, Shwitra, Kandu, and chronic dermatological conditions owing to its detoxifying and antibacterial properties. Classical writings also specify its application in Arsha, Shoola, Gulma, Shotha, Jwara, Visha, and chronic inflammatory conditions. This comprehensive list of indications illustrates that Ayurvedic practitioners acknowledged Vidanga as a multifaceted medicinal plant capable of treating digestive, metabolic, dermatological, infectious, and systemic ailments by rectifying underlying pathological processes.

Phytochemical Constituents of Embelia ribes (Vidanga)[26,27]

Phytochemical studies indicate that Embelia ribes comprises several physiologically active chemicals that account for its various pharmacological effects. The primary bioactive component is embelin (2,5-dihydroxy-3-undecyl-1,4-benzoquinone), an alkyl benzoquinone noted for its antioxidant, anti-inflammatory, anticancer, antibacterial, and anthelmintic characteristics. Additional significant quinone derivatives encompass vilangin, embeliol, embelinol, embeliaribyl ester, rapanone, and O-methyl rapanone. The plant comprises embelialkyl resorcinols, embeliaflavosides, virenol A, catechin, sitosterol, daucosterol, phenolic compounds, flavonoids, alkaloids, tannins, saponins, glycosides, steroids, volatile essential oils, and fixed oils. The phytochemicals synergistically enhance the medicinal effects of Vidanga, provide a scientific foundation for its traditional therapeutic uses.

Modern Pharmacological Activities of Embelia ribes [28-36]



1. Anthelmintic Efficacy

Embelin and other quinone derivatives have significant anthelmintic efficacy against intestinal helminths by inducing paralysis and mortality in parasites, hence corroborating the traditional Ayurvedic application of Vidanga as a Krimighna agent.

2. Antimicrobial Efficacy

Extracts of E. ribes impede the proliferation of many Gram-positive and Gram-negative bacteria, in addition to harmful fungi, demonstrating extensive antibacterial efficacy.

3. Antioxidant Efficacy

Embelin, vilangin, flavonoids, and phenolic substances efficiently neutralize free radicals, diminish oxidative stress, and safeguard cells from oxidative injury.

4. Anti-inflammatory Efficacy

Vidanga inhibits inflammatory mediators and diminishes tissue inflammation, rendering it beneficial in chronic inflammatory conditions.

5. Antidiabetic Efficacy

Experimental investigations have shown that E. ribes decreases blood glucose levels, enhances insulin sensitivity, and mitigates diabetes consequences via antioxidant processes.

6. Antihyperlipidemic Efficacy

The plant reduces blood cholesterol, triglycerides, and LDL cholesterol while enhancing HDL levels, indicating its potential efficacy in dyslipidemia and obesity.

7. Hepatoprotective Efficacy

Extracts safeguard liver tissue from chemically induced hepatic damage by diminishing oxidative stress and enhancing liver function indicators.

8. Antineoplastic Activity

Embelin suppresses cancer cell proliferation, promotes apoptosis, and regulates many signaling pathways, including XIAP, NF-κB, PI3K/Akt, and JAK/STAT pathways.

9. Wound Healing Efficacy

Topical use of extracts enhances wound contraction, collagen production, epithelialization, and tissue regeneration.

10. Gastroprotective Efficacy

Vidanga enhances digestion, safeguards the stomach mucosa, diminishes flatulence, and promotes gastrointestinal health via its Deepana and Pachana properties.

11. Analgesic Efficacy

Experimental investigations suggest that Embelia ribes exhibits modest to moderate analgesic properties, perhaps through the suppression of inflammatory processes.

Discussion

Vidanga (Embelia ribes Burm. f.) is thoroughly documented in the Brihatrayi and prominent Ayurvedic Nighantus, underscoring its significance as a Krimighna (anthelmintic) and Deepana–Pachana agent. Classical Ayurvedic scriptures constantly advocate its application in the treatment of intestinal parasites, digestive problems, obesity, dermatological ailments, Prameha, and numerous metabolic disorders. The consistent depictions of its Rasa Panchaka and therapeutic effects in many classical writings signify its firmly entrenched position in Ayurvedic therapy. Contemporary phytochemical research has revealed embelin as the primary active component, alongside vilangin, embeliol, flavonoids, tannins, and other bioactive substances that enhance its medicinal effectiveness. Experimental and pharmacological investigations have substantiated several traditional assertions by evidencing anthelmintic, antibacterial, antioxidant, anti-inflammatory, antidiabetic, antihyperlipidemic, hepatoprotective, anticancer, wound-healing, and immunomodulatory properties. Consequently, traditional Ayurvedic insights about Vidanga are robustly corroborated by modern scientific research. Nonetheless, meticulously structured clinical studies, standardization of formulations, and more pharmacological research are necessary to ascertain its safety, effectiveness, dose, and mechanism of action in contemporary clinical practice.

Conclusion

Vidanga (Embelia ribes Burm. f.) is a significant medicinal plant referenced in old Ayurvedic texts. An examination of the Brihatrayi and principal Nighantus reveals their significant therapeutic applications, especially in addressing Krimi Roga, digestive ailments, metabolic problems, dermatological conditions, and obesity. The pharmacological qualities, encompassing Deepana, Pachana, Krimighna, Medohara, and Vishaghna effects, are ascribed to its distinctive Rasa Panchaka and are corroborated by the presence of bioactive

phytoconstituents, including embelin and analogous chemicals. Contemporary scientific inquiry has substantiated several traditional medicinal uses, affirming notable anthelmintic, antioxidant, antibacterial, anti-inflammatory, antidiabetic, antihyperlipidemic, hepatoprotective, and anticancer properties. Consequently, Vidanga serves as a significant connection between traditional Ayurvedic knowledge and evidence-based therapy. Additional clinical research and standardization of herbal formulations may enhance their broader medicinal use and incorporation into modern healthcare.

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