CHAPTER – I

REVIEW OF LITERATURE
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HARĪTAKĪ (Terminalia chebula, Retz)

GENERAL INTRODUCTION

Nomenclature

Botanical Name - Terminalia Chebula Retz

Family - Combretaceae


(Synonyms in different Nighantus and their significance given in Tables : I . 2 and I . 3)

Vernacular Names

Arabic Name - Halīlaja
Bāṅgālī Name - Harttakī
Dogrī Name - Rīḍa
English Name - Chebulic myrobalan
Gujrātī Name - Harde
Kannāda Name - Anileya
Hindī Name - Haradā, Harre
Marathi Name  - Harde, Hartaki
Persian Name  - Halila
Tamil Name  - Kanudakai, Kadake
Telugu Name  - Kanudukara
Udiya Name  - Karevi

All the Sanskṛta Synonyms of Haritaki besides indicating towards the usefulness of the plant in the general well being of the body also give indication towards the properties of the plant, the colour of the fruit and its place of growing.

**Types of Haritaki**

Seven types of Haritaki have been explained by different authorities. They are 1. Vijaya, 2. Rohini, 3. Putana, 4. Amrta, 5. Abhaya, 6. Jivanti and 7. Cetakī. The appearance, habitat and uses of different types are given below:

<table>
<thead>
<tr>
<th>Type</th>
<th>Appearance</th>
<th>Uses</th>
<th>Habitat</th>
</tr>
</thead>
<tbody>
<tr>
<td>Vijaya</td>
<td>Round like bottle gourd</td>
<td>All diseases</td>
<td>Vindhyā</td>
</tr>
<tr>
<td>Rohini</td>
<td>Round</td>
<td>Wound healing</td>
<td>Jhānsi</td>
</tr>
<tr>
<td>Pūtnā</td>
<td>Small and Bony</td>
<td>External application</td>
<td>Sindha</td>
</tr>
<tr>
<td>Amrta</td>
<td>Fleshy</td>
<td>Purifies body</td>
<td>M.P.</td>
</tr>
<tr>
<td>Abhayā</td>
<td>Penta striated</td>
<td>Ophthalmic disorders</td>
<td>Campārana</td>
</tr>
<tr>
<td>Jivanti</td>
<td>Golden coloured</td>
<td>Cures all diseases</td>
<td>Saurāstra</td>
</tr>
<tr>
<td>Cetakī</td>
<td>Tri striated</td>
<td>Best for powder</td>
<td>Himālayā</td>
</tr>
</tbody>
</table>

(Sharma P.V. 1968)
**Guṇa Karma**

<table>
<thead>
<tr>
<th>Rasa</th>
<th>Contains all except Lavana rasa with predominance of Kaśāya rasa.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Guṇa</td>
<td>Rukṣa, Laghu</td>
</tr>
<tr>
<td>Vīrya</td>
<td>Üṣṇa</td>
</tr>
<tr>
<td>Vipāka</td>
<td>Madhura</td>
</tr>
<tr>
<td>Prabhāva</td>
<td>Tridoṣahara</td>
</tr>
<tr>
<td>Doṣa karma</td>
<td>Alleviator of Vāta doṣa owing to Amla rasa.</td>
</tr>
<tr>
<td></td>
<td>Alleviator of Pitta doṣa owing to Madhura, Tikta and Kaśāya rasa.</td>
</tr>
<tr>
<td></td>
<td>Alleviator of Kapha doṣa owing to Kātu, Tikta and Kaśāya rasa</td>
</tr>
</tbody>
</table>

**Properties and uses**

Harītakī is Rūkṣa (harsh), Laghu (light), Üṣṇa Vīrya (hot in potency), Madhura Vipākī (sweet in post-digestive effect), Agnidīpaka (digestive stimulant), Medhya (intelligence promoter), Cākṣuṣya (good for eye sight), Āyuṣya (increases longevity), Anulomka (aperient), Vṛmhaṇa (weight promoter) and Rasāyana (rejuvenator). It cures Śvāsa (dyspnoea), Kāsa (bronchitis), Prameha (urinary anomalies), Arśa (haemorrhides), Kuṣṭha (obstinate skin diseases), Śotha (dropsy), Udarakṛmi (helmenthiasis), Svarabheda (hoarseness of voice), Grahaṇī roga (mal-absorption syndrome), Vibandha (constipation), Viṣama Jvara (intermittent fever), Gulma (abdominal tumour), Ādhmnā (tympanitis) Trśā (thirst), Vamana (vomitting), Hikkā (hiccough), Kandu (pruritis), Hṛda roga (cardiac disorders), Kāmalā (jaundice), Śūla (abdominal colic), Yakṛta - Plīhā Vṛddhi (hepato-splenomegaly), Āṣmarī (urolithiasis), Mūtra kṛcchra and Mūtra ghāta (dysurea and anurea) (Bhā.Pra. Harīt. Varga / 19-26).
A moderate sized or large deciduous tree, attaining 25-30 ft. in height. Leaf-buds, branchlets and youngest leaves with soft, shining, generally rust-coloured hairs. Leaves 7-20 cm. by 4-8 cm, glabrous or nearly so when mature, not clustered, distant, alternate or sub-opposite, elliptic oblong, acute rounded or cordate at base, pinninerved, secondary nerves 6-8 pairs,
arching, prominent; petioles 2-5 cm. long, pubescent, usually with 2 glands near the top. Flowers all hermaphrodite, 4 mm. across, sessile, dull-white or yellow, with an offensive smell. Spikes sometimes simple, usually in short panicles, terminal and in the axils of the uppermost leaves; bracts exceeding the flowers, subulate, hairy, conspicuous among the buds but soon deciduous. Calyx campanulate, 3 mm. long, flat at the base expanding a little towards the mouth, glabrous outside, hairy within; teeth 5, short, sometimes obscure. Drupe pendulous, 2-4 cm. long, ellipsoid or obovoid from a broad base, glabrous, more or less 5-ribbed, when dry yellowish green; stone oblong, bony, very thick, obscurely angled.

Bark 6 mm thick, dark brown with many generally shallow vertical cracks. Wood very hard, brownish grey with a greenish or yellowish tinge, with an irregular small dark purple heartwood, close grained.

Distribution

Throughout the greater part of India, Burma and Ceylon, upto 5000 ft. in the outer Himalayan and upto 6000 ft. in Travancore. (Kirtikar & Basu 1975).
CHEMISTRY

The chemistry of myrobalans has received considerable attention in recent years. Chebulic myrobalans may contain varying proportions of gallo-tannic acid according to the stage of maturity of which the fruit has reached, the fully grown fruits containing less of the tannic principles. Tannin in a sample of commercial ground myrobalans was found 18.8 per cent (Stark 1892). Fridolin (1884) isolated on organic acid which he named Chebulinic Acid, and which he believed to be the source of the gallic and tannic acids detected by previous observers in the fruit. Another research (Year Book of Pharmacy 1893) resulted in the isolation of about 3.5 per cent of an acid named Chebulic Acid, “in addition to a large proportion of tannin,” the latter named acid being probably identical with the former. Another contribution to the literature on the subject is recorded in the Pharm. Journ., 27th June 1891, in which it is stated that the tannin of myrobalans had been found to be a mixture of two tannins, one of which is the glucoside of gallic acid and named Ellagic Acid, and the other a tannic acid proper, named Ellagotannic Acid. A green-coloured oleo-resin has been extracted from the fruit and named Myrobalanin. A transparent fixed oil is expressed from the Kernels (Lall and William 1973).

Mineral constituents of the bark of the plant are CaO - 10.244%, CO₂ - 8.302%, MgO-0.557%, P₂O₅ - 0.870%, SO₂ - 0.058%, Cl - 0.188%, K₂O - 0.425% and SiO₂ - 0.366% (Nadkarni 1976).

A chemical examination of the fruits of T. chebula led to the isolation and characterization of punicalagin, terflavin A and a new ellagitannin named terchebulin, which possesses a novel tetraphenylcarboxylic acid (terchebulic acid) moiety. From the leaves of this plant, a series of biogenetically related hydrolysable tannins, terflavils B, C and D,
punicalagin and punicalin were isolated and structurally elucidated. The concomitant isolation of terflavins A and B provided biogenetic evidence that the terchebulic acid moiety is derived by an oxidative carbon-oxygen coupling of adjacent flavogallonic acid and gallic acid esters (Lin et al. 1990).

A new triterpine, 2 alpha-hydroxymicromeric acid, and two known compounds, maslinic acid and 2 alpha-hydroxyursolic acid, were isolated from the leaves of T. chebula (Singh 1990).

Two new triterpenoid glycosides, chebuloside I & II, were isolated from the stem bark of T. chebula. Their structures were elucidated as beta-D-galactopyranosyl 2 alpha, 3 beta, 23-trihydroxyolean-12-en-28-oate and beta-D-glucopyranosyl 2 alpha, 3 beta, 6 beta, 23-tetrahydroxyolean-12-en-28-oate, respectively, based on spectral and chemical analyses (Kundu & Mahato 1993).

Arjungenin and Arjunglucoside-I were isolated and characterized from an alcohol extract of the fruits of T. chebula (Reddy 1994).

Chebulin, m.p. 249°, from flowers (Inamdar & Rajarama 1962); a purgative glycoside of an anthraquinone derivative isolated (Gaind & Saini 1965); a tannin-terchebin from fruits (Rastogi & Mehrotra 1990).


Gallic acid (1.21%) from fruits (Grampurohit & Shah 1986) (Rastogi & Mehrotra 1995).
Ether extract showed higher antioxidant activity than BHA and BHT. Acid esters present in phenolic fraction of extract were found most effective (Kim et al. 1993). Isolation of shikimic, gallic, triacontanoic and palmitic acids, ß-sitosterol, daucosterol, triethylester of chebulic acid and ethyl ester of gallic acid from fruits (Lu et al. 1991); a new triterpene-chebupentol isolated from fruits and its structure determined; arjungenin, terminoic acid and arjunolic acid also isolated (Lu et al. 1992); antioxidant constituents of plant, phloroglucinol and pyrogallol, isolated along with ferulic, vanillic, p-coumaric and caffeic acids (Kim et al. 1993). Determination of oleic (54.1), palmitic (27.3), stearic (9.2), isocetic (5.5), linoleic (3.5), myristic (0.2) and lauric (0.1%) acids and ß-sitosterol in seed oil by GC (Gunasekar et al. 1992; Sudersanam & Banarji 1992) (Rastogi & Mehrotra 1998).

**Tannin contents of Terminalia chebula**

<table>
<thead>
<tr>
<th>Part utilized</th>
<th>Tannin</th>
<th>NonTannin</th>
<th>Tannin/ Non Tannin ratio</th>
<th>Sugar contents</th>
<th>pH</th>
<th>Classification</th>
</tr>
</thead>
<tbody>
<tr>
<td>Nut</td>
<td>33 (av.)</td>
<td>13 (av.)</td>
<td>2.5</td>
<td>4.5</td>
<td>3.4</td>
<td>Pyrogallol</td>
</tr>
</tbody>
</table>

(The Wealth of India, 1960)

**IS Specification for Myrobalan Extract***

<table>
<thead>
<tr>
<th>Characteristics</th>
<th>Solid extract</th>
<th>Spray-dried extract</th>
</tr>
</thead>
<tbody>
<tr>
<td>Colour **</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Red, max.</td>
<td>2.0</td>
<td>1.5</td>
</tr>
<tr>
<td>Yellow-Red, Min.</td>
<td>2.5</td>
<td>3</td>
</tr>
<tr>
<td>pH (of a solution of 0.4±0.025% tannin content)</td>
<td>3.0-3.7</td>
<td>3.0-3.7</td>
</tr>
<tr>
<td>Moisture, % by wt., max.</td>
<td>10</td>
<td>6</td>
</tr>
<tr>
<td>Tannins, % by wt., min.***</td>
<td>58</td>
<td>60</td>
</tr>
<tr>
<td>Non-tannins, % by wt., Max.***</td>
<td>37</td>
<td>36</td>
</tr>
</tbody>
</table>
### Characteristics of Material

<table>
<thead>
<tr>
<th>Characteristic</th>
<th>Max. Value</th>
<th>Notes</th>
</tr>
</thead>
<tbody>
<tr>
<td>Insolubles, % by wt.</td>
<td>5</td>
<td>4</td>
</tr>
<tr>
<td>Iron, mg./100 g.</td>
<td>5</td>
<td>5</td>
</tr>
<tr>
<td>Copper, mg./100g.</td>
<td>5</td>
<td>5</td>
</tr>
<tr>
<td>Sulphated ash, % by wt.</td>
<td>4</td>
<td>4</td>
</tr>
</tbody>
</table>

* IS 2716 – 1964

** These characteristics shall be tested only when the material is required for tanning.

*** Calculated on moisture – free basis.

(From *The Wealth of India 1960*).
HARĪTAKĪ IN VEDIC LITERATURE

Although Haritakī has been referred to at many places but no direct reference as for its use has been found in vedic literature.

HARĪTAKĪ IN ĀYURVEDIC LITERATURE

DESCRIPTION IN VRHATTRAYAI

Carakā Samhitā (Agṇiveṣa, 8th - 7th Cent. B.C.)

Caraka has given special importance to Haritakī. It has been described as the first drug in the Cikitsā Sthāna of the treatise. He has given a detailed description of Haritakī. It has been said that it contains all the tastes except one i.e. the salt taste, is hot, beneficial, corrective of humors, light, stimulative of the gastric fire and digestion, promotive of life, roborant, auspicious, the best of vitalisers, a panacea, promotive of the intellect, senses and vigour.

Haritakī is subduer of the following disorders as Kuśṭha (obstinate skin diseases), Gulma (abdominal tumors), Udāvarta (upward oppression), Śoṣa (consumption), Pāṇḍu (anemia), Madātya (intoxication), Arśa (haemorrhides), Grahaṇī dosa (assimilation disorders), Jīrṇa Viṣama Jvara (chronic irregular fevers), Hṛda roga (cardiac disorders), Śiro roga (diseases of the head), Atisāra (diarrhoea), Arucī (anorexia), Kāsa (cough), Prameha (urinary anomalies), Anāha (abdominal distension), Plīhā Vṛddhi (splenic enlargement), Nūtana Udara roga (recent abdominal affections), Kapha Praseka (discharge of mucus), Svarabheda (hoarseness of voice), Vaivarnyā (impairment of complexion), Kāmalā (jaundice), Kṛmi (helminthiasis), Śvayathu (oedema), Tamaka Śvāsa (asthma), Chardi (vomitting), Klaivya (impotency), Angavāda (lassitude of limbs), Vividha Srotovibandha (various kinds of obstruction of body channels), Hṛdya-urso pralepa
(collection of fluids or fats around the lungs or the heart), Smṛti budhi pramoha (stupefaction of memory and understanding).

However, dyspeptics, eaters of dry food, those who have weakened by indulgence in women, drink and poisonous addictions and those who are afflicted with hunger thirst and heat should not take Haritakī.

"Haritakī Pathyānāma" as described by Caraka conveys the usefulness of Haritakī as the best among the wholesome drugs. There are a plenty of references of the use of Haritakī as single drug or in combination to the other drugs. It also finds a place in the nomenclature of many formulations. It is used in the treatment of Udara Krmi (helminthiasis) along with other drugs. It is deployed for the purpose of purification before the start of Rasāyana (rejuvenation) therapy along with other drugs. In Prameha (urinary anomalies) the use of Haritakī in different therapeutic regimens has been described. The use of Haritakī in the treatment of Šotha (dropsy) has also been advocated. Danti Haritakī which contains Haritakī as an important constituent is therapeutically used in Gulma (abdominal tumours). Another important use of Haritakī in the treatment of Udara roga (abdominal disorders) is in the form of Haritakī Kalpa (the use of the drug in particular ascending and descending order).

Another important use of Haritakī immersed in Go-mūtra (Cow’s urine) is reported in the treatment of Arša (haemorrhides), Kāmalā (jaundice) and Pāṇḍu (anemia). In Grahaṇī roga (assimilation disorder), Haritakī along with other drugs is used as an Agnidīpaka (promoter of digestion). Similarly in Kāsa Cikitsā (cough disorder) a confection of Haritakī by the name of Agastya Haritakī is used successfully. Similarly Haritakīdyādi Leha is also used in Kāsa Cikitsā. In Marma Cikitsā (treatment
of vitals), the twin formulations Vacādi Cūrṇa and Harītakāyādi Ghṛta contain Harītakī as an important constituent.

In Kalpa Sthāna (section of pharmaceutics), the role of Harītakī in the formulations for the treatment of Pāṇḍu (anemia), Arśa (haemorrhides), Kandu (pruritis) and Kotha (urticaria) has been advocated. Caraka has also emphasized the role of Harītakī in the diseases caused by overnutrition. I also finds a place in the class of Decoctives (Mahakasayas) as in Arśoghanā (anti-haemorrhoidals), Kuṣṭhagna (curative of dermatosis), Virecanopaga (adjuvants in purgative therapy), Kāsahara (bronchial sedative), Jvarahara (anti pyretics) and Vayasthāpana (rejuvenators).


**Suśruta Samhitā** (Suśruta, 8th - 7th Cent, B.C.)

Suśruta has also given due importance to Harītakī. It has been enlisted in Mustādi Gana, Triphalādi Gana and Amalkayādi Gana. The drugs contained in these Ganas or groups cure uterine and vaginal disorders, purify breast milk, act as good digestive, curative of urinary anomalies, dermatosis, improve eye sight, beneficial in chronic intermittent fevers, and are restorative and aphrodisiacs.

Harītakī has been described as beneficial for ulcers, is Ūṣna (hot in potency), Dastāvara (purgative), Medhya (intellect promotor) and Doṣaghna (subdues the deranged humors). It cures Śopha (oedema) Kuṣṭha (obstinate skin diseases), is Kaśāya (astringent), Dīpana (stimulative of gastric fire), Amla (sour) and Cākṣuṣya (good for eye sight).
Suśruta Samhitā contains many references wherein the use of Harītakī has been indicated as purgative drug. While enumerating the purgative drugs the reference of Harītakī is also made. Administration of Harītakī proves curative of all forms of diseases. It is said to be best of elixirs and improves the intellectual faculties. The use of Harītakī in Vāta Rākta particularly with predominance of Kapha has been reported. In Arśa Cīkitsā, the use of Harītakī along with other drugs is mentioned. Similarly in Kuṣṭha Cīkitsā the Harītakī is also mentioned along with other drugs. In Arśa Cīkitsā a medicated Takra containing Harītakī has been advocated. Harītakī Ghṛta, a preparation containing only Harītakī and Ghṛta (clarified butter) along with Kānjī (fermented rice gruel) is used in abdominal diseases.

In Pittaja Vidradhī (abscess), a plaster of various medicines is applied and a lambative of Harītakī and Trīvrta along with honey is licked. In cases of Pittaja Granthī (benign tumour), powder of Harītakī in the medium of grape juice is administered along with application of plaster of various medicines over the affected portion. As a general measure of treatment in cases of Šopha (oedema) Harītakī with Guḍa (jaggery) is given in equal quantity.

A special mention in reference to cosmetic value of Harītakī has also been made. A face pack containing Harītakī and some other drugs has been advised to remove tans, specks, marks and moles (Vyanga) from the face and to give glow to the face. Harītakī and Saindhva (rock salt) have also been recommended for Kavalagraha (gargles). Brahma Rasāyana and Brahma Ghṛta, the two preparations meant for rejuvenation contain Harītakī as an important ingredient. Last but not the least is the use of Harītakī in diseases associated with overnutrition and oversaturation has been mentioned by Suśruta.
Aṣṭāṅga Hṛḍya (Vāgabhatta, 6th Cent. A.D.)

Vāgbhatta has also given a detailed description of Haritakī in his treatise. The properties of Haritakī has been mentioned as, “It is astringent, sweet at the end of digestion, dry, devoid of salty taste, easily digestible, kindles hunger, helps digestion, improves intelligence, best to maintain youth, hot in potency, laxative, bestows longevity, strengthens mind and sense organs, cures dermatoses, discolouration, disorders of voice, chronic intermittent fevers, diseases of head and eyes, anemia, cardiac disorders, jaundice, diseases of duodenum, consumption, dropsy, diarrhoea, obesity, fainting, vomiting, intestinal worms, dyspnoea, bronchitis, excess salivation, haemorrhides, diseases of spleen, distension of abdomen, obstruction of channels, abdominal tumours, stiffness of thigh, loss of taste and many other diseases arising from Kapha and Vāta.

In addition to general properties and therapeutic uses of the drug, it has been mentioned in lot many disease conditions. In fevers the use of Haritakī either with milk or grape juice is indicated. In chronic fevers, Haritakī along with other drugs is used for fumigation with Ghṛta. Two specialised preparations known as Agastya Haritakī and Vasista Haritakī Rasāyana which contain Haritakī as important constituent are employed in Kāsa Cikitsā. In Arśa Cikitsā, the use of Haritakī with Guḍa (jaggery) or Haritakī soaked in cow’s urine is used. In Grahaṇī Cikitsā for increasing the digestive fire Haritakī is used along with other drugs. In contrast to Grahaṇī Cikitsā, Haritakī along with other drugs is used in cases of Atisāra Cikitsā when there is mild accumulation of Doṣas. In cases of retention of urine Haritakī along with other drugs is used with milk or water. Two important
pharmaceutical preparations namely Dantī Harītakī and Vaiṣavānara Cūrṇa deployed in the treatment of Gulma Cikitsā contain Harītakī as an important constituent.

In the treatment of Udara rogas, Harītakī macerated with cows urine is used. Similarly a medicated Ghṛta meant to of cure Udara roga contains Harītakī as an ingredient. In Śvayathu (dropsy) Cikitsā, Go-mūtra Harītakī is successfully used. In Kustha Cikitsā, pills of Harītakī and Guḍa are used to cure different skin diseases. In Vīrecaṇa-Kalpa, Harītakī-Kalpa a preparation made of Harītakī powder and Guḍa is made into pills. It is reported to cure duodenal diseases, anemia, itching, skin rashes and haemorrhides. In Bālameya pratisedha (diseases of children), paste of Harītakī with Vacā, Kuṣṭha and honey or breast milk is applied in Tālukanṭaka (affection of palate). The use of Harītakī has also been indicated in Unmāda (insanity) Cikitsā and Mukha roga (diseases of buccal cavity) Cikitsā also. For purification of body after Snehana and Svedana, Harītakī along with other drugs is used with luke warm water. The use of Harītakī has been strongly advocated for regaining strength and for the replenishment of tissues.


DESCRIPTION IN LAGHUTRAYAI

Śārangadhara Samhitā (Śārangadhara, 13th Cent. A.D.)

The uses of Harītakī in Śārangadhara Samhitā are spread over a wide range from fevers to ophthalmic diseases, from anaemias to rectal diseases and from cardiac diseases to bronchitis. In addition Harītakī constitutes an
important ingredient of many pharmaceutical preparations in Āyurveda which are in use till date.

The decoction of Harītakī in combination to other drugs relieves fevers of different origin. It has also been used as anthelmenthic in combination to other drugs. In Mūtrakṛcchra (dysurea) Harītakī along with other drugs is used. Similarly, a preparation Amrta Triphalādī Kwātha, containing Harītakī is used in hemi-crania, corneal ulcers and night blindness. Harītakī in association to other drugs has been advocated as a good Carminative and Digestive. The famous Āyurvedic preparation Triphalā which is a combination of three Myrobalans contains Chebulic Myrobalan (Harītakī) as one of the three ingredients. It is used in number of disease conditions as polyurea, oedema, remittent fever, eye diseases, skin diseases, tonic, carminative and reduces Kapha and Pitta. A preparation called Pancasama cūrṇa which contains four ingredients more other than Harītakī relieves abdominal pains, tympanitis, haemorrhides and rheumatism.

Suderśana cūrṇa, known best for chronic fevers of all types also contain Harītakī. The other important preparations which contain Harītakī as an ingredient are Sanjīvani Vati, Surana vataka, Mandūra Vataka, Chandraprabhā Guggulu, Yogrāja Guggulu, Kaishore Guggulu, Triphalā Guggulu, Gokṣurādi Guggulu, Kāncanāra Guggulu,. Cyavanaprāśa Avleha, Agastya Harītakī, Kutjavleha, Mahātiktaka Ghṛta, Phala Ghṛta, Jātyadi Taila, Kumāryāsawa, Lohāsava, Khadirāriṣṭa, Rohitakariṣṭa, Mahātaleswara Rasa, Kuṣṭhakuthāra Rasa, Agnitundi Vati and Abhayādi Modaka and many more.

For Lekhana Vasti (enemata), Harītakī is also added among other drugs for removal of doṣas from the body. Harītakī along with other drugs is also used as Gaṇḍūṣa (gargling). Harītakī along with Āmra bija (kernel of
mango fruit) is made into a paste and applied over scalp in cases of Dārunaka (dandruff). Harītakī in combination to other drugs is also used as paste in premature greying of hair. Harītakī along with Śīrīṣa and Rasānjana is made into paste with honey is reported to be beneficial for application over Upadamsa (venereal ulcers). Harītakī in combination to other drugs is applied over eyelids for eye diseases and it also forms a part of Chandrodaya varti, an ophthalmic preparation which is claimed to cure pterygium, opacity of lens, tumours and long standing ulcers of sclera and cornea.


**Bhāva Prakāśa** (Bhavamiśra, 15th -16th Cent. A.D.)

Like Śārangadhara, Bhavamiśra has also explained Harītakī as an important drug. In addition to its use in various pharmaceutical preparations, a separate description of the drug as such is also given.

Fifteen synonyms and seven types of Harītakī have been explained. The habitat of all the seven types have been given separately. In addition, the clues for identification of all the seven types are also given as is the use of different types in specific disease conditions. The presence of different Rasas (tastes) in different parts of the fruit along with the authentication of the fruit for therapeutic use is given also. The use of Harītakī has been advocated as Rasāyana (rejuvenator). It has been suggested to use Harītakī
round the year but with different vehicles according to different Rtu (seasons).

**Rtu Haritaki**

<table>
<thead>
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Individuals who have been restricted for the use of Haritaki have also been mentioned. Haritaki has been stated to possess all the six Rasas except Lavana (salty) Rasa. It is Rukṣa (dry) Uṣṇa Vīrya (hot in potency) Agnidīpaka (kindles digestive fire) Medhya (intellect promotor) Madhura Vipāka (sweet in post digestive effect) Rasāyana (rejuvenator) Cākṣusāya (good for eye sight) Laghu (easily digestible) Ayuṣya (increases life span) Vṛmhaṇa (weight promotor) and Anulomini (carminative).

It cures Śvāsa (dyspnoea), Kāsa (bronchitis), Prameha (polyurea), Arśa (haemorrhides), Kuṣṭha (obstinate skin diseases), Šotha (dropsy), Krmi (helmenthiasis), Vaisvarya (hoarseness of voice), Grahaṇī (malabsorption), Vibandha (constipation), Viṣama Jvara (intermittent fever), Gulma (abdominal tumour), Adhmāna and Anāha (tympanitis), Tṛṣā (thirst), Chardi (vomitting), Hikkā (hiccough), Kaṇḍu (pruritis), Hṛda Roga (cardiac diseases), Kāmalā (jaundice), Śūla (abdominal pain), Yakṛta Plīhā Vṛddhi
(hepato - splenomegaly), Aśmarī (uro lithiasis), Mūtra Kṛcchra (dysurea) and Mūtraghāta (anurea). Owing to its sweet, astringent and pungent taste, it cures Pitta Doṣa and Kapha Doṣa because of its bitter, pungent and astringent taste and Vāta Doṣa because of its sweet and sour taste.

The use of Harītakī as explained by Bhāvamiśra is also spread over a larger plane ranging from treatment of various fevers to gastro intestinal diseases, from haemopoitic diseases to hepatic diseases from consumption to epilepsy, from arthritis to cardiac diseases, from metabolic disorders to ophthalmic diseases from dermatoses to senility so on and so fourth.

The use of Harītakī in combination to other drugs is indicated in various forms of fevers, bronchitis and associated symptoms. Certain preparations as Harītakyādi Gutiκā, Chaturbhadrīkāvleha, Triphalādi Kwatha to name a few are indicated. Similarly in cases of Āmatisāra the use of Harītakī along with some other drugs has been reported beneficial. In Malabsorption syndrome as well as in Haemorrhides also Jatīphalādi cūrna, Vijaya cūrna and Saguḍa abhayā have been explained.

In the treatment of Jaundice and Anemia or the associated oedema, the use of Harītakī along with other drugs is reported useful. Certain preparations as Punarnavā Mandūra and Traūṣnādi Mandūra are explained. In hyperacidity and nausea Harītakī stands as a useful drug. Maha cetasa Ghrṭa, a preparation meant for insanity also contains Harītakī as an ingredient. Similarly in Epilepsy a preparation known as Kalyāṇa Cūrna contains Harītakī as one of the ingredients. The preparations employed for nervous disorders as Pathyādi Guggulu, Mahā Narāca Rasa, Mahayagrāja Guggulu and Hingwādi Taila also contain Harītakī. In reference to rheumatoid arthritis, it has been said that the use of castor oil with Harītakī cures the disease. Vaiśavānara Cūrna, another preparation employed as
digestive in cases of rheumatoid arthritis contains a major portion of Harītakī Cūrṇa along with other ingredients. Similarly in gouty arthritis, the preparations like Nava kauṣīka Kwātha, Triphalā Guggulu, Simhanāda Guggulu and certain other preparations also contain Harītakī.

In the treatment of Cardiac diseases also the role of Harītakī along with other drugs is explained. In urinary anomalies both in Dysurea and Polyurea, there is use of Harītakī. Amṛtādi Guggulu, Daśāṅga Guggulu, Loha Raśāyana, Vyōsādi Saktu, Triphalādi Taīla, the preparations meant for obesity also contain Harītakī. In abdominal diseases also as in dropsy and dermatoses, the use of Harītakī in combination to other drugs is reported. In urticaria as well in premature greying of hair, Harītakī has been used as an important drug in the recipes.


DESCRIPTION IN OTHER ĀYURVEDIC TEXTS

Bhela Samhitā (Bhela, 8th 7th Cent. B.C.)

Bhela being one of the pupils of Mahārṣi Ātreya along with Caraka, Hārīta, Prasara and others, Bhela Samhitā is also one of the old Āyurvedic treatise. The text deals with all the aspects of Āyurveda.

The use of Harītakī in all most all the disease conditions either as a single drug or one of the drugs in combination has been described. In Sūtra
Sthāna of the text a peculiar use of three ingredients of Triflā has been indicated. For this purpose Āmalaki is to be taken at the start of the meals, Harītakī after meals and Vibhītaka at the end of the digestion. It has been mentioned that Pitta produces Ûśmā during the digestion and if Harītakī is taken after meals it regulates the Pitta.

Harītakī is mentioned as an ingredient of Mustādi Čūrna which is an antidote for Citraka. It has also been mentioned as an ingredient of Triūśanādi Ghṛta, Daśānga Ghṛta, Kuṣṭha Śānti Čūrna, Sanabijādi Čurna, Suvarṇaśāmaka Čūrna and Bhallātaka Yoga. Harītakī in combination with other drugs has been advised in the treatment of different Vātāja diseases, Śopha (oedema) and Hṛda Rogas (cardiac diseases). Pathādi Čūrna which contains Harītakī is mentioned to treat Arśa (haemorrhides), Śūla (colic), Hṛda Rogas (cardiac diseases) and Gulma (abdominal tumours). Another combination with Harītakī namely Vallabhaka Ghṛta has been mentioned in the treatment of Śvāsa (asthma) and Hṛda Rogas (cardiac diseases). In Kāsopkrama with other drugs and in Kāsa Cikitsā as an ingredient of Agastya Rasāyana, Harītakī has also been described. In Arocaka Cikitsā along with Pipplī, Pippalāmūla, Marica and some other drugs, it has been advised to be taken with honey. In Apatantraka (convulsions) cikitsā, Harītakī has been mentioned as an ingredient of Hingvādi Čūrna, Harītakyādi Čūrna and Harītakyādi Ghṛta. In Kalpa Sthāna, Harītakī as an ingredient of Caturanguliya Kalpa, Śankhini Kalpa and Śyāma Trivrta Kalpa has been mentioned.

References –Sū.8/19-22; 10/18; Ci.2/23; 5/17; 6/55; 10/67; 13/29,51;14/21; 15/6; 16/43; 17/2019/7,11; 20/41; 21/38; 26/12,16,24; Ka.6/4; 8/17; 9/45.
Kāśyapa Samhitā (Kāśyapa, 6th Cent. B.C.)

Although detailed description of Haritakī is not available in this text, yet the use of Haritakī in different pharmaceutical preparations is available.

Haritakī has been used as one of the components of Trivrta Yoga meant for complications of puerperal women arising out of Vāta. Similarly the use of Haritakī along with other drugs mixed with milk is reported to cure flatulence. In the chapter on Rājayakṣmā (consumption), a preparation Mahā-abhāyariṣṭa also contains Haritakī as a constituent. Fumigation of Haritakī with other drugs is advocated in chronic fevers. In the treatment of Raktaja Gulma, powder of Haritakī with other drugs is taken with warm water for cleansing as is the use of a Ghṛta preparation which also contains Haritakī. In the management of puerperal fevers decoction of certain drugs along with Haritakī has been suggested for cleansing the mouth. In ophthalmia neonatorum, an eye drop containing Haritakī has been mentioned. For the treatment of oedema as a general measure Haritakī mixed with Jaggery has been suggested and the use of Haritakī along with other drugs is reported to relieve pain in case of abdominal colic. A unique feature of this treatise is that it has suggested the name of Haritakī as one of the congenial diet for Amlapitta (hyperacidity).


Aṣṭāṅga Samgraha (Vāgabhatta, 6th Cent. A.D.)

The authorship of Aṣṭāṅgahrīḍya and Aṣṭāṅga Samgraha being the same, the description of Haritakī and its use in various disease conditions are almost same.

References – Sū.:12/39-43; 13/3; 15/17,30,36,38,49; 16/15,29; 18/18.
Dhanwantari Nighantu (Mahendra Bhogika, 10th Cent. A.D.)

Fifteen synonyms of Haritaki have been given. It has been stated to possess all but salty taste. By virtue of its Amla Rasa it subdues Vata Dośa, by Madhura Tikta Rasa it subdues Pitta Dośa and Kapha Dośa by its being Rūkṣa and Kasāya. Therefore, Haritaki is said to normalise all the three Doṣas.

Haritaki is Lekhāṇī (revulsive), Laghu (light), Medhya (intellect promoter), Cāksuṣya (good for eye sight) and releaves Prameha (urinary anomalies), Vamana (vomitting), Šotha (oedema), Vāta Rakta (gouty arthritis) and Mūtrakṛcchra (dysurea). It is Anulomaka (carminative), Hṛdya (cardio tonic), Indriya Prasādinī (satiates the senses) and cures diseases caused by Santarpana (over nutrition). It is contra-indicated in Trṣā (thirst), Mukha Šoṣa (dryness of mouth), Hanustambha (lock jaw), Galagraha (rigidity of neck), Navajvara (early stages of fever) Kṣīna (emaciated ) and in Garbhini (pregnancy).

It is stated to cure all diseases, grows in the Himalayas, the abode of Hara (Lord Śiva) and greenish in colour, that is why it is called Haritaki.


Cakradutta (Cakradutta, 11th Cent. A.D.)

Like Caraka, Cakradutta has also emphasized the role of Haritaki as Rasāyana (rejuvenator) drug. He is of the view that for longivity Haritaki powder should be taken with jaggery, honey, ginger and piper powder. Like previous writers, he also holds the view that for Rasāyana purpose Haritaki should be taken in different seasons with specific vehicles. His use of the drug has also a very long range. In different fevers, Drākṣādi Kwāṭha, Āmalkyādi Kwāṭha, Patolādi Kwāṭha, Āragwadhādi Kwāṭha, Dārvayādi
Kwātha, Mustādi Kwātha, Vyōṣādi Kwātha and Triphāladi Kwātha have been indicated. All these formulations contain Harītabi as a constituent.

In Atisāra, Pipalamūlēdi Cūrṇa has been suggested. In Grahaṇī Cikitsā, two preparations Takrāriṣṭa and Kalyāṇaka Ghṛta have been indicated. They contain Harītabi as a constituent. Similarly in Arśa Cikitsā, the use of Harītabi in combination is indicated for application over the pile masses. For this condition Dantayāriṣṭa, Kankāyan Ghṛta, Vijayā Cūrṇa, Agnīmukha Loha and Bhallātaka Loha are some of the other preparations which also contain Harītabi. In Pāṇḍu Cikitsā also, the use of Harītabi along with jaggery and honey has been mentioned. Similarly, Punarnāvā Manḍūra, Vidangādi Loha, Manḍūra Vajra Vataka and Harādrādi Ghṛta to name a few contain Harītabi also. In Rājayakṣmā Cikitsā, Madhu Tāpyādi Loha and Eladi Mantha also have Harītabi as a constituent. In Kāsa Cikitsā special preparations of Harītabi as Harītabhyadi Gūṭikā, Harītabhyadi Modaka, Agastya Harītabi and Bhṛgu Harītabi have been described.

In Hikkā and Śvāsa Cikitsā the role of Harītabi and Sontha in combination has been detailed. Similarly Tejovātādi Ghṛta and Bhārantī Guda employed in the treatment of above diseases also contain Harītabi. In different Vāta Rogas Harītabhyadi Cūrṇa, Āditya Pāka Guggulu and Mahānārāyaṇa Taila of which Harītabi is a constituent have been explained. A preparation namely Mahāsneha which also contain Harītabi has been explained for application. Similarly in Vāta Rakta the use of Harītabi and jaggery along with decoction of Giloyā has been explained. The popular preparations Kaisōra Guggulu and Amṛtādi Guggulu also contain Harītabi.

In Āmaṇvāta the use of Harītabi along with Eranda Taila is said to be beneficial. Similarly Yoga Rāja Guggulu and Simhṇāda Guggulu employed in the treatment also contain Harītabi.
In Udara Śūla and Gulma, Tumbruādi Cūrṇa, Hingwādi Cūrṇa, Triphaladi Kwāṭha, Vacādi Cūrṇa, Dipakyādi Cūrṇa and Gomūṭra Abhayā have been reported to be useful. In polyurea, Dhanwantara Gutikā, Trayoṣnādi Guggulu and Viḍāṅgādi Loha are used. All these formulations contain Harītakī also. Navaka Guggulu, Loha Rasāyana, Vyōsādi Saktu and Trīfḷādi Taila used in the treatment of Stholya (obesity) have Harītakī as one of the drugs. Similarly the formulations employed in Kuṣṭha, Bhagandara, Updamśa, Amlapitta, Kṣudra Roga, Vṛana, Śoṭha, Mukha Roga, Netra Roga and for Virecana (purgation) purpose, the use of Harītakī in different forms is indicated.

Vangasena  

Vangasan, like the previous scholars of this science has given a detailed description of the use of Haritakī in different disease conditions with a wide range. Its use is spread over from the treatment of various fevers to diarrhoea, malabsorption syndrome, from haemorrhoides to Rājayakṣmā, from epilepsy to urinary disorders, from diabetes to various skin ailments so on and so fourth.

Haritakī has been said to be a useful drug along with other drugs in the treatments of various types of Jvaras. In diseases of G.I.T. ranging from Atīṣāra, Grahnī roga, Arsa to various abdominal tumours and abdominal disorders, the use of Haritakī has been advocated. Ghṛta bharjita Haritakī, Guḍa Haritakī, Mahācangerī Ghṛta, Abhayārīṣṭa are some of the preparations used in the above disease conditions of which the Haritakī is an important constituent. Vyāghṛī Haritakī, Agastya Haritakī and Vaśiṣṭha Haritakī used in chronic bronchitis and tuberculosis also contain Haritakī in special way.

Vaiśvānara Cūrna , a preparation mentioned in reference to arthritis contains Haritakī as a major part. Similarly, Abhayā Vaṭaka and Abhayā Lavaṇa employed in the treatment of various abdominal disorders have Haritakī as an important ingredient.

The use of Haritakī as a purifactory agent has been described in the cases of chronic dermatoses of different types. In premature graying of hair, the use of Haritakī along with other drugs has been advocated for washing of the hair. In ophthalmic disorders a specialized preparation by the name of Haritakyādi Varti which contains Haritakī also along with other drugs has been mentioned in the text.

Under the chapter Rasāyanadhikāra, the worthy scholar like all his predecessors has stressed the role of Haritakī as a Rasāyana drug. He has
also suggested that for achieving this effect Harītakī should be used with different Anupānas in different Rtus. He has also advocated the use of Harītakī immersed in honey for achieving the rejuvenating effect (Madhu Harītakī).

Grahanādhi.: 29,44-47. Arśodhi.: 63,71,335,345,385391. Ajūrnādhi.11.

Śoḍhala Nighaṇṭu (Śoḍhala, 12th Cent. A.D.)

Synonyms of Harītakī are given as Jayā, Pathyā, Prapathyā, Pūtnā, Amṛtā, Rohini, Ropini, Surbhi, Kalikā, Abhayā, Haimvatī, Kāyasthā, Cetakī, Avyathā, Śivā, Vijayā, Nandini, Himajā, Jivanti, Pranḍā, Vaiasthā and Śreyasī. By scanning the root words of these names it can be inferred that Harītakī is an elixir, heals the ulcers, restorative, and stands victorious to conquer all the diseases. It can also be interpreted that it grows over mountains and is always beneficial when used.

Vijayā, Rohini, Pūtanā, Amṛtā, Cetakī, Abhayā and Jivanti are the seven varieties of Harītakī described by the author. The distinctive
characters of each variety have also been described. For overall use Vijayā is the best, Rohinī for healing of wounds, Pūtanā for application as paste, Amṛtā for purgation and Cetakī for all disease conditions according to its different pharmaceutical preparations. For therapeutic use the best quality of Haritakī should be fresh, oval, solid, smooth, heavy and should immerse when put into water.

Further, Cetakī has been described to be of two types - dark and light coloured. The dark variety is of six fingers width in length and the other one is of only one finger width in length. The therapeutic action of Haritakī is some times attributed to its taste, some times to its odour, some times by touch and some times by sight only. A person starts purging if he sits under the tree of Cetakī. This holds true for the animals and birds also. It is said that a person continues to purge as long as he holds on the Cetakī Haritakī in his hands. For the members of the royal families, delicate people and for the week people, Cetakī is the best as it helps in the smooth passage of stools.

Haritakī is said to possess five rasas and is devoid of Lavaṇa rasa. It is said that Haritakī fruit contains different rasas in different parts. By virtue of its possessing Kaṭu and Kaśāya rasa, it subdues Kapha doṣa, Vāta doṣa by Amla rasa and subdues Pitta doṣa by virtue of Madhura and Tikta rasa. It is drying in nature and digests the Ama doṣa. It sharpens the memory and maintains the retention power and good health.

It cures Kustha (dermatosis), Vaiśvarya (hoarseness of voice), Purātana Viṣama Jvara (chronic and intermittent pyrexia), Sīro roga (diseases of head), Aksī roga (ophthalmic disaeses), Hṛda roga (cardiac disorders), Kāmalā (hepatitis), Grahanī (mal-absorption), Śoṣa (emaciation), Śopha (dropsy), Atisāra (diarrhoea), Prameha (urinary anomalies), Vami (nausea), Kṛmi (helminthiasis), Śvāsa (dyspnoea), Kāsa (bronchitis), Praseka
(watering in the mouth), Arśa (haemorrhides), Plīhā roga (diseases of spleen), Anāha (tympanitis), Udara roga (abdominal disorders), Vibandha (constipation), Srotorodha (blockage of channels), Gulama (abdominal tumours) and Arocaka (distaste of mouth). In short Harītakī cures all the disease conditions arising out of abnormalities of Kapha and Vāta doṣas. It is contra-indicated for use in conditions like Trṣṇā (acute thirst), Kantha Śoṣa (dryness of throat), Hanustambha (lock-jaw), Galagraha (choaking of throat), Nava Jvara (early febrile conditions), Ksīṇa (weak) and Garbhini (pregnant women).


Gada Nigraha (Śodhala,12th Cent. A.D.)

Gada Nigraha is another text by Ācārya Sodhala. Harītakī has been mentioned as an important drug in the different chapters of this text. The chapter of Harītakī Kalpa Adhikāra under Rasāyana Tantra Ausadi Kalpa Adhikāra begins with a dialogue between Lord Brahma and the twin physicians of the gods, Āśvānī kumāras. The latter asks the former regarding the origin of Harītakī, its types, rasas, uprasas, nomenclature and the peculiar characteristics of each type, uses of different types, the appearance of good quality of Harītakī fruit and the different adjuvants with which Harītakī is used. The lord thus replies:

The drop of nectar fell down on the earth while lord Indra was drinking it and from this drop seven divine types of Harītakī originated. These seven types are Vijayā, Rohinī, Pūtanā, Amṛtā, Cetakī, Abhayā and Jivantī. Thereafter the characteristics of each type, the identification of the best quality and the qualities of each type of Harītakī have been described. As per the consideration of the rasa, it is stated that Harītakī
contains five rasas and is devoid of Lāvāṇa rasa. It alleviates Kapha Doṣa because of Kaṭu and Tikta rasa, Vāta doṣa because of Amala rasa and Pitta doṣa because of Madhura and Tikta rasa and clears the Āma doṣa by being Rūkṣa guṇa. It forcibly cures all the Vātaja, Pittaja, Kaphaja and Sannipātaja diseases and that is why it is known by the name of Harītakī. It is Madhura in vipāka and is Rūkṣa (dry), Laghu (light), Dīpana and Pācana (appetiser and digestive) and Vayasthāpanī (stabilises aging). It is Īṣṇa in vīrya and Buddhī- Indriya balapradhā (increases intellect and vitality of the sense organs).

It cures Kuṣṭha (dermatoses), Vaivāṃya (discolouration), Vaisvārya (speech defects), Purātana viṣma jvara (chronic pyrexia), Pāṇḍu (anemia), Hṛḍa roga (cardiac diseases), Kāmalā (hepatitis), Grahaṇī (mal-absorption), Śoṣa (consumption), Śotha (dropsy), Atiṣāra (diarrhoea), Meha (urinary abnormalities), Mūrcchā (syncopy), Vamana (vomiting), Kṛmi Roga (helmenthiasis), Śvāsa (asthma), Kāsa (bronchitis), Arśa (haemorrhoids), Plīhā-Vṛddhi (splenic enlargement), Anāha (tympanitis), Gara (poisoning), Udara roga (abdominal diseases), Srotovibandha (obstruction of channels), Gulma (abdominal tumours), Śūla (colic), Arocaka (dyspepsia) and Kapha-Vāta roga (disease conditions caused by vitiation of Vāta and Kapha Dosas).

In short Harītakī cures all the diseases that is what is meant by the word Harītakī. It is wholesome for all body tissues that is what is meant by Pathya. It is beneficial for the body that is why the name Śivā and by its quality of conquering all the diseases it is called Vijayā. It removes the doubt of causation of any disease if used regularly that is why it is known as Abhayā. Harītakī fruit which is fresh, oval in shape, solid, heavy and smooth and which dips when put into water is the best. It should be used with butter in paediatric diseases. In diseases caused by vitiation of Vāta doṣa it should be used with Ghṛṭa (clarified butter) and Rock salt, with jaggery in diseases
caused by vitiation of Pitta doṣa and with Piper longam powder and honey in diseases caused by vitiation of Kapha doṣa.

At the end of the chapter a special use of Harītakī called Abhayā Aṣṭaka in which two Harītakī fruits are taken before meals, two in between meals, two after meals and two at bed-time have been recommended for twenty one days. It is said to bring youthful state with high quality of memory, good digestion and sharp eyesight.

In the chapter Prayoga Khaṇḍa, Harītakī has been mentioned as a constituent of different preparations. In Gṛhṭa Adhikāra, the preparations which contain Harītakī are Manjīṣṭhādhyā gṛhṭa, Harītatakatukāma gṛhṭa, Daśāṅga gṛhṭa (Harita Varnita), Mahānīla gṛhṭa (Bheda Varnita), Dhanvantara gṛhṭa (Bheda Varnita) and Kumārakalyāṇa gṛhṭa (Kharanāda Varnita). In Taila Adhikāra, Ashwagandhādi taila, Bhrṅgarāja taila, Śrīśādi taila, Vajraka taila, Dasmulādi taila and Sarīvādi taila are the preparations which contain Harītakī as a component. In Cūṇa adhikāra, it is mentioned as a component of Hingwādi cūṇa, Narāca cūṇa, Vijaya cūṇa, Sardūla cūṇa, Narāyaṇa cūṇa and Vaiśavānara cūṇa. In Gutikā adhikara, the preparations which contain Harītakī are Kankāyana vataka, Abhayā vataka, Mandura vataka, Kṣāra gutikā, Guḍa vataka, Mārīcādi gutikā, Candraprabhā gutikā, Abhayadi modaka, Vyosādi gutikā, Triphala guggula, Gokṣuru guggula, Vijayā gutikā and Pathyā vataka. In Lehā adhikara, it is mentioned as a constituent of Pathyā avaleha, Cīraka avaleha, Pancajiraka avaleha, Agastyaḥarītakī avaleha, Vaiśiṣṭhaharītakī avaleha, Vāśāḥarītakī avaleha, Dantiharītakī avaleha, Vyaghriharītakī avaleha, Punarnāvaharītakī avaleha and Harītakī avaleha. In Āsava ādhikāra, Harītakī is mentioned as a component in Kumārī āsava, Phala āsava, Kankāriṣṭa, Durālabharīṣṭa, Abhāyariṣṭa, Triphalaris.ta and Bhrṅgarāja āsava.
Under Kāya cikitsā khanda, in Jvara (pyrexia) cikitsā, the preparations of Harītakī along with other drugs are mentioned as Kaṭu rohiniādi pācana kaśāya for improving the digestion, Drākṣādi kwātha in Pitta jvara and Triphāāadi kaśāya in Kaphaja jvara. In Atisāra (diarrhoea) cikitsa, Harītakī with Pippalī and with Citraka has been mentioned for Pācana (digestion). And with other drugs as Pathyādi cūrṇa in Kaphaja atisāra. In Grahanī (malabsorption) cikitsā, Harītakī has been mentioned along with other drugs for the management of Kaphajanya, Āmaja and Pakva grahanī. As a constituent of Truṣnadhya ghrṭa and Hingwādi cūrṇa, it is mentioned for Mandāgni. In Arśa (haemorrhoides) cikitsā, Harītakī fried in Ghrṭa is advised along with Guḍa and Pippalī and as a constituent of Guḍa abhayā. In Agnimāṇḍhya cikitsā, it is advised with Saindhava and in Vidagdhājīrṇa along with a set of other drugs, in Pāṇḍu (anaemia) cikitsā, as a constituent of Phalātrikādi kwātha and Vyośādi ghrṭa and in Kāmalā (jaundice) cikitsā of Haridrādi ghrṭa and Triphalādī leha. In Raktapitta (gout) cikitsā it is mentioned as a constituent of Vāsadi kwātha and Drākṣā Harītakī yoga, in Rājayaṅkṣamā cikitsā of Satāvayādi leha and Rāsanādi cūrṇa. Harītakī has also been mentioned as a constituent of Sṛṃgyādi cūrṇa, Kuṣṭhādi cūrṇa and Madhupāncāṇana gūṭikā in Kāṣa (bronchitis) cikitsā, Abhāyādi ghrṭa in Śvāsa (asthma) cikitsā and Sadadhrārṇa yoga in Vātaroga cikitsā. It is advised with Guḍa and Giloyā kwātha and as a constituent of Amṛtā guggula in Vātā rakta (gout) cikitsā. In Āmavāṭa (rheumatoid arthritis) cikitsā, Rāsanādi kwātha and Satyādī kwātha have been mentioned which also contain Harītakī as their component. Along with Eranḍa taila, it is also advised in Āmavāṭa cikitsā. In Śūla (colic) cikitsā, Hingwādi cūrṇa, Triphalādī kaśāya and Patolādī kaśāya have been mentioned to be having Harītakī as their component. Vacādi cūrṇa, Yavānyādi cūrṇa and Viḍangādī Kṣīra in Gulma (abdominal tumour) cikitsā, Vallabhaka ghrṭa, Harītakūṭa cūrṇa, Pathādī cūrṇa and Abhāyādi ghrṭa in Hṛḍa roga (cardiac diseases)
cikitsā and Harītakyādi kwātha and Durālabhādi kaśāya in Mūtra Kṛcchra (oligoureia) are the other preparations which have been mentioned to be having Harītakī as their component. In Prameha cikitsā, Kuṣṭha (dermatoses) cikitsā and Śalya and Śālākya tantra of this text different drug combinations have been mentioned which also contain Harītakī as their important component. It has been mentioned in the chapter of Rasāyana tantra of the text that Harītakī kept immersed in Ghī in iron vessel, conquer senility.


Madanapāla Nighaṇṭu (Madanapāla, 12th Cent.A.D.)

The description of Harītakī starts with the nomenclature of the drug. It grows over the Himālayās, the abode of Hara (Lord Siva), greenish in colour and is a panacea, that is why it is called Harītakī. It is stated to be of seven varieties as Jīvantī, Pūmā, Amṛtā, Vijaya, Abhayā, Rohinī, and Cetki. Different interpretations of the different names have been given in reference to different disease conditions and the mode of identification of these types as well. Harītakī fruit which is fresh, hard, smooth round and heavy and which when immersed in water settles down is stated to be good for
treatment purpose. Moreover which is easy to break like jaggery, astringent in taste, fleshy and with a small seed is the best to use.

Further it is stated that if chewed, Haritaki increases the digestion, powdered Haritaki clears the stool, cooked Haritaki solidifies the stools and roasted Haritaki detoxifies the food. Similarly the use of Haritaki in different Rtuas with different vehicles has been stated to pacify all the diseases. Twenty-one synonym of Haritaki have been given. It contains all the tastes except salty taste and is predominant in astringent taste. It is Rūksa (dry), Uṣṇa (hot in potency), Dīpana (kindles digestion), Medhya (intellect promoter), Madhura-pākī (sweet in post digestive effect), Rasāyana (rejuvenator), Sara (clears the faeces), Budhi-pradā (increases intellect), Vṛṣya (aphrodisiac), Cākṣusyā (good for eye sight), Vṛmanā (weight promoter) and Laghu (light to digest).

It cures Śvāsa (dyspnoea), Kāsa (bronchitis), Prameha (urinary anomalies), Arśa (haemorrhides), Kuṣṭha (obstinate skin diseases), Śopha (oedema), Udara Roga (abdominal diseases), Kṛmi (helmenthiasis), Vaisvarya (horaseness of voice), Grahanī roga (malabsorption syndrome), Vibandha (constipation), Viṣama jvara (intermittent fever), Gulma (abdominal tumour), Ādhmāna (tympanitis), Vṛana (ulcers), Chardi (vomitting), Hikkā (hiccough), Kandū (pruritis), Hṛda roga (cardiac disorders), Kāmalā (jaundice), Śūla (abdominal colic), Plihā roga (splenic disorders). It cures Vāta through Madhura and Amla rasa, Pitta through Astringent and Madhura rasa and Kapha through Kaṭu rasa.

References – Abhayādi Varga : 8-25.
Mādhava Dravyaguṇa (Mādhava Kavi, 13th Cent. A.D.)

The text begins with a salutation to Lord Śiva. The first drug which finds mention after giving the purpose of this work by the scholar is Śiva or Harītakī. It is explained to possess five Rasās, Āyuṣya (increases longevity), Cākṣuṣya (good for eye sight), Sara (laxative), Medhya (intellect promotor), Ěṣṇa in Vīrya (hot in potency), Dīpana (appetizer), Śoṭha Kuṣṭha Vraṇapha (cures oedema, chronic dermatoses and ulcers), cures disease conditions like Pāṇḍu (anemia), Hṛda roga (cardiac disorders), Kāmalā (jaundice), Grahanī (mal-absorption syndrome), Vibandha (constipation), Sroto-viṣodhana (clears the micro-channels), Gulta (abdominal tumours), Urusthambha (stiffness of the chest) and Arocaka (distaste). In short Harītakī is mentioned to cure all the disease conditions arising out of vitiation of Kapha and Vāta doṣa.

References – Vividha ausadhi Varga : 1/7-9.

Hṛdaya Dīpikā Nighañṭu And Siddha Mantra (Bopādeva, 14th Cent. A.D.)

Seven types of Harītakī namely Cetaki, Abhayā, Pathyā, Harītakī, Prāndā, Śivā and Vijaya has been described. Harītakī has been described under Doṣaghna Varga as tridoṣahara.

References – Dvipāda Varga : 70 ; Doṣaghna Varga : 136

Kaideva Nighañṭu (Kaideva, 14th Cent. A.D.)

Eleven synonyms of Harītakī have been given. It is stated to possess all but Lavaṇa rasa. It has Madhura vipāka (post digestive effect) and is Rūkṣa (dry), Laghu (light), Ěṣṇa virya (hot in potency). It is Dīpana and Pācaka (appetiser and digestive), Medhya (intellect promotor), Vayasthāpana and Rasāyana (rejuvenator), Cākṣuṣya (good for eye sight)
and provider of Bala, Buddhī and Smṛti (vitality, intelligence and retention of memory). It cures Śiro roga (diseases of the head), Aḵši roga (diseases of the eye), Pāṇḍu (anaemia), Hṛda roga (cardiac disorders), Kāmalā (jaundice), Grahaṇī roga (assimilation disorder), Śoṣa (consumption), Śopha (oedema), Atisāra (diarrhoea), Meha (polyurea), Vamana (vomiting), Śvāsa (dyspnoea), Kāsa (bronchitis), Praseka (excessive salivation), Arśa (haemorrhides), Plihā roga (splenic diseases), Anāha (tympanitis), Udara roga (abdominal disorders), Srotovibandha (blockage of micro channels), Gulma (abdominal tumours), Arocaka (distaste), Hikkā (hiccough), Vraṇa (wounds) and Tridoṣa (subdues the three humors).

By its having Madhura and Amla rasa it cures Vāta, by Kaṭu and Tikta rasa Kapha and by virtue of Kaśāya and Madhur rasa it cures Pitta. It is stated to possess predominance of different rasas in different parts. In reference to habitat it is Jalaja (grows near watery land), Vanaja (grows in forests) and Parvatiya (grows over mountains). These varities are good in ascending order. The fruit which itself drops from the tree after ripening is best. In addition it should also be fresh, smooth, large, heavy and round. The fruit which settles down when immersed in water is stated to be good. For full therapeutic value the weight of each fruit should be equivalent to two tolas (approximately 20 gms).

The fruit which is infested with insects, burnt, lying in water or mud or which is torn is contra-indicated for use.

References – Aus.Varga : 221-224.

Rāja Nighaṇṭu (Narahari, 15th Cent. A.D.)

Twenty three synonyms of Harītakī have been given in the text. In addition seven types of Harītakī as explained by previous writers have also
been given. The different places of growth according to the geographical
distribution have also been detailed for each of the seven types. The
specified use of each type in specific disease conditions have also been
explained. It has been further stated that by keeping the Cetakā type in the
grip it results into passage of loose stools after sometime. But for general use
Vijayā is the best as it is easily available everywhere. Haritaki fruit which
sinks in water is the best for use. Haritakī is called Haritakī as it forcibly
removes the diseases and crosses every barrier in the body metabolism. In
general there is restriction for use of Haritakī in Tṛṣṇā (thirst),
Hanusthambha (lock jaw), Galagraha (sliffness of neck), Śoṣa
(consumption), Nava- jvara (early stages of fever), Jīrṇāvasthā (senility) and
in Garbhini (pregnancy).

Haritakī has been stated to possess all six but salt taste. It is Recani
(purgative), Koṣṭhamayaghni (abdominal disorders), Rasāyana (rejuvenator),
Netra rujāpaharinī (cures diseases of eyes), Tvakamayaghni (cures diseases
of skin) and Yogavāhī (potentiator and carrier).


Vaidya Jīvanam  (Lolimbarāja, 1633 A.D.)

Vaidya Jivanam by Lolimbrāja is a compilation work composed in a
question answer form in order to make it interesting. It is written in a lighter
vain as dialogues between the poet physican Lolimbrāja and his wife
Murasa. The work is divided in five chapters or Vilāsās. The use of Haritakī
in different forms is spread over all the five chapters in different disease
conditions.

In the treatment of different types of Jvara (fevers), Grahanī
(malabsorption), Kāsa (bronchitis), Aśmarī (calculus), Raktapitta (gout) and
Mūtra kṛcchra (oligourea), the use of Harītakī in combination with the other drugs has been recommended.

References—Jva.Ci.23,41,43-44,46,54,59,65,66; Gra.Ci.18.; Ka.Ci.2,18; As.Ci. 22, 23,24,25; Ra.Pi.Ci. 28; Mū.Kṛ.Ci. 34.

Vṛhat Nighaṇṭu Ratnākara (Śāligrāma, 1896 A.D.)

Under the chapter Medo roga karma vipāka, Harītakī, along with other drugs has been recommended for alleviation of Kapha and Vāta and for reducing the Meda. However, the author has mentioned the use of Harītakī in different combinations for the management of different disease conditions like the previous scholars.


Śāligrāma Nighaṇṭu bhuṣanam (Śāligrāma, 1896 A.D.)

The description of Harītakī begins with a mythological story in which the twin physicians Aswani Kumāras ask Dakṣa Prajāpati about the origin of the Harītakī, its various types, colouration, its taste and sub-taste, its properties and the diseases it cures. The Master replies that the nectar, which came out of the churning of the ocean by Gods and Demons when being drunk by Lord Indra, a drop of that nectar fell on the ground and from that drop of nectar seven types of Harītakī germinated.

Fifteen synonyms of the drug are given but the commentator has added twenty-four synonyms from his own side. Like the previous works on the subject seven types of Harītakī have been explained. The different features of identification of each type and the specific places of their availability are also explained. The use of specific type in a specific disease has been indicated. It has been said that all types of Harītakī cause purgation in different ways, some by consumption, others by smelling, still others by
touch and a few by sight only. Of all the seven varieties, Vijayā type is
important of the all as it is easily available everywhere and can be given in
all disease conditions. A special word of praise for Chetkī type of Harītakī
has been given. It has been said that the human beings, birds and animals
whosoever moves underneath this tree, immediately purges. In addition to
the properties given by his predecessor in Madana Pāla Nighaṇṭu, the scope
of the use of the drug has been diversified. It is stated to possess all the tastes
but devoid of salty taste. It is Yogavāhī (potentiator and carrier), Rasāyana
(rejuvenator), Agnidipaka (appetiser), Laghu (light), Sara (purging),
Medhya (intellect promoter), Lekhana (revelsive), Vātanulomaka (carminative), Hṛdyā (cardic tonic), Cākṣuṣya (good for eye sight),
Smṛtikāraka (increases retention of memory), Vayasthāpana (rejuvenator),
Buddhidā (increases genius), Kuṣṭha nāśaka (cures obstinate skin diseases),
Vivarntā (cures discolouration of skin), Indriya prasādinī (pleasing for the
organs) and cures Śiro roga (diseases of head), Netra roga (diseases of eyes),
Vaisvarya (hoarseness of voice), Viṣama jvara (intermittent fever), Jīrna
jvara (chronic fever), Pāṇḍu (anemia), Hṛda roga (cardiac disorders),
Kāmalā (jaundice), Śoṣa (consumption), Śopha (oedema), Mūtra ghāta
(obstruction of urine ), Grahaṇī (malabsorption), Atisāra (diarrhoea), Aśmarī
(uro lithiasis), Jvara (pyrexia), Meha (poly urea), Kṛṇi (helmenthiasis),
Śvāsa (dyspnoea), Viṣa (poisons), Udara roga (abdominal diseases), Kāsa
(bronchitis), Svedādhikya ( excessive perspiration), Mala stambha (cessation
of stools), Anāha (tympanitis), Karṇa roga (diseases of ears), Arśa
(haemorrhides), Plīhā roga (splenic diseases), Trīdosa hara (subduer of three
humors), Gulma (abdominal tumors), Hikkā (hicough), Vruṇa (wounds),
Urah stambha ( stiffness of the chest), Śūla (abdominal colic) and Arucī
(anorexia). It has been stated that when chewed, Harītakī increases appetite,
when taken in powdered form it clears the feaces, when taken cooked it
suppresses stools and when taken in roasted form it subdues all the three
humors. When taken along with meals Harītakī increases vigour and intellect, balances the three Dosas and eases the passage of stool and urine. When taken after meals it checks the impurities of food and cures the anomalies arising out of three humors. When taken with salt it cures the diseases arising out of Kapha doṣa, Pitta doṣa when taken with sugar candy and cures Vāta doṣa when taken with clarified butter and all diseases with jaggery. The use of Harītakī along with different vehicles in accordance with different seasonal patterns is also stated. A verse devoted in praise of Harītakī has been quoted taken from Rājavallabha which speaks of, as “Harītakī cares for humans as mother does for her child. A mother may also get annoyed at some time but never does Harītakī when consumed”. Raising double the quantity of Harītakī made into pills, if taken in the early morning cures Pitta doṣa (derangement of Pitta), Hṛda roga (cardiac disorders), Rakta doṣa (disorders of blood), Viṣama jvara (intermittent fever), Pāṇḍu (anemia), Vamana (vomiting), Kuṣṭha (obstinate skin diseases), Kāmalā (jaundice), Aruci (anorexia), Prameha (polyurea), Anāha (tympanitis), Gulma (abdominal tumours) and Piḍikā (boils). Another verse depicting the usefulness of Harītakī reads as, “Harītakī is always wholesome whether taken before meals or after meals, or whether taken after proper digestion of foods or otherwise”.

A special feature of this work is the description of properties of the seeds of Harītaki. They are stated to be Cākṣuṣya (good for eyesight), Gurū (heavy) and Vāta-Pittanuta (alleviator of Vāta and Pitta).


Bhaiṣajya Ratnāvalī (Govinda Dass, 19th Cent. A.D.)

Being a text of pharmaceutical preparations, the use of Harītakī in different preparations has been mentioned. In Medo roga cikitsā, Vyoṣādi
saktu, Vidangādi loha, Loha rasāyana, Navaka guggulu, Amṛtādi guggulu, Triphalādi taila contain Haritakī as a constituent. Similarly in Udara roga, Yakṛta-Plīhāvṛddhi and in Śoṭha roga the use of Haritakī has been mentioned in combination to other drugs.

References – 39/5-10,22-25,32-42,43,44,47-49; 40/26,43,35,36,37,39,79-81, 82-86,94-97; 41/5,8,15,32-40,50; 42/7,11,14,27,28,29,37-38,136-139.

Yoga Ratnākara (Anonymus)

The practical aspect of treatment makes this work a unique but it is really a matter of disappointment that the writer intentionally has not given any clue of his name neither in the beginning nor at the end of this text. The worthy writer only longs humbly that as long as this world exists the noble physicians may read this work. The reference of Bhāvamīśra at different stages testifies that the writer was definitely a successor of Bhāvamīśra.

Haritakī has been described in different combinations for the treatment of different diseases. In Jvara (fever) cikitsā, it has been mentioned as a componant of Maricādi cūrṇa and Triphalādi modaka. For Pācana and in Sannipātaja jvara, it has been mentioned along with other drugs. In Viṣama jvara, with Madhu and with Amṛta, Viśwa, Nāgarāmothā and Katerī in the form of kwāṭha. It has also been mentioned as a componant of Āmalakyādi cūrṇa given for the treatment of Viṣama jvara.

In Atisāra (diarrhoea) cikitsā, for Āma pācana, in combination with different other drugs and as a constituent of Kalingaṣṭhaka for the treatment of Raktātisāra and of Abhāyadi gutikā for Sannipātatisāra. It has been mentioned as a componant of Pancamūlādya ghrṭa, Bhallāṭaka kṣāra, Takra Haritakī, Kalyāṇaka avleha and Caturāmūrti rasa prescribed for the treatment of Grahaṇī (malabsorption syndrome). In Arśa (piles) cikitsa, its
combinations have been described as Tilādi modaka, Kānkayana gutikā, 
Surāna modaka and Agastī modaka. In Ajīrṇa cikitsā, Amṛtā Haritakī and in 
Kṛmi (helmenthiasis) cikitsā, Kṛmi Kuthāra and Kṛnimudgara rasa are the 
combinations of Haritakī, which have been described.

In Pāṇḍu (anemia) cikitsā, Haritakī in combination with Madhu, Ghrīta 
and Loha Bhasma and as a component of Navāyasa cūrṇa has been 
described and in Kāmalā (hepatitis) cikitsā, with Gūḍa and Madhu and as a 
component of Vyosādi ghṛta. In Kāsa – Śvāsa (bronchitis – asthma) cikitsā, 
It has been mentioned with Śountha and as a constituent of Pippalayādi 
gutikā, Harītakyaśī modaka, Khadirādi gutikā and Vyāghṛī Haritakī avaleha, 
Drākṣā harītakyaśī leha, Bharangī harītakī avaleha and Citraka harītakī 
avaleha. In Vāta vyādhi as a component of Mahārāsnādi kwātha, Rāsanādi 
cūrṇa, Trayodaśāṅga guggulu, Yogarāja guggulu and Eranḍa pāka.

In Vātarakta (gout) cikitsā, Navakarsīka kwAtha, Patolādi kwātha and 
Laghu manjiṣṭhādi kwātha and in Śūla (colic) cikitsā, Triphalā-āragwādhadi 
kwātha, Patolādi kwātha, Pathyādi kwātha and Haritakī yoga are the 
combinations of Haritakī, which have been described. In Hṛda roga (cardiac 
diseases) cikitsā, the combinations of Haritakī have been described as 
Puṣkara mūlādhya cūrṇa, Drākṣādi cūrṇa and Hingwādi cūrṇa, in Asmarī 
(urolithiasis) cikitsā, Śunthyādi kwāhta, in Amalapitta (hyperacidity) cikitsā, 
Bhūnimbādi kwāhta, Patolādi kwāhta, Abhayādi kwāhta, Gudādi modaka 
and Drākṣādi ghṛta.

In Rasāyana (rejuvenation) adhikāra, Haritakī has been described as a 
componant of Triphalal rasāyana, Rtu Haritakī and Gudūcyādi yoga.

References – Purvārdha, Jvara Ci./p.p.208-250; Atisāra Ci./p.p.258-276; 
Grahaṇī Ci./ p.p.282-289; Arśa Ci./p.p.299-308; Ajīrṇa Ci./p.p.331; Kṛmi 
Ci./p.p.336; Pāṇḍu Ci./ p.p.340-341; Kāmalā Ci./p.p.344-345; Kāsa-Śvāsa
DESCRIPTION OF HARITAKI IN LATER ĀYURVEDIC TEXTS

Scattered references of use of Haritaki in various rasa preparation in the texts pertaining to the Rasa Śāstra are frequently available. Later Āyurvedic scholars have also given details of use of Haritaki in their works taking their material from previous and their contemporary scientists of the allied branches along with their own experience. To name a few are Dravyaguṇa Vijnānam, Dravyaguṇa Śāstram, Dravyaguṇa Vijnāna, Nighañṭu Ādarśa, Mahauṣadha Nighañṭu, Dravyaguṇa Hastāmlaka and Vṛhat Dravyagunadarśa.

Dravyaguṇa Vijnānam (Yādavī Trikamji, 1953 A.D.)

In addition to the synonyms, three different types of Haritaki have been mentioned by the names : Baḍī Hara, Pīḷi Hara and Java Hara.

The worthy writer has mentioned that Haritaki fruit which is more than 15 gm in weight, solid and with small seeds should be taken for internal use. The uses of Haritaki has been mentioned as described in Caraka samhitā and Suśruta samhitā.

Dose of Haritaki has been mentioned as 3 – 6 gm for laxation and 1 – 3gm for rejuvenation.

**Dravyaguna Śāstram** (G.A. Phadke, 1960 A.D.)

In addition to the synonyms, brief botanical description and the characteristic features of all the seven varieties, worthy scholar has explained the pharmacodynamics of diverse use of Haritaki in context to doṣās, dhātus and malās and different disease conditions.


**Dravyaguna Vijnāna** (P.V. Sharma, 1968 A.D.)

Along with the different synonyms, botanical description and description of different types of Haritaki, the geographical availability of its different types in India has been mentioned.

The Guna-Karma of Haritaki have been detailed as under:

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<tr>
<th>Guna</th>
<th>Laghu, Rūkṣa</th>
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<tr>
<td>Rasa</td>
<td>Panca rasa (Lavāna varjitā) Kaṣāya pradhāna</td>
</tr>
<tr>
<td>Vipāka</td>
<td>Madhura</td>
</tr>
<tr>
<td>Virya</td>
<td>Ūṣṇa</td>
</tr>
<tr>
<td>Prabhāva</td>
<td>Tridośahara</td>
</tr>
</tbody>
</table>

**Doṣa Karma**: Alleviates Pitta because of Madhura, Tikta, Kaṣāya rasa

Alleviates Kapha because of Kaṭu, Tikta, Kaṣāya rasa

Alleviates Vāta because of Amla, Madhura rasa
External Uses - Šotha-hara (anti inflammatory)

Vednā-sthapanā (analgesic)

Vraṇa-śodhana (antiseptic)

Vraṇa-ropanā (wound-healer)

Internal Uses -

Nervous System - Nervous tonic and promotes intelligence,

Good for eye sight

Digestive System - Appetiser, digestive, hepatotonic, carminative,

Laxative, anthelminthic

Circulatory System - Cardiotonic, coagulant, cures dropsy

Respiratory System - Bronchial sadative

Reproductive System - Relieves inflammation.

Urinary System - Diuretic

Skin - Cures dermatoses

Temperature - Antipyretic

Homologation - Rejuvenative

Nighaṇṭu Ādarśa (Bapalal G. Vaidya, 1968 A.D.)

In addition to give the synonyms of Haritakī, the meaning of each of the synonyms has been explained to justify these names. The Guṇa-Karma of Haritakī have been mentioned as below:

Rasa - Panca rasa (Majjā - Madhura rasa; Snāyu - Amla;

Vṛnta - Tiktā; Tvacā - Kaṭu; Asthi - Kaśāya).

Virya - Īṣṇa

Vipāka - Madhura

Doṣaghnaṭa - Tridoṣa

The different uses of Haritakī as described by Caraka, Susruta, Vāgabhatta, Harīta, Bhava Prakāśa, Vaidhya Manoramā, Rājamārtanda, Śodhala, Cakra Dutta, Vanga Sena and Śaranga Dhara have been discussed in the management of different disease conditions.


Mahauṣada Nighaṇṭu (Arya Dasa Singha, 1971 A.D.)

In addition to the synonyms, the Guṇa-Karma have been described as under:

Rasa - Panca rasa (Lavaṇa varjita), Kaśāya predominant

Guṇa - Rūkṣa, Laghu

Virya - Īṣṇa

Vipaka - Madhura

**Dravyaguna Hastamalaka** (Banwari Lal Mishra, 1976 A.D.)

In addition to the synonyms, botanical description in brief and chemical analysis, the Guṇa-Karma of Haritaki have been mentioned as detailed below:

- **Rasa** - Kasāya, Tikta, Madhura, Katu, Amla
- **Guṇa** - Laghu, Rūkṣa
- **Vipāka** - Madhura
- **Vīrya** - Úṣṇa
- **Prabhāva** - Tridoṣa-sāmaka

Appropriate Haritaki for systemic use: Fresh, heavy (16gm), non-porous, small seeded, which immerses in water.


**Vṛhat Dravyagunādarśa** (Mahendra Kumar Sastri, 1978 A.D.)

Along with the synonyms, botanical description, types and qualities, Guṇa-Karma of Haritaki have been described as under:

- **Rasa** - Except Lavana contains all rasas, Kaśāya predominant.
- **Vīrya** - Úṣṇa
- **Vipāka** - Madhura
- **Doṣa** - Tridoṣa-sāmaka
- **Mātrā** - 4 to 8 Māṣā

<table>
<thead>
<tr>
<th>S.No.</th>
<th>Name of Nighantu</th>
<th>Classified under (Varga)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>Dhanwantri Nighantu</td>
<td>Gudųcyādi Varga</td>
</tr>
<tr>
<td>2.</td>
<td>Śodhala Nighantu</td>
<td>Gudųcyadi Varga</td>
</tr>
<tr>
<td>3.</td>
<td>Madanapāla Nighantu</td>
<td>Abhayādi Varga</td>
</tr>
<tr>
<td>4.</td>
<td>Mādhava Dravyaguna</td>
<td>Vividhauṣadhādi Varga</td>
</tr>
<tr>
<td>5.</td>
<td>Hṛdaya Dīpikā Nighantu and Siddha Mantra</td>
<td>Dvipada Varga and Dosaghna Varga</td>
</tr>
<tr>
<td>6.</td>
<td>Kaideva Nighantu</td>
<td>Ausadhi Varga</td>
</tr>
<tr>
<td>7.</td>
<td>Rāja Nighantu</td>
<td>Āmrādi Varga</td>
</tr>
<tr>
<td>8.</td>
<td>Bhāva Prakāśa Nighantu</td>
<td>Harītakyādi Varga</td>
</tr>
<tr>
<td>9.</td>
<td>Śāligrāma Nighantu bhūṣanam</td>
<td>Harītakyadi Varga</td>
</tr>
</tbody>
</table>

In Dhanwantri Nighantu and Śodhala Nighantu, Harītakī has been classified under Guḍųcyādi varga and in Bhāva Prakāśa Nighantu and Śāligrāma Nighantu bhūṣanam, it is mentioned under Harītakyādi varga. The other Nighaṃṭukāras classified Harītakī under different other vargās.
<table>
<thead>
<tr>
<th>S. No.</th>
<th>Synonyms of Haritaki</th>
<th>Name of Nighantus</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>Abhayā</td>
<td>✓</td>
</tr>
<tr>
<td>2.</td>
<td>Amṛtā</td>
<td>✓</td>
</tr>
<tr>
<td>3.</td>
<td>Amoga</td>
<td>✓</td>
</tr>
<tr>
<td>4.</td>
<td>Avyathā</td>
<td>✓</td>
</tr>
<tr>
<td>5.</td>
<td>Balyā</td>
<td>✓</td>
</tr>
<tr>
<td>6.</td>
<td>Bhīṣagapriyā</td>
<td>✓</td>
</tr>
<tr>
<td>7.</td>
<td>Bhīṣagavarā</td>
<td>✓</td>
</tr>
<tr>
<td>8.</td>
<td>Cetakī</td>
<td>✓</td>
</tr>
<tr>
<td>9.</td>
<td>Cetanakī</td>
<td>✓</td>
</tr>
<tr>
<td>10.</td>
<td>Cetanikā</td>
<td>✓</td>
</tr>
<tr>
<td>11.</td>
<td>Devī</td>
<td>✓</td>
</tr>
<tr>
<td>12.</td>
<td>Divyā</td>
<td>✓</td>
</tr>
<tr>
<td>13.</td>
<td>Girijā</td>
<td>✓</td>
</tr>
<tr>
<td>14.</td>
<td>Haimavati</td>
<td>✓</td>
</tr>
<tr>
<td>15.</td>
<td>Haritakī</td>
<td>✓</td>
</tr>
<tr>
<td>16.</td>
<td>Himajā</td>
<td>✓</td>
</tr>
<tr>
<td>17.</td>
<td>Jayā</td>
<td>✓</td>
</tr>
<tr>
<td>18.</td>
<td>Jivanti</td>
<td>✓</td>
</tr>
<tr>
<td>19.</td>
<td>Jivapriyā</td>
<td>✓</td>
</tr>
<tr>
<td>20.</td>
<td>Jivanīkā</td>
<td>✓</td>
</tr>
<tr>
<td>21.</td>
<td>Jivaniyā</td>
<td>✓</td>
</tr>
<tr>
<td>22.</td>
<td>Jivyā</td>
<td>✓</td>
</tr>
<tr>
<td>23.</td>
<td>Kalikā</td>
<td>✓</td>
</tr>
<tr>
<td>24.</td>
<td>Kāyasthā</td>
<td>✓</td>
</tr>
<tr>
<td>25.</td>
<td>Nandinī</td>
<td>✓</td>
</tr>
<tr>
<td>26.</td>
<td>Pācanī</td>
<td>✓</td>
</tr>
<tr>
<td>27.</td>
<td>Pathyā</td>
<td>✓</td>
</tr>
<tr>
<td>28.</td>
<td>Pramathā</td>
<td>✓</td>
</tr>
<tr>
<td>29.</td>
<td>Prāndā</td>
<td>✓</td>
</tr>
<tr>
<td>30.</td>
<td>Prapathyā</td>
<td>✓</td>
</tr>
</tbody>
</table>
The most common synonyms mentioned by different above referred Nighantu's are Haritakī and Śivā. The other synonyms which are comonally mentioned by most of the nighantus are Abhayā, Vijayā, Pathyā and Haimavatī. In Śāligrāma Nighantu bhūsanam 37 out of total 45 synonyms have been mentioned while in Śodhala Nighantu and Rāja Nighantu 23 synonyms each have been mentioned. In Madanapāla Nighantu 20, in Dhanwantri Nighantu 16, in Bhāva Prakāśa Nighantu 15, in Kaideva Nighantu 10, in Hṛdaya Dīpikā Nighantu and Siddha Mantra 7 and in Mādhava Dravyagunā only 2 synonyms of Haritakī can be found.

<table>
<thead>
<tr>
<th>No.</th>
<th>Synonyms of Haritakī</th>
<th>Significance of Synonyms</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>Abhayā</td>
<td>As it is safe to prescribe.</td>
</tr>
<tr>
<td>2.</td>
<td>Amṛtā</td>
<td>As it is a certain remedy like nectar.</td>
</tr>
<tr>
<td>3.</td>
<td>Amogha</td>
<td>As it is unerring and infallible.</td>
</tr>
<tr>
<td>4.</td>
<td>Avyathā</td>
<td>As it removes distress.</td>
</tr>
</tbody>
</table>

Table – I. 3 : Significance of Synonyms of Haritakī
<table>
<thead>
<tr>
<th>No.</th>
<th>Word</th>
<th>Meaning</th>
</tr>
</thead>
<tbody>
<tr>
<td>5</td>
<td>Balyā</td>
<td>As it is invigorating.</td>
</tr>
<tr>
<td>6</td>
<td>Bhiṣagapriyā</td>
<td>As it is favorite of the physician.</td>
</tr>
<tr>
<td>7</td>
<td>Bhiṣagavara</td>
<td>As it is the best choice of the physician.</td>
</tr>
<tr>
<td>8</td>
<td>Cetaki</td>
<td>As it imparts intelligence.</td>
</tr>
<tr>
<td>9</td>
<td>Cetanakī</td>
<td>Signifies the same as Cetakī.</td>
</tr>
<tr>
<td>10</td>
<td>Cetanikā</td>
<td>Signifies the same as Cetakī.</td>
</tr>
<tr>
<td>11</td>
<td>Devī</td>
<td>As it is believed to have divine origin.</td>
</tr>
<tr>
<td>12</td>
<td>Divyā</td>
<td>Signifies same as Devī.</td>
</tr>
<tr>
<td>13</td>
<td>Girijā</td>
<td>As it grows on the Himalayās.</td>
</tr>
<tr>
<td>14</td>
<td>Haimavatī</td>
<td>Signifies the same as Girijā.</td>
</tr>
<tr>
<td>15</td>
<td>Haritakī</td>
<td>As it grows on the Himālayās, the abode of Lord Śiva / as its colour is greenish / as it destroys the disease.</td>
</tr>
<tr>
<td>16</td>
<td>Himajā</td>
<td>Signifies the same as Girijā.</td>
</tr>
<tr>
<td>17</td>
<td>Jayā</td>
<td>As it emerges victorious in curing the disease.</td>
</tr>
<tr>
<td>18</td>
<td>Jivanti</td>
<td>As it is beneficial for the maintenance of life process.</td>
</tr>
<tr>
<td>19</td>
<td>Jivapriyā</td>
<td>As it is cherished by and agreeable to human beings.</td>
</tr>
<tr>
<td>20</td>
<td>Jivanikā</td>
<td>Signifies the same as Jivanti.</td>
</tr>
<tr>
<td>21</td>
<td>Jivanīyā</td>
<td>Signifies the same as Jivanti.</td>
</tr>
<tr>
<td>22</td>
<td>Jivyā</td>
<td>Signifies the same as Jivanti.</td>
</tr>
<tr>
<td>23</td>
<td>Kalikā</td>
<td>As the shape of its fruit is like that of a bud.</td>
</tr>
<tr>
<td>24</td>
<td>Kāyasthā</td>
<td>As it makes the body solid and enduring.</td>
</tr>
<tr>
<td>25</td>
<td>Nandini</td>
<td>As it grows on the Himālayās, the abode of Lord Śiva.</td>
</tr>
<tr>
<td>26</td>
<td>Pācanī</td>
<td>As it digests and purifies the morbid dosas.</td>
</tr>
<tr>
<td>27</td>
<td>Pathyā</td>
<td>As it is suitable for use in different diseases.</td>
</tr>
<tr>
<td>28</td>
<td>Pramathā</td>
<td>As it is nourishing and uproots the disease.</td>
</tr>
<tr>
<td>29</td>
<td>Pranda</td>
<td>As it possesses the life giving properties.</td>
</tr>
<tr>
<td>30</td>
<td>Prapathyā</td>
<td>Signifies the same as Pathyā.</td>
</tr>
<tr>
<td>31</td>
<td>Pūtanā</td>
<td>As it purifies the body by releasing toxins through purgation.</td>
</tr>
<tr>
<td>32</td>
<td>Rasāyanaphala</td>
<td>As its use yields the properties of rejuvenation.</td>
</tr>
<tr>
<td>33</td>
<td>Rohini</td>
<td>As it increases the quality of life.</td>
</tr>
<tr>
<td>34</td>
<td>Ropinī</td>
<td>As it is healer of the diseases.</td>
</tr>
<tr>
<td>35</td>
<td>Rudrapriyā</td>
<td>As it grows on the Himālayās, the abode of Lord Śiva.</td>
</tr>
<tr>
<td>36</td>
<td>Śakrasrṣtā</td>
<td>As it imparts strength to the body.</td>
</tr>
</tbody>
</table>
The synonyms of Haritaki as given by the different Nighantu karas are indicative of its availability, identification and the therapeutic actions. Along with, some of the synonyms indicate the safety profile of this drug. The distinctive actions like that of sodhana (purification), pācana (digestion) and rasāyana (rejuvination) are apparent from some of the symptoms. The mythological story of its divine origin and its actions as that of the nectar are also apparent by some of the other synonyms.

Table – 1.4: Properties of Haritaki in different Nighantu

<table>
<thead>
<tr>
<th>S. No.</th>
<th>Name of Nighantu</th>
<th>Properties of Haritaki</th>
<th>Mukhya Karma</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Rasa</td>
<td>Guṇa</td>
</tr>
<tr>
<td>1.</td>
<td>Dhanwantri Nighantu</td>
<td>Madhura, Amla, Katu, Tikta, Kasāya</td>
<td>Laghu, Rūkṣa</td>
</tr>
<tr>
<td>2.</td>
<td>Śodhala Nighantu</td>
<td>Madhura, Amla, Katu, Tikta, Kasāya</td>
<td>Laghu</td>
</tr>
<tr>
<td>3.</td>
<td>Madanapala</td>
<td>Madhura, Rūkṣa, Ěṣaṇa</td>
<td>Madhura</td>
</tr>
<tr>
<td>Nighantu</td>
<td>Amla, Kaṭu, Tikta, Kaśāya</td>
<td>Laghu</td>
<td>Tridosahara</td>
</tr>
<tr>
<td>------------------------------</td>
<td>---------------------------</td>
<td>--------</td>
<td>-------------</td>
</tr>
<tr>
<td>4. Madhava Dravyaguna</td>
<td>Madhura, Amla, Kaṭu, Tikta, Kaśāya</td>
<td>Sara</td>
<td>Usṇa</td>
</tr>
<tr>
<td>5. Hṛdaya Dipika Nighantu &amp; Siddha Mantra</td>
<td>---</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>6. Kaideva Nighantu</td>
<td>Madhura, Amla, Kaṭu, Tikta, Kaśāya</td>
<td>Rūkṣa, Laghu</td>
<td>Usṇa, Madhura</td>
</tr>
<tr>
<td>7. Rāja Nighantu</td>
<td>Madhura, Amla, Kaṭu, Tikta, Kaśāya</td>
<td>Sara</td>
<td>Usṇa</td>
</tr>
<tr>
<td>8. Bhāva Prakāśa Nighantu</td>
<td>Madhura, Amla, Kaṭu, Tikta, Kaśāya</td>
<td>Rūkṣa</td>
<td>Usṇa, Madhura</td>
</tr>
<tr>
<td>9. Śāligrāma Nighantu-bhūṣanam</td>
<td>Madhura, Amla, Kaṭu, Tikta, Kasaya</td>
<td>Rūkṣa, Laghu</td>
<td>Usṇa, Madhura</td>
</tr>
</tbody>
</table>

In all the above mentioned Nighantu, there seems no controversy about the presence of Panca rasa (except Lavana rasa) in Haritaki. However, in Hṛdaya Dipika Nighantu & Siddha Mantra, no description regarding the rasas of Haritaki is found. As per the Guna of Haritaki are concerned, these are mentioned as Laghu and Rukṣa. Śodhala has described its Guna as Laghu only and Bhava Miśra as Rukṣa. In Madhava Dravya Guna as in Rāja
Nighantu, its Guṇas are described as Sara. In Hṛdaya Dīpikā Nighantu and Siddha Mantra, there is no description regarding its Guṇas. In almost all the Nighantuśas, the Vīrya of Haritakī has been described as Usṇa except in Dhanwantri Nighantu and Hṛdaya Dīpikā Nighantu and Siddha Mantra where no mention regarding its Vīrya is found. Regarding its Vipaka, in Śodhala Nighantu, Madanapāla Nighantu, Kaideva Nighantu, Bhāva Prakāśa Nighantu and Śāligrāma Nighantu Bhūṣanam, it is described as Madhura. No other above mentioned Nighantuśas have mentioned its Vipaka. Nighantuṅkāras have described it as a multi actioned drug but among its mukhya karmas, it is described as Trīdoṣahara or Sarvadoṣahara in almost all the Nighantuśas. The other important actions of Haritakī have been described as Rasāyana, Dīpana, Anulomana, Srotovibandha-nāśaka, Yogavāhi and is of value in the cure of Santarpanakṛta rogas.
INTERPRETATION GUṆA KARMA OF HARĪTAKĪ

Dravya

A substance or drug necessarily implies action and attributes, which is intimately connected with Dravyas and of which it is the primary cause or to put it more explicitly, those attributes have an inseparable inherence in and are intimately associated with the substance by way of cause and effect (Samvāyī Karma) (Cakrapāṇī - Ca.Sū. 1/51). In the present context Dravya stands for the drug Harītakī.

Rasa

Harītakī contains Madhura, Amla, Kaṭu, Tikta and Kaśāya rasas with a predominance of Kaśāya rasa (Bha. Pr. Harit.Varga/9). This fact bears no controversy in the textual description of any of the works including Brhatrāyatī, Laghuṛayaī, Nighaṇṭukāras of the samhita period or later works on the subject.

Guṇa

Dravyas without Guṇas and Guṇas without Dravyas are unimaginable (Ca.Sū.26/36). Dravyas act by their Guṇas, which inherently reside in them. Guṇas act mechanically and the action is due to their physiochemical properties. Guṇas become active after attaining the status of Vīrya thus producing the same Guṇas in the body (Aṣ. Sam. Sū.17/36).

The trial drug Harītakī contains all the rasas except Lāvaṇa rasa with predominance of Kaśāya rasa and is said to be Tridoṣa sāmaka. It is said to possess Rūkṣa (dry), Laghu (light) and Ūṣa (hot) Guṇas. Substances having these Guṇas are predominant in Vāyu and Agni Mahābhūtas. These Guṇas are antagonist to Snigdha (unctuous), Gurū (heavy) and Śīta (cool) guṇas.
Vīrya

Vīrya is the factor, which is responsible for action. It is the power by which the drug acts (Ca.Sū.26/65). The trail drug Harītakī is said to be having Ģūṣṇa vīrya. There is no controversy regarding its Ģūṣṇa vīrya in any of the Samhitas or Nighantus.

The Ģūṣṇa vīrya drugs are said to be the alleviators of Vāta and Kapha doṣas (Aś.Hr.Sū.9/18). Cakrapāṇī has described three degrees of potentialities of the drugs as Tīkṣṇa, Madhya and Mṛdu (Cakrapāṇī: Ca. Sū. 2/17). The vīrya of the drug plays an important role on drug standardization, which is closely related with the soil, climatic conditions, collection, preservation, processing, formulation, preparation, dosage etc. The vīrya of a drug is either lowered or destroyed if proper rules given are not followed (Ca.Vi. 8/87).

Vipāka

The rasas are to be digested, assimilated and metabolized before they show their final action in the body. When the drug is digested, it is acted upon by Pācaka agni in G.I. tract. During digestion, the drug is first disintegrated and then resynthesized as per the specific affinity of its Panca mahābhūtas. This process as also the product thus formed at the end of digestion is spoken as Vipāka (Aś.Hr.Sū.9/20). The breakdown of rasas and their resynthesis in to their vipākas during the digestive process are expressed in the terminology of rasa (Ca.Sū.26/58). But their determination unlike the rasas is not possible by gustatory perception. Therefore vipākas are to be determined by their actions. Vipāka is a broad term comprehending the digestion and metabolism. The Pācaka agni, Bhūta agnis and Dhātu agnis lodged in the Koṣṭha, Srotāmsi and Dhātus respectively perform digestive and metabolic reactions in the body. It is with this view that the sphere of Vipāka
extends from G.I. tract to the cells of the body. Obviously, the substances ingested go on changing or altering their atomic or molecular arrangements during digestion, intermediary metabolism and metabolism followed by the changes in their concomitant properties and actions accordingly.

With this principle of Sāmānya pratyārabdha following are the three vipākas of six rasas with their mahābhautic predominance:

<table>
<thead>
<tr>
<th>Rasa</th>
<th>Vipāka</th>
</tr>
</thead>
<tbody>
<tr>
<td>Madhura ( Prthavi + Ap )</td>
<td>Madhura ( Prthavi + Ap)</td>
</tr>
<tr>
<td>Lavaṇa ( Agni + Ap )</td>
<td>Amla ( Agni + Prthavi )</td>
</tr>
<tr>
<td>Amla ( Agni + Prthavi )</td>
<td>Katu ( Agni + Vāyu )</td>
</tr>
<tr>
<td>Katu ( Agni + Vāyu )</td>
<td>Tikta ( Akasa + Vāyu )</td>
</tr>
<tr>
<td>Tikta ( Akasa + Vāyu )</td>
<td>Kasāya ( Prthavi + Vāyu )</td>
</tr>
</tbody>
</table>

But there are certain exceptions to this rule (Vicitrapratyārabadha) (Aś.Ḥṛ.Śū.9/27). This means to say that the trial drug Haritakī should have Katu vipāka as a rule but due to chemical transformation at the level of Pācakāgni, it has Madhura vipāka in violation to the general norms of vipāka. It seems that in order of evolution the Pancamahābhūtas does not remain in order of their affinity. In the context of Haritakī, it may be possible that its Prthavi protoelement takes a predominant position and joins with Ap proto-element to produce Madhura vipāka. The transformation of its Kasāya rasa into Madhura vipāka is apparent at the level of Pācakāgni in G.I. tract, which inferred with the laxative action.
Prabhāva

Prabhāva is specific potency or power. Vīrya is the potency of general nature exerting effect on doṣas while Prabhāva exerts specific action because of specific composition of the drug (Ca.Sū.26/67).

Going by the textual description of the drug, it has been said to be Vāta-Kaphahara by some and Tridoṣahara by others. But the multifaceted properties and qualities ascribed to the trial drug Harītakī are due to its specific action which has a wide range on almost all the systems of the body that is why so much reverence has been paid to this drug comparing it with the care provided only by the mother (Śā.Ś. Harit.Varga).

As per my guide Prof. (Dr.) J.K.Barde, Harītakī keeps the biological system clean and tidy maintaining the equilibrium of all the doṣas and thus it works as rasāyana and being harmless it signifies its name as Pathyā and Amṛtā.

The different effects of the drug Harītakī are interpreted here under in the light of the analysis made by G.A.Phadke (Dravyaguṇa Śāstram p.p.327-333).

Except Lāvana rasa Haritaki contains all the rasas but has a predominance of Kaśāya rasa. It is Madhura in vipāka although as a rule it should have Kaṭu vipāka owing to Kaśāya rasa predominance. The drugs having predominance of Kaśāya rasa are generally Śīta in virya but Harītakī is Úṣṇa in virya. Vipāka normally corresponds with rasa. And virya likewise corresponds to rasa and vipāka but here in this case it is not so. It is a pecularity with Harītakī.
Effect on Doṣas

Harītakī subdues Kapha because of Kaṭu - Tikta rasa

Harītakī subdues Pitta because of Madhura - Tikta rasa

Harītakī subdues Vāta because of Amla rasa.

Effect on Dhātus

Harītakī brings a qualitative change in dhātus particularly Mamsa dhātu. It dries up the Kleda contained within the māmsa dhātu and in turn increases the quality of māmsa dhātu by increasing the māmsa agni and by removing the faulty contents lying within the māmsa dhātu. It increases māmsa dhātu by the principle of Sāmānya (similar). That is why Amṛtā or Mamslā are synonyms of Haritaki.

By virtue of its Kaṭu, Tikta and Kaśāya rasas, Harītakī dries up the Kapha and Sneha lying within the matrix of Meda dhatu and acts as a revulsive (lekhana). It clears the blockade of micro-channels thereby maintaining a smooth flow of rasa dhātu, which results into satiation of the successive dhātus and increases vitality.

Effect on Malas

Harītakī purifies all the malas of the body in general and of mamsa dhātu in particular. The increase in drava and Kapha contents in the dhātus of the body increases Kleda, which results in the excessive perspiration and urination. Harītakī dries up the Kleda and thus corrects the renal functions and fat metabolism.
Special Effects

Dīpana Pācana - Haritakī increases Agni by its being Ūṣṇa vīrya and satiates thirst. It helps in the digestion of foods and undigested metabolites. It means to say that it increases Kāyagni and Dhātwagni, which in turn helps in the digestion of Dhatugata āma.

Anulomana - Kaśāya rasa predominant drugs usually cause Stambhana (constipation). But Haritakī is an exception to this rule. It breaks up the feecal matter by its Pācaka property and by its being Madhura in vipāka, it eases the passage of urine and stool by virtue of its carminative action. By its being Kaśāya rasa it does well in Grahaṇī roga.

Medhya Buddhi Bala Pradā - Haritakī increases intellect. It increases the strength of sense organs. The drugs and metals like Gold, Śatāvarī and Brahmī etc. also perform the same function by their Madhura nature. But Harītakī does it in a different way. It destroys the Kapha and Meda dhatu thereby removing the interness. In a way it activates and recharges the sense organs or the higher faculties by removing the impurities collected within them in the form of malas. When all the channels are cleared, the transportation of the required nutrients satiates the sense organs and they work with optimum accuracy.

Vayasthāpanī - Harītakī preserves youthfulness. The aging results from the diminution of the Mamsa dhātu, which affects the strength of the body. Harītakī increases the muscular tissue and thus invigorates the body. The accumulation of doṣas results in Vāta prakopa thus producing various disease conditions which in turn diminishes the strength of the body and of dhātus and digestive capacity thereof. Harītakī purifies and satiates all the dhātus and senses and maintains the youthfulness. Obesity results in increase in fatty tissue but deprives the body of all other dhātus as far as the quality is
concerned. Haritakī restores the equilibrium of all the dhātus. It clarifies the excessive fatty tissue, removes the laxity and heaviness thus restoring youthfulness and alertness. Being devoid of Lavaṇa rasa, it maintains and preserves the youthfulness.

In a way, it maintains a free and smooth flow of rasa dhātu by opening the micro-channels. This results in the restoration of strength, good complexion, nourishment to all the dhātus to the optimum level. That is because it is claimed to be a rejuvenator (Rasāyana).
Sanskṛta References:

हरीतकी पथ्यानाम्। (चौथौ 25:40)
हरीतकी पत्वांसामुणाणाल्लवणा श्वाम्।
दोषानुसारम् लर्धि विद्वाददीपनपाचनीम्।
आवुधां पौष्टिकी धन्या वयसः स्थानीं पराम्।
सर्वोर्गप्रशासनों बुद्धिनिद्रयत्वप्रदाम्।
कुशं गुल्मुद्वारवं शोषं पाण्डवमयं मद्दम्।
अश्वश ग्रहणीदोष शुरुणां विषमज्वरम्।
हुँद्रोऽग सर्वोर्गमल्लरोरोचकम्।
कासं प्रभेमागां प्रीठानुडारं नवम्।
भक्तप्रसे वैस्वर्य व्रेणं कामतां क्रिङ्गीम्।
कविघुँ तथां छल्ले कल्याणसाधनसम।
कोतेविवनिधानं विविधानं प्रलेपं हृदयोरसो।
स्मृतिविभिन्नों स ज्ञेष्ठीप्रेयं हरीतक।

चौथौ 1:29-34

जन्द्रोऽग विपक्तवथा विषाण्ति: पञ्च चाभया।
दन्तया: पलानि तावत्ति विषकहस्य तथैव च।
अष्टभागावशेष तु रसं पूतस्तथोपिते।
दन्तीसदं गुहं पूतं क्षीराद्याभ्याच त।
तैलाद्यकुडं चैव निकूलाभायमेवति।
चूर्णितं पलामकं तु पिपलीविषव्यवसंज्ञ।
तत् साध्यं लेहवच्छिं तत्संगीतैलसं मधु।
क्षेपः कृष्णपलं चैवं ल्योगान्त्रकेशरः।
ततो लेहयतं लीङ्गा जग्या चैवकाहरीतक।
सुखं विविधं स्निग्धं दोषप्रस्थलनामायम्।
गुल्मं भवयुमशोभसि पाण्डुगमरोचकम्।
हुँद्रोऽग ग्रहणीदोष तात्ति विषमज्वरम्।
कुशं प्रीठानुडारं ज्ञेष्ठा हन्त्युपसेविता।
निरत्याः: क्रमशःचाथा व्याजोऽनासरसीद्व।

चौथौ 5-154-160
हरितकीकटफलमुत्तंतरोधं
यवान्युशीरणयपथालगृहीच्याभयाधिकरकसप्तपणि:
पादे: कपाया: कपमेहिना ते दशोप्रियपत्रा मधुसंप्रुयुक्ता:।।

चौथि 6/27-29

पीतं कपोत्थथं बलं शेषं गव्येन मूर्तेन हरितकी च। चौथि 12/21
मासमौषूदं पवश्चानं त्रीण्यासानं व्योङसंयुतम।
हरितकी सहवं वा कृषि वा शिनाजना।। चौथि 13/152
गोमूर्चाध्युलणं दद्यात् समुहं वा हरितकीम।
हरितकीं नक्सुता त्रिफला वा प्रयोजयेत।। चौथि 14/67-68
सुगुणं पिपलीयुक्ता घुम्भुम्मानं हरितकीम।।
पलाशं च्वतं कवण्यां मानतुःं हरितकीम।। चौथि 15/142
कपनाणुतु गोमूर्चक्तनुरुक्ता हरितकीम।
हरितकीं प्रयोगेण गोमूर्चाण्यथा पिते।
जीविण कृषिण भूज्ञीत रसेन महुर्णव वा।। चौथि 16/68
दशमूणं स्वयंचुता शांतपुरणी शरीं बलम।
हस्तिपिण्डपाणागर्ग पिपलीपृत्विन्त्रकान।
भागीं पुरकसूलं च विघ्नलां यवादकम।
हरितकीमं चेकं जले प्रवाढके पचत्।।
यवें: विलेन: कपायं तं पूर्तं तच्चाभ्यासम।
पचेतु गृहलूलां दद्या कुक्षं च पृथ्थ्युतात।।
तेलातु सपपिलीयुणनुव सिध्दिन्तेत च माध्यकात।
लिहियादैं दे चाभेये नित्यमत: खाद्यसायनात।। चौथि 18/57-60
कपनां कर्तृमं भागीं मुत्तं धार्यं वाचाभे।।

चौथि 18/112-113
हरितकीमं कव्याख्यातके विशालं पचे॥

स तेहः: भवास्तिकासनुम॥ चौथि 18/168-169
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उजामुनानानाहविचुदवतानं पील्चा जयेदाशु रसोधानाश।। चौथि 26/21
पथाष्टीपीषकरपरच्छलात समातुग्धायवकेन कलकः।
गुड्रस्नानलवणीम् भूषितो हस्ताभ्युष्णोदयमिनिसूले॥। चौथि 26/86
मुत्ता हरीतकी के लोग पदमक तिक्रोहियणम्।

साधोवाधनादश सोकोवासम जक्कलनृग्नधापन। चोंचि 27/30-32
रसे च दंशमुस्य हरीतकीसे चैव लेहानेण पचेत पृथक्। चोंक 12/15
पल्लित्रकालिक्ष्णौ इहु गुड्याण्तपलन तत्।

तिनौौ गोकानु कुर्यादशैक्ष भक्षयेत्तत।
उष्णाम्बू च विदेवानु दशमे दशमेउहनिन च।

एते निष्ठिरायस। स्यु। स्त्रोगन्तिन्ताणम्।
ग्रहणीपापुरोगारः कणिकोशानिलिपम्।। चोंक 9/27-29
सुन्ताहरित्रिश्वरहरित्वादामलकबिषीतक्त

प्रनाम तिल्कस्तवशु फलेश्षिपि हरीतकी।।
विशान तवशु निर्दशू फलानामथव कथते।
हरीतक्या। फलत्वस्थी वियुत्त दोषवन्ज्ञतम्।।
योज्य त्रिवृहिद्रानन सर्वश्चिन्निकरणम्।

रसायन परं मेघ्य तुट्टात्त्रशोधयम।।
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सूचि 44/64
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वा सक्शीत मूनतोयोन्यतेरेण गुहरीतकी वा भक्षयेत।।

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पथ्याकृत्यां पक्वा दायेत्।।
हरितकिंचूर्णं प्रस्त्रमाधवे
परिच्छेद्धरीतकी
व्याधिकायम् विपचेत्
वा पायेत्।।
तिलवक्षृतचतुर्थिनि यानुतानुदेशुरु॥
त्रिवृद्धरत्नकीनावः चूर्णं लिहिकमुद्धवम्।
जलोकस्मिनिर्ज्ञायुक्तं पक्वान्वयापायं दबिश्चान्।।
सुरचिर 6/13
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सुरचिर 9/24-25
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सुरचिर 14/11
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वा तुलसीं हरितकीं वा तुलसुमुखायुजी। सुरचिर 23/12
हरितकिंचूर्णमर्यादेन चूर्तान्त्व दाहिमुण्ड्यानः।
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सुरचिर 25/40
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एकदेवकृष्ण विष्णुवर्षपार्श्वानाद विष्णुवर्षग्रेह्यान्युपुरुष
च महावाचिनि संसोधनमादिशिति।।
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कषायं मधुरं पाके रक्षा विलम्बणं लघुं॥
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कूष्ठवैवैर्यंस्यवैयुर्विनिविषमज्ञानः॥
शिरोदिक्षणंह्रोगकर्ममङ्गलप्रहणीवदानः॥
सरोषोपावपरीतंस्यत्रेश्चविष्ठेनिन्द्रीणीनं॥

श्वासकालस्त्रे: पलिहानायघरोदरम्॥
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साङ्गे नागं पाठं गुड़भारुपानि वा।
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मूर्तापालेषु सर्वं सुराधिरज्ञे: पिबेत॥ (अोहोचि 11/36)
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(अोहोचि 14/92-97)
हरीतकीस्वर्भरजः: प्रस्थुतं घृतात्कम्॥।
हरीतकीनां क्वयोध्नः हन्त्येतत्कुष्टमुखाद्यांम्यं च वानतः॥।
(अोहोचि 15/28-30)
हरीतकी सहच्छः वा गोऽनुग्नेन पवयोः॥
(अोहोचि 15/40)
सर्वेऽत्तत्त्वः शुद्धयेः मूर्ताहरीतकः॥ (अोहोचि 17/2)
विच्छङ्गभल्लात्तकं हरीतकीनाम्: विनिहन्ति कुष्ठम्॥।
(अोहोचि 19/45)
हरीतकीमधि त्रिवृंहिधानेनोपकल्पयेत्: सर्वव्याधिनिवर्धणः:——
विशेषाद्युग्रहीपाषाण्डूकोकठार्यां: हिताः॥ (अोहोचि 2/58-60)
हरीतकीवचः: मुख्ये तालुकण्टकात्॥ (अोहोचि 15/40)
सर्वेऽत्तत्त्वः शुद्धयेः मूर्ताहरीतकः॥ (अोहोचि 17/2)
विच्छङ्गभल्लात्तकं हरीतकीनाम्: विनिहन्ति कुष्ठम्॥।
(अोहोचि 19/45)
हरीतकीमधि त्रिवृंहिधानेनोपकल्पयेत्: सर्वव्याधिनिवर्धणः:——
विशेषाद्युग्रहीपाषाण्डूकोकठार्यां: हिताः॥ (अोहोचि 2/58-60)
हरीतकीवचः: मुख्ये तालुकण्‌टकात्॥ (अोहोचि 2/38)
ज्योतिष्ठति: सहरीतकिम्: वर्त्तीर्याज्ञानेनेपौर्णमाद्युवनि।
(अोहोचि 6/38-40)
हरीतकी हर्द्रे द्हे: प्रमाणाः नायनाभनम्॥ (अोहोचि 5/36)
हरीतकीकपयो वा पेयो मालिकसंयुतः॥। (अोहोचि 22/55)
सप्तदशोति—हरितकीतिलक—पियेत्वाकहरं मुख्यम्। (अंहृतः 22/103)
चाहरीतकी—पीतं समूलामपरं जयेन। (अंहृतः 30/25)
हरितकीमागलक—तेन साधु विरिच्यते। (अंहृतः 39/11)
हरितकीं सर्पिष्टं—व्यवहित्वाय बलं शरिरं। (अंहृतः 39/147)
सारं तिलेवालकानि—हरितकींचं—ते मनुष्यं स्वं परीणाममवापुर्वन्न्ति। (अंहृतः 39/160)
शिलाजतुष्टीि—अभयं—दुर्बलदेहधातुत्रिपक्षयार्गेन यथा शाळाक। (अंहृतः 39/161)
द्राक्षा हरितकी—पितंज्वर जयेन। (शादिवङ्कः 2/15)
बीजपूरिवर्षिणभ्या—स्थलेणज्वरे व्रतयज्ञासे। (शादिवङ्कः 2/17)
अभयामुस्तं—दीपं पादं परम्। (शादिवङ्कः 2/32-34)
कटफलाम्बु—हरितकी—क्वाभो जीर्णज्वरं हन्त। (शादिवङ्कः 2/43-44)
देवदास वचा—धान्या हरितकी—शून्य
वज्रवासमूच्छकमण्डितं। (शादिवङ्कः 2/47-49)
एका हरितकीयाःस्य ध्रौ च योध्यं विभीतकौ।
चत्वारिगमलकः स्त्रिफलेषा प्रकीर्णिता। (शादिवङ्कः 4/9-10)
स्त्रिफला जनवीयम्—वहलज्ञार्गेन सर्वेषसिंद्रो चूर्ण प्रणाशनम्। (शादिवङ्कः 6/26-36)
हरितकी प्रतिविषा—आमातसाश्रम ग्राहिं चामिन्धुयोध्यम। (शादिवङ्कः 6/46)
शुष्ठी हरितकी—आधाराभसमामामवाला स्मृतम्। (शादिवङ्कः 6/93-94)
सैन्यम्—शुष्ठी हरितकी—स्वाधित्वपिनम्। (शादिवङ्कः 6/112)
इज्वारणांका—हरितकी—जयेदेश्यंस सर्वं
आद्यवात प्रतिष्यां—प्रशेषं च रसायनम्। (शादिवङ्कः 7/6-12)
विद्या नामाः पश्चात वटी संजीवनी नामा संजीवयति मानवम्।
(शादिवर्ष 7/18-21)
सूर्यो चूंर्दरस्वरूपः शिवा विभूतिपति धात्री पतिं कृष्णस्तथा मेध्या
रसायनः।
(शादिवर्ष 7/28-33)
हरितकीशतं भूरिः श्रवणं कासं ज्वरं ग्रहणं नाशयोधेष
बलियतिनाशणः रसायनः सवरोगप्रणाशणः।
(शादिवर्ष 9/30-37)
कासीं द्वे हरितकी प्रजुनांत शोधनं रोपणं चैव सवर्वकरं घृतम्।
(शादिवर्ष 9/51-57)
जातीनिम्यपटोलानां तोप्रभया व्रेण दुष्टे प्रशस्ते।
(शादिवर्ष 9/168-171)
पाटलकामभी वीजसारः पर्या कृष्णाना पुष्टजननो।
वनधयानां गर्भद: पर: मरिष्टो दशमूलायत्सेजः शुकवलपदः।
(शादिवर्ष 10/77-92)
आलंकारस्य चूर्णं तु शिवारूपसंम द्रव्यम्
दुग्धपिप्पः प्रलेपोधां दाहणं हन्ति दाहणम्।
(शादिवर्ष 11/19)
धात्रीपत्त्रां पथे द्वे नविराधकालं पतिं महत।
(शादिवर्ष 11/28-29)
हरितकी सैन्धवं च गैरिकं च रसायनम् सवर्णार्यायपद्।
(शादिवर्ष 11/48)
रसायनं शिरोरेण पर्या स समर्थिनम्।
सचित्रं लेपं योजमुषुपद्यः दापम्।
(शादिवर्ष 11/107)
पश्चायस्करवधितितात्रिकावृत्तं भूतं सोऽं।
पाचरसरसुरूपं गुरुभिषजीणवर् सागे।
(भाषा 1/121)
हरितकीत्रिवृद्ध्वारकाणां पृथभवेत्।
कासं श्वासं मलस्त्वं वहनिमान्यं नियच्छति।
(भाषा 1/141-143)
द्राक्षा हरितकी मुखा कटुका कृत्तमालक: ————
पिपिलात्तपितानां श्रानो भेदनो मत:।
(भाषा 1/344-345)
पश्चायस्मुषुपद्यः विचारितसे विचारितसे।
आभासितानाशय क्वायभेदः पिवेन्नर।
(भाषा 2/16)
हरीतकी सातिविष्णु हिंदस्य ।
आमालितारो त्रेयों वस्त्रियन्न न शामयित ।
(भागप. २/१८-२०)
हिंदस्य सौरपत्तिवेश्यप्रभावितविषय । श्रेणिमालितारुत ।
(भागप. २/७८)
जातीशङ्करलक्षण्याला-तालिशिप्पत्तःनात्येद ग्रहणी कान्यः
क्षणकानकरोचकम ।
(भागप. ४/४८-५१)
पितास्यर्हशमनीसुनुशार्याः
(भागप. ५/९५)
भवेश्या प्रातरहीणशिरक तदाध्यायः
भुक्त्या भुज्यायशकंकितमनकाले ।
(भागप. ६/४२)
विद्वदने वषय तु ।
लीरवायर्यां चापि सुवत स्मित ।
(भागप. ६/४३)
वृषण विष्णु श्रुतां विपुरां विनाशये विस्मित ।
(भागप. ८/३५-३८)
विष्णु वृषणा वर्तमाना कामलापशः
(भागप. ८/३९)
आटानिकमृत्युकान्तः सकित्वासरसानितंविर्यन ।
(भागप. ९/३१)
पाठपर्यलयचन्दन । नागक्रसाभायः
हन्त्यमितमक्तिविचारादिशाशोधाः
(भागप. १०/१८)
मधुताः विद्वान्तश्रीकरहार्षानां
(भागप. १४)
ज्ञानित यथाभायामानमृत्युमं सेवययाना हितंशिषः
(भागप. ११/४६)
हरीतकीकणाशुरीमधिरिवं परं वहने-प्रविधेयमृ
(भागप. १२/३८)
हरीतकी चूर्णितु । चर्दिः शीघ्र निवर्तते तु
(भागप. १७/१८)
दशमूली तथा राष्ट्राणं विशाला त्रिफला कौन्ती
हन्त्य भ्रम गदं मूच्छ मेधास्मृतिमित्रप्रदम ।
(भागप. २२/५२-६१)
पंचकोलां साधित्या त्रिफला । अपस्मारे तथोत्खेद्यक्षेरो ग्रहणीगदे
(भागप. २३/२१-२२)
एतक्याणं चूर्ण नान्दस्यानेह दीपमृ
(भागप. २४/३२-४१)
भागा दश विद्वायांसुत्तुलयः पथ्यां-चतुर्शां
संबुद्धगुरुवातं हर्षेत्याचूर्णितं भुत्तमृ
(भागप. २४/९१-९२)
अभायपुर्वयो धार्त्री । आध्यात्मर शून्यमानां प्रत्याध्यामान तथेव च ।
उदावतं तथा गुलामुदारणी हर्षयोत्री
(भागप. २४/९८-१०३)
हिंदस्यस्वादिकां स्वास्थ्यावर्धितं तंवित्वकरोः
(भागप. २४/१०३)
स्याद बीजपूर्वे।।

(भाग 24/111)

पथ्याविभीतानलकोफलाना शस्त्रस्त्रस्त्रादिको गुम्बुलुंग नामना—

चक्षुर्वें तथा पुष्पिको विषयन शस्त्रस्त्र सद्यानको विषयादन्त्रुंग शस्त्रस्त्र:

सकलें तज्जौ।।

(भाग 24/145-150)

नागरं पिन्यलीमुंग चत्वरघुणचित्रकंसू——एना त्रिकन्टकं पथ्याः

गुम्बुलुंगोगाराजोंमहामुख्यं रसायनः।

(भाग 24/327-337)

देवदार्श्वामुंगतनारातिविषाभया। पिवेदुण्माण्यात्मानित्यात्मावत्स्यभेद्यज्ञम्।।

(भाग 26/25)

सेवनं चामावातस्त्रप्रमणमन्त्यत्त्वायणमं कटीज्य्योपर्स्थाननां रजः पीतं निवर्त्येत्।

(भाग 26/28-30)

एण्डैल्युलां हर्यत्कीला——गृधंगीपूढ़धारितो निम्ताम्।

(भाग 26/51)

सेन्धवं श्रेष्ठी सरस्ना——शूलेन हत्यावर्जे——

अन्यंचानिर्जनम् रोगानाशयत्वाशु देहिनाम्।।

(भाग 26/116-121)

रसना वातारिमूलवचनकं अविषाभया——सवेंषां पाचनानान्तु श्रेष्ठेन्तद्वी

पाचनम्। महाराजानीक नाम प्रज्ञापतिविनिमित्तम्।।

(भाग 26/132-142)

तिस्तोष्ठव वा पञ्च गुडः पथ्यं तदवतरं शायसुद्यतिर्णां गाजारुत्त्यन्तं

मुन्तयज्यश्यम्।

(भाग 29/44)

लौहर्य्यानारण्यूष्टीचूर्ण——निहत्त्येव शूलम् हि परिणामज्ञम्।।

(भाग 30/70)

सामुंद्रं सेन्द्वनं——चूर्णं त्रिफला तथा——सेवतो हर्यतेदीर्णी

तथाजीर्णावचनावान्त्यान।।

(भाग 32/35-41)

हरीतकीर्वचप्रास्त्रं——ह्योगवान्त्यान।

(भाग 34/12)

हरीतकीर्वचपुरं——कृष्णेण सदांहे सच्चे विबन्धे।

हरीतकीकृष्णालं——वशशालाञ्जुन्दीयकाः।

(भाग 38/46)

उष्णकारांजुरं——आमलकाभयानाने।

(भाग 38/49)

अमृतामुट्टिः——पथ्यावजलकानि गुम्बुला——

(भाग 39/29)

व्योष्टित्रिकशिवूर्णि त्रिफलाः——


हरीनवयंब्या पथ्या प्रपथ्या पूर्णावृक्षत
जयाप्यथा हैमवतीं वयोश्च चेनकीं शिवा
प्राणदा निन्दिनी चैव रोहिणी बिजया च सा।
कषायाभूमा च कटुका तिन्ना मथुसाभिन्त।
इति पञ्चरसा पथ्या लवणे विवर्जिता।
अम्लभावाज्ययेिवां निरं मथुरतितकात्।
करणं शक्षणाभवाभविन्नो तत्तोभया।
प्रथथ्या लेखनी लवनी भेष्या चक्षुषिता सदा।
मेहकुष्ठार्जणचकिर्दिशोऽवात्सारकुष्ठाजित।
वातानुलोभनी हया सन्नियाणां प्रसादानी।
संतपणकृतारोगान्त्र्यो हन्ति हरीतकी।
तृणायं सङ्क्षोधे च हनुमान्ये गलाधे।
वयान्ते तथा क्षीणे गर्भिण्या न प्रश्यते।
हरस्य भवने जाता हरिता च स्वभावतः।
सवरीमाणश्च च हरते तेन व्याता हरितकी॥
(धन्वन्तरि नि०, गुड्यादि वर्गः 202-208)

हरीतक्षणं जयं पद्यं प्रस्तुतं पूर्णाःप्रमुखः।
रोहिणि रोपणि चैव सुरभी कालिकाभय।
हैमवती च कायस्था चेतति चाव्यथा शिवा।
विजया नन्दिनी प्रोत्ता हिमना रामायणका॥
जीवन्ती प्राणं व्याता वपस्या चापिषेयसी।
सोद्वल नि०, प्रौभाग, गुड्यादि वर्गः 231-232)

विजया रोहिणि चैव पूर्णा चागुता तथा॥
चेतती कायस्था प्रोत्ता जीवन्ती सप्तयोगः॥
अलबुढुता विजया तवत्ता चैव रोहिणी॥
पूर्णाक्षणम् शलाया स्थलामासा तथामृता॥
स्वरं तु चेतती जेया पंचाः तवत्ता समृता॥
सूर्यवर्णाः जीवन्ती सप्तानामिष्ठ तक्षणम्॥
सर्वप्रयोगे विजया रोहिणि क्षतरोहिणी॥
लेपायेः पूर्णाः विद्वरिकार्केण पुर्णाः बिवुः।
चेतती शरीराण्युष्णाह्सुपकल्पयेत्॥
नवा पूर्णा घना सिद्धां गुर्द्वी मेघजति चाप्तु या।
परिध्य यहतो धीमानु गुणकृत्सा प्रशस्यते॥
चेतती हिधिध चैव प्रोत्ता कृष्णा मुक्तच च वर्णितः।
प्रहस्य शुक्ला कृष्णा मुक्तच जैवकृमुता मम॥
काव्याद्वाद्रोधनं काव्यस्मयेन भेदयेत्।
काव्यस्मयेन दृष्टचाव्यं सैव चैव प्रोत्ता च वर्णितः॥
चेततीपापप्रेयणमुपसत्तमि ये नरः।
भिन्ने तत्क्षणादेव पशुपितकृमुगान्तः॥।
चेतती तु धृता हस्ते यावतिष्ठतिति देहिनः।
तावदिभ्ये सेणै रच प्रभावानात्र संशयः॥
नृपादिसुकुमाराण्यं कुशानं भेषजज्ञायाम्।
चेतकी परमा शस्त्रा हिता सुवथविरेचनो॥
हरीतकीरसा: पंच विदाल्वणवर्ज्ञता॥
मज्याश्रितं तु मधुरमयतं स्मर्याश्रितं विदु॥
त्वमश्रितं तु कदुकं लिङ्कं वृत्ताश्रितं तथा॥
अस्माश्रितं कषायं तु रसाकुमरनीषण॥
कदु कुल-कृषायचादमस्त्वानाभावं ज्येष्ठ।
पितानी स्वादिन्तत्वत्सः रूद्धायामविपाचिनी॥
विपाकमधुरा मेधा वयःस्थायनवर्ज्ञी।
उषणीयौ सरसुयौ बुँदोनिंत्रवलप्रदा॥
कुस्तवेयवथवेयवथपुराणविषमाजवरान।
शिरोशिरायुह्दुड्डेशकालाध्रिपणिगणन॥
सामोशोषातीसारेभोभोवभिकृताम्。
श्वासकासप्रसेकाशीर्षीहानाहगरोदमन॥
विकंध स्रोतासं गुल्ममूस्तभमारोकम्।
हरीतकी जयेद्वाधिने तास्तांस्तु कफवातजान॥
तृणायं काठोपे च हनुस्तभे गलृहेः।
नवजः च वुवशीणे गंभीरेः नैव शस्त्रते॥
(संदल नि०, द्रोहाग, गुहुव्यादि वर्ग : 204-222)

हरस्य भवने जाता हरिता च स्वभावतः।
हर्षयस्तवरोगांच तेन प्रोत्ता हरीतकी॥
जीवन्ती पूतना पश्चादमूता विजयाभया।
रोहिणी चेतकी सत्न भेदभिनं हरीतकी॥
जीवन्ती जीवनोचोगायपानाल्पूतना मता।
सुधावद्रृता जेया विजया विजयप्रद।
नृणामभयाद यस्ताभया तत्र प्रकीर्तिता।
रोहिणी तु गुणारोहचेतनाचेतके मता॥
जीवन्ती स्वर्णवणीया पूतनाउद्विभिती मता।
अमृता जिद्दला प्रोत्ता विजया तुम्बुरुपि॥
पञ्चगीति त्वभया जेयाभूता वृत्ता तु रोहिणि।
उद्देशी तु चेतकी जेया कर्म तासामभोज्यते॥
सर्वोपगुप जीवन्ती प्रलेपे पूर्णा हिता।
शुद्ययष्मृता प्रोत्ता विजया सर्विगहुत॥
अक्षरोगेभया शस्त्रा रोहिणि ब्रगरोहिणि।
चेतकी चूर्ण योगे स्वात्सनिधैव प्रकीर्तिता॥
नवा सन्धा पना वृत्ता गुरी क्षिप्ता च याम्भसि।
निमज्जेतसा प्रशस्ता स्मोकव्यात्िितुऽप्रव।॥
शीताचिच्चन्ना गुडनिभा किचिदल्या कपाकिण।
स्मृतत्वक् सरसा स्वल्पसीजा गुरी हरीतकी॥
चर्वंता वर्द्धयत्वभिः पेषिता मलशोधिनी।
स्विन्ना सह्याहिणि प्रोक्ता भृष्टा पथानलाशुः॥
ग्रीष्मे तुल्युगुं सुसैन्ययुगुं भेयारूपोहयुगुं
तुल्यां शरदरा शरदयलया शुगठया तुषाराग्ने।
पिपलत्या शिशिरे वसन्तसमै धौर्णें संपोजितां
राजन् प्राप्य हरीतकीमिव रुजो नयन्तु ते शत्रुः॥
शिवा हरीतकी पथ्या चेतकी विजया जया।
प्राण्या प्रमथासीद्धा कायस्य प्राणवदमृता॥
जीवनीया हेमवती पूर्णा वृत्ताभभय।
वयस्या नन्दीनि जेया श्रेयसी रोहिणि तथा॥
हरीतकी पञ्चरसालवणा तुसोत्करा।
ख्योणा दीपमेव भेदेय स्वादुपाका रसायनी॥
सरा बुढ़िप्रदा वृष्णा चारुभ्या भृण्णी लघुः॥
स्मासकांशप्रेमार्वि: कुष्ठोपोद्वारान् कृमीनु॥
वैश्वर्यमग्निोवेषविवन्धविषमार्वारान्॥
गुल्माध्मगेन्त्रविद्विंसकाण्डकाकण्डाप्रम्यानु॥
कामलन शूलमानान्त पीलान चापकार्पितिः॥
मधुरामलतया वातं कष्यपस्वातुभावतः॥
पितान गन्ति कर्ण हन्ति कुदेकं हरीतकी॥

(मदनपाल निः,हरीतक्यादि वर्गः 8-25)
शिवां पचनसायुष्या चकुष्या लवणा सरा।
मेघोस्यों दैपनी दोषोऽपकुषुष्यांपर्वह।
शिरोक्षिप्षा(4)हुहोकागामार्गहीयांगीयां
विवायं सोतसा गुलमूलस्तम्भभारोचकम्।
हरीतकी हरेद् व्याधीलोभ्यं कफवातजान।
(माधव द्रव्यगुण,विविधोपधि वर्ग : 7-9)

वेतक्यभया पथ्या हरीतकी प्राणदा शिवा विजया।
(हृदयेतपक नितौ, हिषाद वर्ग : 70)

फलं धात्रभागीशिराजातकविकुलकतानं।
(हृद्येतपक नितौ, दीघमन्त्र देशपन वर्ग : 136)

हरीतक्यभया पथ्यं प्रपथ्यं हैमवध्यपिं।
कायस्या श्रेष्यसी लेय भ्राणदा विजयाः शिवा।
जया वितवणा पञ्चरसानु तुवरशक्ता।
स्वामुपकसायुष्या स्तोणां सहंगां लघु।
दैपनी पावनी मेघा वयस्यस्त्राणीनी परम।
सरायनी च चकुष्या बलवुष्टिःमृत्युप्रता।
क्षणवैवर्यवैवर्यस्यपुग्राणविशेषज्ञतराः।
शिरोक्षिप्षा(4)हुहोकागामार्गहीयांगीयां
सशोषणोपावतीसारेिमुहम्मदमिकृषीन।
श्वस्तकास्परशेषां-पलोहानागवोदराः।
विवायं सोतसा गुलमूलस्तम्भभारोचकम्।
हिम्माध्यानप्रणान शूलं जीन दोषोऽपकुषुष्यांपर्वह।
स्वामेत्यावात्सनं क्षुद्रित्तित्वयं कफम्।
कथ्यत्वमुस्त्वाच्यं पितं हन्ति हरीतकी।
गुणवलः(3)सायुष्यांस्थितस्थितुः पञ्चाभ्योदभवं।
स्वामुपकसायुष्यांस्थितविस्पष्टाः।
हरितकी हैमवती जयाभया शिवाच्या चेतनिका च रोहिणी। 
पथ्याप्रस्पर्यापि च पूतनागृहताजीवप्रिया जीविनिका विष्णवार।
जीवन्त ज्ञान जीव जायस्य श्रेयसी च सा।
देवी दिव्या च विज्ञा वहिनेत्रमिताभिया।
हरितकी पञ्चरसा च रचनी कोष्ठामयजनी किस्योगवाहिनी।
बीजास्थितिका मधुरा तदन्तस्त्मभागत: सा कटुष्णीयाय।
मांसाण्डमात्स्यायुपका हरितकी पञ्चरसा स्पृयेम्म।
हरितक्यमृतोत्तम्ना साप्तेश्वरिरिता।
तस्या नामानि वर्णित्य वक्ष्यामथय यथाक्रमम्।
विज्ञा रोहिणी चैव पूतना चामुताभया।
जीवन्ती चेतकी चेति नाम्ना स्तविधा मता।
अलाभुनाभिविज्ञा सुभुता रोहिणी मता।
स्वल्पत्तक्क पूतना जेथा स्वूतमांसारृता स्मृता।
पञ्चरसा जाभया जेथा जीवन्ती स्वर्णवर्णभास।
यस्मातु चेतकी विष्णुलेखाया सृजक्षणम्।
विद्यापूड़ो विज्ञा हिमाचलभव्या वाच्येतकी पूतना।
सिद्धां स्तवाय रोहिणी तु विज्ञा जाता प्रतिष्ठानके।
चम्पायाममुनाभया च जनिता देशे सुराछ्वत्वये।
जीवन्तीति हरीतकी निगविता सत्त्वभे बुधे।।
सर्वप्रयोगे विजया च रोहिणी क्षतेपु लेपेपु तु पूतनोदिता।
विरेचनेयादमुत्ता गुणाधिका जीवन्तिका स्थाविह जीवितोगजित।।
स्वाच्छेतकी सर्वरुजापारिका नेत्रामणघीरभयां वदन्त।।
इत्यं यथामोचिं प्रयोजिता जेना गुणाद्य न कदचिद्रिल्यथा।।
चेतकी च घृता हस्ते याकालिष्ठति देहिनः।
तावदरिच्चये वेगातेभावान्न संघसः।।
सप्ताभमपि जातीनां प्रधानं विजया स्मुता।
सुर्वप्रयोगसुलभा सर्ववार्यहिषु शयते।।
खिलताः सु मिनजनति या सा जेना गुणवत्ती भिन्नवच्यः।
यस्या यस्या भूयो निमजजनं सा गुणाद्य भ्यात।।
हस्ते प्रस्थं व्याधीन्न भूमस्तरति यथः।।
हरीतकी तु सा प्रोक्ता तत्र कीर्तिन्तवायकः।।
हरीतकी तु वृणायं हनुस्तम्भे गलये।
शोधे नवजवे जीणे गुविन्णां नैव शयते।।

(राजनिष्ठु, आयानिष्ठ : 214-229)

हरीतकवभया पश्चा कायस्थ पूतनामृत्त।
हैमवत्ववयथा चापि चेतकी श्रेयसी शिवाः।।
वयस्था विजया चापि रोहिणीति च।।

विजया रोहिणी चैव पूतना चामुनाभया।
जीवन्ती चेतकी चेति पश्चा: सप्तजातयः।।

विन्यान्त्री विजया हिमाङ्गोलभया स्वाच्छेतकी पूतना
सिद्धं स्वादथ रोहिणी निगविता जाता प्रतिस्थापनके।
चम्पायाममुनाभया च जनिता देशे सुराछ्वत्वये।
जीवन्तीति हरीतकी निगविता सप्त प्रभेवा बुधे।।
अलानुपूर्ता विजया वृत्ता सा रोहिणी स्मृता।
पूनास्स्थितं सूह्मा कथिता मानसास्मृता॥
वचरंवयाभया प्रोत्ता जीवनी स्वर्णवर्णिनी।
त्रिरेखा चेतकी जेया सप्तानमियमाकृति:॥
विजया सर्वरोगेण रोहिणी ब्रजरोहिणी।
प्रलेपे पूतना योग्या शोधनार्येश्मृता हिताः॥
अक्षरोगेभया शस्त्रा जीवनी सर्वरोहत॥
यून्नेन चेतकी शस्त्रा यथायुक्तं प्रयोजयेत॥
रूपी विविधा प्रोत्ता वचेता कृप्या च वर्णः॥
षड्युगुलयता शुक्ला कृष्ण त्वेकागुणुला स्मृता॥
काविवासादात्रेण काभिः-धने भेदयेत्॥
काभित्स्पर्शेन दृष्ट्यासङ्खा चतुर्द्धिभेदयेच्छिव॥

चेतकीपादपच्छायामुस्पर्णा ये नरः॥
भिधन्ने तत्क्षणादेव पाषुपिष्कुमृगाधि॥
चेतकी तु धृता हरसे यातिस्पृश्ति देहिनः॥
तारिब्रज्येत वेनैस्तु प्रभावानात्र संशयः॥
नृपाणां सुकुमाराणां कृष्णानां भेषजलिप्तम्॥
चेतकी परमा शस्त्रा हिता सुखविरेचनी॥
सप्तानमिपि जातीनां प्रधाना विजया स्मृता॥
सुद्धयोगा सुलभा सर्वरोगेण शस्यते॥

हरीतकी पञ्चसालवर्णा तुवा परम्॥
र्षोणा दीपनी मेच्छा स्वातुपाका रसायनी॥
चक्षुषा नधुराण्या बृहणी चानुलोपिनी॥
श्वासकारप्रमेहार्याः कुष्ठगोधोवरक्रियेनी॥
वैश्वर्यग्र्हणीरोगविवर्तविषमज्जारान्॥
गुल्मग्धानृपाणफलितकाकणांहस्मानानान्॥
कामलाः शून्यातां फूलाहान्यच यकृताः॥
अष्टमें मृत्यूकृष्ण्य मृत्युधातवः नास्येत्॥
स्वातुत्तकपातृकायत्वात्पितात्तकहत्वकथयत सा।
क्रुद्दत्तकपातृकायत्वात्मलत्वात्मात्तुर्वितवा॥
पितुकृत्कुदकुम्भत्वात्मात्तुर्वितकृत्वा कथ शिव॥
प्रभावाद्वैविषयनृत्व सिद्ध यत्त्वकाशयते॥
हेतुतया: शिश्नानोधारे नापूर्व क्रियते धुना॥
कर्मान्त्वमृगी: सामृद्ध दृष्टग्रामश्रयेवत॥
यत्त्ररो नेति चिन्त्य छालेुक्कुच्छयोपयोऽऽ॥
पथ्याया मजनि स्वाते: स्वायाम्यो व्यवस्थित:॥
वृथा तितक्तबचि कुत्रायस्थतःस्तुरेो रस:॥
नवा सिन्य पना बृत्तागुवी कित्ता च यात्रभसि॥
निम्नज्ञता प्रश्लता च कथितालिप्तुर्वाणप्रदा॥
नवादिगुणायकत्व सत्यावत्र विकर्षता॥
हरीतक्ताः: फल्ते यत्र इत्यय तच्छ्रेष्ठमुच्चते॥
चर्विता वर्हेऽत्वमृत्ती: पेषिता मलशोधिनी॥
स्तन्या संग्राहिणी पथ्या भूप्ता प्रोत्ता त्रिदेष्टुत्॥
उनमिलिनी वुकिबलेन्द्रियाणां निम्तुलिनी पितुकाणिलानामू॥
विक्रियलिनी मृत्तशक्तुनिलाणां हरीतकी स्थात सह भोजनेन॥
अनुपातकृत्तावोच्छानवालिप्तकफोकद्वानृ॥
हरीतकी हर्षपार्वा भुजस्योपपि योजिता॥
लवणेन करं हनि पितं हनि साश्वरा॥
धृतेन वातानृ रोगान्विरोगान्विनिविता॥

सिद्धुत्त्वशक्तिः शुण्ठीकणामधुशुङ्के: क्रमान्॥
व्यावहिर्याया प्रायस्ता सत्यमृगुणिषणा॥
अत्याविविवन्नो बलबिनित्यव रूक्षः: कृष्णो लड़कनकर्णितशः॥
पिताधिको गर्भवति च नवी बिभोभत्तकस्यभावाः न खादेत॥

(भाव प्रकाश नि, हरीतक्ष्मावि वर्गः 6-35)
दक्षप्रजापतिः स्थपतिः शिष्याः नामात्मा सुप्रसिद्धाः।
कुलोमरीतकेशात्मा खुशिकृतिम्।।
रसा: कुतिसंभाव्यात्। कृतिश्रोतसा: स्मृताः।।
नामानिकतयोक्तानिकिकिरातोक्षाणम्।।
केचर्वणाग्रह: के च का च कुत्रप्रयुज्यय।।
केनमन्यायंसुखवर्तकांशयोगोगान्योऽहति।।
प्रश्नस्थताध पुरुषों भवन्वन्तकु महारसि।।
अतिवर्जयस्तम� श्रुताकारो वचनमुप्प्रवी।।
पपत्तिबिंबंदन्यांशक्रत्विपन्नतोषमृतम्।।
ततोदिव्याःमुत्यन्नासनंतजीत्यथःरैतक।।

हरीकतवभायाप्रवायास् पूर्तनामुरम।।
हैमवत्वायाचारियोंतकोऽभ्यसिष्यवा।।
व्यस्मातिविज्ञाप्रिजीवन्तीरोहिणीति च।।
विजया छोधिणो चैव पूर्वुना चालूनाय।।
जीवनीचेतस्की चैति विजेयाः सप्त जातयः।।
अनावृहुतवायाप्रवायुः सारोहिणो स्मुता।।
पूर्तनास्थिरेनीसृष्टाक्षिदितामांसंतामृता।।
पंचरक्ष्मभायाप्रौक्तजीवन्तीवर्णवर्णिनी।।
त्रिर्वात्तचेतकोऽवेस्तानामियवाकृति।।

विध्याद्रौविज्ञायहिमाचलभायास्चेतवकोपुन्नात
सिद्धाप्रत्यायोहिणीतुविजयाजाताप्रतिस्थानके।।
चाम्पायामृतभाषा च चैव तादेश मुराप्राप्तवेये
जीवन्तीतिहरीतकोणिमितासत्स्प्यथेव बुध्दः।।
विजयायस्वरेगुप्पूहिणीतुरप्ररोहिणी।।
पलेपपुरुषायोज्ञाशृंगारणथुष्टानाहिता।।
अक्षिरोगेयभायाःशालीवन्तीसरेखः।।
चूपाचेतकीश्वासत्यायुक्तप्रयोजयेव।।
नेताकैविध्याप्रौक्तसिलाः कृष्णाचतवर्णः।।
सृजोऽणांपर्वान्ध्रस्वापुपाकारसायनी।
चयंतालसुपार्षदसृजोऽणांपर्वान्ध्रस्वापुपाकारसायनी।
श्वासकारसप्रभुराः: कुछोऽपेक्षेऽदक्रिमिन।
चैवविय्यश्रीस्वायविवमलिपजवरान।
गुम्माध्रान्नानुपार्षदसृजोऽणांपर्वान्ध्रस्वापुपाकारसायनी।
कामलांशुमानाभस्तिहानंत्रकृत्त्वा।
अभ्यभावाभवेः: सत्यदितिहास्य।
कपःकथस्तवेत्वास्त्रित्वात्स्त्रित्वात्।
स्वादित्ततःकथस्तवेत्वास्त्रित्वात्स्त्रित्वात्।
हरीतकीस्वापुपाकारसायनी।
लवणेनसोदानेयाप्राहीसायनी।
अभिनयंपितिरीलधिसारसमाधानलेखना।
वातानुपदकनीहःसृजोऽणामध्या।
वयसः:स्थायनीस्वायविवमलिपजवरान।
विवर्णतानलिपिक्षेणरीक्षितायप्रसादनी।
शिरोरोगेनेत्रेवेत्रसम्बिंधमाज्ञाय।
पुराणं जनवर्षाणं दुर्ग्रोहं कामलं ततथा।
शोपशीतं मूखम्मित्रान्तं प्रेमं च विसंगतिः।
अभिमूच्छितरं जनवर्षानं कृपाधारितं शोभितं।
कामर्यसमर्थं भानमानं हंससंग्रहं कर्मभिन्नि।
अर्थसङ्ग्रहं त्रिवृक्षं तुष्यं गृहीतं च मानं।
उस्तस्मेतलं शूलं जनाशयं दर्शितं तत्र।
पथ्यायभाषां मंजुस्वरूपाः सुन्दरमन्यालोकवस्थितः।
वृन्दित्तत्वसंचि कुरूसभिस्थतस्नवं रसः।
नवानिधधारनावृत्तानाय नित्यप्रकाशस्य वसिः।
निमित्तेषवस्तुप्रक्ष्यं नित्यगतिमुखान्वितं रात्रिप्रदा।
नवाग्रुप्तक्षत्त्वप्रमुक्रितपत्रकर्णः।
हरितकया फलेषूक्तयां च चोभुवन्तु।
चर्वितावर्त्त्वयनिपेश्यतामलशोधिनी।
स्वातोप्रत्याग्नुक्षत्रधिविशेष्यं प्रकाशविहरितेऽप्रक्ष्यं।
उन्मोचित्तेविद्वैतेविद्वैताणां निमुखस्य पितककामिनिदान।
विबद्धिनी पृथ्वीश्चकुमलानां हरितकीयस्य सारथ्येनन।
अन्नपानाशरस्यापाधिपि चोरेद्रव्य।
हरीतकीर्तित्वाविषयन्याश्वपृविहितानि।
लल्पणेनकर्णमहं पितामहं नित्यसारकर्णः।
घृतेनवात्मन्त्रोपरायणवाच्योगवाच्यान्विता।
सिन्धूत्तकण्ठराजसुण्ठीकामिधुरः क्रमात्।
वर्षिख्यप्राप्तयासारस्यावनगुप्तिषा।
हरीतकीमनुष्याणां तेविहितकारणो।
कदाचित्कुपयोगानावृक्षस्य अहरीतकी।
द्राश्नानिर्णयोष्णिविधिनानिद्रुपाणिश्वियायः।
संचूर्वचाक्षुश्तान्त्वमचित्रेद्रव्यभाषेण।
कत्यायिकं च मुक्तयुगमिकामिभायः।
ससेवन्तेविहितिस्यहितिन्नाभायः।
हद्रोगकाक्त्वसन्नञज्वरप्रभुवान्ति।
कुष्ठानिकासकमलास्मिनेह्मुख्या।
आनाहृगुल्मपितिकाग्रभवाविविकारः
सर्वतंबिततमामाृसूबेनमान्ति।।
भुक्तप्रध्याभुक्तप्रध्याभुक्तप्रध्यापथाया
जीणप्रध्याजीणप्रध्याजीणप्रध्यापथाया।।
“अध्यात्मिकन्नोबलविजितश्रुस्वः कृषोलंधनकर्मिकश्रुस्वः
पिताधिकोधर्मवती च नारी विमुक्तवनस्वभयानवादेत्”।।
कषायाम्लायमधुरातिकाकुदसान्विताः
इति पंचरत्रा पथ्या लवणविविजिताः।।
हर्षब्धवनेजाताहरिताचाचवर्णवाभवः:।
हरेतसर्वोगांश्चतेन्त्रासर्वाहरितीकी।।
हरीतक्ष्या: स्नेतीजच्छन्यङ्गुश्वातन्त्रः
पितनाशकर्णवेष्वुनिभेष्व: परिवीरितम्।।
(शालिग्राम निघण्ठः : हरीतक्ष्यादि वर्गः)

द्रव्यलक्षणन्तु क्रियागुणवत्ता समवायिकारणमिति।।
(सू०न० 40/2)
हरीतक्ष्यो पञ्चरसाठवणा तुवरा परम्।।
(भाप० हरीतक्ष्यादि वर्गः 9)
गुणा गुणाभ्रायो नौत्तराच्छासुमणानु भिषकः
(च०स० 26/36)
गुर्वादा वीर्मुच्यते शक्तिमन्त्रोऽयथा गुणः।।
(अ०स०स० 17/36)
जारेरागिनन्ना योगाचुदेति रसान्तरम्।
रसानां परिवास्थे स विपाकं इति स्रुतः।।
(अ०ह०स० 9/20)
परं चातो विपाकानां लक्षणं संप्रवक्ष्यते।।
कदुःतिकक्ष्याणं विपाकं प्रायश्च कालः।
अस्तोऽवम्बलं पच्यते स्वाबुरुणं लवणस्तथा।।
(च०स० 26/57-58)
इति सामान्यतः.................................
विचित्रप्रत्यार्थम् व्यभिचारं भिन्नते।

(अध्यूपूर्व 9/27)
तत्त्रोषणं समं च वातकनयों करोति।

(अध्यूपूर्व 9/18)
तत्त्राण्यौषधये इव अतिप्रविष्टं, वैयर्यभेदात्,
तीखण्ड्वर्गं, मध्यवीर्यं तथा मूलवीर्यं च।
चक्रपाणि: (चौसूर 2/17)
इदमेवप्रत्यक्षे समान युतम-मच्छिन्नं...
भेषजं भवेत-च्यानेन विशेषेण युक्तमिति।

(चौविश 8/87)
हरितकीमनुष्यांमात्वावतिकारिणी।
कदाचित्कुप्यात्मातानोदस्माहीरीतकी।
शालिग्राम नि: हरितक्षादि वर्गं (राजवल्लभ)
HARĪTAKĪ (TERMINALIA CHEBULA) IN OTHER LITERATURE

In Unani medicine Haritaki is mentioned as cold and dry and tonic to brain and vision, checks diarrhoea, piles, paralysis, headache, epilepsy, loss of memory and as purgative. It is also described as blood purifier and useful in leprosy. Chebulic myrobalan is used in fever, cough, asthma, urinary diseases, piles, worms, rheumatism and scorpion-sting. Bala-harade is highly useful in chronic diarrhoea and dysentery, flatulence, vomiting, hiccup, colic and enlarged spleen and liver. Brayed with water and sugar it is used in ophthalmia. Cold infusion of Haritaki is used as a gargle in sore mouth and stomatitis, spongy and ulcerated gums. Brayed in rose-water, it is cooling application to swellings. Chebulic myrobalan is extensively used in combination with belleric and emblic myrobalans under the name Triphala and also as adjunct to other medicines in numerous diseases (Nadkarni 1976).

For medicinal purposes, the fruits are usually picked green and dried black. Six kinds of fruits are usually recognised; Halileh-i-Zira, when the size is that of cumin seed; Halileh-i-Javi, when the size is of a barley corn; Halileh-i-Zangi, when the size is of a resin; Halileh-i-Chini, when the fruit is greenish yellow and some what hard; Halileh-i-Asfar, when it is near to the maturation and Halileh-i-Kabul or fully mature fruit. The second, third and sixth varieties are used in medicines where as the fourth and fifth are good for tanning (Wealth of India, 1960).

The fruits of Terminalia chebula are used as a medicine for sore throat by Paharias in Sikkim. A fruit finely powdered is used as dentrifice, said to be useful in carious teeth, bleeding and ulcerations of the gums. A fruit coarsely powdered and smoke in a pipe affords relief in a fit of asthma. The paste of fruit on a rough stone with little water mixed with the carron oil of
pharmacopia applied to burns and scalds is more effective than when carron oil alone is used. Water in which the fruits are kept over night is considered a very cooling wash for the eyes. The ashes mixed with butter form a good ointment for sores (Kirtikar & Basu 1975).

The dried fruits form one of the most valuable of Indian tanning materials and are very largely exported from India. The better qualities contain about 25 percent of gallo-tannic acid residing in the pulp surrounding the seed, which is itself devoid of astringent principles. The Galls produced on the leaves are rich in tannic acid and are used locally for tanning and as a mordant in dyeing (Lall & William 1973).

The wood of the plant of Terminalia chebula is very hard and fairly durable. It takes a good polish and is used for house building, furniture, turneys, carts, shafts, axles, yokes, naves, felloes of wheels, agricultural implements etc. The fruit is the valuable black myrobalan of commerce and is one of the finest tanning material for dyeing cotton, wool and leather. Usually the fruits with ribs are known as bhonga hirda, they are not of much use for tanning and dyeing but are used for making durable inks. Tannic acid is prereded from the fruits. Leaf galls developed as a result of insect punctures are as valuable as oak galls for and tanning, they are also used for making inks. Myrobalan constitutes one of the valuable tan-stuffs in India and considerable quantities of it are exported every year (Dastur 1977).

Fruit well rubbed with an equal proportion of catechu is used in aphthous complaints and is considered a valuable remedy. The unripe dried fruits which are the Indian or black myrobalan and which are sold in the northern provinces in Bangal are recommended as purgative. The price and supposed efficacy of the fruit increases with the size (Drury 1978). Chebulic myrabalan is used in Chinese medicine by the name 'he zi'. Chebulic
myrobalan found favour wherever it went, in Greco-Roman, Tibetan, Chinese and Arabic medicine, being praised by Avicenna, the great 11th century Muslim physician, and extolled in the four Tantras (Gyushi), Tibet's pre-eminent medical text, as the "King of medicines". So sacred is chebulic myrobalans to Tibetens that it is the medicine Buddha is visualized holding in his extended in his right hand in a gesture of giving. Tibetan medicine utilizes every part of this plant for medicinal purpose. Chebulic myrobalan was first mentioned in Chinese medicine in the materia medica of medicinal properties (Yaoxing Ben Cao), a text published around 600 AD, as a fruit originating from India. In Chinese medicine it is said to bind up the intestines and to be useful in treating dysentery and chronic diarrhoea due to either internal heat or coldness (which is why Chinese medicine considers it to have a neutral temperature). Also, chebulic myrobalan stops coughing, relieves asthma and soothe the throat. Chinese medicine administers the fruit in the roasted form for intestinal symptoms and in the raw form for the respiratory complaints (Svoboda R and Lade A, Chinese Medicine and Ayurveda, 1998, p.p.121).

Mature fruits of Terminalia chebula compared with apples, the edible tissue of T.chebula contained 10.3 times more vitamin C and 14.5 times more protein. T.chebula contained 5% lysine, which increased the biological value of its protein. T.chebula was also found to be rich in macro and micro nutrients. The minimum recommended Dietary Allowance for selenium, potassium, manganese, iron and copper could be met if 100 gm. of the raw fruit was eaten. The energy value of T.chebula was about 3 times greater than that of the reference fruit. The study concluded that T.chebula was highly nutritious and should be cultivated to supplement human dietary requirement (Barthakur and Arnold, Food Chem., 1991, 40:2, 213-219).
Terminalia chebula fruit extract were found to be strongly inhibitory to several bacterial pathogens, including Pseudomonas solanacearum, the casual agent of bacterial wilt of tomatoes, capsicum and eggplants. It is suggested that the anti-bacterial activity of the fruit may be associated with its high tannin content. None of the fungi tested was inhibited (Drury H, Useful Plants of India, 1978, p.p.419-420).

PHARMACOLOGICAL STUDIES OF HARĪTAKĪ

The fruits are credited with laxative, stomachic, tonic and alterative properties. According to Indian pharmacopia, which recognises both the mature dried fruits and the young dried fruits, the content of foreign organic matter shall not exceed one percent. In combination with Emblica officinalis and Terminalia bellirica under the name of Triphala, the fruits of Terminalia chebula are extensively used as adjuncts to other medicines in almost all diseases. The main purgative ingredient of Triphala is Terminalia chebula, the other two only increasing the purgative activity of Terminalia chebula possibly by rendering the irregular peristaltic movements uniformly progressive. The purgative principle in the pericarp of the fruit of the Terminalia chebula has been found to be a glycoside, which may be similar to Sennoside-A. The comparative purgative activity of different commercial samples of the ripe fruits in rats has been studied; the potency of one gm. of Survari Harde was found to be equal to that of 1.47gm. of Bala Harde or of 1.76gm. of Java Harde (Patel et.al. 1959; Gaind & Saini 1965).

Antispasmodic activity similar to that of Papeverine has been reported in the fruit’s chebulin (Inamdar & Rao 1962). The bark of Terminalia chebula is endowed with both diuretic and cardiotonic properties. Methanolic extract of the trunk-bark showed physiological activity on blood pressure and action on the intestine of rabbit and the uterus of guineapig.
The leaves contain shikimic, dehydroshikimic & quinic acids (Kirtikar & Basu 1975).

Cytoprotective effect of Terminalia chebula on gastric mucosa has been reported. Duodenal ulcers were produced by infusion of secretagogues and gastric lesions were induced by necrotising agents. Prior treatment for 15 days with mixture of Terminalia chebula with Asparagus racemosus was found effective in preventing the formation of duodenal ulcer and diminishing ulcer index in gastric lesions. (Dhanukar S, et.al., Indian Drugs, 1983, 20(11), 442).

Four groups of 25 rabbits each, were studied to determine the effect of Haritaki (Terminalia chebula), Amala (emblica officinalis) and Bahera (Terminalia belerica) on cholesterol – induced hypercholesteolaemia and atherosclerosis. The control group was fed with cholesterol alone; the Haritaki group received Haritaki and cholesterol; the Bahera group received Bahera and cholesterol; and the Amala group received Amala and cholesterol for 16 weeks. Cholesterolaemia was significantly less (P<0.001) in Haritaki group (166 mg/dl), the Bahera group (240 mg/dl) and Amala group (205 mg/dl) than in control group (630 mg/dl). The haritaki group also had significantly lower degrees of sudanophilia and cholesterol contents of aorta and liver (P<0.001) as compared to Bahera and Amala groups. The drugs did not influence serum triglyceride level (Thakur CP, et.al., Int. J.Cardiol., 1988; 21(2) 167-75).

Study of in vitro antibacterial activity of extracts from the plants Terminalia chebula, Eclipta alba and Ocimum sanctum was carried out by disk diffusion technique. All showed such activity against human pathogenic Gram positive and Gram negative bacteria. The activity against Salmonella organisms was shown only by Terminalia chebula; against Shigella
organism by Terminalia chebula and Eclipta alba; but not by Ocimum sanctum. The widest spectrum of antibacterial activity was shown by Terminalia chebula. It was most potent (Phdake & Kulkarni, Indian J. Med. Sci, 1989, 43(5): 113-17).

Various extracts from Terminalia chebula fruit rind showed cardiotonic activity in tests with normal and hypodynamic isolated frog hearts. They increased the force of contraction and cardiac output without altering the heart rate. Steroids/sapogenins, saponins, anthraquinone derivatives and tannins were detected by TLC. No alkaloids were found (Reddy VRC, et.al., Fitoterapia, 1990, 41:6, 517-525).

Various extracts prepared from the fruit rind of Terminalia chebula showed inhibition of (Na+, K+, Mg2+) ATP-ase of frog heart muscle. The inhibition of the enzyme was found to be dose-dependent and higher than that of ouabain (Azeem M A, et.al., Fitoterapia, 1992, 63:4, 300-303). The ethyl acetate soluble fraction of the alcoholic extract of leaves of Terminalia chebula was fed to normal and Triton- treated rats, serum lipids were found to be lowered in Triton-induced hyperlipidaemia. Chronic feeding of the extract for 30 days to normal rats lowered levels of very-low density lipoprotein-cholesterol. Hepatic triglycerides lipase [triacylglycerol lipase] activity was reduced (Khanna-A K, et. al., Fitoterapia, 1993, 64: 4, 351-356).

Three hydrolysable tannins and a related compound were isolated from the MeOH extract of the fruits of Terminalia chebula. These compounds exhibited activity against 5 human tumour cell lines in vitro (EC50 values of 2.8-16.7 aeg/ml) (Lee Seung Ho, et.al., Archives-Pharmacal-Res., 1995, 18:2, 118-120).
Ten herbal extracts with therapeutic antiherpes simplex virus type 1 (HSV-1) activity were evaluated. Among them four medicines including Terminalia chebula showed a stronger anti-HSV-1 activity in combination with acyclovir than the other herbal extracts in vitro. When acyclovir and/or a herbal extract were orally administered at doses corresponding to human use, each of the four combinations significantly limited the development of skin lesions and/or prolonged the mean survival times of infected mice compared with both acyclovir and the herbal extract alone (P<0.001 or 0.05). These combinations were not toxic to mice. Combinations of acyclovir with historically used herbal medicines including Terminalia chebula showed strong combined therapeutic anti-HSV-1 activity in mice, especially reduction of virus in the brain (Kurokawa M, et.al., Antiviral Res., 1995, 27(1-2); 19-37).

Extract of 41 medicinal plants used in Egyptian folk medicine were screened for their inhibitory effects on immuno deficiency virus-1 reverse transcriptase. The extracts of six plants including that of Terminalia chebula showed significant inhibitory activity with IC 50 ≤ 50 micrograms/ml. (el Mekkawy, et.al., Chem. Pharm. Bull. (Tokyo), 1995; 43(4): 641-48).

A formulation of five medicinal herbs namely Boerhavia diffusa, Berbaris aristata, Tinospora cordifolia, Terminalia chebula and Zingiber officinale invitro for amoebicidal activity to determine the minimal inhibitory concentration (MIC) value. The formulation had a MIC of 1000 micrograms/ml as compared with 10 micrograms/ml for metronidazole. In experimental caecal amoebiasis in rats the formulation had a curative rate of 89% with the average degree of infection (ADI) reduced to 0.4 in a group doses with 500 mg/kg per day as compared with ADI of 3.8 for the sham – treated control group of rats (Sohni Y R, et.al., J. Ethnopharmacol., 1995; 45(1): 43-52).
The activity of a crude extract formulation was evaluated in experimental amebic liver abscess in golden hamsters and in immuno modulation studies. The formulation comprises the following five plants - Boerhavia diffusa, Tinospora cordifolia, Berberis aristata, Terminalia chebula and Zingiber officinale. The formulation had a maximum cure rate at a dose of 800 mg/kg/day in hepatic amoebiasis reducing the average of infection (ADI) to 1.3 as compared to 4.2 for sham- treated controls. In immuno modulation studies humoral immunity was enhanced as evidenced by the haemagglutination titre. The T-cell counts remained unaffected in the animals treated with the formulation but cell - mediated immune response was stimulated as observed in the leukocyte migration inhibition (LMI) tests (Sohni & Bhatt, J. Ethnopharmacol, 1996, 54 (2-3): 119-24).

Hot water extract of four traditional herbs including Terminalia chebula have been shown to have anti - herpes simplex virus (HSV) activity in vivo, were examined for anti - cytomegalovirus (CMV) activity in vitro and in vivo in this study. They inhibited replication of human CMV and murine CMV (MCMV) in vitro. These anti - CMV activities in vivo were examined in an MCMV infection model using immunosuppressed mice. Terminalia chebula significantly suppressed MCMV yields in lungs of treated mice compared with water treatment. It was observed that it may be beneficial for the prophylaxis of CMV diseases in immuno compromised patients (Yukawa, et. al., Antiviral Res. 1996, 32 (2): 63-70)

The in vitro antioxidant potential of Triphala and its constituents (Terminalia chebula, Terminalia belerica and Emblica officinalis) was tested with the following systems : radical scavenging activity measured by DPPH ( 1, 1- diphenyl - 2 - picrylhydrazyl ) reduction, and superoxide radical and peroxo radical scavenging properties measured by riboflavin/light/NBT (Nitro blue tetrazolium) reduction and linoleic acid peroxidation,
respectively. Alcohol extracts of Triphala and its constituents were strong antioxidants. Triphala was also effective in preventing superoxide induced haemolysis of red blood cells. The extracts also prevented lipid peroxidation induced by Fe3+/ADP/ ascorbate system in rat liver mitochondria. The major phenolic compounds of the alcohol extracts were confirmed as tannins (Vani T, et.al., Int. J. Pharmacogn., 1997, 35: 5, 313-317).

Gallic acid (GA) and chebulagic acid (CA) were isolated from the extract of Kashi (myrobalans : the fruit of Terminalia chebula) as active principles that blocked the cytotoxic T lymphocyte (CTL) – mediated cytotoxicity. GA and CA inhibited the killing activity of CD8 + CTL clone at IC50 values of 30 micro M and 50 micro M, respectively. Granule exocytosis in response to anti-CD3 stimulation was also blocked by GA and CA at the equivalent concentration (Hamada S, et.al., Bio. Phar. Bull., 1997; 20(9): 1017-19).

Examination of EtOH extract of the fruiting bodies of Terminalia chebula led the isolation of two potent anti microbial substances against even methicillin – resistant strains of Staphylococcus evidence, the two isolates have been identified as gallic acid and ethyl ester (Sato Y, et.al., Biol, Pharm. Bull., 1997, 20 (4): 401-4).

Terminalia chebula and some other medicinal with anti-herpes simplex virus therapeutic activity, inhibited replication of human cytomegalovirus (CMV) and murine CMV (MCMV) in vitro. These anti-CMV activities were examined in an MCMV infection model using immunosuppressed mice. Terminalia chebula along with other test drugs significantly suppressed MCMV yields in lungs of treated mice compared with water treatment. Along with other drugs Terminalia chebula is reported that it may be beneficial for the prophylaxis of cytomegalovirus (CMV)

A Tannin fraction (TC-E) was obtained from dried fruit pulp of Terminalia chebula. TC-E was subjected to silica gel chromatography which yielded 4 fractions (TC-EI, TC-EII, TC-EIII and TC-EIV). TLC and 13C-NMR revealed that TC-EI was a gallic acid (GA) derivative while the other fractions were tannin in nature. TC-E and its fractions were evaluated for their antimutagenic potential against 2 direct-acting mutagens, 4-nitro-o-phenylenediamine (NPD) and 4-nitroquinoline-N-oxide (4NQNO), and S9-dependent mutagen, 2-aminofluorene (2AF), in TA 98 and TA 100 strains of S.typhimurium. TC-E and its fractions were significantly effective against 2AF-induced mutations. TC-EI was the least potent in both S.typhimurium strains, and TC-EIV was the most potent in TA 98 while TC-EII was the most potent in TA 100. The tannins were partly effective against NPD but not effective against 4 NQNO induced mutations (Kaur S, et.al., Mut. Res., 1998, 419: 1-3, 169-179).

A total of 82 Indian medicinal plants traditionally used in medicines were subjected to preliminary antibacterial screening against several pathogenic and opportunistic microorganisms. Terminalia chebula was one among the others, which showed potentially interesting activity against the test bacteria. These active crude alcoholic extracts were also assayed for cellular toxicity to fresh sheep erythrocytes and found to have no cellular toxicity (Ahmad I, et.al., J. Eth.Pharm. 1998, 62: 2, 183-193).

HYPERCHOLESTEROLEMIA

During the second half of last century the health status of the population of almost all the industrial nations improved dramatically with the decline in infectious and childhood diseases but during this period there was an increase in both absolute and relative frequency of deaths ascribed to coronary heart disease (CHD).

Approximately 1.5 million adults continue to suffer from a heart attack each year in the United States alone; over half a million of them die each year. The situation is even worse in countries like Canada, England, Germany, France, Holland, Yugoslavia and Russia. There are more heart attacks per 1000 adult population in almost all of these countries as compared to the United States. The incidence of CHD in India is also fast catching up with that of developed countries. Over 24 million suffer from heart ailments in India now. A 1993 survey of the urban Delhi population shows the prevalence of CHD to be 31.9 per thousand adults. There is concern over the increasing incidence of CHD among people below 40 years in India as compared to people below 50 years in the West. One in ten heart attacks occur in people below 40 years (Gupta 1996). The emergence of CHD as the leading cause of death has been attributed to certain risk factors of which the greatest importance is attached to hyperlipidaemia, the condition in which lipids are present in excess in the blood (Kannel 1966).

The concept of atherosclerosis came into light in modern medical science when Ignatovski (1908) reported that feeding of milk and egg yolks to rabbits induced atherosclerosis. Windaus (1910) reported that he had analyzed the contents of atheromatous material and discovered its lipid nature. Anitschkow and Chalatow (1913) reported that adding pure cholesterol to the diets of rabbits induced atherosclerosis. Thus, the concept
began and developed that dietary and blood lipids were aetiologically related to atherosclerotic process.

Page (1954) described the arterial filtration concept of atherosclerosis. Chobanian and Hollander (1962) supported this concept. Radioactive labelled cholesterol and fatty acids have been injected interavascularly and have been found subsequently in atheromas and in the arterial walls as well as in other tissues of the body. The lipid composition of early atheromatous plaques has been found to be so similar to that of plasma as to suggest that atheromatous lipids are derived from the plasma. Experimental atherosclerosis has been developed in rabbits, dogs, rats, monkeys and other mammals. The process in humans normally evolves over several decades. In families demonstrating familial hypercholesterolemia, the process is accelerated because of extreme elevation of blood cholesterol. Especially in the homozygous form, death in childhood due to myocardial infarction has been reported.

Werthessen (1954) reported that hypercholesterolemia and hypertension are the most important risk factors involved in coronary thrombosis. It is also possible that the deleterious effect of hypertension is mediated through increased cholesterol and lipid deposition in the arterial wall. A linear relationship has been established between increased perfusate pressure and increased cholesterol deposition in arterial wall. Cornfield (1962) has described that 1% difference in serum cholesterol is associated with a 2.66% difference in risk at all levels of serum cholesterol i.e. higher the cholesterol the higher the risk.

It was established that the atherosclerosis is preventable and reversible in all the species of animals (Willa, 1957). The older observations of Anitschkow and Chalatow (1913) that cholesterol induced atherosclerosis in
rabbits is reversible was again supported by Leary (1934). Bargadon (1952) noted that the spontaneous atherosclerosis of sucking rabbits disappears after weaning. Shortly thereafter, Pollak successfully prevented hypercholesterolemia and atherosclerosis in rabbits by the simultaneous administration of cholesterol and sitosterol. Dury (1956) induced marked regression or complete absence of aortic atherosclerosis by two weeks of cortisone therapy in rabbits. Thyroid and estrogens (Chakravarti et al. 1956) also induced regression of experimental atherosclerosis in rabbits. Phosphatide infusion (Dury 1956) had a similar effect as did sunflower oil and diethylstilbestrol. Friedman and Byers (1957) implanted fragments of atherosclerotic aorta into the eyes of normocholesterolemic rabbits and observed these fragments to loose rapidly a great portion of their excess lipid and cholesterol. Pick et al. (1952) have shown that estrogens reverse previously induced coronary atherosclerosis in cholesterol fed cockerels.

Following the development of Steiner and Kendall (1946) method for inducing atherosclerosis in dogs by reducing thyroid function and feeding cholesterol in cotton seed oil, it was demonstrated that early atherosclerosis in dogs may almost completely disappear leaving only traces of residual lesions. Estrogen has been said to induce a similar response (Marmorston et al. 1955). The acceptable human data on the reversibility of human atherosclerosis was provided by Rutstein et al. (1958). Using tissue culture techniques they found that cells from the human aorta pick up the lipid when cholesterol or beta – lipoprotein was added to the culture medium. The aortic intracellular lipid deposition promptly disappears. It is interesting that Rutstein, found that the deposition of lipid is completely inhibited by the addition of stearic acid (Conner et al. 1967).

Henry and Ira (1998) have discussed lipid disorders including hypercholesterolemia in detail. Some premature CHD is said to be due to
mutations in major genes involved in lipoprotein metabolism, but elevated lipoprotein levels in most patients with CHD reflect the adverse impact of a sedentary lifestyle, excess body weight, and diets high in total and saturated fats on a less than perfect genetic background.

NCEP, Founded in 1985, seeks to reduce the prevalence of high blood cholesterol among Americans. It is a multidisciplinary coalition with a Coordinating Committee comprised of representatives from more than 40 major medical and health professional associations, voluntary health organizations, community programs, and governmental agencies.

The National Cholesterol Education Program (NCEP) has issued major new clinical practice guidelines on the prevention and management of high cholesterol in adults. The guidelines are the first major update from NCEP in nearly a decade.


Key changes in the new guidelines are: more aggressive cholesterol-lowering treatment and better identification of those at high risk for a heart attack; use of a lipoprotein profile as the first test for high cholesterol; a new level at which low HDL (high-density lipoprotein) becomes a major heart disease risk factor; a new set of "Therapeutic Lifestyle Changes," with more power to improve cholesterol levels; a sharper focus on a cluster of heart
disease risk factors known as "the metabolic syndrome;" and increased attention to the treatment of high triglycerides.

The new guidelines are expected to substantially expand the number of Americans being treated for high cholesterol, including raising the number on dietary treatment from about 52 million to about 65 million and increasing the number prescribed a cholesterol-lowering drug from about 13 million to about 36 million.

"Americans at high risk for a heart attack are too often not identified and, so, don’t receive sufficiently aggressive treatment," said NHLBI Director Dr. Claude Lenfant. "Yet, studies show conclusively that lowering the level of low-density lipoprotein, or LDL, the ‘bad cholesterol,’ can reduce the short-term risk for heart disease by as much as 40 percent. Treatment may lower risk over the long-term-that beyond 10 years-even more. That’s why, while the intensity of treatment in ATP III is stepped up, its primary aim remains squarely on lowering LDL."

According to ATP III, Americans at high risk for a heart attack include those with heart disease or diabetes, and many of those with multiple heart disease risk factors. The guidelines state that diabetes poses as great a risk for having a heart attack in 10 years as heart disease itself-and the threat from multiple risk factors can be equally great. The guidelines recommend these persons be treated as intensively as heart disease patients with lifestyle changes and medication.

To better identify risk, the guidelines include a tool that predicts a person’s chance of having a heart attack within 10 years. Based on newly analyzed data from the landmark, NHLBI-supported Framingham Heart Study, the "risk assessment tool" translates clinical conditions and lifestyle
factors into a single, easy-to-understand category of risk. The tool calculates risk separately for men and women based on age, total cholesterol, HDL (the "good" cholesterol), systolic blood pressure, treatment for high blood pressure, and cigarette smoking. ATP III recommends use of the tool for persons with two or more heart disease risk factors.

"The new guidelines will help doctors determine heart attack risk more precisely than was possible before," said Dr. Scott Grundy, ATP III chairperson and director of the Center for Human Nutrition at the University of Texas Southwestern Medical Center at Dallas. "That allows treatment to be more individualized. We now know that cholesterol-lowering treatment is more effective when its intensity closely matches the level of risk."

"The ATP III approach looks at 'overall' risk for a heart attack," said NCEP Coordinator Dr. James Cleeman, "which means in the short- and long-term. That's important because, although risk typically increases with age, the foundation for heart disease is often laid in adolescence and early adulthood. So Americans need to act now to prevent that future heart attack or heart disease itself. Every risk factor needs to be treated."

Cleeman advises Americans to check with their doctor to learn their overall risk for a heart attack and what, if any, treatment is needed.

Other changes in the new guidelines include:

- Treating high cholesterol more aggressively for those with diabetes.

Besides their very high short-term risk for having a coronary event, persons with Type 2 diabetes also have a particularly high risk of dying from a heart attack. Type 2 diabetes, or noninsulin-dependent diabetes mellitus, is
the most common form of the disease and affects more than 14 million Americans.

-A lipoprotein profile as the first test for high cholesterol.

A lipoprotein profile measures levels of LDL, total cholesterol, HDL, and triglycerides, another fatty substance in the blood. The prior recommendation called for initial screening with a test for only total cholesterol and HDL. The guidelines advise healthy adults to have a lipoprotein analysis once every 5 years.

-A new level at which low HDL becomes a major risk factor for heart disease.

ATP III defines a low HDL as being less than 40 mg/dL. Previously, a low HDL was less than 35 mg/dL. The change reflects new findings about the significance of a low HDL, and the strong link between a low HDL and an increased risk of heart disease. An HDL level of 60 mg/dL or more is considered protective against heart disease.

-Intensified use of nutrition, physical activity, and weight control in the treatment of elevated blood cholesterol. ATP III combines these steps into a new "Therapeutic Lifestyle Changes" (TLC) treatment plan.

ATP III recommends a more intense and effective eating plan than that previously used. The new diet reflects changes in Americans' eating habits, including a drop in saturated fat and cholesterol consumption. The new TLC diet includes daily intakes of less than 7 percent of calories from saturated fat and less than 200 mg of dietary cholesterol. It also allows up to 35 percent of daily calories from total fat, provided most is from unsaturated fat, which doesn't raise cholesterol levels. (A higher fat intake may be
needed by some patients with high triglycerides and/or a low HDL to keep their triglycerides or HDL from worsening.)

ATP III also encourages use of certain foods that contain plant stanols and sterols, or are rich in soluble fiber, to boost the diet's LDL-lowering power. Plant stanols and sterols are included in certain margarines and salad dressings; foods high in soluble fiber include cereal grains, beans, peas, legumes, and many fruits and vegetables.

Additionally, the guidelines stress the need for weight control and physical activity, both of which improve various heart disease risk factors. For instance, weight control enhances LDL lowering and raises HDL, while physical activity improves HDL and, for some, LDL. "TLC is the first line of therapy for high cholesterol and, with the turbo-charge that ATP III gives it, it will be significantly more effective in lowering LDL than the previous lifestyle recommendations," said Cleeman.

-Identifying a "metabolic syndrome" of risk factors linked to insulin resistance, which often occur together and dramatically increase the risk for coronary events.

The syndrome includes factors such as too much abdominal fat (indicated by too large a waist measurement), elevated blood pressure, elevated triglycerides, and low HDL. Therapy for the syndrome emphasizes TLC, especially weight control and physical activity. Insulin controls the body's metabolism of carbohydrates, fats, and protein. In insulin resistance, its normal actions are impaired. "The metabolic syndrome has emerged as being as strong a contributor to early heart disease as cigarette smoking," said Grundy. "In addition, the insulin resistance that goes along with the
syndrome is one of the underlying causes of Type 2 diabetes. It’s thus very important to recognize the syndrome and treat it with lifestyle changes."

-More aggressive treatment for elevated triglycerides.

Recent studies indicate that an elevated triglyceride level is significantly linked to the degree of heart disease risk. The new guidelines recommend treating even borderline-high triglyceride levels. Therapy includes weight control and physical activity and sometimes, for higher triglyceride levels, medication.

Advising against the use of hormone replacement therapy (HRT) as an alternative to cholesterol-lowering drugs.

According to ATP III, studies have not shown that HRT reduces the risk for major coronary events or deaths among postmenopausal women who have heart disease. HRT also increases the risk for thromboembolism and gallbladder disease. In contrast, cholesterol-lowering drugs have been found to reduce coronary events in women with or without heart disease.

The new guidelines were developed over 20 months by 27 panel members and consultants who are leading experts in heart disease, lipid measurement and management, primary care medicine, nutrition, epidemiology, health economics, and other areas. The guidelines were reviewed and approved by NCEP’s Coordinating Committee. NHLBI is part of the National Institutes of Health, located in Bethesda, MD.

**Lipid and Lipoprotein Transport**

Lipoproteins are spherical particles made up of hundreds of lipids and protein molecules. They are smaller than red blood cells and visible only by electron microscopy. The major lipids of the lipoproteins are cholesterol,
triglycerides and phospholipids. Triglycerides and the esterified form of cholesterol (cholesteryl esters) are monopolar lipids that are insoluble in aqueous environments (hydrophobic) and comprise the core of lipoproteins. Phospholipids and a small quantity of free (unesterified) cholesterol, which are soluble in both lipid and aqueous environment (amphipathic), cover the surface of the particles, where they act as the interface between plasma and the core components. A family of proteins, the apolipoproteins, also occupies the surface of the lipoproteins to serve as an additional interface between lipid and aqueous environments. These proteins play crucial roles in the regulation of lipid transport and lipoprotein metabolism.

Lipoproteins have been classified on the basis of their densities into major classes: chylomicrons, very low-density lipoproteins (VLDL), intermediate-density lipoproteins (IDL), low-density lipoproteins (LDL), and high-density lipoproteins (HDL).

**Apolipoproteins**

The apolipoproteins (apos) provide structural stability to the lipoproteins and determine the metabolic fate of the particles upon which they reside. There are two forms of apo B – apo B100 and apo B48. Apo B100 is the major apolipoprotein of VLDL, IDL and LDL, comprising approximately 30, 60 and 95 percent of the proteins in these lipoproteins respectively. Apo B100 is synthesized in the liver. It is essential for the assembly and the secretion of VLDL from the liver and is the ligand for the removal of LDL by the LDL receptor. The LDL receptor is a cell surface protein that binds and internalizes lipoproteins that contain apo B100 or apoE.

Apo B 48 is essential for the assembly and secretion of chylomicrons. Apo B 48 is encoded by the same gene and the same messenger ribonucleic acid (m RNA) as apo B100, but in the intestine the m RNA is edited in an
unusual way. The role of apo B48 in the metabolism of chylomicrons in plasma is unclear.

The apolipoprotein of the C series are synthesize in the liver and are present in all plasma lipoproteins (trace amounts in LDL). Individual apo C’s have different metabolic roles, but all inhibit the removal of plasma chylomicrons and VLDL remnants by the liver.

Apo E is synthesized mainly in hepatocytes but is also made in other cells, including macrophages, neurons, and glial cells. It is found in chylomicrons, IDL, VLDL and HDL and mediates the uptake of these lipoproteins in liver both by the LDL receptor and by the LDL receptor-related protein (LRP). Complete absence of apoE causes elivations of plasma levels of chylomicron and VLDL remnants and early atherosclerosis.

Apo AI, apo AII, and apo AIV are found primarily on HDL. Apo AI and apo AII are synthesized in the small intestine and the liver; apo AIV is made only in the intestine. Apo AI comprises about 70 to 80 percent of the protein of HDL and plays a critical role in maintaining the integrity of HDL particles. Individuals with a profound deficiency of apo AI also lack HDL. Apo AI also activates the enzyme lecithin: cholesterol acyltransferase (LCAT), which esterifies free cholesterol in plasma. Plasma levels of HDL cholesterol and apo AI are inversely related to risk for CHD, and some patients with apo AI deficiency develop early, severe atherosclerosis. Apo AII is the second most abundant apoprotein in HDL, and its functions have not been determined.

**Transport of Exogenous (dietary) Lipids**

Normolipidemic individuals dispose of most dietary fat in the blood stream within 8 h of the last meal, but some individuals with dyslipidemia,
particularly those with elevated fasting levels of VLDL, triglyceride, have measurable levels of intestinally derived lipoproteins in the circulation as long as 24 h after the last meal.

In the intestinal mucosa dietary triglyceride and cholesterol are incorporated into the core of nascent chylomicrons. The surface coat of the chylomicron is composed of phospholipid, free cholesterol, apo B48, apo AI, apo AI, and apo AIV. The chylomicron, essentially a fat droplet containing 80 to 85 percent triglycerides, is secreted into lacteals and transported to the circulation via the thoracic duct. In the plasma apo C proteins are transferred to the chylomicron from HDL. Apo CII is required for hydrolysis of triglycerides by LPL on capillary endothelial cells in fat and muscle, and apo CIII may modulate core triglyceride hydrolysis by regulating LPL activity. The addition of apo E allows the chylomicron remnant to bind to hepatic LDL receptors and/or LRP after the triglyceride core has been hydrolyzed and after apo CII and apo CIII have recirculated back to HDL. As a consequence, dietary triglyceride is delivered to adipocytes and muscle cells as fatty acids, and dietary cholesterol is taken up by the liver where it can be used for bile acid formation, incorporated into membranes, resecreted as lipoprotein cholesterol back into the circulation, or excreted as cholesterol into bile. Dietary cholesterol also regulates endogenous hepatic cholesterol synthesis.

Abnormal transport and metabolism of chylomicrons may predispose to atherosclerosis, and postprandial hyperlipidemia may be a risk factor for CHD. Chylomicrons and their remnants can be taken up by cells of the vessel wall, including monocyte-derived macrophages that migrate into the vessel wall from plasma. Cholesteryl ester accumulation by these macrophages transform them into foam cells, the earliest cellular lesion of the atherosclerotic plaque. If the postprandial levels of chylomicrons or their
remnants are elevated or if their removal from plasma is prolonged, cholesterol delivery to the artery wall may be increased.

**Transport of Endogenous Lipids**

The endogenous lipid transport system, which conveys lipids from the liver to peripheral tissues and from peripheral tissues back to liver, can be separated into two subsystems: the apo B-100 lipoprotein system (VLDL, IDL, and LDL) and apo AI lipoprotein system (HDL).

**The Apo B100 Lipoprotein system** – In the liver, triglycerides are made from fatty acids that are either taken up from plasma or synthesized de novo within the liver. Cholesterol can also be synthesized by the liver or delivered to the liver via chylomicron remnants. These core lipids are packed together with apo B 100 and phospholipids into VLDL and secreted into plasma where apolipoprotein CII, CIII and E are added to the VLDL particles. Triglycerides make up the bulk of the VLDL (55 to 80 percent by weight), and the size of the VLDL is determined by the amount of triglycerides available. Hence, very large triglyceride-rich VLDL is secreted in situations where excess triglycerides are synthesized, such as in states of caloric excess, in diabetes mellitus, and with alcohol consumption. Small VLDL is secreted when fewer triglycerides are available. Although VLDL is normally the principal hepatic lipoprotein secreted by most individuals, VLDL and cholesteryl ester-enriched IDL and/or LDL like particles may be secreted by the liver in individuals with combined hyperlipidemia.

The half-life of LDL in plasma is determined principally by the availability (or “activity”) of LDL receptors. Most plasma LDL is taken up by the liver, and the remainder is delivered to peripheral tissues, including the adrenals and gonads, which utilize cholesterol as a precursor for steroid hormone synthesis. The adrenals have the highest concentration of LDL
receptors per cell in the body. Overall, about 70 to 80 percent of LDL catabolism occurs via LDL receptors, and the remainder is removed by fluid endocytosis and possibly by other receptors.

The LDL receptors, a glycoprotein with a molecular mass of approximately 160 kDa, is present on the surface of nearly all cells in the body. Goldstein and Brown (1995) characterized the molecular genetics and cell biology of the LDL receptor and defined its role in cholesterol metabolism by showing that cholesterol delivered to the cytoplasm by LDL regulates both the rate of cholesterol synthesis in the liver and the number of LDL receptors on the surface of hepatocytes. These feedback mechanisms allow cells to maintain cholesterol homeostasis. While the LDL receptor is a major factor in determining plasma LDL cholesterol levels, the rates of entry of VLDL into plasma and the efficiency with which VLDL is converted to LDL also influence steadystate LDL concentration in plasma.

Increased level of plasma LDL cholesterol and apo B 100 are risk factors for atherosclerosis. Normal LDL does not cause foam cell formation when incubated with cultured macrophages or smooth-muscle cells, but when LDL undergoes lipid peroxidation it becomes a ligand for an alternative, scavenger receptor pathway. Scavenger receptors are present on endothelial cells and macrophages, and uptake of modified (oxidized) lipoproteins by these receptors in macrophages results in formation of cholesterol-laden foam cells. In addition to inducing foam cell formation, oxidized LDL acts in the vessel wall to stimulate the secretion of cytokines and growth factors by endothelial cells, smooth-muscle cells, and monocyte-derived macrophages. The consequence is recruitment of more monocytes to the lesion and proliferation of smooth-muscle cells, which synthesize and secrete increased amounts of extracellular matrix, such as collagen.
The role of VLDL in atherogenesis is uncertain. The major reason for this uncertainty derives from the inverse relationship between elevated levels of triglyceride-rich lipoproteins and reduced levels of the antiatherogenic HDL cholesterol, and it is possible that hypertriglyceridemia may not be directly atherogenic but the surrogate of other lipoprotein abnormalities.

**Apo AI-containing lipoproteins** – In contrast to atherogenic apo B lipoproteins, the apo AI-containing HDL appear to be antiatherogenic. In fact, in some studies, HDL cholesterol levels are as strong an indicator of protection from CHD as LDL cholesterol levels are an indicator of risk. Although a great deal is known about the HDL transport system, the mechanism by which these lipoproteins protect against atherosclerosis is poorly defined.

HDL particles are formed in plasma from the coalescence of individual phospholipid-apolipoprotein complexes. Apo AI appears to be the crucial, structural apoprotein for HDL, and apo AI/phospholipid complexes probably fuse with other phospholipid vesicles containing apo AII and apo AIV to form the various types of HDL. The C apoproteins can be added to HDL after their secretion as phospholipid complexes or by transfer from triglyceride-rich lipoproteins.

In rare cases low plasma HDL is due to a genetic deficiency of one of the structural components of HDL (such as apo AI), but low HDL cholesterol levels are usually the secondary consequence of increased plasma levels of VLDL and IDL (or chylomicrons and their remnants). Low levels of HDL cholesterol and apo AI may increase atherosclerosis risk by any of several mechanisms. HDL could remove cholesterol from foam cells in atherosclerotic lesions or protect LDL from oxidative modification. Alternatively, the atherosclerotic risk of low HDL may be due to the
commonly associated elevations of apo B containing lipoproteins, which both accept HDL cholesteryl ester and deliver cholesteryl esters to the vessel wall.

**Hypercholesterolemia**

Elevated levels of fasting plasma total cholesterol in the presence of normal levels of triglycerides are almost always associated with increased concentrations of plasma LDL cholesterol (type IIa), since LDL carries about 65 to 75 percent of total plasma cholesterol. The rare patient with markedly elevated HDL cholesterol may also have increased plasma total cholesterol levels. Elevations of LDL cholesterol can result from single-gene defects, polygenic disorders and secondary effects of other disease states.

**Familial hypercholesterolemia** (FH) is a codominant genetic disorder that occurs in the heterogeneous form in approximately 1 in 500 individuals. FH is due to mutation in the gene for the LDL receptor and is genetically heterogeneous, more than 200 different mutations in the gene having been described. Plasma level of total and LDL cholesterol are elevated at birth and remain so throughout life. In untreated adults, total cholesterol level range from 7 to 17 mmol/L (275 to 500 mg/dL). Plasma triglyceride levels are typically normal and HDL cholesterol levels are normal or reduced. As would be expected with a decrease number of LDL receptors, the fractional clearance of LDL apo B is decreased. LDL production is increased because more VLDL and more IDL are secreted by the liver and more IDL particles are converted to LDL rather than taken up by the hepatic LDL receptors. Tendon xanthomas, which are due to both intracellular and extracellular deposits of cholesterol, most commonly involve the Achilles tendons and the extensor tendons of the knuckles and are found in about 75 percent of adults with FH. Tuber xanthomas, which are softer, painless nodules on the elbows
and buttocks, and xanthelasmas, which are barely elevated deposits of cholesterol on the eyelids, are common in heterozygous FH. In men CHD develops by the fourth decade of life (or earlier). The homozygous form of FH occurs in one out of 1 million individuals and is associated with plasma cholesterol level $> 13$ mmol/L ($>500$mg/dL), large xanthelesmas and prominent tendon and planar xanthomas. These individuals have an aggressive, premature CHD that can be manifested in childhood.

**Familial Defective Apo B 100**  This autosomal dominant disorder, which is a phenocopy of FH and is due to a missense mutation at amino acid 3500 that reduces the affinity of LDL for the LDL receptor and thus impairs LDL catabolism. The prevalence and manifestations of both the heterozygous and homozygous forms and similar to those produced by mutation of the LDL receptor.

**Polygenic Hypercholesterolemia** Most moderate hypercholesterolemia [plasma cholesterol levels between 6.5 and 9 mmol/L (240 and 350 mg/dL)] and is polygenic in origin. Multiple genes interact with environmental factors to contribute to the hypercholesterolemia, and both overproduction and reduced catabolism of LDL are thought to play roles in the pathophysiology. The severity is probably affected by the consumption of saturated fat and cholesterol, by age and by level of physical activity. Plasma triglyceride and HDL cholesterol levels are usually normal. Tendon xanthomas are not present. Genes involved in cholesterol and bile acid metabolism may be involved in the pathogenesis (Henry and Ira 1998).
Characteristics of Isolated Hypercholesterolemia

<table>
<thead>
<tr>
<th>Lipid Phenotype</th>
<th>Plasma Lipid Level, mmol/L (mg/dL)</th>
<th>Lipoproteins Elevated Phenotype</th>
<th>Clinical Signs</th>
</tr>
</thead>
<tbody>
<tr>
<td>Familial hypercholesterolemia</td>
<td>Heterozygotes: total Chol. 7-13 (275 - 500)</td>
<td>LDL IIa</td>
<td>Usually develop xanthomas in adulthood &amp; vascular disease at 30-50 yrs.</td>
</tr>
<tr>
<td></td>
<td>Homozygotes: total chol. &gt; 13 (&gt;500)</td>
<td>LDL IIa</td>
<td>Usually develop xanthomas &amp; vascular disease in childhood</td>
</tr>
<tr>
<td>Familial defective apo B 100</td>
<td>Heterozygotes: total chol. = 7-13 (275-500)</td>
<td>LDL IIa</td>
<td></td>
</tr>
<tr>
<td>Polygenic hypercholesterolemia</td>
<td>Total chol. = 6.5-9.0 (250-350)</td>
<td>LDL IIa</td>
<td>Usually asymptomatic until vascular disease develops; no xanthomas</td>
</tr>
</tbody>
</table>

Note: Total chol., the sum of free and esterified cholesterol; LDL, low-density lipoprotein.

(Harrison's Principles of Internal Medicine 2001)

Cholesterol

Cholesterol has a steroid structure and other steroids are synthesised from it. It occurs in animal fats but not in plant fats and is widely distributed in all cells of the body. In the plasma, it exists in free as well as in esterified states. 75 percent of the cholesterol is esterified with fatty acids. In human beings these are palmitate, oleate, linoleate, palmitoleate, stearate and myristate. The esterification ratio seems to be influenced during athrosclerotic process.
Cholesterol Metabolism

(a) Absorption of Cholesterol
The dietary cholesterol (free and esterified) after getting mixed with the endogenous cholesterol in the lumen of small intestine is acted upon by bile salts, cholesterol esterase and other intestinal secretions (Glover and Green 1957; Bergstrom et al. 1960; Treadwell et al. 1962)

Cholesterol esterases play a major role in cholesterol absorption, but it is more easily absorbed in the presence of dietary fat and bile salts. These bile salts form complexes with cholesterol or act as co-factors for cholesterol esterase (Swell, et al. 1959). Following absorption cholesterol is transferred via lymph to plasma and incorporated into chylomicrons. In blood, it again enters the metabolic pool. Thus the absorption of steroid varies widely depending upon the quantity fed, chemical structure, total fat content of the diet and the species. The absorption of dietary cholesterol is incomplete and generally less than 50%. The daily intake is of the order of 150-300 mg (Green 1971)

(b) Biosynthesis of Cholesterol
It has long been known that animals can synthesise cholesterol. Possible biosynthetic pathways became possible with the availability of isotopes and isotopically labelled compounds but the manner of synthesis has been the subject of investigations by many workers particularly Bloch and co-workers (Bloch et al. 1943; Rittenberg and Bloch 1944; Ibid 1945; Little and Bloch 1950; Bloch et al. 1954; Ibid 1959), Popjak and co-workers (Brady and Gurin 1950; Ibid 1951). The results of their studies have made it possible to chart the origin of all parts of the cholesterol molecule (Malhotra 1992).
Acetic acid - → Acetyl-CoA - → Mevalonate - → Isoprenoid unit

Squalene

Lanosterol

14 - Desmethyl Lanosterol

Zymosterol

Δ7, 24 - Cholestadienol

Desmosterol (24 -Didehydrocholesterol)

Cholesterol (C_{27}H_{46}O)

**Biosynthesis of Cholesterol**

Acetic acid is the fundamental unit and acetyl-CoA is the source of all carbon atoms. The synthesis takes place in several stages: (1) synthesis of mevalonate, a 6-carbon atom compound from acetyl- CoA (2) the formation of isoprenoid units from mevalonate by loss of CO₂. The isoprenoid units may be regarded as building block of the steroid skeleton (3) six of these units condense to form the intermediate squalene (4) formation of parent steroid, lanosterol, from squalene by ring closure and (5) formation of cholesterol from lanosterol after several further steps, including loss of three methyl groups as shown in the figure above.

(c) Catabolism and Excretion of Cholesterol

The main pathways for elimination of cholesterol are, degradation to bile acids and excretion of neutral sterol in feaces.

(1) Conversion of Cholesterol into Bile acid

The two species are cholic acid and chenodeoxycholic acids. Various
compounds formed during the conversion of cholesterol to cholic acid or chenodeoxycholic acid are conjugated through a peptide linkage to either of the amino acids, glycine or taurine, so that liver finally secretes into the bile taurocholic acid, glycholic acid, taurochenodeoxy cholic acid and glycochenodeoxycholic acid. These conjugated bile acids are the direct end product of the hepatic catabolism of cholesterol and are called primary bile acids. Once they have reached the intestinal tract, further chemical transformation of the primary bile acids may occur as a result of enteric bacterial enzyme systems so that deoxycholic acid is formed from cholic acid and lithocholic acid is from chenodeoxycholic acid (Malhotra 1992).

(ii) Neutral Fecal Sterol A number of neutral sterols of endogenous origin have been isolated from faeces of man and experimental animals (Gould and Cook 1958), cholesterol is one among them. The sterols of the faeces are derived from bile, intestine, secretions, sloughed mucosal cells and are further altered by the action of intestinal micro-organisms. Approximately half of the cholesterol secreted in the bile is reabsorbed (Danielsson 1960). Coprostanol is the principal sterol in the faeces, it is formed from cholesterol in the lower intestine by the bacterial flora therein. A large portion of the
excretion of bile salts is reabsorbed into the portal circulation taken up by the liver and excreted in the bile. This is known as entero-hepatic circulation. The bile salts not reabsorbed, or their derivatives, are excreted in the faeces. Bile salts undergo changes brought about by intestinal bacteria. About 0.4 g of sterol is lost in the faeces in humans, thereby accounting for one-third of the net input. Increase in bile acid excretion can lead to increase in further absorption of cholesterol or it may also result in a decrease in cholesterogenesis via negative feedback mechanism (Malhotra 1992).

**Classification of Total Cholesterol, LDL Cholesterol and HDL Cholesterol Values**

<table>
<thead>
<tr>
<th></th>
<th>Total Plasma Cholesterol</th>
<th>LDL Cholesterol</th>
<th>HDL Cholesterol</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Desirable</strong></td>
<td>&lt; 200 mg/dl</td>
<td>&lt; 130 mg/dl</td>
<td>&gt; 60 mg/dl</td>
</tr>
<tr>
<td><strong>Borderline</strong></td>
<td>200 - 239 mg/dl</td>
<td>130 – 159 mg/dl</td>
<td>35 – 60 mg/dl</td>
</tr>
<tr>
<td><strong>Undesirable</strong></td>
<td>≥ 240 mg/dl</td>
<td>≥ 160 mg/dl</td>
<td>&lt; 35 mg/dl</td>
</tr>
</tbody>
</table>


Large epidemiological studies have found no concentration of Serum Cholesterol below which the risk of coronary artery disease remain constant. Thus the definition of a “normal concentration of Cholesterol” in serum for our population is not likely to be the optimum level. On the basis of epidemiological studies, a serum cholesterol less than 200mg/dl may be considered “optimal” and greater than 240 mg/dl definitely elevated.
<table>
<thead>
<tr>
<th>Drug or Drug Type</th>
<th>Major Indications</th>
<th>Mechanism</th>
<th>Common Side Effects</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Bile acid sequestrants</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Cholestyramine colestipol</td>
<td>Elevated LDL</td>
<td>Promote bile acid excretion and increase LDL receptors in liver</td>
<td>Bloating, constipation, elevated triglycerides</td>
</tr>
<tr>
<td>nicotinic acid</td>
<td>Elevated LDL, VLDL</td>
<td>Decreases VLDL synthesis</td>
<td>Cutaneous flushing, GI upset, elevated glucose, uric acid, and liver function tests</td>
</tr>
<tr>
<td><strong>HMG CoA reductase</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Inhibitors (&quot;statins&quot;) Pravastatin simvastatin atorvastatin fluvastatin lovastatin</td>
<td>Elevated LDL</td>
<td>Inhibit cholesterol synthesis and upregulate LDL receptors in liver</td>
<td>Myositis (muscle inflammation), arthralgias (joint pains), GI upset, elevated liver function tests</td>
</tr>
<tr>
<td><strong>Fibric acid derivative</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>gemfibrozil</td>
<td>Elevated triglycerides, elevated remnants</td>
<td>Stimulate lipoprotein lipase (an enzyme that breaks down lipids in lipoproteins, may decrease VLDL synthesis</td>
<td>Myositis (muscle information), GI upset, gall stones, elevated liver function tests</td>
</tr>
<tr>
<td><strong>Fish oils</strong></td>
<td>Elevated triglycerides</td>
<td>Decrease synthesis and increase breakdown of triglycerides</td>
<td>Diarrhea, GI upset, fishy odor breath</td>
</tr>
</tbody>
</table>
MEDO ROGA / MEDO DOŞA

Suśruta states that the Meda component comes from the maternal side in the embryo (Su. Śa. 3/32). It remains within the Medodharā Kalā in whole of the body and is chiefly present in the abdomen as well as in the small bones (Su. Śa. 4/11). Medo dhātu contributes towards lubrication, perspiration and stoutness of the body in addition to providing nourishing material for the growth and firmness of the bones (Su. Śū. 15/6).

The deficiency in Medo dhātu is manifested by Plīhā-vṛddhi (enlargement of spleen), Sandhi śunyatā (sense of numbness in joints), Rūkṣatā (dryness in the skin) and Medurmāmsa Prārthanā (craving for emollient meat) (Su. Śū. 15/10). Similarly, excess of the Medo dhātu produces Snigdhāṅga (oily and glossy skin), Udarapārśava vṛddhi (increased bulk on the sides of the abdomen), Kāsa - Śvāsa (bronchitis -dyspnoea) and Daurgandha (foetid smell from the body) (Su. Śū. 15/15).

Medo Roga

Neither Medovṛddhi (obesity) nor Kṛṣṭā (asthenia) is the state of health. Both these states are always prone to disease. These both have been categorized among the eight undesirable or censurable persons (Ca. Śū. 21/3). The balanced state of all the seven dhātus is the key to good health. Medo dhātu, which is one of the components of the seven dhātus is responsible for the emaciated or corpulent frame of the body. The healthful status as described by both Suśruta and Caraka gives a complete understanding of the balanced state of health involving both psyche and soma (Su. Śū. 15/44) and the physiological norms (Ca. Śū. 21/18-19).

It is worth mentioning that both these authorities have described the balanced state of health in reference to corpulence or asthenia. Although,
both these conditions are not physiologically suggestive of good health, yet obese are suppose to suffer from more severe and serious disorders as compared to individuals who are lean, thin and weak (Ca. Sū. 21/16-17).

Patho-physiology of Medo Roga

Food is one of the important components for the sustenance of existence of an individual (Ca. Sū. 27/3) or in a way we can say that body is the end product of the food we take. The Medo dhātu being one of the seven components of the body also depends on food. Suśruta has mentioned that Sthūltā and Krṣṭā depend chiefly upon Rasa. It means to say that rasa which is the source of nourishment for the whole body is also the source of Medo dhātu (Su. Sū. 15/33). Āyurveda comprehends three levels of Agni-vyāpāra or metabolism:

1) Jatharāgni level

2) Bhūtāgni level

3) Dhātvāgni level

All types of food ingested undergoes Jatharāgni pāka at the outset. The nature of Jatharāgni pāka is to cause disintegration of the bigger molecules of food to make it ready for absorption. However, the absorption is not a passive phenomenon and has been described to be helped by Jatharāgni. Thus the function of digestion and absorption both have been attributed to Jatharāgni pāka. Entire phenomenon of digestion has been described under the heading of Awasthāpāka, which includes the Madhurapāka (salivery digestion), Amalapāka (gastric digestion) and Katupāka (intestinal digestion) (Ca.Ci. 15/9-11). The food thus processed by Jatharāgni is further acted upon by Bhūtāgni and Dhātvāgni (Ca. Ci. 15/13).
Anna rasa absorbed from the Mahāsrotasa goes in circulation. The circulating rasa is made available to different tissues for nutrition in three ways known as:

1) Kedarikulya Nyāya
2) Khale Kapota Nyāya
3) Kṣīra Dadhi Nyāya

According to Kedarikulya Nyāya, the circulating Annarasa reaches different tissues through the respective channels and is utilized by the way of transformation or nourishment of the dhātus. According to Khale Kapota Nyāya, there is selective absorption of the nutrients by the tissues to meet their specific requirement. According to Kṣīra Dadhi Nyāya, Dhātus of the body are arranged in the serial order and they are nourished one after the other. According to this theory there is a complete transformation of one into the other as milk is totally converted into Rakta and so on. All the techniques have been discussed critically by Cakrapānidatta in his commentary on Caraka [Cakrapāni (Ca. Sū. 28/5)]. If we examine them in the light of the modern development, none of them alone seems to be capable of explaining the entire phenomenon of tissue nutrition. But the combination of the three makes a perfect basis for the exchange taking place at the tissue level.

Thus, the nutrition reaching the different tissues is acted upon by Dhātwāgni. The function of Dhātwāgni is to participate in the process of Caya – Upcaya (metabolism) having two aspects – anabolism and catabolism. Anabolism helps the formation of tissues, specific materials leading to their growth and development. On the other hand in the process of catabolism, there is breakdown of the nutrition for the production of energy i.e. Ùsmā and Ùrjā. In the absence of the sufficient nutrition and in the
process of wear and tear there is breaking down of tissue material leading to Apacaya. Thus the homeostasis or the equilibrium of Dhātus referred to above is the end result of two processes. If the anabolic process overpowers the catabolic one, there is Bṛmhaṇa of the tissues. This phenomenon may be general or a specific one i.e. when all the tissues are simultaneously affected in a similar way it is general and on the other hand when some specific tissue responds in a different way from others it is specific or localized i.e. in Medo roga the anabolic process supercedes the catabolic process so there is its Vṛddhi, whereas the other tissues go on weakening due to deficiency in nutrition available to them.

There is likelihood of the presence of two types of Agnis, operating at Dhātu level by taking part in anabolism and catabolism. The subject matter of the aforesaid topic is scattered in the Āyurvedic literature. There are implicit references as well. However, if all the references available in the Āyurvedic literature related to Dhātwāgni are scrutinized there seems to be a clear description of two types of Dhātwānis.

Type one is related to the conversion of the worked up stuffs into tissue specific material leading to the Vṛddhi of the Dhātus. As long as this process is normal, the built of the body, the strength, complexion and other ingredients of Saukhya (happy and prosperous life) are maintained (Ca. Sū. 28/3). The Agnis performing these functions of anabolism and regeneration have been referred by the name of Rasāgni, Raktāgni and others.

When there is hypofunctioning of any one of these Agnis, the formation of some other Dhātus may increase. For example, in Medo roga the Dhātwāgni-mandatā is at the level of Rakta and Māmsa dhātus. Hence, the formation of Rakta and Māmsa is reduced and the entire nutrition is
channelised to nourish Meda. Medāgni, being normal or hyperfunctioning, the turnover of the nutrients (Madhura Rasa) into fats is quickly achieved.

This aspect of Dhātwaṅgni is also governed by Jathārāgni i.e. there is parallel hyper or hypo functioning of Jathārāgni (Ca. Ci. 15/39; Aṣ. Hṛ. Sū. 12/10-12). Here, Caraka has clearly mentioned that Vṛddhi and Kṣāya of Dhātwaṅgni depends upon the state of Jathārāgni. In Medo roga though there is relative hyperfunctioning of Medāgni even it is associated with hyperfunctioning of Jathārāgni.

Second type of Dhāwaṅgni i.e. Agni, situated at the Dhatu level has been named as Pācaka-amśa or Kāyāgni-amśa, which is similar in function as Jathārāgni or Pācakāgni, hence this name. The pecuharity of this type of Dhātwāgni is that with its hyperfunctioning there is consumption (Kṣāya) of Dhatuṣ and on the contrary with its hypofunctioning there is growth and regeneration (Vṛddhi) (Aṣ. Hṛ. Sū. 11/34-35; Aṣ. Sam. Sū. 19/16). In the hyperfunctioning stage, as long as nutrients are available, they are consumed first, but as soon as their availability ceases, Dhatuṣ are affected viz. in the initial stage Poṣaka-dhatu is utilized by this Agni and thereafter, in its absence breakdown process of Sthāyi-dhatu starts. This process may not stop even when the moieties of Pācaka agni are within normal limits, in the hyperfunctioning stage the phenomenon becomes more evident. Like the two types of Agnis, there are two types of Pākas known as Prasāda pāka and Kittā pāka, obviously corresponding to anabolic and catabolic reactions. The end product of Prasāda pāka are utilized for the nourishment of the Dhatuṣ, whereas those of the Kittā pāka provides the material for the production of various kinds of excretions such as Mūtra, Purīṣa (Ca. Sū. 28/4).

On the whole the entire Agni vyāpāra may be basically divided into three types i.e. 1. Sanghāta bheda, deals with the disintegration of the
substances both at the level of Jatharāgni pāka and Dhātwāgni pāka, 2. In the process of Parinamana, there is break down of the substances producing energy and heat, 3. In the process of Pravṛtti, there is transformation of the materials from one kind to another. Example of such changes are both at Bhūtāgni and Dhātwāgni level functions [Cakrapāṇī (Ca. Ci. 15/15)]; (Ca. Sū. 28/4; Ca. Sū. 28/3).

Conversion of Madhura Rasa into Sneha Dravyas

The etiology of Medoroga and Medovṛddhi has been described by all the textual authorities but among them the nature of the food and its metabolism in the body have been given utmost importance. Suśruta has categorically emphasized the importance of Āhāra rasa in the etiology of obesity and leanness both. He has conceived and discussed the conversion of Madhura āhāra dravyas into Sneha dravyas leading to adiposity (Medoroga). According to him if one indulges in overeating of Madhura dravyas and does not take active exercise rather sleeps for a longer time including day sleep, the Anna rasa of such people remains Āma or incompletely processed. In other words it is not metabolized in the system. And as such it is not utilized by Rakta and Māmsa dhātu. Thus, it is made available for the conversion of Madhura dravyas into Sneha dravyas and gets deposited in the form of adipose tissue leading to Sthāulya or obesity (Su. Sū. 15/32).

In this context Dalhana has raised some relevant questions and has made attempt to answer them. He has pointed out (Dalhana on Su. Sū. 15/32) that in the patients of Medo Roga there is Dīptāgni then how Āmarasa can be formed ? He himself has answered that though there is no Agnimāndhya at Jatharāgni level yet Agnimāndhya is present at Dhātu level. Actually, in the cases of obesity the digestion of food is rapid and absorption is quick hence the production of Āma at the level of intestinal digestion does
not arise in such cases. To say that Medasvīṣ, who have Dīptāgni produce Āmarasa will be introducing an element of contradiction as only Mandāgni can produce Āma. The correct interpretation of the passage, under reference is that it is Dhātwāgni that is Manda and in consequence Āma is produced at the level of Dhātwāgni paka. In other words, the Annarasa, after its formation and absorption is not properly dealt with by Dhātwāgni.

Further, the author has tried to explain (Ḍalhana on Su. Sū. 15/32) how this does not nourish Rasa and Rakta but goes on accumulating as fat in the body. He stated that by virtue of Viśiṣṭa or some inexplicable cause and due to the obstruction of channels, āhāra rasa does not nourish Rasa and Rakta. The predominantly sweet tasting substances, in circulation, are turned over as Meda or fat. Thus, Meda dhātu alone accumulates in the body and all the other dhātus viz. Rasa, Rakta, Māmsa (the dhatus preceeding the Meda dhātu in chronological order) as well as Asthi, Majjā and Śukra are not properly nourished, hence they undergo wasting.

**Role of Bija Doṣa (Genetics) in Medo Roga**

Caraka has mentioned without any ambiguity that there is a role of Bija swabhāwa in the etiopathogenesis of Medoroga. The term Bija swabhāwa has been further explained by Cakrapāṇī that the parents have obese offspring by virtue of the particular quality of Bija. He has further explained that the constitution of such persons is so that even with the normal or subnormal diet, there is a tendency of Medoroga (Cakrapāṇī on Ca. Sū. 4/30). It is probable that the term Adṛṣṭa used by Suśruta in the etiopathogenesis of Medoroga may have the same sense because by using the word Adṛṣṭa, he meant to say that due to unknown reasons, without taking any excess of fat or food, they develop obesity what has been explained by Cakrapāṇī as Bija swabhāva. It may be inferred that by the
excessive use of Madhura and Śleṣma āhāṣra by the parents, grand parents and great grand parents, changes in the molecule of Bīja develop which gives rise to a constitution that there is a tendency for the formation of Meda even with normal or subnormal diet. In other words it is an inheritance of metabolic error.

**Role of Āhāra (Foods) in Medo Roga**

According to Vāgabhatta, Dravyas are either Tulya (homologous, similar or identical) or Viśiṣṭa (heterologous, dissimilar or non-identical) which cause an increase or decrease, as the case may be of the Dhātus (body tissues) due to properties potentially inherent in them, as in a seed. Homologous properties of Dravyas cause a rapid increase of identical properties of Dhātus (Aṣ. Sam. Sū. 19/18).

Caraka refers to over-indulgence in Madhura rasa (Ca. Sū. 26/43 (1)) as well as the articles that are heavy, cold and oily while Suṣruta refers to over-indulgence in Śleṣamaja āhara coupled with sedentary habits as favouring the production of Medas in the body (Su. Sū. 15/32). Medoroga or Sthaulya has been enlisted by Caraka as one of the Nānātmaja vikāras of Śleṣmā (Ca. Sū. 20/17). Hence, any Dravya that is Tulya or homologous to Śleṣmā (either by Guṇa-sāmānyya or Karma-sāmānyya) can favour an increase in Meda dhatu. In other words all articles of food and habits that conduce to the conversion of energy yielding substances like carbohydrates and fats when combined with sedentary habits like sleeping in the day time (Divā-Swapanā), lack of exercise (Avyayāma) etc. which reduce the expenditure of energy in the body, leads to storage of Meda (fats or lipids) in the body.

Madhukoṣa Tīkā (commentary) on Madhava Nidāna with regard to Medoroga Nidāna (Mā. Ni. 34/1-9), is obviously based upon the earlier observations of Suṣruta and Caraka. According to Madhukoṣa, Sneha (oil)
and Medas (fat) are produced from the predominantly sweet tasting Anna-rasa (chyle) which is not unlike Āma. This sweet tasting Anna-rasa behaves very much like Āma and, from it is produced Medas, which accumulates. The production of Medas is carried out at the expense of other Dhātus.

**Role of Srotorodha (obstruction of channels) in Medo Roga**

The term Āvr̥ttā mārga and Niruddha mārga have been often used by the textual authorities in Āyurveda with reference to etiopathogenesis, clinical manifestations and complications of Medo Roga. The term used above means that the obstruction is at the level of molecular biology. The transfer of Āhara rasa from the circulating Rasa to different tissues is through subtle channels taking part in the metabolism of the body as a whole. These channels are often obstructed by the formation of Āma. Which has been referred earlier to be of two types, at the Jatharāgni level and at the Dhātu level. This blockade at the metabolic level either in the channels or in the functions of Agni leading to formation of Āma in turn leading to subsequent obstruction in channels at the level of Dhātus other than Meda may be one concept. This leads to the obstruction in the nutrition of other Dhātus hence their subsequent wasting. On the other hand at the level of Meda dhātu there is obstruction either in the channel or in the Agni hence its growing. What is known as hypercholesterolemia or atherosclerosis causing ischaemia, thrombosis or embolism leading to various types of nervous and cardiac lesions may be well covered by this concept.

Thus the concept of Āvr̥ttā mārga in relation to Medo Roga is applicable at the level of etiology and clinical manifestation including complications there of. The above three factors i.e. (i) the nature and quality of Āhāra, (ii) a particular metabolic tendency governed by Bijā doṣa and (iii) the integrity of the Srotasa taking part in circulation and metabolism both at
the gross and the molecular level are of fundamental importance in the normal and abnormal metabolism of lipids as long as there is abnormality in this factor i.e. excess food is taken and the channels are obstructed and if at all there is a genetic tendency, the process of Medo Roga begins.
Hetu Sevana

Avyayāmādi

Apaśita, Vikṛta Medovṛddhi

Srotorodha

Vāyu Virmārga gamana

Koṣṭha madhya Sanchārita

Jatharāgni Sandhūksanā

Kṣudhāvrddhi

Anna Pācana, Śośana Vega

Adhika Annasevana

Viśeṣa Madhura Annasevana

Medo dhātvāgnimāndhya

Kevala Dhatuvara Parināma, Srotorodha & No Dhatupuṣṭī

Medo Roga

Medo Roga Samprāptī (Kāya Cikitsā, Joshi, Y. G., p.p. 256)
Medo Doṣa

Medo roga and Medo doṣa have been described to be synonymous to each other (Śā., Khaṇḍa -1, 7/95). Literally, it means a disease in which Medo dhātu is deranged. It is only one type of the disease according to Āyurvedic texts, but Ādamala, the commentator on Śārangadhara, has tried to distinguish between two types of Medoroga:

1. Lipid disorders where Meda acts as an aetiological factor in the genesis of other diseases.
2. Adiposity, including its clinical features (Sthāulya).

In the example of the former he has quoted the morbid changes developing due to the obstruction of the channels by Meda and for the latter he has mentioned enlargement of abdomen due to fat deposition. Due to the obstruction of the channels the nutrition of the various tissues suffer leading to vitiation of Vāta in those organs causing severe diseases therein. Dyspnoea, excessive thirst, syncope etc. have been described as the clinical manifestations of this condition.

It is interesting to note that a distinction between adiposity and lipid disorders leading to obstructions of channels (Āvrta and Niruddha mārga) like atherosclerosis, occlusive vascular diseases have been forwarded by Ādamala in his commentary on Śārangadhara. Kṣudra śvāsa or dyspnoea on effort is one of the cardinal symptoms of coronary insufficiency and the Moha or syncope is the cardinal symptom of short supply to the brain, which are the example of Medo doṣa. Thus, the most important clinical manifestations of atherosclerosis, the coronary insufficiency and cerebral insufficiency have been described as lipid disorders in Āyurveda in an implicit manner. At this juncture it is advisable to differentiate between two types of disorders of Meda. Instead of treating Medo doṣa and Medo roga as
synonyms, a more specific nomenclature may be adopted as given below (Tripathi et. al. 1989):

The use of Snigdha Dravyas (lipids or fats) both for dietary purpose and for the treatment have been advocated by all the authorities of Ayurveda (C.Vi. 1/25(2); C. Sū. 22/4; 13/99). As the important constituent of food, the fats are limited to prescribed measure or Mātra, which in turn is dependent on Agni of individual that is, his capacity to digest (Ca.Vi. 1/25(3); Ca.Sū. 29/34).

Āma - Hyperlipaemia

In the absence of or due to the inhibition of Agni, the fuel meant for the body is not properly metabolized and the products of that faulty metabolism, being retained in the body undergo changes as to yield such substances, which are injurious and detrimental to the body. This state is spoken of as Sāmaāvasthā.

The above stated Agni may be Jatharagni, Bhūtāgni or Dhātwägni. The impairment of any of them is capable of producing Āma (Aṣ.Ḥr.Sū.
13/25). This Āma is associated with the vitiated Doṣas. It is circulated throughout the body and is capable of initiating the pathogenesis of many diseases of diversified symptoms (Aṣ. Hṛ. Sū. 13/27).

**Physical properties and actions of Āma**


It will be interesting at this stage to recapitulate the physical properties and qualities described for hyperlipaemia as this picture truly depicts that of Āma, or rather Sāmāvasthā. Hyperlipaemia is described as an increased state of lipids in blood and the person exhibits the symptoms like feeling of heaviness of the body, lethargy, greasiness over the body and deposition of fats in the various sites of the body. Almost same symptoms can be observed in a person in Sāmāvasthā. By virtue of the qualities as mentioned earlier, the ama produces both acute and chronic diseases. The chronic diseases are produced mainly by the capability of Āma to initiate the disease conditions such as Srotorodha (obstruction of channels), Balabhramśa (loss of strength), Ālasyam (lethargy), Apakti (loss of digestive power), Daurbalyam and Gauravam of Hṛdayam (weakness and heaviness of heart) and Anilmudata (inactivity of Vāyu) (Aṣ. Hṛ. Sū. 13/23; Ma. Ni. 25/4). The diseases which are caused by Āma in association with the Doṣas and Dūṣyas are generally spoken of as Sāmarogas. The signs and symptoms of these diseases depend upon the site and nature of Āma and Doṣas. The settlement of Āma during its circulation through the body is an important factor in producing the disease (Su. U. 56/10). This statement is again dependent upon the healthy or diseased state of the Srotas (Su. Sū. 25/10).
As mentioned earlier that Āma is produced because of the impairment of Jatḥarāgni, Bhūtāgni or Dhātvāgni. The Jatḥarāgni being located in its own place, not only takes part in the digestion of food but also contributes to and augments the function of other Agnis (Aś. Hṛ. Sū. 12/12). As the functions of Jatḥarāgni and Dhātvāgnis are same, the causes or conditions which can impair the Jatḥarāgni will also be capable of disturbing the functions of Dhātvāgnis. The causes and/or conditions which contribute to the impairment of Agni and thereby to the formation of Āma are the following (Dwarkanath C. 1959):

   a) Ingestion of food containing articles which are incompatible to one another
   b) Ingestion of heavy or indigestible articles of food
   c) Over eating
   d) Ingestion of foods for which one has an aversion or the consumption of foods which are disgusting
   e) Ingestion of foods which produce distension of the abdomen
   f) Consumption of raw and uncooked food
   g) Eating of foods which are too cold
   h) Use of foods which are irritating and capable of causing inflammation of the stomach (and intestines)
   i) Consumption of unclean and contaminated (infected) food
   j) Eating of dry, fried or dehydrated foods-stuffs
   k) Use of foods soaked in too much of water (possibly for long duration of time)
   l) Intense emotional stresses as grief, rage, worry, fear, complex etc.
   m) Hunger and irregular diet habits
The relevant aetiological factors for the impairment of Bhūtāgni and Dhātvāgni and to the formation of Āma at their levels can be considered as follows:

a) Increased supply of the specified Poṣaka Dravyas (nutrients)
b) Supply of Asātmaya Dravyas (non-homologus materials)
c) Laziness and lack of physical activities
d) Various physical and emotional stresses

The impairment of any Agni at any level can initiate the process of formation of Āma. Although in broad terminology it is designated as Āma yet the nature of this unprocessed product of impaired metabolism depend upon the material, site and type of the Agni involved.

In the condition like that of Medo doṣa (lipid disorders), it can be interpreted that either the material i.e. the Āhara rasa (chyle) is overfllooded with Snehamsas (lipids) or the site i.e. Yakṛta (liver) where the Bhūtāgni-pāka of Snehamsas (resynthesis of cholesterol) takes place (Dwarkanath C. 1959) is imperfect or the concerned Agni itself i.e. Āpaya Agni (predominantly) which is responsible for metabolism of Snehamsa ‘Āpaya compounds (Dwarkanath C. 1967) in circulation’ is hypo-functional. Thus the improperly metabolised Snehamsas in the circulation can be termed as Sāmaja and are competent enough to cause severe complications in the form of different disease conditions. These faulty processed Sāmaja snehamsas that are having the moieties of Śleṣma in them, while circulating in the Dhamanīs may lead to the development of the condition like that of ‘Dhamānīpratīcaya’ or atherosclerosis (the sequence of events is shown in the figure below). Thus Sneha vyāpata produces the condition of Sāmāvastha in the body. This process explains the pathogenesis of various diseases caused by Srotorodha due to hyperlipaemia.
Fig. 1.4: Flow chart of aetiopathogenesis of Medo doṣa (hypercholesterolemia) leading to Dhamanipraticaya (atherosclerosis)
Sanskr̥ta References:

- सूर्य 3:32
- सूर्य 4:11
- सूर्य 15:6
- सूर्य 15:10
- सूर्य 15:15
- चोर्सु 21:3
- सूर्य 15:44
- चोर्सु 21:18-19
- चोर्सु 21:16-17
इष्टवर्णगण्धरसस्यस्मि विविधतिमण्ययां प्राणिसंग्राजकानन् प्राणिसंजोकानस्य राजमाचकले
रुपकाः, प्रायसद्रार्द्यानां; तद्विधया ज्ञातस्तते: स्थितिः; तत् सत्यसूर्यायति,
तत्त्वदीर्घात्तुष्णुष्णवण्टियस्यप्रसादकर्म यथोत्तमपसेर्वाव्यां, निपरितमहिताय
संपद्यते॥

(च०२० २७:३)
सनिमितमेवस्थौविष्कार्यां च। – –स्वामः
जनयति। – – – – – – – – – – – – –

(स०२० १५:३३)
अन्नस्य भूत्स्मातस्य दहस्त्य प्रसादः।
माघुराधानं कसो भवात् फेनभूत उदीयते॥
परं तु पवयमानस्य विद्यस्यमक्षलभावतः।
आश्वाचन्यवाक्यस्य पितमचछुद्यते॥
पक्षवाश्यं तु प्राणस्य शोष्यमणस्य वहिनिना।
परिप्रिणिष्ठपक्षस्य वायुः स्यतृ कदृभावतः॥

(च०चिर० १५:९-११)
मौमायमनकम्यावाव्यः प्रस्तुतिः सनाभसः।
पुमज्ञार्यान्नवन्नायाध्यादिपीत्यचन्तिनि हि॥

(च०चिर० १५:१३)
रसो रतस्नपत्यपरिष्ठति, रकः च मांसपत्या, एवं
मांसाध्योपयुतोतयतात्वपत्यपरिष्ठति; अग्रापि च मध्ये केवलं बुद्धतीर्थराद
यथा सवृोलस्य ददी भवति, तथा कुस्तनाद रसाद रद्धं भवति, तथा कुस्तनाद
रसाद रद्धं भवति, एवं रक्षायो मांसादिष्ठ्या भवन्ति,

(च०चिरा च०२० २८:४)
विविधधनिः पीतं लोदं स्वाहितं – – – – – –
केवलं शरीरमुपचारवर्णसुरसायष्यायति शरीरधात्तुप्यायति च।
धातयो हि धात्वाहाः: प्रकृतिमनुवर्तते॥

(च०२० २८:३)
अन्नस्य पत्का सर्वेऽ गयमभिषो मनः।
तत्त्वल्लस्तः हि तद्द्विधायुविष्क्रियात्मकः॥
तत्समातं विधिक्षुतेत्रानामपनेरन्द्रनेहितः।
पालयेत् प्रयत्स्तस्य स्थितिः ह्यापुर्वनस्थितः॥

(चोचि 15:39)

दितं पञ्चात्स्यक्तं पञ्चवणमानसः]
पञ्चभूतात्स्यक्तेऽपि यतेजस्यज्ञोदयात्॥
त्यत्रवत्त्वं पकाकामिर्यायानलशस्वितम्॥
पञ्चत्त्वनं विभजते सारसिद्धो पुष्करं तथा॥
तत्रस्थेवेपि पितामहः षोषणायमयुनप्रहम्॥
करोति बलाधानेन पाचको नाम तत्स्रृः॥

(असूर 12:10-12)

स्वस्थानसःस्य कायामेंश्रा धातुषु सश्रिताः॥
तेषां साधारणोऽस्मिः धातुभिक्षणोऽभवः॥
पूर्वो धातुः परं कुष्ठिहः क्षीणशच तस्दिः॥
दोषा दुष्टा रसेद्धातुं दूषण्यन्युमयेः मलान।॥

(असूर 11:34-35)

यें पाचकांशं धातुस्यात्सेपं माध्यतितेत्त्वः॥
वृत्तिः क्षीणस्क्षानिः जायते भृणो चापरसः॥

(असूर 19:16)

tतत्राहारप्रसादस्यो रसः कुद्दं च मलायमभिन्नित्वते॥

(चोचि 28:4)

रसादतं प्रसादं, ततो रसायनां प्रसादं, मांसान्वेदः प्रसादनमित्यादि,
यावचुदिनात। प्रसादश्वेतेऽरसादिम्यः प्रसादान्यन्या रत्नादयं किंद्रष्ट्यान्यान्यात्
वर्धमाणा: कपायदय इति॥

(चक्पणि चोचि 15:15)

अध्यायश्वेते अज्ञायश्वेते अज्ञीणभोजनन्यायसिं इत्यथः। ननु, भेदस्विनो दीपाभिन्द्रो
कथमारससंवेदः? नेभ दोषः दीपाभिन्द्रायप्रधष्टशनीलात्त्वालमससो भवति। ततह
कथं रसायनवस्थेति विश्वमित्रवचनं नहूमको रसायनवेशं लभते। सत्तुं
जातेणुविनना रसः कुद्दयेन कुत् एव, किंतु धातुभिन्निकायम् इत्युच्यते।
श्रीरेरुकामिनिति तं त शरीरदेशं गच्छनित्ययः। भेदे जनयति
विश्वाराहस्यज्ञानोद्भवत्वशान्वेनसांसुदूरत्मार्गितवच्च धातुदयमात्रकम्य भेद एव
वर्धयति। तद्विश्वौध्ययमापायत्तीति तत् मेवः, आपदयति करोति। कथनं
कथवन्ति। गद्गदवत्तम् अव्यात्तदन्तम्। श्लेष्मवेदविश्वयति एते श्चुद्रावसायस्तं
स्थूलं शीर्षावेदः प्रविशिष्टनि, स्थूले भवन्तित्तयथः। जेवधातनवो नायानेतृत्तथयति
शेषधातनोजस्यायः। वातविकारिणायति अज वातविकारि मेवः
कृतमायायदनिबन्धातकोपकाविकारि इत्यः। अन्यतमिति एषाभेकः।
पञ्चचतुष्यातीति मरणुपुष्पाणीत्त्वयः॥
(उद्विष्णु २.१५.३३)
अतिश्लूतस्य हेतुमाह- देहत्यादि। अतिशेषुपुरणंति भोजनम्। श्रीस्वभावविवितः
स्थूल माता पितुजनतवात्। सम्प्रति स्थूलस्य साधारणद्वाहारादि
मूर्तिवेदोजस्यमाह- तत्य हीतया। मेदस्विन इति हेतुमभविषेषणं, तेन
यस्मादिति पुष्कलसारी मेवो देहव्यापकः। नलयद्वुत्तत्त्वतेव प्रायो वमते, नान्ये
रसादयस्तम्भशुभत्वादित्यः। तत्समादिति विशेषधातुत्वात्। मेदोशेषायति।
(चक्रापाणि २.२१.४)
इत्यं तु त्यं विशिष्ट हि स्यं स्यं बुद्धये क्षमाय च।
प्रत्यात्माकीर्त्येन्मोहद्वृशभयाः च जायते॥
(अधोरूपूर्ण १९.२१)
रस निमित्तेव प्रथौत्स्य कार्यणं। तत्र
श्लेष्मलाहारसेविनोद्धशनशैलास्यायामिनिः दिवासवपनस्य चाम एवान्नसो
मधुरतरस्च शरीरभुनुक्त्रमन्तिनेवान्नसो जनयति, तदस्वस्त्र्यमापायति।
(२.१५.३२)
श्लेष्मविकारां श्लेष्मकिर्मित उच्च क्वा दायामास्यः, देहा- तृप्तिश्च, तन्न्या च,
निद्राधिक्यं च, स्नेहं च, गुञ्जातिः च, अलस्यं च, मुक्त
व्यावस्थं, श्लेष्मादगिरिणं च, मलायतिः, बलासकाः, अप्पिक्षयं,
हृद्योपलेपश्च, कण्ठोपलेपश्च, धर्मप्रतिच्छविः, गलगण्डश्च, अतिशौचं च,
शैलामिति च, उदवद्वे, स्वेतावभासता च, स्वेतमूर्तन्त्रयस्त्वं
च, - - - - -
(२.२०.१७)
अव्यायामादि...: पुरुषस्य प्रायो बाहुल्येनाम इव मधुरोद्योनमः। मेवो वर्धयति।
तस्यादित्वे श्लेष्माय। मेदसेत्यादि। अन्यं धातवेन रसायः। शुक्रान्ता न पुष्पन्ति,
वेदशीते वृद्धि गच्छति। कहनं तयं कष्टे धुर्धरसः, सादं शरीरस्य,
कृष्णिका, अल्पाणो हीनवलं, अल्पैशुः शुक्मावृहद्यताः।
दीपातीन्तिवादाहरन्मभिलपित। कोष्ठान्त: रूढ़मार्गितां प्रवृत्ताविनिमाश्चती विनाशय
भवत इत्यत आहं-एतावित्यदि। विशेषात् प्रवृत्तावेती रोगोत्पादको भवत:। एतो
हि स्थूलं नरं नाशयत: यथा दावानिविवनम्। पुनर्विपुलः नेदसो
विशेषेतुचम्-नेदसीत्यादि। विकरान् पूवोत्तानेव। स्फळकं ऊर्ज्जरितिनो भागः।

(माधुकोष व्यास्याः गांवि no 24:1-9)

न्येवोश इति। नेदवृद्धिजनितो दोषे नेदोषं, यदामेव
एव दोषं: कारणकारोपचारं गुर्दियथा-अव्यायाम
विशालपनलेखाहासेविन:-----------------------------।

ननु नेद एव दोषं: कथं? तदृश्यमेंदसावृत मार्गितां पुष्पतन्येन धारवः।
नेदस्तु जीवयते तस्मादसक्तः सर्वकर्मणु।--

(शास्त्रप्रो no 7/95 गृहधर्मीपिका)

स्नेधायांति, सिम्वं हि भुज्यामानं स्वदेते,भुकतं---------------
वर्णप्रसाददेवान्ति चाभिनिवर्त्याति,तम्बातस्नेधायांति।

(चौविन no 1/25(2))

लंदनं वृहं काले रक्षणाः-------------------------

जानीतेऽ: सवैचित्रकाः।

(चौतूर no 22/4)

स्नेहभ्रं प्रसयौति ततं। नेदमन्तस्यः -------
सन्योधन मथेतेतृः।

(चौतूर no 13/99)

मात्रयवद्वनेयाः मात्रयविद्वस्म मुखं

तस्भास्मात्रयवद्वनेयाः।

(चौविन no 1/25(3))

गुरुमायद्यात्

मात्रचागिनेन पेशतः।

(चौसूर no 29/34)

उष्णोत्पल्य बल्लेनसम्य पञ्चवत्।

(अधुसूर no 13/25)
द्रव्य गुर्वनेकवर्ण हेतु:।

मलसंगारस्विकलमः।।

जनपत्याशु दौर्भाल्।।

आगसंखोजोऽविल्लणम्।।

दोषेण वेनावतं तथ्येदामसस्मुद्भवेऽवै।।

कुपितां वह लोकाणः।।

व्याधिस्त्रोपजायते।।

तत्रस्थेव पितानां।।

पाचकं नाम तत्स्मृतम्।।

(अष्टोत्तरसूत्र 12/12)
RESEARCH STUDIES ON HYPERCHOLESTEROLEMIA

- Age and sex differences in children's cholesterol levels.
  (12/8/99 HeartInfo)

- Americans Are Slow To Meet LDL Reduction Targets.
  An Ailment and Aid for Kids With Hypercholesterolemia
  Michele Mietus-Snyder and Mary J. Malloy of the University of
  California (5/11/99 HeartInfo)

- Anti-cholesterol Drugs Help Arteries Dilate
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Niacin for Cholesterol Lowering.
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RESEARCH STUDIES ON HYPERCHOLESTROLEMIA IN ĀYURVEDA

In the field of Āyurveda, different research studies were conducted at different levels in different institutions in India which are enlisted as under:


