ISSN: 2230-9926

Available online at http://www.journalijdr.com

IJDR

International Journal of Development Research
Vol. 15, Issue, 03, pp. 67945-67952, March, 2025
https://doi.org/10.37118/ijdr.29334.03.2025

RESEARCH ARTICLE OPEN ACCESS

CONCEPTUAL RECAPTURE OF HARITAKI [Terminaliachebula Retz.]

Dr. Swati Goyal*[1] and Dr. Manoj Adlaka[2]

[1]Assistant Professor, *Dravyaguna* Department, Government Ayurveda College, Jaipur, Rajasthan
[2]Associate Professor, PG Department of *Dravyaguna*, PGIA, Jodhpur, Rajasthan

ARTICLE INFO

Article History:
Received 15th January, 2025
Received in revised form
28th January, 2025
Accepted 02nd February, 2025
Published online 30th March, 2025

KeyWords:

Ayurveda, Haritaki, *Terminalia chebula.*

Correspondingauthor:
Nongthombam Nongpokngambi Chanu,

ABSTRACT

Aim- To collect and comprehensively review information available regarding the medicinal use of Haritaki. ***Background-*** Haritaki [*Terminalia chebula* Retz.] a member of the *Combretaceae* family, has been used in traditional medicine since ancient times. With the exception of *Lavana, Haritaki* possesses five *Rasas. Madhura* is its *Vipaka,* and *Ushna* is its *Veerya*. These qualities enable the plant to execute a number of pharmacological activities, including *Srotas-Shodhana, Rasayana, Medhya, Deepana*, and *Aampachana*. Chebulic acid, gallic acid, corilagin, ellagic acid, chebulagic acid, chebulinic acid, triterpenoids, and anthraquinones are the primary phytochemicals found in *Haritaki.* Antimicrobial, anti-inflammatory, antioxidant, anti-diabetic, hepato-protective, anti-mutagenic, anti-proliferative, radio-protective, cardio-protective, and other therapeutic effects are among the many that it carries out. In various nighantus properties of Haritaki and its different part have been explained. Though there are few review articles available on this plant but no review has comprehensively covered all aspects of Haritaki. Materials and Methods- This review is in a narrative format and done from literature and publications relevant to Haritaki that were identified through a systematic search of major computerized medical databases. ***Review Results-*** Haritaki [*Terminalia chebula* Retz.], was reviewed from all *samhitas and Nighantu's* and from more than 50 research articles for medicinal uses and other important aspects. ***Conclusion-*** Haritaki is concluded to have more than 12 *Samhita* based indications *Jwaraghna, Kushtaghna, Arshoghna, Chardighna, Netrahitkar, Visham Jwarhar, Shwasagna, Kasaghna, Pramehgna, Shothagna, Hridya, Rasayan, Udar roga, Krumighna* and *Pandughna.* Haritaki also possesses more than 20 activities-Anti-oxidant & free radical scavenging activity, Cardio-protective activity, Anti-diabetic and retino-protective activity, Cyto-protective activity, Anti-viral activity, Anti-protozoal activity, Anti-inflammatory & anti-arthritic activity, Anti-allergic activity, Anti-carcinogenic activity, Anti-spasmodic activity, Wound healing activity, Purgative property, Immuno-modulatory activity, Adapto-genic & anti-anaphylactic activity, Anti-fungal activity, Hypo-lipidemic/Hypo-cholesterol-emic activity, Gastrointestinal motility improving and anti-ulcerogenic activity, Anti-amoebic activity, Chemopreventive activity, Skin Disorders and Radioprotective activity. Clinical significance- *Samhita* based indications of Haritaki are compared with Article concluded effect and then areas of further research are identified in drug Haritaki.

Citation: Dr. Swati Goyal and Dr. Manoj Adlaka. 2025. "CONCEPTUAL RECAPTURE OF HARITAKI [Terminaliachebula Retz.]". *International Journal of Development Research*, 15, (03), 67945-67952.

INTRODUCTION

Haritaki (*Terminalia chebula* Retz.), a member of the *Combretaceae* family, has been used medicinally from ancient times. Because of its remarkable healing properties and broad range of biological activity, it is referred to as the "King of Medicines" in Tibet and is consistently ranked first in the *Ayurvedic* materia medica. These qualities enable the plant to execute a number of pharmacological activities, including *Srotas-Shodhana, Rasayana, Medhya, Deepana*, and *Aampachana*.[1] It prolongs youth, prevents degeneration, enhances mental and physical health, and delays or even reverses aging. These days, various contemporary studies have uncovered its pharmacological properties and chemical constituents. Chebulic acid, gallic acid, corilagin, ellagic acid, chebulagic acid, chebulinic acid, triterpenoids, and anthraquinones are the primary phytochemicals found in Haritaki. Based on both ancient and contemporary literature, this research provided a thorough analysis of *T. chebula*, with a focus on its pharmacological activities.[2] According to *Acharya Bhavprakash*, the *Haritaki* was the first medication in *Bhavprakash Nighantu*. He related the tale of *Haritaki's* emergence, saying that once, as *Indra* was consuming *Amrita*, a drop of it dropped to the ground and *Haritaki* sprang from that celestial drop.[3] According to *Acharya Charaka, Haritaki* is the greatest herb to utilise on a regular basis. Of all the *Pathya Dravya, Haritaki* is the best.[4] Among the *Anulomana Dravyas, Achraya Sharangdhar* says it is the greatest.[5] Up to 1500 feet above sea level, it can be found all over India.[6] The rind of the fruit is used as medicine.

Ayurvedic literature describe hundreds of *Haritaki* compositions. It is a component in the most popular and well-known Ayurvedic composition, *triphala*. Seven types of *Haritaki* are described by *Bhavamishra: Vijaya, Rohini, Putana, Amrita, Abhaya, Jivanti* and *Chetaki*.[7]

AIM- To collect and comprehensively review information available regarding the medicinal use of Haritaki

MATERIALS AND METHODS

This literature review was compiled from ayurvedic text, relevant modern science books, research published articles both from print and electronic resources. Computerized medical databases E- Samhita, PubMed., Google Scholar, Medline, Embase, Mantis were searched using these keywords: *Haritaki, Terminalia chebula* Retz. etc. Results of these searches were reviewed with respect to medicinal uses of *amra* and other important aspects.

OBSERVATION AND RESULTS

Historical review- *Haritaki*, also known as *Terminalia chebula* Linn, is a medicinal herb that has a profound impact on a variety of illnesses, including wounds, diabetes, ulcers, inflammation, constipation, and hepatoprotection.[3]

Ayurvedic Classification:

- **Classification of *Haritaki* in *Ayurveda Samhitas***
  Charak Samhita[4]**–** *Prajasthapana, Jwaragna,Kasaghna, Arshoghna*
  Sushrut Samhita[8]**–** *Triphla, Amlakyadi, Parushakadi*
  Ashtang Hriday[9]**–** *HaritakyadiVarga, TriphlaVarga*
  Ashtang Sangraha[10]**–** *Kasaghna, Arshoghna, Kushtghna, Hidhma Nigrahana, Garbhasthapan, Vayasthapan, Varnadi Gana*
- **In *Nighantus*:**
  Bhavprakash Nighantu[7] **–** *Haritakyadi Varga*
  Adarsh Nighantu – *Haritakyadi Varga*
  Raj Nighantu[11] **–** *Amradi Varga*
  Kayvadev Nighanti[12] **–** *Aushadhi Varga*
  Dhanvantari Nighantu[13] **–** *Guduchyadi Varga*

Types of *Haritaki-* As per *Bhavprakash*[7]

1) ***Vijaya-*** Used for *Sarva-rogahar*
2) ***Rohini-*** Used for *Varan*
3) ***Putana***- Used for *pralep*
4) ***Amruta-*** Used for *Shodhan*
5) ***Abhaya-*** Used for *Netrarog*
6) ***Jeevanti-*** Used for *Sarvayoga*
7) ***Chetaki-*** Used for *Churnayog*

Different varieties along with morphological characters and users according to Indian Materia Medica given below- [14]

1] ***Survarna haritaki-*** When it contains pulp with a yellowish to brownish tint, it is large, dense, and heavy, measuring roughly 2 by 11 inches.

2] ***Rangari haritaki-*** Compared to *suvarn harade*, these are smaller, less furrowed, and wrinkled. They are also approximately an inch long. Usually used for fever, cough, asthma, and urinary disorders, these are alternative, stomatic, laxative, and poisonous.

3] ***Bala haritaki-*** Compared to *suvarn harade* and *Rangari harade*, this type is smaller. It has a uniform color and a deep dark pulp. These aperients are safe and mild. Ripen fruits are thought to have purgative properties that help to balance bile and remove phlegm and billows, beneficial for colic, enlarged liver and spleen, vomiting, hiccups, flatulence, and persistent diarrhea and dysentery.

4] ***Java haritaki-***These are the smallest of the a fore mentioned types, and the remaining traits are comparable to those of *bala harade*. In addition, its cold infusion is utilized as a gargle for stomatitis, spongy gum, and ulcerated gum. An appetite enhancer, gastrointestinal prokinetic agent, stomachic, liver and digestive stimulant, mild laxative, blood purifier, and treatment for sore throats, muscular rheumatism, skin itching, and oedema.

Different species:

1. *Terminalia chebula*
2. *Terminalia citrin*

Interpretation and etymology of synonyms [7]

- ***Haritaki:*** It contributes a pleasing hue or complexion.
- ***Abhaya*:** It eases fear of all illnesses.
- ***Avyatha*:** Using *Avyatha* can help with a lot of illnesses.
- ***Pathya:*** It is good for the body since it cleans the channels.
- ***Kayastha:*** When taken internally, *kayastha* is usually beneficial in curing illnesses.
- ***Putana:*** Purges the body of impurities.
- ***Amrita:*** It revitalizes the body and eliminates illnesses due to its *rasayana* properties.
- ***Hemvati:*** Grows in the Himalayas and everywhere else.

- ***Chetaki:*** it enhances mental function by clearing the pathways in the brain.
- ***Shreyasi:*** Its good qualities make it very beneficial.
- ***Shiva:*** Good luck is brought by *Shiva*.
- ***Vijaya:*** Specifically, *Vijaya* is able to defeat illnesses.
- ***Jivanti:*** It prolongs life by having a long-lasting *Rasayana* effect.
- ***Rohini:*** is beneficial for wound healing.

Table 1. Synonyms of *Haritaki (Terminalia chebula)*

Synonyms	*D.N.*[13]	*S.N.*[15]	*M.P.N.*[16]	*K.N*[12]	*Bh.N.*[07]	*R.N*[11]
Abhaya	+	+	+	+	+	+
Amogha	-	-	+	-	-	-
Amrita	+	+	+	-	+	+
Avyatha	+	+	-	-	+	+
Bhishagvara	-	-	-	-	-	+
Chetaki	+	+	+	-	+	-
Chetanika	-	-	-	-	-	+
Devi	-	-	-	-	-	+
Divyaa	-	-	-	-	-	+
Haritaki	+	+	+	+	+	+
Haimavati	+	+	+	+	+	+
Himaja	-	+	-	-	-	-
Jaya	+	+	+	-	-	+
Jeevaniya	-	-	+	-	-	-
Jivanti	-	+	-	-	+	+
Jeevpriya	-	-	-	-	-	+
Jeevya	-	-	-	-	-	+
Kalika	-	+	-	-	-	-
Kayastha	-	+	+	+	+	+
Nandini	+	+	+	-	-	-
Pathya	+	+	+	+	+	+
Pranada	+	+	+	+	-	+
Prapathya	+	+	+	+	-	+
Putana	+	+	+	-	+	+
Ramturyaka	-	+	-	-	-	-
Rohini	+	+	+	-	+	+
Ropani	-	+	-	-	-	-
Shiva	+	+	+	+	+	+
Shreyasi	-	+	+	+	+	+
Surabhi	-	+	-	-	-	-
Vayastha	+	+	+	-	+	-
Vijaya	+	+	+	+	+	+
Vratna	-	-	+	-	-	-
Prathama	-	-	+	-	-	-
Jivanika	-	-	-	-		+

D.N. - Dhanvantari Nighantu, S.N. - Shodhala Nighantu, K.N. - Kaiydeva Nighantu, M.P.N. - Madanpala Nighantu, Bh.N. - Bhavprakasha Nighantu, R.N. - Raj Nighantu

Vernacular Names

Table 2. Vernacular names of *Haritaki (Terminalia chebula)*

Sanskrit	*Abhaya, Kayastha, Shiva, Pathya*
Asamese	*Shilikha*
Bengali	*Haritaki*
English	*Myrobalan*
Gujrati	*Hirdo, Himaja, Pulo-harada*
Kannada	*Alalekai*
Kashmiri	*Halela*
Malayalam	*Katukka*
Marathi	*Hirda, Haritaki, Harda, Hireda*
Oriya	*Harida*
Punjabi	*Halela, Harar*
Tamil	*Kadukkai*
Telugu	*Karakkai*
Hindi	*Harre, Harad, Harar*

Taxonomy of Terminalia chebula Retz. [17]

- Latin Name- *Terminalia chebula*
- Kingdom- Plantae
- Subkingdom- Tracheobionata
- Super division- Spermatophyta
- Division- Magnoliophyta
- Class- Mangoliopsidadicotyledons

- Subclass- Rosidae
- Order- Myrtales
- Family- *Combretaceae*
- Genus- *Terminalia*
- Species- *chebula*

Botanical description [18-19]: *Terminalia chebula*- It is a medium-sized deciduous tree that can reach a height of 30 meters. It has a broad, roundish crown with spreading branches. It grows primarily in clay and shaded soils at elevations between 1500 and 2000 meters.

Stem- The stem is dark brown.

Leaves- The subopposite ovate or oblong leaves are 8–20 cm long and deciduous in the winter. Dark brown bark that exfoliates in uneven woody scales and a pair of big glands at the end of petioles are characteristics that identify the species.

Fruit- The yellow, oval fruit has five longitudinal ridges and measures roughly 2-4 cm in length and 1-2.5 cm in width. Fruit that is really huge is precious. The mature fruit has an oval shape and ranges in length from 25 to 38 mm. The shrivelled, black, ovoid, brittle fruits are unripe.

Flower- Large, complex inflorescences of fragrant, slightly yellowish white flowers are produced. They appear in little panicles or as spikes that emerge from the higher axils.

Seed- Covered in a smooth yellowish-brown epidermis, the seed is globose, 2–6 cm long, occasionally tapering towards the lower extremities, obscurely 5 or 6 sided, roughly wrinkled lengthwise. Inside is an astringent pulp that encloses a big, rough, one-celled endocarp.

Image 2. **Parts of *Haritaki (Terminalia chebula)***

Origin and distribution [20]***:*** Throughout South East Asia, including India, Sri Lanka, Bhutan, Nepal, Bangladesh, Pakistan, Myanmar, Cambodia, Laos, Vietnam, Indonesia, Malaysia, Egypt, Turkey, and Thailand, *Terminalia chebula* can be found. It can be found in India along the Sub-Himalayan routes that lead from Ravi eastward to West Bengal and Assam, climbing to a height of 1500 meters in the Himalayas. This tree is found in the untamed forests of Mysore, Northern India, and the southern region of the Bombay Presidency. Fruits ripen from October to January, while flowers bloom from April to August.

Useful parts[7]**- Fruit**

Properties *Raspanchak*

Table 3. *Raspanchak* of *Haritaki (Terminalia chebula)*

Samhita/Nighantu	*Ras*	*Veerya*	*Vipak*	*Guna*
Charak[4]	*Kashaypradhanpanchras*	*Ushna*	*Madhur*	*Laghu, ruksha*
Sushrut[8]	*Kashaypradhanpanchras*	*Ushna*	*Madhur*	*Laghuruksha*
Ashtang Hridaya[9]	*Kashaypradhanpanchras*	*ushna*	*Madhur*	*Laghu,ruksha*
Adarsh Nighantu	*Kashaypradhanpanchras*	*Ushna*	*Madhur*	*Laghu,ruksha*
Bhavprakash Nighantu[8]	*Kashaypradhanpanchras*	*ushna*	*Madhur*	*ushna*
Raj nighantu[11]	*Lavanrahitpanchras*	-	-	-
Kaiyadev Nighantu[12]	*Kashaypradhanpanchras*	*ushna*	*Madhur*	*Rukshalaghu*
Madanpal Nighantu[16]	*Lavanrahitpanchras*	-	*Madhur*	*Ushna,ruksha*
Dhanvantari Nighantu[13]	*Lavanrahitpanchras*	-	-	*Ruksha*

Nutrient and Phytochemicals: The triterpenes, arjunglucoside I, arjungenin, and the chebulosides I and II are among the glycosides that have been identified from *Terminalia chebula*. The phenolic compounds ellagic acid, chebulinic acid, gallic acid, ethyl gallate, punicalagin, terflavin A, terchebin, luteolin, and tannic acid are among the other ingredients. Chebulin is a coumarin conjugated with gallic acid. [21-22]

Fruit - Corilagin, Daucosterol, Ellagic acid, Gallic acid (1.21%), Punicalagin, Quercetin, Terchebin, Terchebulin, Chebulagic acid, Chebupentol, and Corilagin. [23]

Seed oil - Behenic acid[23]

Stem bark - Bellericoside, Chebuloside, Oxalic acid [24]

Leaf - Tannins, terflavins, B, C, and D, as well as punicalagin and punicalatin, are produced by the leaves. Additionally, they include micromeric acid, 2α-hydroxymicromenic acid, and maslinic acid. [25]

Tannins-[26] One significant source of tannin is myrobalan fruits. Myrobalan's tannins are of the Pyrogallol kind. They exist in different degrees of aggregation and are quite complex in nature. Their vulnerability to hydrolytic degradation also varies significantly.

Karmas* of *Haritaki

Table 4. *Karmas* of *Haritaki (Terminalia chebula)*

Karma	*Ch.S*[4]	*Su.S*[8]	*A. Hridaya*[9]	*KN*[12]	*RN*[11]	*BPN*[7]	*DN*[13]
Vatahar	+	+	+	+	+	+	+
Vayasthapan	+	+	+	+	-	-	-
Sangrahini	+	+	+	-	-	-	-
Hriday	-	-	+	-	-	+	+
Balya	-	+	+	-	-	-	+
Netrahitkar	+	+	+	+	+	+	+
Pittahar	+	+	+	+	+	+	+
Ayushya	+	+	+	+	-	+	-
Medhya	+	+	+	+	-	+	+
Medohara	+		-	+	-	-	-
Vatapittahar	-	+	+	+	+	+	+
Dipaneeya	+	+	+	+	-	+	-
Rasayani	+	+	+	+	+	+	-
Tridoshar	+	+	-	+	+	+	+
Anuloman	+	+	+	-	-	+	+
Pachan	-	+	+	+	-	+	-

Rogaghnata:

***Charak*[4]-** *Jwaraghna, Kushtaghna, Kasaghna, Arshoghna, Chardighna*
***Sushruta*[8]-** *Kushtagna, Netrahitkar, Visham Jwarhar*
***Bhavprakash*[7]-** *Shwasagna, Kasaghna, Pramehgna, Arshoghna, Kushtgna, Shothagna, Krumigna*
***Kaiyadev Nighantu*[12]-** *Jwaragna, Netrahitkar, Pramegna, Krumigna*
***Rajnighantu*[11]-** *Netravikar*
***Dhanvantari Nighantu*[13]**– *Pramehagna, Kushtagna, Netrahitkar*
***Ashtang hridaya*[7]** – *Pramehghna, Pandughna*

Table 5. *Rasa of Parts* of *Haritaki (Terminalia chebula)*

Parts of *Haritaki* Fruit [7]	*Rasa*
Phalamajja	*Madhura*
Snyayu	*Amla*
Vrunta	*Tikta*
Twacha	*Katu*
Asthi	*Kashay*

Doses- [7]- 3 – 6 gm of the drug in powder form

Important Formulation- [7]- *Triphala churna, Triphaladi Taila, Agastya Haritaki Rasayana, Chitraka Haritaki, Abhayarista, Danti Haritaki, Dashamula Haritaki, Brahma Rasayana, Abhaya Lavanaa, Pathyadi lepa*

Concept of *Ritu Haritaki*[27]

Table 6. Concept of *Ritu Haritaki (Terminalia chebula)*

Sr.No	*Ritu*	*Dosha Avastha*	*Anupana*	*Guna, Karma of Anupanadravya*
1	*Varsha* (Rainy season)	*VataPrakopa, Pitta Sanchay*	*Saindhav*	*Vrushya, Tridoshhara*
2	*Sharada* (Autumn)	*Pitta Prakopa,VataPrasham*	*Sharkara*	*Vrushya, Vata pitta shamaka*
3	*Hemanta* (winter)	*Pitta Prasham*	*Shunthi*	*Vrushya, VataKapha shamak*
4	*Shirisha* (winter)	*KaphaSanchay*	*Pippali*	*Vrushya, Kapha pitta shamak*
5	*Vasanta* (spring)	*Kaphaprakopa*	*Madhu*	*Vrushya, Tridosha shamak*
6	*Grishma* (Summer)	*VataSanchay, Kaphaprasham*	*Guda*	*Vrushya, Tridosha shamaka*

Traditional use of *Haritaki*[28]

1) Thai traditional medicine makes considerable use of *haritaki* fruit for its tonic, astringent, carminative, and laxative properties.
2) Commonly used in *Tamilnadu* tribes' traditional medicine to treat serious illnesses like fever, cough, diarrhoea, gastroenteritis, skin conditions like candidiasis, urinary tract infections, and wound infections.
3) Frequently used in diuretic and cardiotonic ayurvedic medicines.
4) It affects lengthy immunity and prevents ageing.
5) It is thought to increase cancerous tumours and has been reported to cure blindness.

Article review/Pharmacological activity

1) ***Anti-oxidant & free radical scavenging activity-*** Six extract and four compound of *Terminalia chebula* fruit exhibited antioxidant activity & phenolic compound were found to be responsible for this activity.[29] The leaves, bark & fruit of *Terminalia chebula* possessed high antioxidant activity and phenolic were found to be responsible for this activity.[30]
2) ***Cardio-protective activity-*** *Terminalia chebula* extract pretreatment was found to ameliorate the effect of isoproterenol on lipid peroxide formation and retained the activities of the diagnostic marker enzymes in isoproterenol induced myocardial damage in rats.[31] Its pericarp has also been reported to have cardioprotective activity in isolated frog heart model.[32]
3] ***Anti-diabetic and retino-protective activity-*** Water extract of dry fruits of *Terminalia chebula* at a dose of 200 mg/kg body weight improved the glucose tolerance as indicated by 44% of reduction in the peak blood glucose at 2nd hour in glucose tolerance test in diabetic. (Streptozotocin induced) rats.[33] The fruit extract of *Terminalia chebula* exerts a significant and dose dependent glucose lowering effect in glucose lowering effect in the rat model of metabolic syndrome.[34]
4] ***Cyto-protective activity-*** Gallic acid (GA) & CA were isolated from the extract of the herbal medicine Kashi (Myrobalan, the fruit of *Terminalia chebula*) as active principal that blocked the cytotoxic T-lymphocytes-mediated cytotoxicity. Granule exocytosis in response to anti-CD3 stimulation was also blocked by GA & CA at equivalent concentrations.[35] Cytoprotective effect on oxidative stress and inhibitory effect on cellular aging of its fruits have also been documented.[36]
5] ***Anti-viral activity-*** *Terminalia chebula* fruits afforded four immunodeficiency virus type 1 (HIV-1) integrase inhibitors, GA (I) and three galloyl glucoses (II- IV). Their galloyl moiety plays a major role for inhibition against the 3'-processing of HIV-1 integrase of the compound.[37] *Terminalia chebula* has also retroviral reverse transcriptase inhibitory activity.[38]
6] ***Anti-protozoal activity-*** A combination of *T. chebula* and four other botanicals (*Boerhavia diffusa, Berberis aristata, Tinospora cordifolia* and *Zingiber officinale*) had a maximum cure rate of 73% in experimental amoebic liver cure in hamsters [39] and 89% in experimental cecal amoebiasis in rats showing its anti-amoebic activity against Entamoeba histolytica[40]
7] ***Anti-inflammatory & anti-arthritic activity-*** Aqueous extract of dried fruit of *T. chebula* showed anti-inflammatory activity by inhibiting inducible nitric oxide synthesis.[41] Chebulic acid from immature seeds of *T. chebula* significantly suppressed the onset and progression of collagen induced mice.[42]
8] ***Anti-allergic activity-*** Aller -7, a polyherbal formulation of seven medicinal plants including *Terminalia chebula* exhibited potent in vitro antiallergic activity isolated guineapig ileum substrate.[43]
9] ***Anti-carcinogenic activity-*** A group of researchers have reported the inhibitory action on cell growth by phenolics of *Terminalia chebula Retz* fruit and found that chebulinic acid, tannic acid and ellagic acid were the most growth inhibitory phenolics of *T. chebula.*[44]
10] ***Anti-spasmodic activity-*** One of the numerous studies of *Terminalia chebula* demonstrated its 'anti-vata' or antispasmodic properties by the reduction of abnormal blood pressure as well as intestinal spasms. This confirms its traditional usefulness for spastic colon and other intestinal disorders.[45]
11] **Wound healing activity-** Topical administration of an alcoholic extract of *Terminalia chebula* leaves on the healing of rat dermal wounds showed that *Terminalia chebula* treated wound healed faster as salivary bacterial for upto 90 min post rinsing.[46]
12] **Purgative property-** Purgative action of an oil fraction from *Terminalia chebula* has been documented.[47]
13] **Immuno-modulatory activity-** Crude extract of *Terminalia chebula* stimulated cell-mediated immune response in experimental amoebic liver abscess in golden hamsters,[48] aqueous extract of *Terminalia chebula* produced an increase in humoral antibody titter and delayed type of hypersensitivity in mice.[49]
14] **Adapto-genic & anti-anaphylactic activity-** *T. chebula* fruit was one of the six Ayurvedic herbs administered to animals to test their adaptogenic potencial. All six traditional *rasayana* plants were able to aid the animals against a variety of different stressors working in different ways.[50]
15] **Anti-fungal activity-** An aqueous extract of *Terminalia chebula* exhibited antifungal against a number of dermatophytes and yeasts.[51] [52]
16] **Hypo-lipidemic/Hypo-cholesterol-emic activity-** Hypolipidemic activity of *Terminalia chebula* extract against experimentally induced atherosclerosis have been documented.[53]
17] **Gastrointestinal motility improving and anti-ulcerogenic activity-** Although its traditional use as laxative is well established *Terminalia chebula* fruit has been shown to increase gastric-emptying time.[54] This action is appeared to be balanced with protective effect on gastrointestinal mucosa, with the improvement in the secretory status of Brunner's gland involved in the protection against duodenal ulcer.[55]
18] **Anti-amoebic activity-** A combination of *Terminalia chebula* and four other botanicals (*Boerhavia diffusa, Berberis aristate, Tinospora cordifolia* and *Zingiber officinale*) had a maximum rate of 73% in experimental amoebic liver abscess in hamsters [56]and 89% in experimental cecal in humoral antibody (HA) titer and delayed type hypersensitivity (DTH) in mice.[57]
19] **Chemopreventive activity-** *Terminalia chebula* showed chemo-preventive effect on nickel chloride-induced renal oxidative stress, toxicity and cell proliferation response in male Wistar rats.[58]
20] **Skin Disorders-** It is useful in skin disorder with discharges like allergies, urticaria and other erythematous disorders.[59]
21] **Radioprotective activity-** The administration of *Terminalia chebula* extract prior to whole body irradiation of mice resulted in the reduction of peroxidation of membrane lipids in the mice liver as well as decrease in the radiation induced damage to DNA. It also protected the human lymphocytes from undergoing the gamma radiation induced damage to DNA exposed to vitro.[60]

DISCUSSION

Haritaki *Terminalia chebula* is concluded to have *Samhita* based indications *Jwaraghna, Kushtaghna, Arshoghna, Chardighna, Netrahitkar, Visham Jwarhar*, *Shwasagna, Kasaghna, Pramehgna, Shothagna, Krumighna, Hridya, Rasayan, Udar roga, Vrinaropana* and *Pandughna.* Amra also possesses Anti-oxidant & free radical scavenging activity, Cardio-protective activity, Anti-diabetic and retino-protective activity, Cyto-protective activity, Anti-viral activity, Anti-protozoal activity, Anti-inflammatory & anti-arthritic activity, Anti-allergic activity, Anti-carcinogenic activity, Anti-spasmodic activity, Wound healing activity, Purgative property, Immuno-modulatory activity, Adapto-genic & anti-anaphylactic activity, Anti-fungal activity, Hypo-lipidemic/Hypo-cholesterol-emic activity, Gastrointestinal motility improving and anti-ulcerogenic activity, Anti-amoebic activity, Chemopreventive activity, Skin Disorders and Radioprotective activity.

Table 7. Comparison between Ayurvedic Indications and Article Concluded Effects

AYURVERDIC INDICATION	ARTICLE CONCLUDED EFFECTS
Jwaraghna, Visham Jwarhar	Anti-viral activity, Anti-protozoal activity, Anti-inflammatory, anti-arthritic activity.
Kushtaghna, Krumighna, Vrinropan	Wound healing activity, Anti-amoebic activity, Skin Disorders, Anti-protozoal activity, Anti-allergic activity, Anti-fungal activity.
Arshoghna	Purgative property.
Shwasagna, Kasaghna	Adapto-genic & anti-anaphylactic activity.
Chardighna	Gastrointestinal motility improving and anti-ulcerogenic activity.
Pramehgna, Netrahitkar	Anti-diabetic and retino-protective activity, , Anti-allergic activity, Hypo-lipidemic/Hypo-cholesterol-emic activity.
Shothagna	Anti-inflammatory, anti-arthritic activity.
Pandughna	Anti-protozoal activity, Anti-amoebic activity.
Hridya	Cardio-protective activity.
Rasayan	Immuno-modulatory activity, Anti-oxidant & free radical scavenging activity.
Udar roga	Anti-spasmodic activity, Gastrointestinal motility improving and anti-ulcerogenic activity.
-	Anti-carcinogenic activity, Cyto-protective activity, Chemopreventive activity, Radioprotective activity.

CONCLUSION

From the detailed review, it can be inferred that *Haritaki* is an important plant used in Ayurveda as well as in other indigenous systems of medicine. *Haritaki* is concluded to have more than 12 *Samhita* based indications and nearly 21 Article concluded effects. Among them Anti-carcinogenic activity, Cyto-protective activity, Chemopreventive activity, and Radioprotective activity are effects noticed other than *Samhita* based indications, since *haritaki* is a plant of more medicinal uses so there must be some other activities to be ruled out, which may act as area of further research.

Clinical Significance: Areas of further research are identified in drug *Haritaki* by comparing *Samhita* based indications with Article concluded effects.

REFERENCES

1. Srivastava A, Chandra A, Singh M Jamal F, Rastogoi P, Rajendran SM, Bansode FW, Lakshmi V. Inhibition of hyaluronidase activity of human and rat spermatozoa in vitro and antispermatogenicactivity in rats in vivo by Terminalia chebula, a flavonoids rich plant. Reproductive Toxicol 2010; 29:214-24
2. Kundu AP, Mahato SB. Triterpenoids and their glycosides from Terminalia chebula. Phytochemistry 1993; 32(4); 999-1002.
3. Bhavaprakasa Nighantu, Vol-1 Edited by Dr.S.D.Kamat, Haritakyadi Varga, Shloka No. 1/5, Chaukhamba Sanskrit Pratishthan:Delhi,1st ed,2018;p.1
4. Agnivesha Charaka Samhita Edited by Dr. Brahmananad Tripathi. Vol.I, Sutrasthana. 25/ 40, Chaukhamba Subharati Prakashana: Varanasi,2006; p.454
5. Dr. Shailaja Srivastava,'Jivanprada' hindi commentary on Sharangdhara Samhita of Acharya Sharangadhar, Sharangdhra Samhita, 1st Part 4/3-4, Chaukhambha Orientalia, Varanasi, 2009.
6. Chopra RN, Nayar SL, Chopra IC. New Delhi: CSIR; 1956. Glossary of Indian medicinal plants; p. 242
7. Bhavaprakasa Nighantuh, Vol-1 Edited by Dr.S.D.Kamat, Haritakyadi Varga, Shloka No.1/7; Chaukhamba Sanskrit Pratishthan: Delhi,1st ed, 2018;p.2
8. Sushrut samhita of Maharsisushrut; edited with Ayurved-Tatttva- Sandipika; hindi commentary, scientific analysis by Kaviraaj Ambikadutta Shastri; part-1,2; Publisher: Chaukhamba Sanskrit Sansthaan, Varanasi-221001; Edition- reprint, 2018.
9. Vaaghbat: Asthang Hridayam: Saroj Hindi Commentary by Ravi Dutta Tripathi; Chaukhamba Sanskrit Pratisthan, Revised Edition 2009.
10. The Kashi Sanskrit series; Astangahridayam of Vaghbhat; edited with the Vidyotini Hindi commentary by Kaviraj Atridev Gupta; edited by Vaidya Yadunandana Upadhyaya; Publisher- Chaukhamba Prakashan, post box no.-1150, Varanasi- 221001; Edition- reprint- 2019
11. Sri Narhari Pandit, Raj Nighantu, (English Translation With Critical Commentary) Edited By Prof. K.C.Chunekar et al., Amradi Varga, Shloka No-214-215, Chaukhambha Orientalia: Varanasi,2017;p.621
12. Kaiyadeva Nighantu. (Pathyapathya-Vibodhakah) Edited and Translated by Prof. Priyavrata and Dr. Guru Prasada Sharma, Aushadhi Varga, Shloka No.221, Chaukhambha Orientalia: Varanasi,2017; p.45
13. "Dhanvantari Nighantu" Sanskrit Text And English Translation,Vol-I, Commented by Dr. S.D. Kamat,Guduchyadi Varga, Shloka No. 209-210, Chaukhamba Sanskrit Pratisthan : Delhi, 2011;p.76
14. Govt. of India. The Ayurvedic pharmacopoeia of India. New Delhi; Government of India Ministry of Health and Family Welfare Department of Indian System of Medicine and Homeopathy; 2001.p47.
15. Acharya Shodhala, "Shodhala Nighantu", Text with English- Hindi Commentaries, Commentated by Prof. (Dr.) Gyanendra Pandey et al., Guduchyadi Varga,Shloka No.231-233, Chowkhamba Krishnadas Academy: Varanasi.1st ed, 2009;p.45
16. Madanpala Nighantu, English Translation by Dr. J.L.N.Sastry. Abhayadi Varga, Shloka No. 20-21, Chaukhambha Orientalia: Varanasi,2017;p.4
17. Pulliah T. Encyclopaedia of world medicinal plants. New Delhi, India: Regency Pub Vol 4 pp 19311934.
18. Shrivastava R.K.,2000. Approach Grafting– a new approach for the formation of Clonal Bank of Terminalia chebula. The Indian Forester 126, 300-304.
19. Gupta AK, Quality standards of Indian Medicinal Plants, Vol.1,2003,206.
20. Shu HZ, Flora of China, Terminalia chebulaRetzius, Vol. 13,1788,309-319.
21. Govt. of India. The Ayurvedic pharmacopoeia of India. New Delhi; Government of India Ministry of Health an d Family Welfare Department of Indian System of Medicine and Homeopathy; 2001.p47.
22. Gupta AK, Tandon N, Sharma M, Quality standard of Indian medicinal plant. New Delhi: Indian Council of Medical Research;2003;pp.207-209.
23. Sukhdev SH, Deepak M, Joseph GVR, Joseph S, Nagar G. Indian herbal pharmacopoeia. Vol II. Jammu Tawi: IDM, Mumbai and RRL, CSIR; 1999.pp.154-

24. AslokarLV, Kakkar KK, Chakre OJ. New Delhi: Publications and Information's Directorate, CSIR; 1992. Glossary of Indian Medicinal plants with active priciples.
25. Kumar A, Lakshman K, Jayaveera K, Satish K, Tripathi SM. Estimation of rutin and quercetin Terminalia chebula by HPLC. Int J AesthAntiag Med. 2009;2(1):3.
26. Jayantkumar K, Effect of geographical variation on the content of tannic acid, gallic acid, chebulinic acid and ethyl gallate in Terminalia chebula fruits. Nat Prod. 2006;2(3-4):170-175.
27. Gupta Atrideva, AsthangaHrudaya of Vaghabhatta, Vidhyatini Hindi commentary, 11th ed., Varanasi: Chaukhambha Sanskrit Bhavana, 1993.
28. Srivastava A, Chandra A, Singh M Jamal F, Rastogoi P, Rajendran SM, Bansode FW, Lakshmi V. Inhibition of hyaluronidase activity of human and rat spermatozoa in vitro and antispermatogenicactivity in rats in vivo by Terminalia chebula, a flavonoids rich plant. Reproductive Toxicol 2010; 29:214-24
29. Hazra B, Sarkar R, Biswas S, Mandal N. Comparative study of antioxidant and reactive oxygen species scavenging properties in the extracts of the fruits of Terminalia chebula, Terminalia belerica and Emblica officinalis. BMC Comp Alter Med. 2010; 10:20.
30. [13]. Chang CL, Lin CS. Development of antioxidant activity and pattern recognition of Terminalia chebula Retz. extracts and its fermented product. HungKuang J.2010; 61:115-129.
31. AslokarLV, Kakkar KK, Chakre OJ. New Delhi: Publications and Information's Directorate, CSIR; 1992. Glossary of Indian Medicinal plants with active priciples.
32. Suchalatha S, Shyamadevi CS. Protective effect of Terminalia chebula against experimental myocardial injury induced by isoproterenol. Indain J Exp Biol. 2004; 18: 737-7421.
33. Reddy VRC. Cardioprotective activity of the fruit of Terminalia chebula. Fitoterapia. 1990; 61:517-25
34. Murli YK et al., Indian Journal of Clinical Biochemistry, 2004.
35. Chang CL, Lin CS, Lai GH, Chen YH, Tuan WC, Hsu CM. Influence of Terminalia chebula extracts on the effect of PC12 cell growth. J Trad Med.2010;21 (1):23-30.
36. Lee HS, Koo YC, Suh HJ, Kim KY, Lee KW. Preventive effect of Terminalia chebula on advanced glycation endproduct -induced endothelial cell dysfunction. J Ethnopharmacol. 2010; 131 (3):567-574.
37. Na M, Bae M, Keng SS, Min BS, Yoo JK, Kamiryo Y, et al. Cytoprotective effect on oxidative stress and inhibitory effect on cellular aging of Terminalia chebulafruits. Phytother Res.2004;18(9):737-41.
38. Jeong AHN, Kim CY, Lee JS, Kim TG, Kim SH, Lee CK, et al,.Inhibition of HIV-1 integrase by galloyl glucoses from Terminalia chebula and flavonol glycoside gallates from Euphorbia pekinensis. Plant Med.2002;68: 457-459.
39. Ma H, Zhao YD, Li K, Kang T. A new alternative to treat swine influenza A virus infection: Extracts from Terminalia chebula Retz. Afr J Microbiol Res.2010;4 (6):497-499.
40. Dwivedi S, Dwivedi A, Kapadia R, Kaul S. Anthelmintic activity of alcoholic and aqueous extract of fruits of Terminalia chebula Retz. Ethnobot Leaflets 2008; 12:741-743.
41. Bagavan A, Rahuman AI, Kamaraj C, Kaushik NK, Mohankrishnan D, Sahal D, Antiplasmodial activity of botanical extract against Plasmodium falciparum. Parasitol Res. 2011;108 (5):1099-1109.
42. Moeslinger T, Friedl R, Volf I, Burner M, Koller E, Spieckermann PG. Inhibition of inducible nitric oxide synthesis by the herbal preparation Padma in 28 macrophage cell line. Can J PhysiolPharmacol. 2000;78 (11):861-866.
43. Pratibha N, Saxena VS, Amit A, D'Souza P, Bagchi M, Bagchi D. Anti- inflammatory activities of Aller-7, a novel polyherbal formulation for allergic rhinitis. Int J Tissue React. 2004;26(1- 2):43-51.
44. Saleem M, Hushum P, Harkonen K, Pihlaja Inhibition of cancer cell growth by crude extract and phenolic of Terminalia chebula fruit. J Ethnopharmacol. 2002; 81:327-336.
45. Seyyed AM, Ali V, Mohammad KGN, Peyman M. Spasmogenic activity of the seeds of Terminalia chebula Retz in small intestine; In vitro and in vivo studies. Malays J Med Sci.2011;18 (3) 18-26.
46. Li K, Diao Y, Zhang H, Wang S, Zhang Z, Yu B, et al,.Tannin extracts from immature fruits of Terminalia chebulafructus Retz. promote cutaneous wound healingin rats. BMC Comp Alter Med. 2011; 11:1-9.
47. Miglani BD, Sen P, sanyal PK, Purgative action of oil obtained from Terminalia chebula, Indian J.Med.Res.,52(2), 1971, 281-283.
48. Shivaprasad HN, Khariya MD, Rana AC, Mohan S, Preliminary immunomodulatory activities of aqueous extract of Terminalia chebula, Pharm. Boil., 44(1), 2006, 32-34.
49. Sohni YR, Bhatt RM, Activity of a crude extract formulation in experimental hepatic amoebiasis and in immunomodulation studies, J. Ethnopharmacol., 54(2-3), 1996, 119-124.
50. Rege NN, Thatte UM, Dahanukar SA, Adaptogenic properties of six Rasayana Herbs used in Ayurvedic medicines, Phytotherapy Res.,13,1999, 275-291.
51. Dutta BK, Rehman I, Das TK, Antifungal activity of Indian plant extracts, Mycoses, 41(11-12), 1998, 535-536.
52. Ray PG, Majumdar SK, Antimicrobial activity of Indian plants, Econ. Bot., 1976,120-131.
53. Thakur CP, Thakur B, Singh S, Sinha PK, The Ayurvedic Medicines Haritaki,Amla and Bahira reduced cholesterol induced atherosclerosis in rabbits, Int. J. Cardiol., 21(2), 1988, 167-175.
54. Tamhane MD, Thorate SP, Rege NN, Dahanukar SA, Effect of oral administration of Terminalia chebula on gastric emptying: An experimental study,J. Postgrad. Med.,43(1), 1997, 12-13.
55. Nadar TS, Pillai MM, Effect of Ayurvedic medicines on beta-glucuronidase activity of Brunner's glands during recovery from cysteam-ine-induced duodenal ulcers in rats, Indian J.Exp.Biol., 27(11), 1989,959- 962.
56. Sohni YR, Bhatt RM, Activity of crude extract of formation in experimental hepatic amoebiasis and immunomodulation studies, J. Ethnopharmacol.,54(2-3), 1996, 119-124.
57. Sohni YR, Kaimal P, Bhatt RM, The antiamoebic effect of crude drug formation of herbal extracts against Entamoeba histolytica in vitro and in vivo, J. Ethnopharmacol., 45(1), 1995, 43-52.
58. Prasad L, Hussain Khan T, Jahengir T, Sultana S, Chemomodulatoery effects of Terminalia chebula against nickel chloride-induced oxidative stress and tumour promotion response in male Wistar rats, J. Trace Elem.Med.Biol.,20(4),2006,233-239.
59. Jimtta BK, Rahman I, Das TK, Terminaliachebula(myroblan) and its effect on dermatophytes, Geobios, 26(1),1999, 43-45.
60. Gandhi NM, Nayar CKK, Radiation protection by Terminalia chebula some mechanistic aspects, Molecular and Cellular Biochemistry, 277(1-2), 2005, 43-48.

****