



KRIMIGHNA KASHAYA - DRUG REVIEW

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ABSTRACT Worm infestation is a major public health problem in children of developing countries because of poor socioeconomic conditions and lack of good hygienic living. It causes not only nutritional deficiencies and anaemia but can lead to intestinal obstruction in the infested children. Intestinal worm infestation can be correlated with *Pureeshaja Krimi. Acharya Charaka* has classified the *dravya* as per pharmacological actions into 50 *Mahakashaya* (50 groups of *dravyas*) of 10 herbs each with a particular action. Out of these 50 *Mahakashaya Krimighna Mahakashaya* is the 15th *Mahakashaya*. All *dravyas* in *Krimighna Kashaya* has *krimihar* property. This article reviews properties of various ingredients of *Krimighna Kashaya* and its probable mode of action based on previous in-vivo and in-vitro studies.

KEYWORDS : *Krimighna Kashaya, Krimi rog, Intestinal worm infestation*

INTRODUCTION

Worm infestations affect all age groups of the population, but they are particularly problematic for young children since they are still learning how to deal with their parasitic foes. The parasite challenge is probably the least known endemic issue. They are not evident as a cause or a factor in what may be a significant condition because they rarely show immediate symptoms and cannot be seen. s Worm infestation is one of the most common illnesses seen in paediatric practice as a result of the scientific community's emphasis being diverted from nutrition and lifestyle choices. Worm infestation was known as *Krimi Roga* in *Ayurveda*. *Krimi roga*, also known as *Balroga*, is one of the most prevalent illnesses. In modern sciences, the name "*Krimi*" in *Ayurveda* can be compared to helminthiasis. *Krimighna Kashaya, Acharya Charaka* has classified the *dravya* as per pharmacological actions into 50 *Mahakashaya* (50 groups of *dravyas*) of 10 herbs each with a particular action. All ten herbs of *Krimighna Mahakashaya* have antibacterial, anthelmintic, and antiprotozoal activity. *Vidanga* (*Embelia ribes* L.), one of these 10 herbs, is regarded as the excellent *Krimighna Dravya*. *Krimighna Mahakashaya* contains *Akshiva, Marich, Khadira, Kebuka, Vidang, Nirgundi, Kinhi, Gokshura, Vrishparnika, Akhuparnika*.

MATERIAL AND METHODS

Electronic database, 'Google scholar', Pubmed, Scopus has been searched for relevant studies and review publications from 2011-2023. The key words used for search are '*Krimighna Kashaya* in *Pureeshaja Krimi*(Intestinal worm infestation). Abstracts and full texts of open access in English language were only considered.

NAME	RAS	GUNA	VIRYA	VIPAKA	KARMA
<i>Akshiva (shigru)</i> ^[1] <i>Moringa oleifera</i>	<i>Katu, Tikta</i>	<i>Laghu, Tikshna, Ruksha</i>	<i>Ushna</i>	<i>Katu</i>	<i>Kaphvatahara Deepan, Krimighana</i>
<i>Marich</i> ^[2] <i>Piper Nigrum</i>	<i>Katu</i>	<i>Laghu, Tikshna</i>	<i>Ushna</i>	<i>Katu</i>	<i>Kaphvathara, Deepan, Pramathi</i>
<i>Khadira (Gandira)</i> ^[3] <i>Acacia catechu</i>	<i>Tikshana, Kashaya</i>	<i>Sheeta, Ruksha</i>	<i>Sheeta</i>	<i>Katu</i>	<i>Kaphpittahara</i>
<i>Kebuka</i> ^[4] <i>Costus Speciosus</i>	<i>Tikta, Kashaya</i>	<i>Laghu, Ruksha</i>	<i>Sheeta</i>	<i>Katu</i>	<i>Kaphpittahara</i>
<i>Vidang</i> ^[5] <i>Embelia ribes</i>	<i>Katu, Kashaya</i>	<i>Laghu, Ruksha, Tikshna</i>	<i>Ushna</i>	<i>Katu</i>	<i>Krimighana, Vishaghan, Deepan</i>
<i>Nirgundi</i> ^[6] <i>Vitex Nirgundo</i>	<i>Katu, Tikta</i>	<i>Laghu, Ruksha</i>	<i>Ushna</i>	<i>Katu</i>	<i>Vatakaphhara</i>
<i>Kinhi (Shweta shrish)</i> ^[7] <i>Albezzia procera</i>	<i>Tikta, Kashaya, Madhu</i>	<i>Laghu, Ruksha, Tikshna</i>	<i>Ushna</i>	<i>Katu</i>	<i>Kaphaghan</i>

<i>Gokshura</i> ^[8] <i>Tribulis Terrestris</i>	<i>Madhur</i>	<i>Guru, Snigdha</i>	<i>Sheeta</i>	<i>Madhur</i>	<i>Vatapittahara</i>
<i>Vrishparnika (vasa)</i> ^[9] <i>Adhatoda vasica</i>	<i>Tikta, Kashaya</i>	<i>Laghu, Ruksha</i>	<i>Sheeta</i>	<i>Katu</i>	<i>Kaphpittahara</i>
<i>Akhuparnika</i> ^[10] <i>Merremia Emargitana</i>	<i>Tikta, Katu</i>	<i>Laghu, Ruksha, Tikshana</i>	<i>Sheeta</i>	<i>Katu</i>	<i>Kaphvatahara</i>

1-AKSHIVA (SHIGRU)

Gana – *Krimighna, Swedopaga, Shirovirechanopaga, Katuka Skandha (Cha.) Varunadi, Shirovirechana (Su.), Varunadi (A.H.)*

Synonyms – *Aksiva, Tikshnagandha, Mocaka, Sobhanjana, Bahupatra.*

Part used – Seed

Chemical constituent:

Asarone, B-asarone, calamenol, calamine, eugenol, Methyl eugenol.

Pharmacological activities:

The defatted methanolic extract of the stem bark exhibited antibacterial and antifungal activities. Aqueous extract of steam bark showed anti-implantation activity in female rat further, the extract showed protective effects against CCl₄- and rifampicin – induced hepatotoxicity, while problem ether extract exhibited protective effect against paracetamol-induced hepatotoxicity in rats.

Research evidence-

- An in-vitro study evaluated the effectiveness of macerated and infused aqueous extracts of *Moringa oleifera* as well as ethanolic extracts against fresh eggs, embryonated eggs, and L1 and L2 larvae of *Haemonchus contortus*.^[11]

2-Maricha

Gana – *Deepaniya, Shulaprasamana, Krimighna, Sirovirechanopaga. (Ch.), Pipaliyadi, Trayusana. (Su.), Pipalyadi (A.S.), Vatsakadi (A.H.)*

Synonyms – *Ushana, Kana, Dhanvantari, Dharmapattana, Vellaja, Sakanga.*

Part used – Fruit

Chemical constituents:

Piperene, piperethine, piperolein A&B, feruperine, dihydro feruperineetc.

Pharmacological activities:

Ethanol extract of the fruit increased the rat BMR and tissue oxygen uptake. The thyroid peroxidases activities and plasma T3 and T4 level were also raised. Other biological activity includes insecticidal activity against fourth in star Laval of *Aedes aegypti* by pipnoohine and

pipryahyine, the two amides isolated from fruit.

Research evidence –

The aqueous and ethanolic extract of *Piper nigrum*, Linn were evaluated for Anthelmintic activity. The dried powder of Black pepper (dried fruit) containing chemical constituent piperine were extracted and the activity was studied. Both aqueous and ethanolic extract collected were screened for preliminary phytochemical studies and also tested for Anthelmintic activity against Indian adult earthworm *Pheretima posthuma* (Annelida) and recorded the time taken for induction of paralysis and death. This study reveals that *Piper nigrum* Linn shows potent Anthelmintic activity.^[12]

3. KHADIRA (GANDIRA):

Synonyms – *Gayatri, Dantadhavana, Raktasara, Somavalka, Kantaki, Balapatra, Yajniya.*

Gana – Kusthagna, Udardaprasamana, Kashaya Skandha (Ch.) Salasaradi (Su.), Asanadi (A.H.)

Part used – Bark

Chemical Constituents: Catechine2-5, epicatechin3, 5, 6

Pharmacological Action:

Ethanolic and aqueous extracts showed antibacterial activity against *E. coli*. It also showed antipyretic, anti diarrhoeal and hypoglycaemic activities. Major therapeutic activities on pruritis and dermatitis.

Research evidence –

In vitro, anthelmintic activity against Indian adult earth worms (*Pheretima posthuma*) has been shown by an alcoholic extract of *Acacia catechu* Willd heartwood and its ethyl acetate fractions at doses of 25, 50, 75, and 100 mg/ml.^[13]

Methanolic extract of *Acacia catechu* heartwood at the concentrations of 20, 40, 60, 80 and 100mg/ml showed dose-dependent anthelmintic activity against *Pheretima posthuma*.^[14]

4. KEBUKA:

Synonyms – *Kembukam, Kevuka*

Gana – Krimighna, Tikta Skandha (ch.)

Part Used – Rhizome

Chemical constituents:

Saponins A, B, C, D., Tigogenine, diosgenin3-11, costasosides.

Pharmacological activities:

Diosgenin and mixture of five saponins obtained from rhizome of *C. speciosus* showed estrogenic and anti fertility effect in rats. The mixture of four alkaloids smooth muscles relaxant, antispasmodic, cardiac tonic, hydro choleric, diuretic and CNS depressant activity in various animals models. Major therapeutic activities as anthelmintic, in filariasis.

Research evidence –

Pheretima posthuma (adult earthworm), one of the most prevalent and widely distributed worms, has been studied against methanolic and aqueous extract of *C. speciosus*' aerial parts. The aqueous and methanolic extracts of *C. speciosus* shown stronger effectiveness against the worm than the common medication, albendazole, proving the traditional claims of the anthelmintic potential of this species. In terms of antiworm action, the aqueous extract was superior to the methanolic extract.^[15]

5. VIDANGA:

Synonym – *Krimighna, Chitrandula, Amogha, Vella, Tandula, Jantuhantri, Gahvara.*

Gana – Krimighna, Kusthaghna, Triptighna (Ch.), Surasadi, Pippalyadi (Su.), Sursadi, Pippalyadi (A.H.)

Part Used – Fruit

Chemical Constitution:

Embelin, christembin, homoemelin, homorapanone, vilangini,

Pharmacological activities:

Benzene and ethanol extract significantly increased the glycogen, protein and non-nitrogen contents in the uterus of the normal and ovarienctomized rats. Embelin was found to enhance the absorptive

and digestive function of rat intestine. Major therapeutic activities contraceptive, antihemintic.

Research Evidence-

- Embelin from *Embelia ribes* at the concentrations of 2, 4, 6, 8 and 10mg/ml showed profound and better anthelmintic activity against *Pheretima posthuma* than albendazole.^[16]
- Vidangadi churna-an Ayurvedic formulation containing *Embelia ribes*, *Hordeum vulgare*, *Mallotus philippinensis*, *Terminalia chebula* showed potent in vitro anthelmintic activity against adult earthworm *Pheretima posthuma*.^[17]
- Aqueous extract of *Embelia ribes* fruit showed in the concentrations of 3% and 5% showed potent anthelmintic activity against Indian Adult earth worm *Pheretima posthuma*.^[18]

6. NIRGUNDI

Synonyms – *Shephalika, Suvaha, Sinduka, Sinduvara, Surasa, Svetapushpa, Nilamanjari, Vanaja, Bhutakei.*

Gana – Vishaghna, Krimighna (Ch.), Surasadi (Su.), Surasadi (A.H.)

Part used – Root

Chemical constituents: phenol, dulcitol, alkaloid, vitricine, b-sitosterol etc.

Pharmacological activities:

Leaf of extract showed anti-inflammatory, analgesic activities and CNS depressant prevention of genotoxicity, Antibacterial and antifungal activities. The leaves possessed hepato protective effect.

7. Kinihi (sweta Shirisha)

Gana – Vishaghna, Vedanasthapana, Sirovirechana, Kashaya khandha. (Ch.), Salasaradi. (Su.), Asanadi (A.H.)

Synonyms – *Kapitanch, Mrdupushpa, Bhandi, Bhandirah, Sukataru, Sukapriya, Suka Puspa.*

Part used – stem bark

Chemical constituents:

Albegenin, albeziagenin, albegenic acid, saponins-lebbeknins A-H of both bark and flower significantly reduce bronchospasm.

Research evidence –

The alcoholic extract of the bark revealed moderate anthelmintic activity against in vitro human *ascaris lumbricoides*.^[19]

8. GOKSHUR:

Synonyms – *Iksugandika, Svadanstra, Trikantaka, Svdanshra, Palankasha*

Gana – Shothahara, Mutravirechaniya, Krimighna (Ch), Vidarigandhadi, Viratarvadi, Laghu Pancamula Viratarvadi (Su.), Vidarigandhadi (A.H.)

Part used – Fruit

Chemical constituents: T.terrestries, chlorogenin, diosgenin, gitogenin, rutin, steroidal saponins.

Pharmacological activities: anti-diabetics, diuretic, asmarihara, anticancer activity, nephroprotective activities, lithotriptic activities, hepatoprotective activities and aphrodisiac properties.

9. Vrishparnika (vasa)

Synonyms – *Atarusa, Bhisamata, Vasika, Vrsa, Simhasya, Simhi.*

Gana – Tikta skandha. (Ch.), Durvadigana (A.H.)

Part used – Whole plant

Chemical Composition:

Vasicine (peganine), vasicinine, kaemferol, vasocolone, vasicolinove etc. The leaves of the plant contain an essential oil and alkaloids vasicine, N-oxides of vasicine, vasicinone, deoxyvasicine and maiontone. The roots are known to contain vasicinone, vasicol, peganine and 2'-hydroxy-4-glucosyl-oxychalcone. The flowers contain b-sitosterol-D-glucoside, kaempferol, its glycosides and quereetin.

Pharmacological activities:

Rasayana activity, vasicine shows bronchodilator activities,

haemostatic activity is reported.

Research evidence-

The plant's 25–50 mg/ml aqueous and ethanolic extracts have been studied and were determined to be ovicidal and larvicidal. Similar to this, the ED50 values for *A. vasica* extracts against larvae ranged from 15, 14 and 12.88 mg/ml for aqueous extracts to 19.5 and 18.62 mg/ml for ethanolic extracts for *O. Columbianum* larvae, respectively.^[20]

10. AKHUPARNIKA

Synonyms – *Musikakarni*, *Bhudaribhv*, *Musikahvaya*, *Undurukarnika Gana* – *Krimighna Dasaimani* (Ch.), *Sursadigana* (Su.), *Surasadigana*

Part used-Whole plant

Chemical Composition: caffeic, p- coumaric, ferulic & sinapic acid esters from seeds

Pharmacological activities:

Alcoholic extract of whole plant showed a general depressant action in rats. The extract also had spasmolytic action on guinea pig ileum. The plant *Merremia emarginata* (Burm.f.) Hallier f. belongs to Convolvulaceae family. In traditional medicinal system, different parts of *M. emarginata* have been mentioned to be therapeutically used as deobstruent, diuretic, for cough, headache, neuralgia and rheumatism. In the present study, biological activities of different solvent extracts isolated from *M. emarginata* were tested. Hexane (IA), ethyl acetate (IB), methanol (IC) and aqueous methanol (25%) (ID) extracts of Methanol extract of this plant might be use full for antioxidant and anti-obesity activities with minimal toxicity.

DISCUSSION

The drug which kills or destroys the worms is called *Krimighna*. Out of ten *krimighna dravyas* *Vidanga* is explained as *agrya* (the best) *Krimighna dravya*. Current researches also supported the *krimighna* action of these ten drugs as all these drugs have antibacterial, anthelmintic, antiprotozoal activity. Treatment guiding principle of krimi is Apakarshana (Expulsion of poisonous substances by shodhan chikitsa), Prakriti vighata (countermeasures/modalities), and nidanaparivarjan are the three aspects of Krimi. The substance is employed because it has the attributes of katu, tikta, kashaya, kshara, and ushna as well as the opposite qualities of kapha and purish are regarding prakritivighata. Except for Swadanastra, all the dravyas that belong to the *krimighna mahakasaya* have ushna virya (which is kapha shamaka), laghu, ruksha, kasaya rasa, tikshana guna, katu, tikta, and kasaya rasa. Gokshur has sheeta virya, guru, snigdha guna, madhura rasa and vipaka, and these qualities contradict the idea of prakriti vighata. However, it may cause the *krimighna* action through Apakarshana since every feature it possesses makes it easier to expell the krimi through virechana, or it may act because of its Prabhava and particular characteristics. Almost of the drugs of *mahakasaya* contain phytochemical constituents like Alkaloids, tannin, flavonoids, essential oils etc to which *antimicrobial* action can be attributed. Among all the ten drugs *vidanga* is mentioned as best *krimighna Dravya*. The above ten drugs are assigned with the *Krimighna* action and have very good role in the treatment of worms.

CONCLUSION

Worm infestations affect all age groups of the population, but they are particularly problematic for young children since they are still learning how to deal with their parasitic foes. Millions of children in many developing nations currently suffer from intestinal worm infections, which are a secret epidemic that damages their health, wellbeing, and academic ability. It is time for us to act as a community to deal with this silent sorrow affecting our children so that they can grow up physically and mentally healthy. Parasites are a problem all around the world; they are not just prevalent in Third World nations with poor sanitation. After thorough analyzing the Guna- Karma, Doshanghta, chemical constituent, therapeutic activities of individual drugs of *krimighna* Kashaya syrup, it shows that all ingredients work on intestinal worm infestation. Evidence based study also showed that all ingredients have antimicrobial, antibacterial, wormicidal, larvicidal activities which directly indicates that combine effect of all ingredients of *krimighna* kashaya syrup have krimihar effect. Hence it can be concluded that *Krimighna* Kashaya syrup may give better results in treatment of intestinal worm infestation.

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