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## Role Of “Krumihara Modaka” in the Management of Krumiroga W.S R.To Worm Infestation in Children-A Step Towards Public Health

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Shri K R Pandav Ayurved College and Hospital, Nagpur.**Abstract:**

In developing countries like India, Poverty, population explosion, poor sanitation and hygiene with lack of education have made children especially in the age group of 3-6 years more prone to Worms. Worm infestation refers to the worms that live in the gastrointestinal tract in the human body and tend to hamper the overall growth and development of the kid. In Ayurveda worms are referred as krumi and briefly described in ayurvedic classics. MATERIAL AND METHODS- Hereby presenting a case series of ten such paediatric patient of 3.5 years of age visiting the opd of swasthrakshan and yoga department with chief complaints of udarshool, aruchi, gudakandu and chardi. On examination, it was observed that the children had lost a certain amount of weight with loss of appetite and white spots appeared on the skin. With further clarification, the patient was confirmed as a case of krumiroga and was selected for study. With Prior consent of the parents, the children were administered a unique formulation prepared in the form of Laddoo;s(modaka) which consists of Coconut, papaya seed, marich, Hingu and jaggery for binding. This formulation was given along with antihelmenthic drugs of choice and the symptoms were assessed objectively and subjectively. RESULTS-It was observed that out of 10 children, 6 of them were significantly relieved with symptoms such as guda kandu, anorexia, udarshool and constipation. Almost 75% improvement was observed within 1 month. CONCLUSION-Krumihara modaka, actually works as an adjuvant effect in the process of deworming by its mode of action being, jantughna, virechak and agnideepak. Hence, this was a genuine attempt to highlight the use of household ayurvedic drugs in the form which is palatable and easily feasible and approachable to all children at easy cost. Future scope and more case studies on the formulation is expected in the near future.

**Keywords-** Krumihara Modaka, Krimiroga, Worm Infestation.**Corresponding Author:****DR. SONAL D WANKHEDE(KAMBLE)**BAMS(Md)-Assistant Professor, Department of Swasthvritta and Yoga,  
Shri K R Pandav Ayurved College and Hospital, Nagpur.**How to cite this article :** Wankhede S. Role Of “Krumihara Modaka” In The Management Of Krumiroga W.S R.To Worm Infestation In Children-A Step Towards Public Health. Int J Ind Med 2022;3(12):6-12

## INTRODUCTION

World health organization (WHO) reports that today's scenario of health system is really on a decline state and not meeting the sated demand and changing needs. Paying less attention to the diet and lifestyle. Faulty Lifestyle has given rise to a good number of ailments challenging the scientific community among which worm infestation is one of the major conditions encountered in paediatric practice. Worm infestation refers to the worms that live as parasites in the human body and are one of the main causes of diseases associated with health and nutrition problems beyond just gastrointestinal tract disturbances. Worldwide more than 3.5 billion people are infested with worms out of which 400 million are children among whom 1.47 billion have round worm, 1.3 billion have hook worm and 1.05 billion have whip worm infestations. Children aged 3-15 years makeup the group with highest worm burden, which is caused greatly due to the contamination of environment, poor sanitation and hygiene. All the available data of prevalence of helminthic remains almost the same even after aggressive implementation of eradication programs with mass administration of anti-helminthic drugs. It is noticed that recurrence rate is very high due to development of resistance towards routine anti-helminthic drugs. An intestinal worm infection in humans is a silent epidemic that destroys the health, well-being and learning potential of millions of children in many developing countries today. It is time to take collective action to deal with this silent calamity among our children to ensure that they grow up healthy both physically and mentally. So it is the need of the hour to think about alternative treatments which can eradicate or assist in eradicating this mammoth challenge. Countries like India where most of the people is below poverty line and living under unhygienic conditions and are also

suffering from malnutrition, there is great need to explore our properties in the field of medicine and ayurveda so that we can offer economy and safe drugs to community that can cure all kinds of parasitic infestations. In this century, Ayurveda has come back into picture and propagation as tomorrow's medical science. The term Krumi is used to denote tiny living beings which reside in the human body. Concept of Krumi and their relation in the development of disease is described in all available Ayurvedic Literature. Acharyas also describe Krumi as an etiological factor in various diseases; The legend, Acharya Charaka classified Krumi into 20 types which come under the two broad groups i.e. Bahya and Abhyantara. He also postulated the line of treatment of Krimiroga i.e, Apakarshana (extraction of krumi), Prakriti Vighata (destruction of the favourable environment for survival of krumi) and Nidana Parivarjana (avoidance of etiological factors responsible for growth of krimi) mainly by through diet, medicines, hygiene and lifestyle management. This set of protocol for the management of Krimiroga (intestinal worm infestations) is very logical and also easy to follow.

**MATERIALS & METHODS:** The children of either sex in the age group of 3-5 years full filling the criteria of inclusion were included in the study. They were duly registered in the OPD Swsatharakshan SKRPAC Nagpur.

**SAMPLING:** The subjects were selected as per the selection criteria and randomly distributed into Intervention and Standard control groups. For the random distribution of subjects, electronic digital randomization table was used. Sampling element was children between the ages of 3 to 5 years of either sex.

**INCLUSION CRITERIA:**

1. Age >3 year and < 5 years
2. Ajirna (Indigestion)
3. Chhardi (vomiting)
4. Anaha (flatulence)

5. Udar shoola (Children having pain in abdomen )
6. Kshudha Mandya (Children with poor appetite).
7. Vivarnata (Children with hypo pigmented patches on skin)
8. Kandu (Children with anal itching)

**EXCLUSION CRITERIA:**

1. Children with increased frequency of Stool and Urination

2. Children with Fever, AGE, Jaundice, Severe Anemia
3. Children with Pneumonia, RDS, cough
4. Children with infectious diseases such as hepatitis, allergic diseases, other metabolic diseases/errors, endocrine diseases, genetic anomalies

**EXPERIMENTAL DRUG(TRIAL DRUG): *Krumihara Modaka***

Particulars	Group A(study)
DRUG	Krumihara modak
DOSE	2 gm in 2 divided doses
Anupaan	Koshna jala
Bhaishaj kala	Nisha kala
Duration	Three consecutive months

**E) Method of preparation:**

*Krumihara Modaka* were prepared in the Department of rasashastra and Bhaishajya Kalpana at SKRPAC College and hospital, Nagpur

**F) Diet:**

Regular food as patient was taking in the past. No special dietary regime was advised during the study period.

**G) Follow-up:**

- 1) Clinically patients were screened on Day 0, Day 7, Day 14, and on next day of 21<sup>st</sup> day.
- 2) Blood investigation(Haemoglobin) were done before and after the study..

**ASSESSMENT CRITERIA:**

The assessment was based on the following parameters –

- 1.Criteria assess by general status of health
- 2.Improvements in sign of krimi like lalastrava, Udar Shoola etc
- 3.Vyadhi upashamanrth
- 4.Nutrition
- 5.Weight and Diet
- 6.Haemoglobin %

**SUBJECTIVE CRITERIA:**

- 1.Improvements in Signs and Symptoms of Krimi
- 2.General status of health
- 3.Improvement in investigation

Sr.no	SUBJECTIVE PARAMETERS
1	VAIVARNATA
2	ARUCHI
3	GUDAKANDU
4	KAARSHYA

5	CHARDI
6	ANAAHA
7	GUDEN KRUMI NIRGAMAN

**ASSESSMENT OF TOTAL EFFECT OF THERAPY**

:

1. Cured/ Excellent response : 100% relief of signs and symptoms.

2. Markedly improved : Improvement between &gt;75 – 99%

3. Moderately improved : Improvement between &gt;50 – 75%

4. Mildly improved: Improvement between 25 – 50%

5. Unchanged : No Relief in signs and symptoms

**STATISTICAL ANALYSIS****Subjective parameters**

Sr. no.	SYMPTOMS	BT	AT	%RELIEF	MEAN DIFF.	SD	T	P
1	<i>Vaivarnata</i>	1.2	0.29	76.4%	1.12	0.6	0.7	<0.001
2	<i>Aruchi</i>	0.4	0.23	38.4%	0.14	0.3	0.9	<0.001
3	<i>Gudakandu</i>	1.6	0.35	79.3%	1.32	0.5	0.8	<0.001
4	<i>Kaarshya</i>	0.3	0.35	67.4%	1.23	0.3	0.4	<0.001
5	<i>Chardi</i>	0.5	0.31	76.1%	1.42	0.4	0.4	<0.001
6	<i>Anaaha</i>	1.2	0.54	30.6%	1.67	0.3	0.6	<0.001
7	<i>Guden krumi nirgaman</i>	0.6	0.61	59.5%	1.92	0.5	0.3	<0.001

**Objective parameters**

Sr. no	parameters	BT	AT	%RELIEF	MEAN. DIFF	SD	T	P
1	HAEMOGLOBIN%	12.10	12.20	2.10%	0.22	0.32	4.87	<0.001
2	WEIGHT	13.27	13.51	1.19%	0.35	0.6	6.71	<0.001
3	HEIGHT	100.061	100.067	0.10%	0.100	0.04	2.082	0.044

**DISCUSSION****ON CLINICAL STUDY**

**NIDANA:** Diwaswapna, Asatmyabhojana, Viruddhashanna were reported by 100% of patients, while Ajirna bhojana was observed

in 98.28% patients. The statement goes hand in hand with those Nidanams mentioned by Acharya Charaka for manifestation of Krimi Roga.

**HABITS:** In the current clinical trail, 17 (42.5 percent) children had nail biting habits and 5 (12.5 percent) of PICA/ others and teeth grinding 15 (37.5 percent). Developing the habit of consuming these substances at a very early age suggests a lack of parental care and education in these children, hence hygienic activity and behavior expectations are comparatively lower, which is a major cause. As children have increased nutritional craving, they tend to show this sign of nonnutritional substances being consumed. Various studies have identified Intestinal parasites in 63% - 70.3% of pica cases suggesting strong relationship between patients suffering from pica and worm infestation. As children have increased craving for nutrition they tend to exhibit this sign of consuming non-nutritive substances.

**PERSONALHYGIENE:** Personal hygiene was observed to be children in maximum number of children isn't maintain hygiene 25(62.5) and 15(37.5%) of children maintain personal hygiene. Children need to learn good personal hygiene very early in life. In addition to making them more socially acceptable, they should practice cleanliness to stay healthy. If they start early, they are more likely to develop a habit of good hygiene that will serve them well through life.

**SROTAS:** In the present study, involvement of Ananvaha, Rasavaha and Purishvaha Srotas was seen in all the patients. Kaphaja Krimi is located in Amashaya whereas Purishaja Krimi in Pakwashaya. These Krimi survive by deriving the Poshana from the Ahara consumed hence involvement of Annavaha, Rasavaha and Purishajavaha Srotas according to their anatomical positioning can be justified. Further intestinal worms affect the GI tract mainly having their effect on other systems. These 3 Srotas form the integral part of GI tract and involvement of worms is obvious.

#### **DISCUSSION ON EFFECT OF THERAPY**

**VAIVARNATA:** There is a 77.5% relief was observed in the symptoms Vivarnata, while these result was found statistically significant. These statistical findings are suggesting that, Krumihara Modaka having good effect in relieving the symptoms.

**UDARSHOOLA:** There is a 32.5% relief was observed in the symptoms Udarshoola, while these result was found statistically significant. These statistical findings are suggesting that, Krumihara Modaka having good effect in relieving the symptoms.

**ARUCHI:** There is a 79.17% relief was observed in the symptoms Aruchi, while these result was found statistically significant. These statistical findings are suggesting that, Krumihara Modaka having good effect in relieving the symptoms.

**GUDAKANDU:** There is a 71.25% relief was observed in the symptoms Gudkandu, while these result was found statistically significant. These statistical findings are suggesting that, Krumihara Modaka having good effect

**KAARSHYA,** while these result was found statistically significant. These statistical findings are suggesting that, HVKIG syrup having good effect in relieving the symptoms.

**PARUSHA:** There is a 2.5% relief was observed in the symptoms Parusha, while these result was found statistically significant. These statistical findings are suggesting that, Krumihara Modaka HVKIG syrup having good effect in relieving the symptoms.

**GUDEN KRIMI NIRGAMAN:** There is a 2.5% relief was observed in the symptoms Guden krimi Nirgaman, while these result was found statistically significant. These statistical findings are suggesting that, , Krumihara Modaka having good effect in relieving the symptoms. **CHARDI:** There is a 7.5% relief was observed in the symptoms.

**CHARDI:** There is a 7.5% relief was observed in the symptoms Chardi, while these result was found statistically significant. These

statistical findings are suggesting that, , Krumihara Modaka having good effect in relieving the symptoms.

**ANAHA:** There is a 26.5% relief was observed in the symptoms Anaha, while these result was found statistically significant. These statistical findings are suggesting that, , Krumihara Modaka having good effect in relieving the symptoms.

**HEAMOGLOBIN:** There is a 2.15% haemoglobin % increased, while these result was found statistically significant. These statistical findings are suggesting that, , Krumihara Modaka having good effect. **WEIGHT:** There is a 2.74% weight increased, while these result was found statistically significant. These statistical findings are suggesting that, HVKIG syrup having good effect.

#### PHARMACOLOGICAL ACTION OF DRUGS

**1.NARIKELA**-being rasayana is a very beneficial herb. It is known as “ Meda-kaphavinashini” and acts as *Aamdoshahar*, *Kaphaavilayankar*. Helps in proper functioning of digestive system and respiratory system (pranvahastrotas)also.

**2.ERANDA KARKATI**(*carica Papaya*) : being katu , ushna and specifically vibandhaanaah &shoolhar, it is useful in all types of kapha related ailments & improves appatite

**3.MARICH**(*Piper nigrum*): It is deepan, paachan and shleshmapraseki and thus is useful in dissolving the thrombosed blood and clearing the channels of blood vessels for normal passage of blood<sup>7</sup>.

**4.HINGU**(*Asafoetida*)-Helps in kshudhamaandya(loss of appatite).Gaurav,Daurbalya etc. It avoids accumulation of toxins in the body boosting the immunity system.<sup>9</sup>

#### CONCLUSION

The study entitled “**ROLE OF KRUMIHARA MODAKA IN THE MANAGEMENT OF KRIMI ROGA W.S.R. WORM INFESTATION IN PAEDIATRIC AGE GROUP** ” was aimed at

evaluating the clinical efficacy of, *Krumihara Modaka*, After a comprehensive observation and discussion on the observed data, the following conclusions may be drawn:

1.Child are more prone for Krimi Roga due to MadhuraPraya Ahara, lack of hygiene towards health, and tenacious contact with etiological factors.

2.Krumihara Modaka is such combination affording Apakarshana and Prakritivighata to Krimi Roga.

3.This clinical study reveals the significant effect on the subjective parameters of Krimi Roga which is suggestive that this combination is actual suitable to treat the Shleshmaja and Purishaja Krimi. Still Combination is additional effective to treat the PurishajaKrimi.

4.Shleshmaja Krimis is said to residing in upper part of the gastrointestinal tract and growing on Ama. As the literatures suggest, Purishaja Krimi is found in lower part of gastrointestinal tract living on faecal material. Ā

5.The trial drug Krumihara Modaka is effective in managing all types of Krimi. It contains five drugs as principle ingredient which is having antihelminthic property and are effective in the treatment of Krimi Roga in children.

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