

Krimi Roga

Internal Parasitic Disease through the lens of Ayurveda

Introduction and Etiology

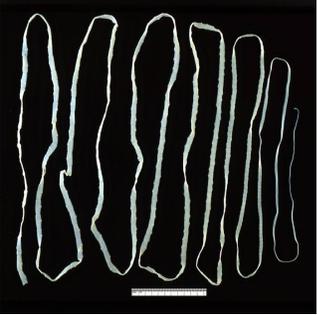
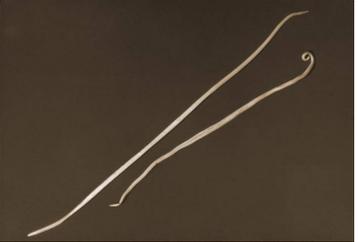
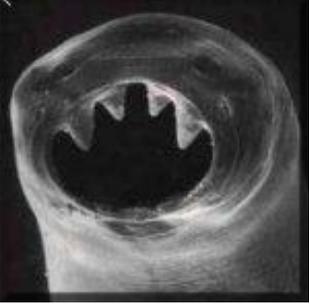
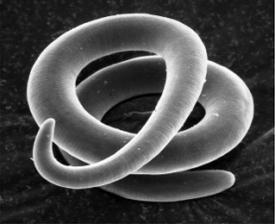
Krimi is the Sanskrit word for parasites.¹ A parasite is an organism that lives by necessary means such as on or in a host organism and survives by feeding from or at the expense of that host.² The term Krimi has adapted a wide interpretation in ancient literature and includes all pathogenic and non-pathogenic organisms covering a vast range of infestation and infection caused by a host of agents from worms to viruses. Parasitic diseases, Krimi Roga, have been with mankind since the beginning of time. Even currently, these diseases remain among the major causes of human suffering and death in the world and are significant obstacles to the development of less economically favored countries.³ Parasitic infections are a significant issue in tropical and subtropical regions of the World including the United States.⁴ These infections are caused by protozoa, helminths and ectoparasites.⁵ Worm infestations present in groups of all ages, but they are much more of a problem in children who are just beginning to learn to cope with parasites.⁶ Ayurveda classically defines two general categories of parasites, internal krimi and external krimi, abhyantara and bahaya. We will focus mainly on abhyantara krimi and the treatment of these infections through the lens of Ayurveda.

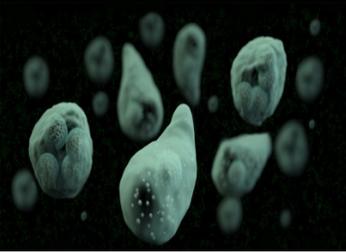
Western Interpretation of Classification and Pathology

There are many pathogens that we know of in the world today. Some of these parasites do not noticeably affect its host. Others will reproduce, grow, and invade their host organ systems making them varying degrees of ill resulting in parasitic infection. These are classified as protozoa: a single-celled organism that can thrive and multiply inside your body such as giardia. Helminths: a multi-celled organism that can live inside or outside of your body, also known as worms and include tapeworms, roundworms, and flatworms. And Ectoparasites: a multi-celled organism that live on or feed off human skin such as mosquitos, ticks, and mites.⁷ A chart is given below to summarize some of these more commonly known pathogenic organisms affecting humans. Listed is their epidemiology, mode of transmission, signs, and symptoms of infection in the body, and a brief look at the western treatment and prevention. Many of these parasites charted are specific to, but not limited to, the intestines.⁸

Chart 1; Common Internal Parasites, Western Approach to Pathology,^{9 10 11 12 13 14 15 16 17 18 19 20 21}

Name, Description	Epidemiology	Transmission	Signs and Symptoms	Diagnosis, Treatment and Prevention	Picture of Parasite
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<p>Tapeworm <i>Taenia solium</i> <i>T. saginata</i> Flat, segmented worm, Many feet</p>	<p>Worldwide Common in Africa, Asia and Latin America</p>	<p>Consuming undercooked meat from infected animals such as beef and pork. Stool to mouth.</p>	<p>Diarrhea Fatigue Nausea Loss of appetite Hunger Abdominal pain Weight loss</p>	<p>Stool sample Blood test MRI <i>Praziquantel</i> Proper food handling, cooking to correct temps, proper hand washing before eating</p>	
<p>Pinworm <i>Enterobius vermicularis</i> Thin and white roundworm ½ inch</p>	<p>Worldwide Most common worm infection in US</p>	<p>Stool to mouth</p>	<p>Restless sleep Anal/Vaginal itching Irritability Teeth grinding Nausea Stomach pain</p>	<p>Presence of eggs in stool, tape test <i>Anti-parasite meds</i> Regular cleaning and showering</p>	
<p>Ascaris <i>Ascaris lumbricoides</i> 6-12 inches Soil - Transmitted Helminth</p>	<p>Worldwide. Moist, warm climates</p>	<p>Contaminated food, stool to mouth</p>	<p>Often asymptomatic Mild stomach discomfort</p>	<p>Worms in stool <i>Anthelmintic meds</i> Good hygiene Avoid ingesting contaminated soil, water and food.</p>	
<p>Hookworm <i>Necator</i>, <i>Ancylostoma</i> ½ inch Soil- Transmitted Helminth</p>	<p>Worldwide in warm climates</p>	<p>Walking barefoot, ingestion of soil</p>	<p>Asymptomatic Gastrointestinal disturbances Blood loss leading to anemia in severe cases</p>	<p>Stool samples can detect presence of eggs <i>Anthelmintic meds</i> Avoid ingestion/skin contact w/contaminated soil</p>	
<p>Trichinosis <i>Trichinella spiralis</i> 1-3 mm</p>	<p>Worldwide, rural areas</p>	<p>Consuming undercooked noncommercial/wild pork</p>	<p>Diarrhea Headache Muscle pain Fever Swelling eyelids/face</p>	<p>Blood tests Muscle biopsies <i>Anti-parasitic meds</i> Avoid consuming undercooked meats.</p>	

<p>Whipworm Trichuris trichiura Long, thin roundworm 2 mm</p>	<p>Worldwide in warm climates, Southern US/rural areas</p>	<p>Ingesting dry beans, stool to mouth</p>	<p>Stomach pain Weight loss Diarrhea</p>	<p>Stool test <i>Anti-parasitic meds</i> Proper hygiene, hand washing, cooking, avoid contact with contaminated soil and confine livestock</p>	
<p>Giardia Giardia lamblia Microscopic protozoan</p>	<p>Worldwide</p>	<p>Contaminated water, soil and food Stool to mouth</p>	<p>Diarrhea Bloating Gas Cramping pain</p>	<p>Multiple stool samples <i>metronidazole, tinidazole, and nitazoxanide</i> Avoid contaminated water, food, soil and feces. Practice good hygiene</p>	
<p>Amebiasis Entamoeba histolytica Protozoan</p>	<p>Developing countries with poor sanitation Tropical/rural</p>	<p>contaminated food, soil, water with feces</p>	<p>Diarrhea Cramping pain Less common; Fever Bloody stools</p>	<p>Difficult to diagnose <i>10-day course metronidazole</i> When traveling avoid tap water, street vendors, raw fruits and vegetables.</p>	
<p>Malaria</p>	<p>Sub-Saharan Africa and South Asia</p>	<p>Mosquito bite</p>	<p>Fever Flu like symptoms</p>	<p>Specific laboratory testing <i>Antimalarials</i> Avoid getting mosquito bitten</p>	

Diagnosis and Prevention

In ancient times the sages who were thought to have superhuman powers would watch for signs and symptoms of Krimi and this was how their presence was detected.²² Today it can be difficult to determine if a parasite is present if it is unable to be viewed by the naked eye without multiple stool samples and other clinical tests. Many cases of parasitic infection go undetected because there are no symptoms at all. The best medicine is prevention.²³

*Prevention includes:*²⁴

- Proper preparation, cooking and storing of food
- Proper hygiene including hand washing, worm infections is one of the most common problems in pediatrics practice in developing countries due to poor hygiene.²⁵
- Avoid swallowing water from rivers, lakes, ponds, and streams
- Avoid cat litter when pregnant
- Drink clean water and use bottled water when traveling
- Practice safe sex, wear a condom

Ayurvedic Prevention of Disease in the body:

Ayurveda would incorporate living a life in harmony with one's constitution and of good health practices is the best form of prevention for disease of any kind.²⁶

Ayurvedas Chart to a Healthy Constitutional Lifestyle^{27 28}

Proper Morning Routines	Every morning the bowels should be eliminated. This can be comfortably done by drinking a glass of room temperature or warm water upon awakening then sit on the toilet. Healthy digestion is a part of being in harmony with the natural rhythms of life. The tongue inspected for any signs of imbalance then scraped and cleaned. The teeth flossed and brushed. The gums massaged with sesame oil. The nasal passages cleansed with Neti. The body oiled as in self-abhyanga. The ears massaged with oil and a few drops of oil can be placed into the canal. Yoga asana practiced. Meditation practiced. Once per week, the eyes washed.
Proper Eating Guidelines	Food eaten in the proper place, prepared with love, and sitting. Grace said before meals. Meals taken without distraction. Meals taken with a proper frame of mind. Food chewed until an even consistency is reached. Food should be warm and unctuous. Food should not have contradictory potencies. Small portions of liquids only with meals. Avoid cold drinks. Food taken with self-confidence. Eat only until you are 75% full. Rest after meals and allow proper digestion, at least 3 hours before next meal is taken.
Proper Food Combining	Bitter greens, such as salads be consumed at the end of the meal. If Astringent teas are taken, take in between meals. If sweets are consumed, eat before meals or alone in between meals. When agni is low and digestion is suffering, combining two high protein foods or concentrated carbohydrates should be avoided.

	When experiencing digestive disturbances, avoid raw onions, cruciferous vegetables, beans, fried foods and heavy sweets.
Balance of 3 Pillars of life	Proper Digestion Proper Sleep Routines Proper Sexual Routines, Routines of Restraint
Vata Pacifying	Tastes: sweet, sour, and salty. Sleep Pattern: awake with the sun. Asanas: slow, attention to detail. Pelvic compression/flexion of the hips. Standing poses. Spices: warming such as cinnamon, clove and basil Oils: warm and heavy, flaxseed and sesame. Gems: yellow sapphire, pearl, ruby. Colors: yellow, gold, brown, orange. Aromas: sandalwood, rose, camphor, lavender.
Pitta Pacifying	Tastes: sweet, bitter, and astringent. Sleep Pattern: rise ½ hour before the sun. Asanas: slow asanas, sitting poses while meditating. Engagement of solar plexus. Spices: cooling such as coriander, peppermint, and fennel. Oils: cool and heavy such as coconut, ghee, and olive oil. Gems: blue sapphire, pearl, emerald. Colors: blue, gold, brown, white. Aromas: rose, sandalwood, lavender, honeysuckle.
Kapha Pacifying	Tastes: Pungent, bitter, and astringent. Sleep Pattern: rise 1 hour before the sun. Asanas: rapid movement with sequences, expansion of the chest. Spices: pungent such as black pepper, pippali, and cayenne. Oils: dry and heating such as mustard and safflower. Gems: ruby, blue sapphire. Colors: red, yellow, orange, gold, purple. Aromas: camphor, basil, sage, cedar, patchouli.

Ayurvedic Classification of Krimi and Interpretation of Krimi Roga Nidana and Rupa

Dr. A. C. Kar states, In Caraka Samhita, krimis are divided into two broad categories, non-pathogenic; Sahaja, and pathogenic; Vikaraja.²⁹ Vikaraja is further broken down into internal and external krimi, Abhyantara and Bahya. Based on their source Caraka further classifies internal krimi as; slesmaja, born of phlegm, purisaja, born of feces and sonitaja, born of blood.³⁰ It is stated that slesmaja krimi is also referred to as kaphaja krimi and sonitaja as raktaja krimi.³¹ There are numerous names given to even more specific krimi and in ancient texts microorganisms were recognized by various names based on the sufferings they produce.³² The general nidana of krimi roga are persons who avoid physical exercise, sleep during the day and who indulge daily on uncooked foods, sweet and sour tastes, take meals before the previous meal is digested, incompatible foods and jaggery.³³ The following tables explain more specifically characteristics of each of the previously defined internal krimi according to ancient texts.

Purisaja, feces-born parasites ^{34 35 36}

Cause: same as phlegm-born parasites, use of foods that are dry, sour and salty. Molasses in the diet and leafy vegetables.
Habitat: Colon. When growth becomes excessive, they move downwards or upwards towards the stomach. When they move towards the stomach the breath of the patient produces a fecal odor and there is belching.
Form/color: Some are exceedingly small, long, and cylindrical. They resemble fibers of wool and are white in color. Some are thick and cylindrical, and colors can be yellow, blue, gray or green.
Effects: Dryness, emaciation, diarrhea, horripilation, constipation, and pallor. They can cause anal itching and irritation at that site. When they are excited, they often come out of the anus. They can cause pandu which is anemia.

Slesmaja or Kaphaja, phlegm-born parasites
Cause: intake of milk, candy/sugar, fish, flesh of animals inhabiting marshy land, uncooked, putrefied, and softened food, pastries, food having mutually contradictory properties and unwholesome food.
Habitat: Amasaya, or stomach. When overgrown they can move anywhere in Gastrointestinal tract.
Form/color: Tape-like, big, and flat in shape, some are round like an earthworm, thread-like and long, and some may look like a fresh sprout of grain. White in color and some have a copper tinge.
Effects: anorexia, fever, malaise, nausea, fainting, salivation, vomiting, emaciation, indigestion, yawning, sneezing, constipation, and dryness of body.

Sonitaja or Raktaja, blood-born parasites
Cause: The same as for Kustha, obstinate skin diseases which includes leprosy. Uncooked leafy vegetables and incompatible foods.
Habitat: Blood-vessels, all organs of raktavaha srotas; liver, spleen, arteries, veins and blood itself.
Form/color: Some are not visible to the naked eye due to how small they can be. Tiny and round and copper in color.
Effects: Destruction of parts of the body as in the face, eyelashes, nails, and of the hair from the head, they produce leprosy or identical symptoms of leprosy.

In addition to the above charts, Ayurveda explains that the cause of infection by parasites is exposure to the pathogen with an inability to destroy it. Infection is the result of having low ojas or when agni is not functioning properly.³⁷ Professor R.H.Singh at the Rajasthan Ayurveda University mentions, “Major part of the pathophysiology of Krimi Roga is because of immune disorder induced by the presence of the parasites in the gut.”³⁸ Of all the doshas, a vata imbalance puts a person at the most risk for krimi roga and most of the symptoms stem from vata. A parasitic infection can occur of kapha or pitta origin as well. Symptoms will vary depending on the organism that is causing the infection, but more commonly seen gastrointestinal signs of krimi roga of a vata nature are possible alternating diarrhea and constipation, gas, bloating, cramping and malabsorption.³⁹ Pitta dosha will most likely present with skin rashes including hives and diarrhea and kapha dosha with symptoms of mucousy stools. Some parasites will leave the digestive tract and create disturbances in other parts of the body resulting in neurological and pulmonary symptoms.⁴⁰

Ancient Ayurvedic Chikitsa for Krimi Roga

Three fundamental principles should be followed for the treatment of Krimi.

1. Krimi Apakarsana; physical removal of Krimi.
2. Nidana Parivarjana; elimination of the cause of infestation.
3. Prakrti Vighata; modification of the habitat of the krimi (referring to microbes and parasites) and also the gut of the host.⁴¹

Caraka states that for the extraction of internal parasites appropriate therapies such as vomiting, purgation and the correct type of enema should be given.⁴² In the Astanga Hrdaya it is said when worms arise in the feces, enema and purgation therapies should be mainly given. For the worms arising from kapha, vama, samana and purgation for the head are the main treatments. For the parasites coming from the blood, the same treatments for Leprosy as mentioned in the texts should be administered.⁴³ Caraka also mentions that drugs and diets that have the pungent, bitter, and astringent taste and are hot in nature are most notably suited for counter acting the factors that are responsible for parasite production.⁴⁴ He also describes the method of therapy for elimination of krimi;

1. *Patient infected with parasites should be given oleation and fomentation for 6-7 nights.*
2. *One day before administering elimination therapy patient should be given morning and evening meals consisting of sugar candy, milk, meat of marsh land animals, pastry and milk prepared with kusumbha oil. Reason for this is to excite the krimi and migrate them to the alimentary tract.*
3. *On the following day if patient has fully digested the previous days meals and passed the night comfortably, patient will be given corrective type of enema, purgation, and emesis therapies. This will take place all in one day if the patient has the strength to do so.*⁴⁵

A more modern day Ayurvedic approach to krimi roga chikitsa should include a mono diet of simple, easy to digest foods in conjunction with doshic appropriate herbs. Mung dal soup or kitcheree is ideal for these conditions with the avoidance of heavy, sweet, sugary foods. Principles of samsarjana krama should be followed adhering to a light diet until agni is stabilized and a constitutional diet reestablished.⁴⁶ The following describes furthermore doshic appropriate protocols for additional treatment.

Ayurvedic Chikitsa for Vata type Krimi Roga

In conjunction with the general treatment mentioned above, vata type chikitsa for krimi roga consist of bastis. Niruha bastis for cleansing the large intestines concocted with anthelmintic herbs followed by anuvasana bastis which will nourish the tissues. Virechana, which is purgation, is advised for cleansing the small intestines.⁴⁷ Herbs that are advised to destroy or help rid the body of all parasites including bacteria, yeast and fungi are called Anthelmintics. Most of these herbs with this special action are pungent and/or bitter.⁴⁸ Warm anthelminthic herbs are used to eliminate parasites while pacifying vata dosha. Anthelmintic herbs have a detoxifying effect. According to the WHO, an estimated 80% of the population of developing countries relies on traditional medicines, mostly plant drugs, for their primary health care needs of individual and society.⁴⁹ This is what is needed to eliminate parasites in the body. For this reason, we should use the following herbs symptomatically and with caution especially if the patient is already in a weakened state.⁵⁰

Herbs for Vata-Type Krimi Roga ^{51 52 53}	
Asafoetida	Doshic Energetics: VK-P+ Rasa is pungent, Virya is heating, Vipaka is pungent. Actions: Anthelmintic, Stimulant, Carminative, Antispasmodic.
Bilva	Doshic Energetics: K-V+ Rasa is astringent/bitter, Virya is heating, Vipaka is pungent. Actions: Anthelmintic, Digestive Stimulant, Astringent.
Musta	Doshic Energetics: PK-Vo Rasa is pungent/bitter, Virya is cooling, Vipaka is pungent. Actions: Anthelmintic, Carminative, Astringent, Alterative.
Vidanga	Doshic Energetics: KV-P+ Rasa is pungent/astringent, Virya is heating, Vipaka is pungent. Actions: Anthelmintic, carminative, laxative, expectorant.
Wormwood	Doshic Energetics: PK-Vo

	Rasa is bitter/pungent, Virya is cooling, Vipaka is pungent. Actions: Anthelmintic, Carminative, Antispasmodic.
Trikatu	Doshic Energetics: VK-P+ Rasa is Pungent, Virya is warming, Vipaka is pungent. Actions: Anthelmintic, Pachana, Dipana.

Foods such as pumpkin seeds have an anthelmintic action as well and are vata pacifying with a sweet rasa and heating energy.⁵⁴ They are increasing to pitta and kapha. Herbs such as dipanas which increase agni and pachanas that burn up ama, are also beneficial for eradicating krimi.⁵⁵ Dipanas and pachanas include cloves, ginger, garlic, and many peppers. In a pubmed research study, a decoction of P. indica, can provide an effective treatment for Purishaja Krimi.⁵⁶ These herbs help target the root of the issue, the disturbance of samana vayu which results in variations in agni, the digestive fire. When a parasite is present the agni is unable to do its job and burn up and destroy the pathogen. The pathogen then replicates and causes havoc in the digestive system irritating the lining of the intestines.⁵⁷ These herbs help strengthen the effect of samana vayu and therefore, increase agni.

Ayurvedic Chikitsa for Pitta-type Krimi Roga

Pitta-type infections due to krimi are less common as vata-type due to the strong nature of their agni. Their digestive fire usually burns up any pathogen that might cause a threat. When infection does occur they usually experience diarrhea as their main intestinal symptom along with a high chance of a skin rash.⁵⁸ Herbs that are more bitter and cooling are more suitable for the hot nature of pitta as beneficial anti-parasitic remedies. Pittas hot nature can burn up and dry out mucosal membranes leaving them susceptible to infections. Hence in this case demulcents that are cooling and nourishing to the tissue such as licorice, slippery elm and aloe vera are beneficial.

Herbs for Pitta-Type Krimi Roga ^{59 60}	
Neem	Doshic energetics: PK-V+ Rasa is bitter, Virya is cooling, Vipaka is pungent. Actions: Anthelmintic, Bitter Tonic, Alterative, Antipyretic.
Palasha	Doshic Energetics: PK-V+ Rasa is pungent/bitter/astringent, Virya is cooling, Vipaka is pungent. Actions: Anthelmintic, Dipana.
Pau d'arco	Doshic Energetics: PK-V+

	Rasa is bitter, Virya is cooling, Vipaka is pungent. Actions: Anthelmintic, Antibiotic, Alterative, Antipyretic.
Wormwood	Doshic Energetics: PK-Vo Rasa is bitter/pungent, Virya is cooling, Vipaka is pungent. Actions: Anthelmintic, Carminative, Antispasmodic.

Ayurvedic Chikitsa for Kapha-type Krimi Roga

Parasitic infections due to kapha are more common than pitta but not as common as vata-type infections. Kaphas naturally have more ojas thus having a stronger barrier against infections.⁶¹ The nature of their agni being not as strong does leave them at risk for infection. When infected with parasites commonly kaphas will have a greater amount of mucous in the body showing up in the stools and a greater chance of respiratory issues.⁶² Due to kaphas moist, heavy and cold nature herbs that are pungent and bitter will be more successful at treating krimi roga. In addition to the Anthelmintics mentioned below, kaphas can stand to also incorporate pungent food into their diet such as hot peppers to stoke their agni and rid the body of an ideal parasite breeding ground.

Herbs for Kapha-Type Krimi Roga ^{63 64 65}	
Bilva	Doshic Energetics: K-V+ Rasa is astringent/bitter, Virya is heating, Vipaka is pungent. Actions: Anthelmintic, Digestive Stimulant, Astringent.
Neem	Doshic energetics: PK-V+ Rasa is bitter, Virya is cooling, Vipaka is pungent. Actions: Anthelmintic, Bitter Tonic, Alterative, Antipyretic.
Palasha	Doshic Energetics: PK-V+ Rasa is pungent/bitter/astringent, Virya is cooling, Vipaka is pungent. Actions: Anthelmintic, Dipana.
Pau d'arco	Doshic Energetics: PK-V+ Rasa is bitter, Virya is cooling, Vipaka is pungent. Actions: Anthelmintic, Antibiotic, Alterative, Antipyretic.
Vidanga	Doshic Energetics: KV-P+ Rasa is pungent/astringent, Virya is heating, Vipaka is pungent. Actions: Anthelmintic, carminative, laxative, expectorant.

Wormwood	Doshic Energetics: PK-Vo Rasa is bitter/pungent, Virya is cooling, Vipaka is pungent. Actions: Anthelmintic, Carminative, Antispasmodic.
Trikatu	Doshic Energetics: VK-P+ Rasa is Pungent, Virya is warming, Vipaka is pungent. Actions: Anthelmintic, Pachana, Dipana.

Conclusion

The world has been dealing with all sorts of pathogens including parasites that cause disease since the beginning of time. Over time we have developed many Western drugs and means to better sanitary practices, but the truth of the matter is they are still not unstoppable. In acute cases of infection Western drugs do hold their place and should be respected although some can have lasting side effects. The Ayurvedic approach to a healthy, harmonious constitutional lifestyle can alter the environment of our bodies creating an undesirable host for parasites to thrive.

¹ Dr. Marc Halpern, *Clinical Ayurvedic Medicine* 8th Edition (Nevada City, California: California College of Ayurveda, 2019) 1-82.

² Centers for Disease Control and Prevention, CDC. Staff written. "About Parasites," <https://www.cdc.gov/parasites/about.html>.

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⁴ Healthline, Tricia Kinman, "Parasitic Infections". <https://www.healthline.com/health/parasitic-infections>.

⁵ *Ibid.*

⁶ Shiv Mangal Prasad, Bijendra Shah, Bishun Dayal Prasad Patel, *A Review on Krimi Roga (Intestinal Worms) In Children*, European Journal of Biomedical and Pharmaceutical Sciences, 2020, Volume 7, Issue 5, 267-270.

⁷ Healthline, Tricia Kinman, "Parasitic Infections".

⁸ Halpern, *Clinical Ayurvedic Medicine*, p. 1-84.

⁹ Halpern, *Clinical Ayurvedic Medicine*, p.1-84-85.

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¹¹ Web MD, Web MD Staff, "Tapeworms in Humans," <https://www.webmd.com/digestive-disorders/tapeworms-in-humans#2>.

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¹³ CDC, CDC Staff, "Parasites-Ascariasis," <https://www.cdc.gov/parasites/ascariasis/>.

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¹⁵ Mayo Clinic, Mayo Clinic staff, "Trichomoniasis," <https://www.mayoclinic.org/diseases-conditions/trichomoniasis/symptoms-causes/syc-20378609>.

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¹⁷ HealthHype, Jan Modric, "List of Human Body Parasites," <https://www.healthhype.com/list-of-human-body-parasites-symptoms-pictures-2.html>.

¹⁸ CDC, CDC Staff, "Parasites-Giardia," <https://www.cdc.gov/parasites/giardia/index.html>.

¹⁹ Healthline, Janet Barwell, "Amebiasis," <https://www.healthline.com/health/amebiasis>.

²⁰ CDC, CDC Staff, "Parasites-Malaria," <https://www.cdc.gov/parasites/malaria/index.html>.

²¹ Getty Images, Getty Images Staff, <https://www.gettyimages.com/>.

²² Kar, *Parasitology in Ayurveda*, p. 16

²³ Halpern, *Clinical Ayurvedic Medicine*, p.1-86.

²⁴ Healthline, Tricia Kinman, "Parasitic Infections".

²⁵ Srivastava Niraj, Pandey Nitin and Saxena Varsha. *Worm infestation in Ayurveda and modern science: Approach and management*. International Journal of Yogic, Human Movement and Sports Sciences. 2018; 3(2): 314-317.

²⁶ Dr. Marc Halpern, *Principles of Ayurvedic Medicine* 11th Edition (Nevada City: California College of Ayurveda, 2016), 5.

²⁷ *Ibid.* p. 343-358.

²⁸ *Ibid.* p. 414-434.

²⁹ Kar, *Parasitology in Ayurveda*, p. 16.

³⁰ Translated by R.K. Sharma and Bhagwan Dash, *Caraka Samhita* Vol. II (Varanasi: Chowkhamba Sanskrit Series Office, 2019), p. 200.

³¹ Halpern, *Clinical Ayurvedic Medicine*, p. 1-83.

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- ³⁴ Dash, *Caraka Samhita* Vol II, p. 200-204.
- ³⁵ Murthy, *Madhava Nidanam of Madhavakara*, p. 33-34.
- ³⁶ Halpern, *Clinical Ayurvedic Medicine*, p. 1-83.
- ³⁷ Halpern, *Clinical Ayurvedic Medicine*, p. 1-86.
- ³⁸ Kar, *Parasitology in Ayurveda*, p. x.
- ³⁹ Halpern, *Clinical Ayurvedic Medicine*, p. 1-86-87
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Abstracts for Krimi Roga

Journal: World Journal of Pharmacy and Pharmaceutical Sciences

Title: Critical Review of Ayurveda Drugs Used for Krimi Roga

Author: Dr. Neha Soni*, Dr. Jyoti Markam, Dr. Pravin Joshi, Dr. Om Prakash Rout, Dr. B. K. Soni

Abstract:

Medicinal plants have been utilized as medicine since time immemorial in different countries. The WHO estimated that 80% of the population of developing countries relies on traditional medicines, mostly plant drugs, for their primary health care needs of individual and society. Traditional knowledge of Ayurveda medicinal plants and their treatment methods are rooted in classical literatures and unscripted dialects of people in India. Medicinal plants are assuming greater importance in present time because of various side effects of modern medication and due to fewer side effects of Indian medicinal plants. At present time many medicinal plants and their derivatives are used as a source of many potent and powerful therapeutic agents to treat various disorders worldwide. The majority of these involve the isolation of the active ingredient (chemical compound) found in a particular medicinal plant and its subsequent modification. Krimi roga is one of the disorders successfully treated by medicinal plants. Krimi in Ayurveda in broad sense is all worms and microbes whether visible or invisible; pathogenic and nonpathogenic subtle organisms and microorganisms. As in contemporary science there is a separate branch of helminthology and microbiology. In ancient times Acharyas have described krimi roga as a disease and causative factor of other diseases too e.g. shiroroga, pandu, hridayaroga.[2] Recent global estimates indicate that more than a quarter of the world's population are infected with one or more of the parasites. Most of the developing countries show prevalence of worm infestation due to poor personal and environmental hygiene which is high among pediatric patients. This article discusses krimi roga and medicinal plants, herbs, single drugs and formulations which are described to have krimidhna properties. This article may be used as a resource for further research to develop safe and potent antimicrobial and antiworm therapies.

ISSN 2349-8870

Journal: Ayu

Title: A Survey on Etiopathological Correlation of Krimi (intestinal helminths) and Pandu (anemia)

Author: V.G. Tengse, M.S. Baghel, S.N. Vyas, J.R. Joshi

Abstract:

A survey study was aimed to find the etiopathological status of intestinal helminths and also to accomplish its association with the clinical condition Pandu. The survey samples included the population of five schools and two

localities in and around Jamnagar. The study was conducted on 337 subjects, of whom 36.20% cooperated to give stool samples to pathology laboratory; more than half of the samples surveyed were suffering with various parasitic infestations and one-third of the total subjects were found at risk to develop Pandu. Ascariasis patients were found in 71.14%, a potent cause of Pandu. Enterobius vermicularis was found in 19.05%, while Hymenolepis nana in 6.35%. 77.77% were in the age group of 10 to 20 years, 58.73% were male, 93.65% patients were Hindu, 80.95% of the patients had secondary level of education, dominance of rural habitat was in 77.77%, and 39.68% each were from lower and lower middle class.

PMID: 22408296

Journal: European Journal of Biomedical and Pharmaceutical Sciences

Title: A REVIEW ON KRIMI ROGA (INTESTINAL WORMS) IN CHILDREN

Author: Shiv Mangal Prasad, Bijendra Shah* and Bishun Dayal Prasad Patel

Abstract:

Ayurveda describes worm infestation as Krimi Roga. The Krimi may be various types on the basis of their origin; Kaphaj Krimi, Raktaj krimi and Pureeshaj Krimi. In Ayurveda Pureeshaja Krimi can be correlated with the helminthiasis. From various sources such as classical literatures of Ayurveda, modern texts, online searches and original papers, data were collected. In Ayurveda, the infectious diseases caused by krimi are explained under the topic of Oupasargikarogas. The term Krimi is a broad term which includes all types of worms, which may be pathogenic or non-pathogenic. Among them, pathogenic is harmful to human beings and helminthiasis specifically can be correlated to the Pureeshaja type of Krimi. Treatment like Apakarshana (elimination therapy), Prakriti Vighata (to create an unfavorable environment) and Nidana Parivarjana (avoiding the etiology) is found to be very effective against Krimi in Ayurveda. In addition it is more economical and painless treatment with no or minimum side effects. The present article reviews the concept of krimi and its management in Ayurveda for children.

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Journal: Ayu

Title: Micro-organisms in Vedas

Author: R.K. Jakhmola

Abstract:

The word krimi is used in Veda for different macroscopic & microscopic creatures. Right from bacteria, various insects like kita, patanga were nominated as krimi. Two types of krimi viz. Drishta (Visible/Macroscopic) & Adrishta (Invisible / Microscopic) were described in veda. These two categories encompass nearly all krimi (Microbes / pathogens). According to their origin & Habitat they were

categorized as pranyashrayee & Anyasthanashrayee. Different sharirika, manasika & adhyatmic vyadhis were thought to be originated from these Krimis. These harmful & debilitates (Pushtinashaka) organisms were recognized by various names based on troubles/sufferings they produce. Sun & Agni (fire) were described as internal source of krimichikitsa. Today science also confirms this fact. That early morning ultraviolet light rays emanating from sun can be used for various krimijanya-vyadhis. Apart from this various treatment modalities by using various natural resources, vegetable drugs, mineral drugs, fumigation, cleansing (Marjan-prokshana) & hymns were described for krimi & diseases caused by them.

PMID: 22131696

Journal: World Journal of Pharmaceutical and Medical Research

Title: Ayurveda Perspective of Krimi Roga W.S.R. to Pureeshaja Krimi: A Literary Review

Author: Dr. Anant Shrikrishna Mapari* and Dr. Vijay Suryavanshi

Abstract:

The worm infection is one of the most common paediatric problems especially in developing countries due to the poor hygiene. The most common parasitic infections is infection caused by *Ascaris Lumbricoides*. The Ayurveda described worm infection as Krimi Roga. The ayurveda term Pureeshaja Krimi can be correlated to the helminthiasis. The ayurveda prescribe various treatment approaches for the management of Krimi Roga such as; Apakarshana, Prakruti Vighata and Nidana Parivarjana. This article presented various ayurveda perspectives of Krimi Roga & its management.

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