

VYAGHRI HARITAKI AVALEHA- DRUG REVIEW

Swabi^{1*}, Deepshikha² and Garg G. P.³

¹P.G. Scholar, ²Assistant Professor, ³H.O.D PG Dept. of Kaumarbhritya, UAU, Gurukul Campus, Haridwar.

*Corresponding Author: Swabi

P.G. Scholar, Dept. of Kaumarbhritya, UAU, Gurukul Campus, Haridwar.

Article Received on 15/04/2022

Article Revised on 04/05/2022

Article Accepted on 25/05/2022

ABSTRACT

Upper respiratory tract infection is the most common illness in children. Long standing or untreated URTI turns into LRTI leads to serious complications which may affect immunity or may hamper the growth and development of child. Upper respiratory tract infections can be correlated with *Pratishyaya* in Ayurveda. *Vyaghari Haritaki Avaleha* is described in *Bhaishajya Ratnavali* in the chapter named “*Kasa Roga Adhyaya*” indicated in *Peenasa* (Rhinitis), *Swasa* (Bronchial Asthma), *Yakshma* (Pulmonary T.B.), *Kasa* (Cough) and also has *Rasayana* (Rejuvenation) effect. This article reviews properties of various ingredients of *Vyaghari Haritaki Avaleha* and its probable mode of action based on previous in- vivo and in- vitro studies.

KEYWORDS: *Vyaghari Haritaki Avaleha, Pratishyaya, Peenasa, Kasa, Rasayana, URTI.*

INTRODUCTION

In developing countries, on an average every child has ARI/year accounting for 30- 50% of total pediatric outpatients visits and 20- 30% of pediatric admissions. Respiratory tract infection is also common in India. Studies from South India have reported prevalence of 27- 59.1% in children <5 years. From global deaths of nearly 1.9 million with ARIs, 70% were reported in Africa and South- East Asia. In India, cost associated with ARI was found to be high relative to median per capita income. This burden increased with recurrence of infections.

Upper respiratory tract infections can be correlated with *Pratishyaya* in Ayurveda. *Pratishyaya* comes under *Nasagata Roga*. Different classifications of *Nasagata Roga* are given by different *Acharayas* like *Maharishi Kashyapa, Acharya Charaka, Acharya Sushruta, Acharya Vagbhatta, Acharya Sharangdhara, and Acharya Bhavamishra* and in *Yogratnakara*.

Vyaghari Haritaki Avaleha is an herbal formulation indicated in respiratory tract infections i.e. *Peenasa* (Rhinitis), *Swasa* (Bronchial Asthma), *Yakshma* (Pulmonary T.B.), *Kasa* (Cough) in *Bhaishajya Ratnavali* in *Kasa Roga Adhyaya* and also has *Rasayana* (Rejuvenation) effect. All ingredients of *Vyaghari Haritaki Avaleha* directly or indirectly work on respiratory tract. It contains *Kantkari, Haritaki, Shunthi, Maricha, Pippali, Twak, Tejpatra, Nagkesar, Ela, Gud* (Jaggery) and *Madhu* (Honey). *Vyaghari Haritaki Avaleha* is also described by *Bhava Prakash, Yoga Ratnakara, Gada Nigraha, Vanga Sena, Bharat Bhaisajya Ratnakara, AFI and API.*

MATERIALS AND METHODS

Electronic database, ‘Google scholar’, Pubmed, Scopus has been searched for relevant studies and review publications from 2011- 2021. The key words used for search are ‘*Vyaghari Haritaki Avaleha* in *Kasa, Peenasa, Swasa, Pratishyaya, URTI* etc. Abstracts and full texts of open access in English language were only considered.

Table no. 1

S.n.	Contents	Botnical name	Family	Rasa	Guna	Veerya	Vipaka
1.	Kantkari ^[2]	<i>Solanum surattense</i>	Solanaceae	Tikta, Katu	Laghu, Snigdha, Ushna	Ushna	Katu
2.	Haritaki ^[3]	<i>Terminalia chebula</i>	Combretaceae	Kashaya, Katu, Tikta, Madhura, Amla,	Laghu, Ruksha	Ushna	Madhura
3.	Shunthi ^[4]	<i>Zingiber officinal</i>	Zingiberaceae	Katu	Laghu, Snigdha	Ushna	Madhura
4.	Maricha ^[5]	<i>Piper nigrum</i>	Piperaceae	Katu	Laghu, Tikshna	Ushna	Katu
5.	Pippali ^[6]	<i>Piper longum</i>	Piperaceae	Katu	Laghu, Snigdha, Tikshna	Anushna-sheeta	Madhura
6.	Twak ^[7]	<i>Cinnamomn</i>	Lauraceae	Katu, Tikta,	Laghu, Ruksha,	Ushna	Katu

		<i>zeylanicum</i>		<i>Madhura</i>	<i>Tikshna</i>		
7.	Tejpatra ^[8]	<i>Cinnamomn tamala</i>	Lauraceae	<i>Katu, Tikta, Madhura</i>	<i>Laghu, Ruksha, Tikshna</i>	<i>Ushna</i>	<i>Ushna</i>
8.	Nagkesara ^[9]	<i>Mesua ferrea</i>	Guttiferae	<i>Kashaya, Tikta</i>	<i>Laghu, Ruksha</i>	<i>Ushna</i>	<i>Katu</i>
9.	Ela ^[10]	<i>Elettaria cardamomum</i>	Zingiberaceae	<i>Katu, Madhura</i>	<i>Laghu, Ruksha</i>	<i>Sheeta</i>	<i>Madhura</i>

1. Kantakari

Synonyms: *Duhshsparsha, Kshudra, Vyaghari, Bhattkatiyya*

Part used: *Panchanga*

Doshagnata: Kapha- Vata Shamaka

Chemical constituents: Solacarpidine, Potassium nitrate, Potassium chloride.

Therapeutic uses: Inflammation, Anorexia, Fever, Cough, Asthma, Bronchitis, Pharyngitis, Hiccough, Catarrh.

Pharmacological actions: Antihistaminic, Thermogenic, Anti-inflammatory, Digestive, Carminative, Stomachic, Expectorant.^[11]

Kantkari in Various Nighantu

Bhavaprakash Nighantu:- Mentioned under *Guduchyadi Varga*.

Guna- karma: *Tikta- Katu Rasa, Deepana, Ushana Veerya, Pachaka*, used in *Swasa, Kasa, Jwara, Peenasa*.^[12]

Kaiyadev Nighantu:- Mentioned under *Aushadhi Varga*.

Guna- karma: *Used in Jwara, Aruchi, Swasa and Peenas*.^[13]

Dhanvantari Nighantu:- Mentioned under *Guduchyadi Varga*.

Guna- karma: *Used in Swasa, Kasa, Aruchi, Jwara*.^[14]

Research Evidences

- *Kantkari Panchang Swarasa* has Antimicrobial potential against *E.coli* responsible for UTI.^[15]
- *Kantakari* aerosol compound has potential to treat the bronchitis.^[16]
- *Kantakari* fruit have antifungal activity.^[17]
- Dry powder of *S. xanthocarpum* is found to be very effective in management of mild to moderate Bronchial Asthma and the bioactivity is equivalent to that of administration of 200 mg of deriphylline.^[18]

2. Haritaki

Synonyms: *Shiva, Pathya, Abhaya* etc

Part used: Fruit

Doshagnata: Tridosahara

Karma: Sothahara, Deepana Pachana, Mridu Virechana, Jwaraghna.

Chemical constituents: Anthraquinone glycoside, chebulinic acid, chebulagic acid, tannic acid etc.

Therapeutic uses: Pharyngitis, intermittent fever, Hiccough, Dyspnea, Coryza, Asthma, Constipation.

Pharmacological actions: Antimicrobial, Antibacterial, Antifungal, Anti- stress, Antispasmodic, Purgative.^[19]

Haritaki in Various Nighantu

Bhavaprakash Nighantu:- Mentioned in *Haritakyadi Varga*.

Guna- karma: *Mrudu Virechaka, Jeerna Jwara*.^[20]

Kaiyadev Nighantu:- Mentioned in *Aushadhi Varga*.

Guna- karma: *Pancha Rasa Yukta* (except *lavana*), *Laghu- Ruksha, Ushana Veerya, Madhura Vipaka, Aayushya, Deepan- Pachana, Swara- bheda, Shiroroga, Netraroga, Swasa, Kasa, Tridosahara*.^[21]

Dhanvantari Nighantu:- Mentioned in *Guduchyadi Varga*.

Guna- karma: *Laghu, Tridoshara, Vamana, Shotha, Vata Anulomaka* etc.^[22]

Research Evidence

- *Terminalia chebula* have antimicrobial activity against bacteria strains *Bacillus subtilis, Staphylococcus aureus, Staphylococcus epidermidis, E.coli, Klebsiella pneumonia, Pseudomonas aeruginosa*.^[23]
- Haritaki contains Gallic & Chebulagic acid which found to be Humoral immunity was enhanced and cell mediated response was stimulated.^[24]
- *Terminalia chebula* is effective in treatment of systemic and local mast cell- dependent anaphylaxis.^[25]

3. Shunthi

Synonyms: *Nagara, Mahaaushada, Vishwabheshaja, Shringavera, Katubhadra, Ardraka, Ardrika* etc.

Part used: Rhizome.

Doshagnata: Kapha-Vata Shamaka.

Karma: Sheetaprashamana, Shothahara, Swarya, Shleshmahara, Vatashamaka, Shwasahara, Deepana, Pachana, Rochana, Vatanulomana, Shoolaprashamana, Bhedana, Jwaraghna etc.

Chemical constituents: Zingiberine, Cineol, Borneol, Gingerol, Gingerin.

Therapeutic uses: Fever, Otagia, Asthma, Cough, Hiccough, Anorexia, Hyperacidity.

Pharmacological actions: Anti-inflammatory, Antioxidant, Anti-rhino viral, Antibacterial, Hypolipidaemic, Analgesic, Antipyretic, Antiemetic, Antiulcer, Aromatic, Carminative.^[26]

Shunthi in Various Nighantu

Bhavaprakash Nighantu: - Mentioned under *Haritkyadi varga*.

Guna- karma: *Ushna, Vata-Kaphahar, Pratishyaya, Kasa, Swasa, Shirashool*.^[27]

Kaiyadev Nighantu:- Mentioned under *Aushadhadi varga*.

Guna- karma: *Laghu, Snigdha, Ushna Virya, Madhura Vipaka, Malsanghrahi, Agnideepana, Vatakaphnasaka, Swasa, Kasa.*^[28]

Dhanvantari Nighantu:- Mentioned under *Shatpushpadi varga.*

Guna- karma: *Snigdha, Ushna, Vrishya, Shotha, Kapha-Vatahar, Aruchi, Swasa.*^[29]

Research Evidence

- Ginger provides a possible therapeutic application in allergic asthma as it suppress Th2-mediated immune responses.^[30]
- Ginger has anti- inflammatory activity as it enhance the serum corticosterone leve.^[31]
- Gingerols – Antitussive. 6-Shogaol administered intravenously showed strong antitussive effect when compared to dihydrocodeine phosphate.^[32]

4. Maricha

Synonyms: *Vellaja, Ushana, Suvrit, Krishna, Maricha etc.*

Part used: Fruit

Doshagnata: Kapha- Vata shamaka

Karma: Kaphaghna, Vatanulomana, Kapha Nissaraka, Deepana, Pachana, Lekhana, Swedajanana, Srotoshodhana.

Chemical constituents: Piperide N Transferuloyltyramine, Guineensine, N-Isobutyl- 2E, 4E, 8Z- Eicosatrienamide.

Therapeutic uses: Hiccough, Cough, Catarrh, Asthma, Fever, Sore throat.

Pharmacological actions: Carminative, Digestive and Anti-oxidant, CNS depressant, Anti-pyretic, Anti-microbial, Anti-bacterial, Anti- inflammatory, Analgesic, etc.^[33]

Maricha in Various Nighantu

Bhavaprakash Nighantu:- Mentioned under *Haritakyadi varga.*

Guna- karma: Kaphaghna, jeerna Pratishyaya, Kasa.^[34]

Kaiyadev Nighantu:- Mentioned under *Aushadhadi varga.*

Guna- karma: Katu, Ushna, Madhura Vipaka, Kapha Nissaraka, Ishat Pitta Vardhak.^[35]

Dhanvantari Nighantu:- Under *Shatpushpadi varga.*

Guna- karma: Katu, Tikta, Ushna, Pitta-Kapha Nashaka.^[36]

Research Evidence

- *Maricha Choorna* has stimulatory action in digestive enzymes with lipolitic activity.^[37]
- Warm saline gargles of *Trikatu*, steam inhalation and fomentation help in relieving symptoms of cold.^[38]
- *Trikatu* is used in combination with honey to alleviate diseases such as colds, rhinitis, cough, breathlessness, asthma and dyspepsia.^[39]

5. Pippali

Synonyms: *Magadhi, Kana, Krishna, Chapala, Upkulya, Ushana, Shaundi, Tikshnatandula, Vaidehi, etc.*

Part used: *Fruit, Root.*

Doshagnata: Kapha-Vata Shamaka

Karma: Vatanulomana, Shirovirechana, Balya, Rasayana, Vatahara, Ksharana, Deepana, Shoolaprashamana, Jwaraghna etc.

Chemical constituents: Piperine and Sesamine are major alkaloid.

Therapeutic uses: Cough And Cold, Vomiting, Anorexia, Bronchitis, Asthma, Fever.^[40]

Pharmacological actions: Anti-bacterial, anti- tussive, Immuno-stimulator, Anti-inflammatory etc.^[41]

Pippali in various Nighantu

Bhavaprakash Nighantu:- Mentioned *Haritakyadi varga.*

Guna- karma: Ushna, Deepana- pachana, Kaphaghna, Agnimandhya, Kasa, Swasa.^[42]

Kaiyadev Nighantu:- Mentioned under *Aushadhadi Varga.*

Guna- karma: Guru, Madhura, Rasayana, Deepana- Pachana, Ishat ushana, Kapha-Vata nashaka, Kasahara, Swasahara.^[43]

Dhanvantari Nighantu:- Mentioned under *Shatpushpadi Varga.*

Guna- karma: Katu, Madhura Vipaka, Sheeta Virya, Tridoshahara, Snigdha, Trishnaghna, Jwaraghna, Ama doshahara, Rasayana.^[44]

Research Evidence

- *Pippali Rasayana*, used as an adjuvant in management of respiratory diseases.^[45]
- Phytochemical analysis of *Piper longum* fruit showed the presence of alkaloids, steroids, glycosides, flavonoids and carbohydrates. The petroleum ether, alcoholic and decoction extracts are effective in all models of asthma in G. pigs.^[46]
- *Pippali* suppressed both acute and sub-acute phase of inflammation.^[47]

6. Twaka

Synonyms: *Darusheeta, Twaka, Utkata, Dalchini, Daaruchini, Swadvi, Twakswadvi, Tanutwaka.*

Part used: Bark

Doshagnata: Kapha-Vata Shamaka

Karma: Lekhana, Kantha- Shuddhikara, Ojo vardhaka, Shleshmahara, Deepana, Pachana, Rochana etc.

Chemical constituents: Cinnamic aldehyde, Cinnamyl acetate, Cinnamaldehyde, Cumic aldehyde, Caryophyllene, Borneol, α - Terpineol.

Therapeutic uses: Gastric irritation, Nausea and Vomiting, Neuralgia.

Pharmacological actions: Ant allergic, Antioxidant, Antifungal, Antibacterial, Insecticidal, Antimicrobial, Expectorant.^[48]

Twaka in various Nighantu

Bhavaprakash Nighantu:- Mentioned under *Karpuradi Varga*.

Guna- karma: Ushna, Vaatanulomana, Deepana-Pachana, Krimighna.^[49]

Dhanvantari Nighantu:- Mentioned under *Shatpushpadi Varga*.

Guna- karma: Laghu, Tikshna, Ushna- Veerya, Kapha-Vata Shamaka, Kantha-Mukha Roga Nashaka.^[50]

Research Evidence

- Cinnamaldehyde inhibits both sensitive and resistant strain of *Helicobacter pylori*.^[51]
- Cinnamon has antioxidant property.^[52]
- Cinnamomum have antibacterial activity against gram positive bacteria (*E.coli*) and gram negative bacteria (*E. faecalis* and *Salmonella typhi*).^[53]

7. Tejpatra

Part used: *Patra*

Doshagnata: Kapha-Vata Shamaka

Karma: Lekhana, Kantha- shuddhikara, Ojo vardhaka, Shleshmahara, Deepana, Pachana, Rochana, Vatanulomana, etc.

Chemical constituents: Saponins, phytosterols, monoterpene, sesquiterpene.

Therapeutic uses: Rheumatoid arthritis, colic diarrhea, nausea, vomiting, dysentery, cough, Alzheimer's disease, diabetes, Neurologic Disorders, Cardiac Disorders.

Pharmacological actions: Antimicrobial, Antioxidant, Anti-inflammatory, Carminative, Analgesics, Antipyretics.^[54]

Tejapatra in Various Nighantu

Bhavaprakash Nighantu:- Mentioned in *Karpuradi Varga*.

Guna- karma: Kashaya Rasa, Ushana Veerya, Laghu, Ruksha, Aama Pachana.^[55]

Kaiyadev Nighantu:- Mentioned in *Aushadhi Varga*.

Guna- karma: Kinchita Madhura, Teekshana, Ushana Veerya, Pitta Vardhaka, Laghu, Kapha- Vatahara, Aruchi, Peenasa.^[56]

Dhanvantari Nighantu:- Mentioned in *Shatpushpadi Varga*.

Guna- karma: Kapaha- Vata hara, Hrullasa, Aruchi.^[57]

Research Evidence

- *Cinnaamomum tamala* have hypoglycemic and antioxidant activities.^[58]
- *Cinnamom tamala* have anti-bacterial potential against *E.coli*, *Klebsiella pneumoniae*, *P. vulgaris*, *P. aeruginosa*, *Streptococcus pneumoniae* and *Staphylococcus aureus*.^[59]

8. Nagkesara

Synonyms: *Naagpushpa, Naangu, Chaampay*.

Part used: Stamens

Doshagnata: Vata- Pitta Shamaka

Karma: Deepana- Pachana, Trishna nigravana, Balya, Vishaghana.

Chemical constituents: Mesuferone- A and B, Mesuafferol, Mesuanic acid.

Therapeutic uses: Asthma, Cold, Fever, Bronchitis, Dyspepsia.

- **Pharmacological actions:** Antioxidant, Hepatoprotective, Analgesics, Antispasmodic, Immunomodulatory, Anti-inflammatory, Antimicrobial.^[60]

Nagkesara in Various Nighantu

Bhavaprakash Nighantu:- Mentioned in *Karpuradi Varga*.

Guna- karma: Sangrahi, Aama pachana.^[61]

Kaiyadev Nighantu:- Mentioned in *Aushadhi Varga*.

Guna- karma: Kashaya, Ushana Veerya, Teekshana, Laghu, Ruksha, Aama pachan.^[62]

Dhanvantari Nighantu:- Mentioned in *Shatpushpadi Varga*.

Guna- karma: Kinchita Ushana Veerya, Laghu, Tikta, Kapha Shamaka.^[63]

Research Evidence

- Extract of *Mesua ferrea* prevents erythrocytes, haemoglobin and DNA against oxidative stress induced damage.^[64]
- Mesuol has immunomodulatory property.^[65]
- Cumorins isolated from blossoms showed antibacterial activities against resistant strain of gram positive bacteria.^[66]

9. Ela

Synonyms: *Sukshma, Tuttha, Sukshmaela, Korangi, Truti, Dravidi, Triputi*

Part used: Seed, Fruit, Oil

Doshagnata: Tridosha shamaka

Karma: Deepana, Pachana, Vatanulomana, Shirovirechana, Rochana, Kaphanissaraka etc.

Chemical constituents: α - Penene, Sabinene, Myrcene, Limonene, Cymene, Cinoel, Linalool, Linayl Acetate, Methyl Heptenone.

Therapeutic uses: Analgesic, Halitosis, Skin Disorders, Toothache, Chronic ulcer and Pruritis.⁶⁷

Pharmacological actions: Anti-inflammatory, Analgesic, Antibacterial, Antimicrobial, Hepatoprotective, Antispasmodic.^[68]

Ela in Various Nighantu

Bhavaprakash Nighantu:- Mentioned under *Karpuradi Varga*.

Guna- Karma: Deepana-Pachana, Kasa- Swasahara, Kshaya, Udarshoola.^[69]

Dhanvantari Nighantu:- Mentioned under *Shatpushpadi Varga*. *Guna- Karma: Vatanulomana, Deepana, Pachana.*^[70]

Research Evidence

- *Elletaria cardamomum* act as potent antimicrobial agents to cure dental caries.^[71]

DISCUSSION

Vyaghari Haritaki Avaleha contains nine ingredients. The main ingredient is *Kantakari* having *Katu- Tikta Rasa*, *Ushna Veerya* and *Kapha- Vata Shamaka* property. Various in- vitro and in vivo studies show that the *Kantakari* have antimicrobial, antifungal properties and its bioavailability is equivalent to deriphylline. *Haritaki* is *Tridoshahara*, *Vatanolomaka* and can be use therapeutically in conditions like pharyngitis, asthma etc. the *Trikatu* and *Chaturjata* are added as *Prakshepa Dravya* having *Deepana Pachana* properties which may improves absorption and increase the bioavailability of drug. Honey helps in treatment and prevention of respiratory ailments as it has properties like *Chhedana* and *Lekhana*. Hence the formulation *Vyaghari Haritaki Avaleha* has therapeutic effect on URTI.

CONCLUSION

In present era, respiratory ailments increase abruptly in which recurrent URTI comprises a large proportion and becomes a major health issue. As in recurrent URTI, immunity of children is also hampered and lack of feeling of well-being is also there due to which child becomes weak and irritable with loss of appetite leading to several mental and physical ailments.

After thorough analyzing the *Guna- Karma, Doshanghta*, chemical constituent, therapeutic activities of individual drugs of *Vyaghari Haritaki Avaleha*, it shows that all ingredients work on respiratory tract directly or indirectly. Evidence based study also showed that all ingredients have antimicrobial, antibacterial, antiallergic, antioxidant, immunomodulatory activities which directly indicates that combine effect of all ingredients of *Vyaghari Haritaki Avaleha* have *Rasayana* and *Balya* effect which can reduce the recurrent attack of URTI by increasing immunity, appetite etc. hence it can be concluded that *Vyaghari Haritaki Avaleha* may give better results in treatment of recurrent URTI.

REFERENCES

1. Paramesh H, Nagaraju K, Sukumaran Tu, Sanklecha Mukesh, Wadhwa Arun, Sanghvi Rajeev, Gupta Ashok, Marathe Sanjay, Balachandran A, Dangwal Tilak Raj, Mishra Prabhakar, Roy Subhashish, Narayan Varsha, recurrent respiratory infections management in india: consensus statement from experts. *Asian J of pediatric practice*, 2017; 1(3).
2. Dravyaguna-vigyana vol.second Prof.P.V.Sharma, A.M.S.,Chaukhambha bharati Academy, Varanasi,reprint, 2003; pg270-272.
3. Dravyaguna-vigyana vol.second Prof.P.V.Sharma, A.M.S.,Chaukhambha bharati Academy, Varanasi,reprint, 2003; pg 753-755.
4. Dravyaguna-vigyana vol.second Prof.P.V.Sharma, A.M.S.,Chaukhambha bharati Academy, Varanasi,reprint, 2003; pg331-335.
5. Dravyaguna-vigyana vol.second Prof.P.V.Sharma, A.M.S.,Chaukhambha bharati Academy, Varanasi, reprint, 2003; pg362-365.
6. Dravyaguna-vigyana vol.second Prof.P.V.Sharma, A.M.S.,Chaukhambha bharati Academy, Varanasi, reprint, 2003; pg275-279.
7. Dravyaguna-vigyana vol.second Prof.P.V.Sharma, A.M.S.,Chaukhambha bharati Academy, Varanasi, reprint, 2003; pg250-251.
8. Dravyaguna-vigyana vol.second Prof.P.V.Sharma, A.M.S.,Chaukhambha bharati Academy, Varanasi, reprint, 2003; pg784-784
9. Dravyaguna-vigyana vol.second Prof.P.V.Sharma, A.M.S.,Chaukhambha bharati Academy, Varanasi, reprint, 2003; 784-784
10. Dravyaguna-vigyana vol.second Prof.P.V.Sharma, A.M.S.,Chaukhambha bharati Academy, Varanasi, reprint, 2003; 719-720.
11. Data base on medicinal plants used in Ayurveda.vol.4.center council for research in Ayurveda and siddha jawahar lalnehru bhartiya chikitsha avum homeopathy anusandhan bhawan, 61- 65 institustional area, janakpuri,new delhi-110058. page no.269-273.
12. Bhavaprakash Nighantu. Commentary By Dr. K.C.Chunekar, A.M.S. Edited By Dr. G.S. Pandey, A.M.S. Chaukhambha Bharti Academy Publisher And Distributer Of Monumental Treatises Of The East Gokul Bhawan, K. 37/109, Gopal Mandir Lane. P.O.Box no.1065. Varanasi, 221001 (India) Reprint, 2006; pg.no.280- 282.
13. Kaiyadev Nighantu. Edited And Translated By Prof. Priyavrata Sharma And Dr. Guru Prasad Sharma. Chaukhambha Orientalia Varanasi. P.O. Box No.32. Gokul Bhawan, K.37/109, Gopal Mandir Lane, Varanasi, 221001 (India) pg.no. 13-14.
14. Dhanvantri Nighantu. Edited by prof. Priyavrata Sharma and Translated by Dr. Guru Prasad Sharma. Chaukhambha Orientalia Varanasi. P.O. Box No.1032. Gokul Bhawan, K. 37/109, Gopal Mandir Lane Varanasi, 221001 (India) pg.no.33.
15. Shinte Sayali, Ramteke Ashok, Phadke Manju, Parab Vivek, Preliminary Antimicrobial Study of *Kantakari* (*Solanum xanthocarpum* Schrad & Wendl) by ditch plate Technique. *International Journal of Ayurveda and Pharma Research*, 2019; 7(5): 23-27.
16. Ahmad Nasreen, Kajaria Divya, Evaluating clinical Efficacy of *Kantakari* Aerosol in the management of Bronchitis: A case report. *International Journal of Ayurveda and Pharma Research*, 2019; 7(3): 31-36.
17. Bhawana Sharma, Neelam Verma, Meeta Singh Tomar. (2020). Evaluation of antifungal potential of *Solanum xanthocarpum* Schrad. And Wendl., an important medicinal plant od arid region. *Int. J. Adv. Res. Biol. Sci*, 7(11): 163-168.

18. Govindan S, Viswanathan S, Vijayasekaran V, Alagappan R. A pilot study on the clinical efficacy.
19. Data base on medicinal plants used in Ayurveda.vol.3.center council for research in Ayurveda and siddha jawahar lalnehru bhartiya chikitsha avum homeopathy anusandhan bhawan,61-65institustional area, janakpuri,new delhi 110058.page no.282- 285.
20. Bhavaprakash Nighantu. Commentary By Dr. K.C.Chunekar, A.M.S. Edited By Dr. G.S. Pandey, A.M.S. Chaukhambha Bharti Academy Publisher And Distributer Of Monumental Treatises Of The East Gokul Bhawan, K. 37/109, Gopal Mandir Lane. P.O.Box no.1065. Varanasi, 221001 (India) Reprint 2006, pg.no. 7-8.
21. Kaiyadev Nighantu. Edited And Translated By Prof. Priyavrata Sharma And Dr. Guru Prasad Sharma. Chaukhambha Orientalia Varanasi. P.O. Box No.32. Gokul Bhawan, K.37/109, Gopal Mandir Lane, Varanasi, 221001 (India) pg.no. 45- 46.
22. Dhanvantri Nighantu. Edited by prof. Priyavrata Sharma and Translated by Dr. Guru Prasad Sharma. Chaukhambha Orientalia Varanasi. P.O. Box No.1032. Gokul Bhawan, K. 37/109, Gopal Mandir Lane Varanasi, 221001 (India), pg.no.53- 54.
23. J. Ethnopharmacol, 1996; 54(2-3): 119.
24. Kannan P., Ramadevi S.R., Waheeta Hopper. Antibacterial Activity of Terminalia chebula Fruit Extract. African Journal of Microbiology Research, 2009; 3(4): 180-184.
25. Effect of Terminalia chebula fruit on Anaphylaxis by anal therapy (Internet). Vol. 3, Oriental Pharmacy and Experimental Medicine. Kyung Hee Oriental Medicine Research Center, 2003; 56- 62. <http://dx.doi.org/10.3742/OPEM.2003.3.2.056>.
26. Indian medicinal plants, ISBN: 978-0-387-70637-5 Springer-verlag berlin/Heidelberg, 2007-library of congress control number: 2007922446. Page no.733-734.
27. Bhavaprakash Nighantu. Commentary By Dr. K.C.Chunekar, A.M.S.Edited By Dr.G.S. Pandey,A.M.S.Chaukhambha Bharti Academy Publisher And Distributer Of Monumental Treatises Of The East Gokul Bhawan,K,37/109, Gopal Mandir Lane.P.O.Boxno.1065. Varanasi-221001(India) page.no.13-14.
28. Kaiyadev Nighantu. Edited And Translated By Prof. Priyavrata Sharma And Dr. Guru Prasad Sharma.Chaukhambha Orientalia Varanasi.P.O. Box No.32.Gokul Bhawan,K. 37/109, Gopal Mandir Lane Varanasi 221001(INDIA)page.no.213).
29. Dhanvantri Nighantu.Edited by prof. priyavrata sharma and translated by dr.guru Prasad sharma. Chaukhambha Orientalia Varanasi.P.O. Box No.1032.Gokul Bhawan, K. 37/109, Gopal Mandir Lane Varanasi 221001(India) page.no.85.
30. Ahui et al., Int. Immunopharmacol, 2008.
31. Ueda et al., Biosci. Biotechnol. Biochem, 2010.
32. J Pharmacobiodyn, 1984; 7: 836.
33. Data base on medicinal plants used in Ayurveda.vol.5.center council for research in Ayurveda and siddha jawahar lalnehru bhartiya chikitsha avum homeopathy anusandhan bhawan, 61-65 institustional area, janakpuri, new delhi-110058.page no.187-192.
34. Bhavaprakash Nighantu. Commentary By Dr. K.C.Chunekar, A.M.S. Edited By Dr. G.S. Pandey, A.M.S. Chaukhambha Bharti Academy Publisher And Distributer Of Monumental Treatises Of The East Gokul Bhawan, K. 37/109, Gopal Mandir Lane. P.O.Box no.1065. Varanasi, 221001 (India) Reprint, 2006; pg.no. 17- 18.
35. Kaiyadev Nighantu. Edited And Translated By Prof. Priyavrata Sharma And Dr. Guru Prasad Sharma. Chaukhambha Orientalia Varanasi. P.O. Box No.32. Gokul Bhawan, K.37/109, Gopal Mandir Lane, Varanasi, 221001 (India), pg.no. 214-215.
36. Dhanvantri Nighantu. Edited by prof. Priyavrata Sharma and Translated by Dr. Guru Prasad Sharma. Chaukhambha Orientalia Varanasi. P. O. Box No.1032. Gokul Bhawan, K. 37/109, Gopal Mandir Lane Varanasi, 221001 (India), pg.no. 85- 86.
37. Rahate Sameeksha, Jadhav Mangala, Menon Anjali. A Comparative Study of Digestive Stimulant Action of Maricha Choorna and Trikatu Choorna in Experimental Rats. World Journal of Pharmaceutical Research, 7(17): 1051-106.
38. Traditional Herbal Remedies for Primary Health Care, World Health Organization, Regional Office for South-East Asia. ISBN 978-92-9022-382-5 (NLM classification: WB 925; Reprinted, September 2011.
39. India, Ministry of Health and Family Welfare.(7) *The Ayurvedic formulary of India*. 2nd revised English edition. Part I. New Delhi: Department of Indian Systems of Medicine & Homeopathy, 2003; 110.
40. Indian medicinal plants, ISBN: 978-0-387-70637-5 Springer-verlag berlin/Heidelberg, 2007-library of congress control number: 2007922446. Page no.491-492.
41. Data base on medicinal plants used in Ayurveda.vol.3.center council for research in Ayurveda and siddha jawahar lalnehru bhartiya chikitsha avum homeopathy anusandhan bhawan, 61-65. institustional area, janakpuri, new delhi-110058.page no.472-476.
42. Bhavaprakash Nighantu. Commentary By Dr. K.C.Chunekar, A.M.S. Edited By Dr. G.S. Pandey, A.M.S. Chaukhambha Bharti Academy Publisher And Distributer Of Monumental Treatises Of The East Gokul Bhawan, K. 37/109, Gopal Mandir Lane. P.O.Box no.1065. Varanasi, 221001 (India) Reprint, 2006; pg.no. 15-16.
43. Kaiyadev Nighantu. Edited And Translated By Prof. Priyavrata Sharma And Dr. Guru Prasad Sharma. Chaukhambha Orientalia Varanasi. P.O. Box No.32. Gokul Bhawan, K.37/109, Gopal Mandir Lane, Varanasi, 221001 (India) pg.no. 215.

44. Dhanvantri Nighantu. Edited by prof. Priyavrata Sharma and translated by Dr. Guru Prasad Sharma. Chaukhambha Orientalia Varanasi. P.O. Box No.1032. Gokul Bhawan, K. 37/109, Gopal Mandir Lane Varanasi -221001(India) page.no.83.
45. Bisht Deepti, Sharma Y. K., Mehra B.L., A Clinical study to evaluate the Efficacy of Pippali Rasayana in Certain Respiratory Disorders. Ayu, 2009; Vol 30, No. 3(7- 9): 337- 341.
46. Kaushik Pawan, Dharendra Kaushik, Rani Rubi, Sacher Disha. In vivo and in vitro Antiasthmatic Studies of Plant Piper Longum. International Journal of Pharmacology, 8(3): 192-197.
47. Kumara Mamta, B.K. Ashok, B. Ravishankar, Tarulata N, Pandya and Acharya Rabinarayan. Anti-inflammatory Activity of two Varieties of Pippali. Ayu, 2012 Apr-Jun; 33(2): 1307- 310.
48. Indian medicinal plants, ISBN: 978-0-387-70637-5 Springer-verlag berlin/Heidelberg, 2007-library of congress control number: 2007922446. Page no.150.
49. Bhavaprakash Nighantu. Commentary By Dr. K.C.Chunekar, A.M.S. Edited By Dr. G.S. Pandey, A.M.S. Chaukhambha Bharti Academy Publisher And Distributer Of Monumental Treatises Of The East Gokul Bhawan, K. 37/109, Gopal Mandir Lane. P.O.Box no.1065. Varanasi, 221001 (India) Reprint, 2006; pg.no. 226- 227.
50. Dhanvantri Nighantu. Edited by prof. Priyavrata Sharma and Translated by Dr. Guru Prasad Sharma. Chaukhambha Orientalia Varanasi. P. O. Box No.1032. Gokul Bhawan, K. 37/109, Gopal Mandir Lane Varanasi, 221001 (India) pg. no. 79.
51. Joshi Bishnu, Lekhak Sunil, Sharma Anuja. Antibacterial Property of Different Medicinal Plants: Ocimum sanctum, Cinnamomum zeylanicum, Xanthoxylum armatum and Origanum majorana. Kathmandu University Journal of Science, Engineering and Technology, January, 2009; 5(1): 143-150.
52. Ranjbar, Ghasmeinezhad Sara, Zamani Hosnieh, Malekirad Ali Akbar, Baiaty Akram, Mohammadirad Azadeh, Abdollahi Mohammad. Antioxidative Stress Potential of Cinnamomum zeylanicum in Humans: A Comparative Cross Sectional Clinical Study. Future Medicine Ltd, 2006; 3(1): 113-117.
53. Adarsh A, Bharath Chettiyar, Kanthesh BM, Raghu N. Phytochemical screening and antimicrobial activity of Cinnamom zeylanicum. Int J of Pharmaceutical Research and Innovation, 2020; 13: 22-23.
54. Upadhyaya Ravi Kant. Therapeutic and Pharmaceutical Potential of Cinnamomum tamala. Research Review: Pharmacy and Pharmaceutical Science, September 2017; 6(3): pp18- 28.
55. Bhavaprakash Nighantu. Commentary By Dr. K.C.Chunekar, A.M.S. Edited By Dr. G.S. Pandey, A.M.S. Chaukhambha Bharti Academy Publisher And Distributer Of Monumental Treatises Of The East Gokul Bhawan, K. 37/109, Gopal Mandir Lane. P.O.Box no.1065. Varanasi, 221001 (India) Reprint, 2006; pg.no. 228-230.
56. Kaiyadev Nighantu. Edited And Translated By Prof. Priyavrata Sharma And Dr. Guru Prasad Sharma. Chaukhambha Orientalia Varanasi. P.O. Box No.32. Gokul Bhawan, K.37/109, Gopal Mandir Lane, Varanasi, 221001 (India) pg.no. 248.
57. Dhanvantri Nighantu. Edited by prof. Priyavrata Sharma and Translated by Dr. Guru Prasad Sharma. Chaukhambha Orientalia Varanasi. P. O. Box No.1032. Gokul Bhawan, K. 37/109, Gopal Mandir Lane Varanasi, 221001 (India) pg. no. 79.
58. Charkraborty Usha, Das Hariswami. Antidiabetic and Antioxidant Activities of Cinnamomum tamala Leaf Extracts in Stz- Treated Diabetic Rats. Global Journal of Biotechnology and Biochemistry, 2010; 5(1): 12- 18.
59. Mishra Amar Kumar, Pandey Abhay K, Singh Brijesh K. In vitro Antibacterial Activity and Phytochemical Profiles of Cinnamomum tamala (tejpatra) leaf extracts and oils. Reviews in Infection, 2010; 1(3): 134- 139.
60. Chahar Manoj Kumar, D.S. Sanjay Kumar, L. Geetha, T. Lokesh, K.P.Manohara. Mesua ferrea L.: A Review of the Medical Evidence for its Phytochemistry and Pharmacological Actions. African Journal of Pharmacy and Pharmacology, 15 February, 2013; 7(6): pp211- 219.
61. Bhavaprakash Nighantu. Commentary By Dr. K.C.Chunekar, A.M.S. Edited By Dr. G.S. Pandey, A.M.S. Chaukhambha Bharti Academy Publisher And Distributer Of Monumental Treatises Of The East Gokul Bhawan, K. 37/109, Gopal Mandir Lane. P.O.Box no.1065. Varanasi, 221001 (India) Reprint 2006, pg.no. 230.
62. Kaiyadev Nighantu. Edited And Translated By Prof. Priyavrata Sharma And Dr. Guru Prasad Sharma. Chaukhambha Orientalia Varanasi. P.O. Box No.32. Gokul Bhawan, K.37/109, Gopal Mandir Lane, Varanasi, 221001 (India) pg.no. 249-250.
63. Dhanvantri Nighantu. Edited by prof. Priyavrata Sharma and Translated by Dr. Guru Prasad Sharma. Chaukhambha Orientalia Varanasi. P. O. Box No.1032. Gokul Bhawan, K. 37/109, Gopal Mandir Lane Varanasi, 221001 (India) pg. no. 78.
64. Rajesh KP, Manjunatha H, Krishna V, Kumara Swamy BE, Potential In vitro Antioxidant and protective effect of Mesua ferrea bark extract on induced oxidative damage. Ind Crops Prod, 2013; 47: 186- 98.
65. Chahar M, Kumar DM, Lokesh T, Manohar K. In vivo Antioxidant and Immunomodulatory activity of mesuol isolated from Mesua ferrea seed oil. Immunopharmacol, 2012; 13: 386- 91.
66. Verotta L, Lovaglio E, Vidari G, Finzi PV, Neri MG, Raimondi A, Parapini S, Taramelli D, Riva A, Bombardelli E. 4- Alkyl- and 4- phenylcumarins from Mesua ferrea as promising multidrug resistant antibacterials. Phytochemistry, 1984; 23: 1816- 17.

67. Indian medicinal plants. dr.prakash paranjpe, chaukhamba Sanskrit pratishthan, delhi, ISBN: 81-7084-170-8, page no.79-80.
68. Data base on medicinal plants used in Ayurveda.vol.7.center council for research in Ayurveda and siddha jawahar lalnehru bhartiya chikitsa avum homeopathy anusandhan bhawan, 61-65 institustional area, janakpuri, new delhi-110058. page no.391-395.
69. Bhavaprakash Nighantu. Commentary By Dr. K.C.Chunekar, A.M.S. Edited By Dr. G.S. Pandey, A.M.S. Chaukhambha Bharti Academy Publisher And Distributer Of Monumental Treatises Of The East Gokul Bhawan, K. 37/109, Gopal Mandir Lane. P.O.Box no.1065. Varanasi, 221001 (India) Reprint, 2006; pg.no. 225- 226.
70. Dhanvantri Nighantu. Edited by prof. Priyavrata Sharma and Translated by Dr. Guru Prasad Sharma. Chaukhambha Orientalia Varanasi. P. O. Box No.1032. Gokul Bhawan, K. 37/109, Gopal Mandir Lane Varanasi, 221001 (India) pg. no. 77.
71. Aneja K.R., Joshi Radhika. Antimicrobial Activity of Amomum subulatum and Elletaria cardamomum Against Dental Caries Causing Microorganisms. Ethnobaracterial Leaflets, 2009; 13: 840- 849.