



## AN AYURVEDA AND MODERN SCIENCE ASPECTS ON WORMINFESTATION IN CHILDREN: A LITERARY RESEARCH

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### ABSTRACT

Stomach ache is one of the most common health issues observed in kids and helminthic contamination is the major culprit behind it. There are many varieties of worms which live in the human frame. These worms extract their nutrients from the digestive tract of the children, especially within the intestine. Due to affable living conditions and an abundance of nutrients, parasites like worms thrive inside the human frame. When worms live in the frame of a host, they're also biologically termed endoparasites. Ayurveda describes worm infestation as a Krumi Roga. Based on their source, they are classified into four groups as follows, Kaphaj (born of phlegm), Raktaj (born of blood), Malaj (born of external excreta), Purishaj (born of feces) and out of these Purishaja Krumi may be correlated with Helminthiasis (worm infestation). Excessive intake of foods which is Madhura (sweet) or Amla (sour), Eating in indigestion, lack of exercise and resorting to daysleep are the main etiology of Krumi Roga (worm infestation) in Ayurveda and the main symptoms are Jwara (fever), Vivarnata (discolouration of the skin), Shula (colic), Hridayaroga (cardiac pain), Sadanam (lassitude), Bhaktadvesho (aversion to food), Atisara (Diarrhoea). In ayurveda, Oupsargika rogas explains infectious diseases as a result of Krumi. Treatment like Apakarshana (extraction of worms), Prakrutivighata (factors responsible for the favourable conditions for the parasites should be counteracted), Nidan parivarjana (etiologic factors of such parasites should be avoided) is found to be very effective against Krumi in Ayurveda. This review article explores the approach and treatment of Worm infestation (Krumiroga) in children.

**KEYWORDS:** Worm infestation, Krumi roga, Apakarshana, Prakrutivighat, Nidan parivarjana and Oupsargika rogas

### INTRODUCTION

Helminthiasis (worm infestation) is a type of micro parasitic disease. It contributes to a significant disease burden in children in developing countries. In the present life, people are lacking in recognition of their dietary habits, which results in increased incidences of Krumiroga which are undetected for a long time.

Nidan like Diwaswapa, Ajirnadhyasana, Asatmya, Viruddha bhojana and so forth lead to Agnimandya and favourable surroundings in the koshta for Krumi.

The prevalence of the disease is concentrated in some regions while it is less prevalent in a few regions. Worm infestation appears as one of the major economic burdens in developing countries. Developing countries in the Southeast Asian region spent 3.76% of the total annual budget for health in 2010<sup>[1]</sup> out of which a significant chunk was allocated to tackle the epidemic of worm infestation in the human body. One of the examples of such measures is the National Deworming Program launched by the Nepalese government in recent years.

Many developing countries have also adopted a preventive approach to tackle the worm infestation by promoting sanitation drives by promoting hand washing and construction of toilets in remote parts of the rural areas such as the "Swachh Bharat Abhiyan" program in India. However despite such measures, according to WHO, globally 1100 million people were defecating in the open resulting in high levels of environmental contamination and exposure to the risk of worm infestations in 2008.<sup>[2]</sup>

Overall prevalence of intestinal worm infection in India was found to be 49.38%. Ascaris was the most common parasite (46.88%), followed by Taenia (2.1%) and Hymenolepis nana (0.21%). Cure rate was found to be 66% for Ascaris and 100% in other cases.<sup>[3]</sup>

Trichuriasis is also the most prevalent human helminthiasis, occurs throughout the world and is especially common in poor rural communities with inadequate sanitary facilities and soil contaminated with human or animal faeces. In some communities, the

prevalence of *T. Trichiura* infection can be as high as 95%.

The highest rate of Worm infestation occurs among children 5-15 yr old. Therefore, this study reviews the literature related to Krumi Roga in children and the role of Ayurveda in its management.

## MATERIALS AND METHODS

The information stated in this article has been retrieved from numerous texts along with literatures of both classical as well as contemporary, published papers and internet based database searches.

## 1. NIDAN (CAUSES) OF KRUMI ROGA Nidan<sup>[4]</sup>

1. Indigestion, eating in indigestion, taking unsuitable, incompatible and dirty food.
2. Lack of physical exercise, day-sleep.
3. Intake of heavy, too unctuous and cold items, black gram, edibles of rice-flour, pulses, stem and root of lotus, Kasheruka, leafy vegetables, wine, vinegar, curd, milk, jaggery, sugarcane, paste of sesamum, meat of marshy animals, oil cake, flattened rice etc. and also sweet and sour drinks causes aggravation of Kapha and Pitta and give rise to worms.

**Table no. 1: Numbers of Krumi according to different Acharya.**

Name of Acharya	Bahya Krumi	Abhyantara Krumi			Total (Abhyantara Krumi)	Total Krumi
		kaphaj	Purishaj	Raktaj		
Charaka <sup>[5]</sup>	02	07	05	06	18	20
Sushruta <sup>[6]</sup>		06	07	07	20	20
Vagbhata <sup>[7]</sup>	02	07	05	06	18	20
Madhavakara <sup>[8]</sup>	02	07	05	06	18	20
Sarangadhara <sup>[9]</sup>	02	07	05	06	18	20
Bhavaprakash <sup>[10]</sup>	02	07	05	06	18	20

## 2. CLASSIFICATION OF KRUMI ON THE BASIS OF THEIR HABITAT<sup>[11]</sup>

- A) Bahya Krumi (Parasites of external excreta): Under the group Malaj these worms infested externally occur mainly in the hairy parts of the body.
- Yuka
  - Pipilika
- B) Abhyantara Krumi (Parasites of internal excreta):

Dosha vitiation takes place because of consumption of etiological factors (Nidan) explained above and these vitiated doshas get concentrated in the blood, phlegm and feces and generate worms.

- Kaphaj
- Raktaj
- Purishaj

**Table no. 2: Types of Krumi, their names according to different Acharya and their habitat.**

Sr. No.	Types of Krumi	Names		Habitat <sup>[13]</sup>
		(Charak) <sup>[13]</sup>	(Sushruta) <sup>[12]</sup>	
1.	Bahya	Yuka, Pipilika		Hair, Eyelashes, Skin, Clothing
2.	Abhyantar			
	a) Kaphaj	Antrada, Udarada, Hrudayachara, Churav, Darbhpushpa, Saugandhika, Mahaguda	Darbhapushpa, Mahapushpa, Praluna, Chipita, Pipilika, daruna	Amashaya (stomach), from Amasaya they spread up and down when excessively grown
	b) Purishaj	Kakeruka, Makeruka, Sausurada, Sashulaka, Leliha	Ajava, Vijava, Kipyra, Chipya, Gandupada, Churu, Dvimukha	Pakvashaya (colon), And when excessively grown they move from Pakvashaya towards Amasaya (stomach) giving rise to fecal odour to breath of patient
	c) Raktaj	Kesada, Lomada, Lomodvipa, Saurasa, Audumbara, Jantumatarah	Keshada, Romada, Nakhada, Dantada, Kikkisa, Kusthaja, Parisarpa	Raktavahini dhamani (blood vessels)

## 3. CHARACTERISTICS OF BAHYA KRUMI (PARASITES OF EXTERNAL EXCRETA)<sup>[13]</sup>

Cause: Lack of cleanliness of the body  
Form: Minute, multipede and having the shape of that of a grain of Tila (*Sesamum indicum*).

Colour: Black and white

Treatment: Removal of these parasites, keeping the body clean and avoidance of such regimens which produce the excreta.

#### 4. SPECIFIC CHARACTERISTICS OF ABHYANTAR KRUMI<sup>[13]</sup>

##### A. Raktaja Krumi (Parasites of blood)

Cause: Same as that for Kustha (obstinate skin diseases including leprosy)

Form: Minute, round and having no pedicle. Because of minuteness some of them are not visible (to the naked eye);

Colour: Coppery.

##### B. Kaphaj Krumi (Phlegm Born Parasites)

Cause: Intake of milk, sugar-candy, tila (Sesamum indicum), pastries, milk preparations, fish, meat of animals inhabiting marshy land, oil of Kusumbha (Carthamus tinctorius) uncooked, putrefied and softened food, food mixed with despicable articles like feces, food having mutually contradictory properties and unwholesome food.

Form and colour : Some are big and flat (tape like ) in shape and white in colour; some are round in shape like earthworm and white in colour with a coppery tinge; some are minute and long in shape like a thread and white in colour.

##### C. Purishaj Krumi (Parasites Of Feces)

Cause: the same as for phlegm born parasites; Form and colour : Some of them are minute, cylindrical and long, they appear like the fibres of wool and they are white in colour some others are thick, cylindrical, and their colours are gray, blue, green or yellow.

#### 5. GENERAL SIGN AND SYMPTOMS OF KRUMI<sup>[14]</sup>

- Jvara (fever),
- Vivarnata (Abnormal complexion),

- Shula ( colic),
- Hrudroga (cardiac pain ),
- Bhrama (vertigo),
- Bhakta Dwesha (anorexia),
- Atisara (diarrhoea) ,
- Sadana (malaise),
- Chardi (vomiting).

#### 6. SPECIFIC SIGN AND SYMPTOMS OF KRUMI<sup>[13]</sup>

A. **Bahya Krumi** -Itching (Kandu), production of urticaria and pimples(koth-pidaka).

B. **Kaphaja Krumi** - Nausea (hrullasa), Salivation (aasya sravana), Anorexia (Arochaka), Indigestion (Avipaka), Fever (jwara), Fainting (Murcha), Yawning (Jrumbha), Sneezing (kshavathu), Constipation (Aanaha), Malaise (Angamardana), Vomiting (Chardi), Emaciation (karshya) and Dryness of the body (Parushya)

C. **Purishaja Krumi** – Diarrhoea (Purisabhed), emaciation (karshya), dryness (Parushya) and horripilation (Lomaharsha); these Krumi inhabit the oral region and cause irritation and itching there and when excited they frequently come out of the anus (Gudaniskramana) ,

D. **Raktaja Krumi** - Destruction of the hair from the head, face and other parts of the body, nails, eyelashes (Kesha-shmashru-nakha-loma-paksha Apadhvansa) and When a wound is contaminated with these parasites; then hyperesthesia (Harsha), itching (Kandu), pain (Toda) and creeping sensation in the ulcerated area (Sansarpana) are caused; when excessively grown they eat away the skin, vessels, ligaments, muscle tissue and cartilages.

Table no. 3: Types of worms and their modes of transmission.<sup>[15]</sup>

Sr. no.	Types of worms	Modes of transmission	
1	A) Nematodes (Roundworm)	1) Ascaris Lumbricoides(Roundworm)	Ingestion of contaminated rawfruits and vegetables.
		2) Ancylostoma Duodenale, Necator Americanus (Hookworm)	Larvae infect humans either by penetrating through the skin (N.americanus and A. Duodenale )or when they are ingested (A.duodenale)
		3) Enterobius Vermicularis(Pinworm/ Threadworm)	Fecal-oral route (typically by ingestion of embryonated eggs that are carried on fingernails, clothing, bedding, or house dust)
	B) Non-Intestinal Nematodes	1) Trichuris Trichura (Whipworm)	Direct contamination of hands, or through consumption of contaminated food or drink
		2) Strongyloides Stercoralis	Skin contact with soil contaminated with infectious larvae
2.	Cestodes (Tapeworms)	1) W. Bancrofti is mainly transmitted in India through Culex Quinquefasciatus mosquito	
		2) Brugia malayi is transmitted through Mansonia annulifera and M. uniformis	
2.	Cestodes (Tapeworms)	Taenia saginata Taenia solium	Ingestion of raw or undercooked meat containing larval cysts
3.	Trematodes (Flukes)	Blood flukes, Flukes of liver, Lung, or Intestines	Ingestion of raw or undercooked meat containing larval cysts

**Table no. 4: Showing life cycle and clinical features /complications of worms<sup>[15]</sup>**

Sr. No.	Intestinal nematodes	Life cycle	Clinical features /Complications
1.	Roundworms ( <i>Ascaris Lumbricoides</i> )	<i>Ascaris</i> ova hatch in the small intestine after ingestion by the human host. Larvae are released, penetrate the intestinal wall, and migrate to the lungs by way of the venous circulation. They are subsequently swallowed and return to the intestines, where they mature into adult worms.	Loeffler syndrome Acute bowel obstruction (due to large mass of worms) Cholecystitis Pancreatitis
2.	Hookworms ( <i>Necator americanus</i> and <i>Ancylostoma</i> spp)	Larvae entering the human host by skin penetration. Larvae become adult and mature female worms produce eggs that are deposited on soil and develop into first-stage larvae (infective stage). Infective larvae are developmentally arrested until they either infect a new host.	1. Iron deficiency Anaemia (The buccal capsule of the adult hookworm is armed with cutting plates or teeth to facilitate attachment to the small intestine so directly burrow into the skin of the humans) 2. Abdominal discomfort 3. Edema. 4. Large numbers of hookworms are fatal.
3.	Pinworms /threadworms ( <i>Enterobius Vermicularis</i> )	It is a small (1 cm long), white, thread-like worm that lives in the cecum, appendix, ileum and ascending colon. Gravid females migrate at night into the perianal region and release eggs there. The eggs become infective within 6 hr. Perianal scratching causes transfer of eggs to finger nails. Infection occurs when eggs are ingested. The larvae hatch and mature within the intestine	1. Insomnia is very common in Child due to perianal itching 2. Digestive disorders such as diarrheas with bloody stools with dehydration (could be fatal, especially in children). 3. In women vaginal infections causing discharge.
4.	Whipworms	Infection develops after ingesting embryonated ova by direct contamination of hands, food (raw fruits and vegetables fertilized with human feces) or drink. Transmission can also occur indirectly through flies or other insects.	1. Diarrheas with bloody stools 2. Anaemia 3. Rectal prolapse

**Table no. 5: Showing diagnosis and treatment of specific worm infestation.<sup>[15]</sup>**

Sr no.	Types of worms	Diagnosis	Treatment
1.	<i>Ascaris Lumbricoides</i> (Roundworm)	1. Stool microscopy: not useful 2. Eggs can be demonstrated in perianal swabs collected early morning.	1. Albendazole 400 mg Once, repeat in 2 weeks 2. Mebendazole. 3. Treat entire family
2.	Hookworm	1. Stool microscopy 2. Peripheral smear	1. Albendazole 400mg Once 2. Oral Iron therapy
3.	Pinworm	1. A history of nocturnal perianal pruritus in children 2. Microscopic examination of perianal swab collected in early morning.	1. Albendazole 2. Mebendazole (Alternative) 3. Pyrantel pamoate- 11 mg/kg base to a maximum of 1 g; repeat at 2 wk (Alternative) Morning bathing removes a large portion of eggs.
4.	Whipworm	Fecal Examination	1. Albendazole 2. Mebendazole -Alternatives 3. Ivermectin (200ug/kg orally once daily for 3 days) - Alternatives
5.	<i>Strongyloides Stercoralis</i>	Fecal Examination	1. Ivermectin 2. Albendazole (400 mg orally twice daily for 7 days – Alternative
6.	<i>Wuchereria bancrofti</i> (Filariasis)	1. Identified in thick bloodfilm 2. Nocturnal periodicity 3. Adult worm in LN biopsy	1. Diethylcarbamazine 6 mg /kg /day q8hr for 12 days 2. Other options is Ivermectin + Albendazole

## 7. LINE OF TREATMENT OF KRUMI ACCORDING TO AYURVEDA<sup>[16]</sup>

All parasites should, first of all, be extracted (Apakarshana); thereafter, all the favourable conditions for these parasites like phlegm, blood, etc should be counteracted (Prakruti Vighata) and as the third principle of treatment is etiologic factors of such parasites should be avoided (Nidan parivarjana).<sup>[17]</sup>

### I. Apakarshana

- Parasites can be extracted by hand with or without the help of instruments (forceps etc.).
- Parasites inhabiting inside the body can be extracted by the administration of appropriate therapies which are of four types namely Shiro Virechana (errhines), Vamana (vomiting), Virechana (purgation) and Asthapana-basti (type of enema).

The patient should be given Oleation (Snehan) and fomentation (Swedan) therapies for six to seven nights (days). Next day (one day before the administration of elimination therapy) during morning and evening meals he should be given food consisting of milk, sugar candy, curd, tila (Sesamum indicum), fish, meat of animals inhabiting marshy land, pastry, milk preparation and oil of Kusumbha (Carthamus tinctorius) with a view to arousing the parasites and impelling them to migrate to the alimentary tract. If the food taken by patient in the previous day is fully digested, he should be given Asthapana Basti (type of enema), Emesis and Purgation therapies all on the same day, if the patient, is found fit for all these therapies after proper examination.

### A. Kwatha Dravya For Asthapana Basti (Nonunctous Enema)<sup>[17]</sup>

- Mulaka (Raphanus sativus), Sarshapa (Brassica nigra), Lasuna (Allium sativum) Karanja (Pongamia pinnata), Shigru (Moringa oleifera), Madhushigru (a type of shigru), Kharapushpa (Achyranthes aspera), Bhustruna (Cymbopogon citratus) and various types of Basils, namely Sumukha, Surasa, Kutheraka, Gandira, Kalamalaka, Parāsa, Kshavaka and Phanijhaka-preferably all these or at least some of them which are available.
- Arka (Calotropis gigantea), alarka (a variety of Calotropis gigantea), kutaja (Holarrhena antidysenterica.), Adhaki (Cajanus cajan), Kustha (Saussurea lappa) and Kaidarya (Murraya kosnigii Spreng), or Shigru (Moringa oleifera), Pilu (Salvadora persica), Kustumburu (Coriandrum sativum), Katuka (Picrorhiza kurroa) and Sarshapa (Brassica nigra)
- Amalaka (Emblca officinalis), Srigavera (Zingiber officinale), Daruharidra (Berberis aristata), and picumarda (Azadirachta indica) once the kwath has been prepared then add paste of Madana fruit (Randia dumetorum), Pippali (Piper longum) and vidang (Embelia ribes), Oil, Svarjikshara (salsoda) and salt should be sprinkled over it may be used as enema for three to seven days.

### B. Dravyas for emesis, purgation and Anuvasana Basti (Oleating type of enema)<sup>[17]</sup>

- For Emesis or purgation -Decoction of Seeds of Madana (Randia dumetorum) mixed with paste of Trivrutta (Operculina turpethum) should be given to the patient to drink.
- for Anuvasana basti -oil of Vidanga (Embelia ribes.)

### C. Administration of Shiro Virechana (errhines)<sup>[17]</sup>

Because of the excessive growth of these parasites they invaded the head thereby causing injury to the head, then the head of the patient should be oleated (Snehan) and fomented (Swedan) and doshas from the head should be purged by the administration of errhiness (Shiro Virechana) prepared with the dehusked seeds of Apamarga (Achyranthes aspera) etc. as described in the second chapter of Charaka sutrasthana.

## II. Prakruti Vighata

For counteracting the factors accountable for the growth of parasites, drugs and diets which are pungent, bitter and astringent in taste and hot in nature are to be used along with other drugs having properties contrary to phlegm and faeces.

### Measures for counteracting the factors responsible for the production of parasites<sup>[18]</sup>

#### A) First recipe for Counter-action

- Pupalikas (a type of cake) made up of Mulakaparni (Moringa oleifera) and red variety of sali-rice along with the salt and the oil of Vidanga (Embelia ribes.)

After eating Pupalikas he should be made to drink sour Kanji (sour gruel) or Udasvit (a mixture of water and buttermilk in equal quantity) along with salt and the powder of Pippali (Piper longum), root of Pippali, chavya (piper chaba), Chitraka (Plumbago zeylanica) and sringavera (Zingiber officinale.)

#### B) Second recipe for Counter-action

- Bhallataka (Semecarpus anacardium) oil or
- Bhadradaru (Cedrus deodara) oil or
- sarala (Pinus roxburghii) oil

This oil mixed with half of its quantity of the dehusked seeds of Vidanga (Embelia ribes) given to the patient in a proper dose will cause purgation.

#### C) Third recipe for Counter-action

Fine paste of Tilvaka (Symplocos racemosa) and Uddalaka decoction of vidanga (Embelia ribes) shyama (black variety of Operculina turpethum), and Trivrutta (white variety of Operculina turpethum), Danti (Baliospermum montanum) and Dravanti (Jatropha glandulifera) and Chavya (Piper chaba) and Citraka (Plumbago zeylanica) The above-mentioned ingredients should be mixed with decoction of Vidanga and oil and kept over fire. This oil, given to the patient in the proper dose to drink, will cause purgation.

Following the same method, oil should be prepared with drugs like.

- Sarshapa (Brassica nigra),
- Atasi (Linum usitatu),
- karanja (Pongamia pinnata)
- Kosataki (Luffa acutangula)

**III. Nidanaparivarjana:** Avoidance of etiological factors.

**Table. No.6: List of Ayurvedic kalpa for the treatment of Krumi Roga.**

Sr. no.	Type of Ayurvedic preparations	Names of Preparations
1.	Rasa	Krumikaalanala Rasa, Krumimudgarasa, Krumikuthar Rasa
2.	Choorna	Vidangadi Choorna, Hingwashtak choorna, Palash Beej Choorna
3.	Ghrita	Bimbi Ghritam, Vidangadi Ghritam
4.	Bhasma/ kashaya	Loha Bhasma, Vangabhasma, Mustadi kashayam, Nimbashatka kashaya, Panch Tiktakashaya
5.	Taila	Bhallataka Taila, Bhadradar taila, Sarala Taila
6.	Asava /Arishta	Khadirarishta, Vidangarishta, Devdarya Arishta, Vidangasava
7.	Gulika	Bilvadi gulika

**8. PATHYA<sup>[19]</sup>: FOOD TO BE TAKEN IN KRUMI ROGA**

- Rasa – Katu, Tikta and Kashaya rasatmaka dravya (Pungent, Bitter and Astringent food items).
- Drava – Tila Taila, Kaanjika, Tushodaka, Gomootra, Sura and Sauveeraka.
- Phala – Apakva Kadalee, Pakva Taalaphala and Nimbuka Rasa.
- Kritaanna – Madhu, Tambula, Aasthaapana Basti, Dhoopa, Abhyanaga and Kaphaghna dravya ( drugs/ food items having properties contrary to phlegm)

**9. APATHYA<sup>(19)</sup> : FOOD NOT TO BE TAKEN IN KRUMI ROGA**

- Rasa – Amla (Sour) and Madhura (sweet)
- Guna – Drava
- Maamsa – Pork
- Dugdha – 8 types of Dugdha, Dadhi, Ghruta

**10. PREVENTION<sup>[20]</sup>**

1. Improving education.
2. Discontinuing the practice of using human feces as fertilizer.
3. Economic development associated improvements in sanitation, health education.
4. Good hand hygiene.
5. Personal protection includes avoiding areas where biting flies are numerous, wearing protective clothing, shoes, and using insect repellent.
6. cooking meat ( $\geq 55^{\circ}\text{C}$  [ $131^{\circ}\text{F}$ ]) or by storage in a freezer ( $-15^{\circ}\text{C}$  [ $5^{\circ}\text{F}$ ]) for  $\geq 3$  Wk (only be applied to pork meat)
7. Offering universal treatment to all individuals in an endemic area, groups with high frequency of infection (children)
8. Offering individual treatment based on intensity of current or past infection.
9. Household contacts can be treated at the same time as the infected individual. Repeated treatments every 3-4 months (in circumstances with repeated exposure)

10. Global Programs To Control And Eradicate Lymphatic Filariasis” from endemic populations currently recommend a single annual dose of diethylcarbamazine (6 mg/kg orally once) in combination with albendazole (400 mg orally once) for 5 yr (mass drug administration).

**RESULT AND DISCUSSION**

Krumi Roga (worm infestation) is one of the diseases mentioned in ancient ayurvedic books, which is responsible to significant disease burden in children in developing countries and Soil-transmitted helminthiasis (STH) infections contributes 27% of entire school-aged and preschool-aged children population in the World that need anthelmintic treatment.<sup>[21]</sup>

In Ayurveda the word Krumi has a broad meaning for worms and correlation of the Krumi with microbes and parasites depending upon their habitat, forms, along with signs and symptoms they produce in host. Although Individual probable correlation of all the Krumi with microorganisms is quite difficult but some of the Krumi produce similar features like parasites and we can see correlation in between them like Kaphaj Krumi with Hookworm, Tapeworm, Roundworm, similarly Purishaja Krumi with Trichuris trichiura, Pinworm or threadworm In Spite of the availability of anthelmintic drugs in modern science the use of Ayurvedic medicines for the treatment of worm infestation has been increasing because of fewside effects as compared to modern medications.

The existing review reveals the general concept of Krumi Roga, its prevention and ayurvedic management of Krumi in children by Apakarshana, Prakruti Vighata and Nidana Parivarjana, through improving their sanitary and living conditions by treatment of infected individuals.

**CONCLUSION**

In Ayurvedic samhita, distinct descriptions about the concept of krumi, krumi roga along with their treatment are found and they may be compared with numerous

microorganisms and parasites according to their habitat and clinical features. Ayurvedic medications and treatment protocols are more focused on complete eradication of worms and prevention of their occurrence rather than only elimination of worms as per modern science also ayurvedic preparation boosts hosts overall health and immunity by acting on various body system like respiratory, digestive, circulatory etc. Hence there is an additional scope to evaluate Krumi Chikitsa defined in ayurveda in current parasitic diseases.

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