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ORIGINAL RESEARCH ARTICLE- CLINICAL RESEARCH OPEN ACCESS

A COMPARATIVE STUDY TO EVALUATE THE EFFICACY OF *VIDANGADI CHURNA* WITH THAT OF *KRIMIGHNA DASHEMANI CHURNA* ON *KRIMI ROGA* (WORM INFESTATION) IN CHILDREN- A RANDOMIZED CLINICAL TRIAL

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ABSTRACT:

Introduction: Helminthic infestations contribute to the global burden of diseases in children, especially in tropical and subtropical regions. Slums and rural areas are highly affected probably due to defective measures of sewage disposal and poor practices of hygiene. More than 1.5 billion people, or 24% of the world's population, are infected with soil-transmitted helminth infections. **Objectives**: In this study, efforts are made to assess the *Krimighna* effect of *Vidangadi churna* and compare its efficacy with *Krimighna dashemani churna* on *Kaphaja* and *Purishaja krimi*. **Materials and method**: The recruited patients were randomly grouped into two, the patients in group A were administered *Vidangadi Churna*, twice a day with *Madhu* (Honey) as *Sahapana,* and the patients in group B were administered with *Krimighna Dashemani Churna*, twice a day, with *Madhu* (Honey) as *Sahapana* for 28 days in the dose as per patient's age. **Result:** The assessment of signs and symptoms was done before and after the treatment. Both drugs showed significant effects and are equally effective in the management of *Krimi Roga*.

Keywords: Helminth, *Vidangadi Churna, Krimighna Dashemani Churna, Krimi Roga,* Worm infestation, RCT

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INTRODUCTION:

A parasite is a living organism that depends on a living host for its survival and derives nutrition from the host, without giving benefit to the host. Helminths are multicellular bilaterally symmetrical metazoans. They are elongated, flat, or round in shape[1]. Helminthiasis, often known as worm infection, is any macro-parasitic condition that affects both humans and other animals and causes an area of the body to become infested with parasitic worms. Helminthic infestations contribute to the global burden of diseases in children, especially in tropical and subtropical regions[2]. They are transmitted by feco-oral route i.e., eggs present in human faeces which in turn contaminate soil in areas where sanitation is poor[3]. Slums and rural areas are highly affected probably due to defective measures of sewage disposal and poor practices of hygiene[4]. More than 1.5 billion people or 24% of the world's population, are population are infected with soil-transmitted helminth infections[5].

The term *Krimi* is used to denote tiny living beings, visible or invisible, which reside in the human body. The concept of the *Krimi* and their relation in the development of disease is described in all available Ayurvedic Literature. *Acharyas have* also described *Krimi* as an etiological factor in various diseases; e.g. *Krimija Hridroga, Krimija Shiroroga,* etc. *Acharya* Charaka has broadly classified them into two groups *Bahya* and *Abhyantara*. *Bahya Krimi* is of two types *Yuka* and *Pippalika*. *Abhyantara Krimi* is of three types; *Raktaja, Kaphaja, Purishaja*[6].

Table No. 1: Classification of *Krimi*

S. No.	**Name**	***Bahya Krimi***	***Abhyantara Krimi***			**Total**
			Total	***Kaphaja***	***Raktaja***	***Purishaja***	
1.	*Charaka Samhita*[7]	2	**18**	7	6	5	**20**
2.	*Sushruta Samhita*[8]	-	**20**	6	7	7	**20**
3.	*Ashtanga Hridyam*[9]	2	**18**	7	6	5	**20**
4.	*HaritaSamhita*[10]	7	**6**	No Sub classification			**13**

5.	*BhelaSamhita*[11]	No Sub classification					**20**
6.	*Madhava Niadana*[12]	2	**18**	7	6	5	**20**
7.	*Bhava Prakasha*[13]	2	**18**	7	6	5	**20**
8.	*Sharngadhar Samhita*[14]	2+1	**18**	7	6	5	**21**

In modern science Helminthiasis in humans is caused by three groups i.e. Nematodes (roundworms), Trematodes (flukes), and Cestodes (Tapeworms). These organisms differ markedly in their life cycle, mode of infection and pathogenesis[15]. Gastrointestinal worms can be correlated with *Kaphaja* and *Purishaja Krimi* as described in Ayurveda. No specific *Samprapti* of *Krimiroga* is provided in texts of Ayruveda, especially by Charaka.

The common symptoms of *Krimi roga* as described in Sushruta Samhita are *Jwara* (Fever), *Vivarnata* (Discoloration), *Shoola* (Pain in Abdomen), *Hridroga* (Heart disease), *Sadana* (looseness of the body), *Bhrama* (Vertigo), *Bhaktadwesha* (Anorexia), and *Atisaara* (Diarrhoea)[16]. *Acharya* Charaka has postulated the line of treatment of *Krimiroga* i.e., *Apakarshana* (extraction of *Krimi*), *Prakriti Vighata* (destruction of the favorable environment for survival of *Krimi*), and *Nidana Parivarjana* (avoidance of etiological factors responsible for the growth of *Krimi*) mainly by through diet, medicines, hygiene and lifestyle management[17].

OBJECTIVES:

Primary:

- To assess the *Krimighna* effect of *Vidangadi churna.*

Secondary:

- To assess the effect of *Vidangadi Churna* on other associated symptoms of *Krimi Roga*.
- To compare the efficacy of *Vidangadi Churna* with *Krimighna dashemani churna* on *Kaphaja* and *Purishaja krimi*.

METHODOLOGY

Research Design: A randomized, single-blind, double arm, interventional, equivalence study design.

Study population: Patients visiting Kaumarbhritya OPD of All India Institute of Ayurveda, New Delhi

Study Sample: Children aged 3-12 years, either gender presenting with symptoms of *Krimi* (Intestinal worms),

Sample size (N) = $\frac{2\,(Z_a + Z_B)^2\ PQ}{(P_O - P_1)^2}$

$N = \frac{2\,(1.96 + 0.84)^2\,(52.5)(47.5)}{(50-55)^2}$

Sample Size

The calculated sample size with 10% droup out rate was 1721, but due to time constraints and financial limitations, a minimum of 60 patients were included in the study.

Randomization:

Randomization was done using a computer-generated randomization table.

Blinding:

It is a single-blind study. The participants were blinded to the interventions after assignment to interventions. The interventions were labeled as Drug A and Drug B. Both the drugs were in powder form and have almost similar color.

Diagnostic Criteria: Clinical features of *Krimi Roga* i.e. *Jvara* (Fever), *Vivarnata* (Discoloration), *Shoola* (Abdominal pain), *Sadana*(Fatigue), *Bhaktadwesha* (Anorexia), *Hrillasa* (Nausea), *Asyasansravana* (Drooling of Saliva), *Swasakrichhrata* (Dyspnea), *Atisara* (Diarrhoea), *Vistambh* (Constipation), *Avipaka* (Indigestion), *Karshya* (Cachexia), *Gudakandu* (Pruritus ani) and ***Gudamukha Paryasti*** **(Worms Passing in stool).**

Sample size calculation

A randomized clinical trial by Dr. Rakesh Kumar Singh, 2012 on *Krimi* showed 50% relief and therefore 55% relief is expected from the present study with a significance level of 95% and power of 80%.

N = Sample Size, Z_a = Significant level,
Z_B = Power, P = Probability (P_0+P_1)
$Q = (1-P)$ P_0 = Previous studies
P_1 = Expected of current studies

Inclusion Criteria

- Children of age 3 years to 12 years, either gender, irrespective of caste, religion, and socio-economic status were taken.
- Children complaining worms in passing in stool (*Gudamukha Paryasti)* along with other symptoms of *Krimi* (worm infestation).
- Parents/Guardians who were willing to give informed consent to participate in the study.

The exclusion criteria set for this study were:

- Other non-intestinal parasitic infestation.

- Children with chronic ailments like tuberculosis, malignancy, or other severe conditions.
- Parents/Guardians who were not willing to give informed consent to participate in the study.

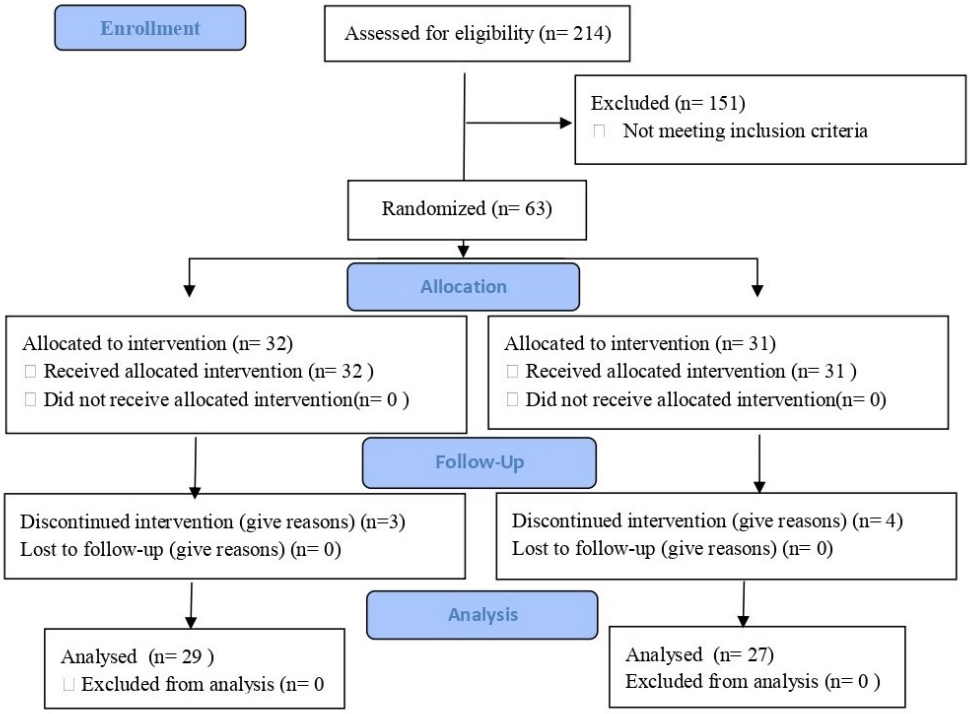

Fig -1 : Consort Flow Chart

Treatment Group:

Group A: *Vidangadi Churna*

Group B: *Krimighna Dashemani Churna*

Drug Dose: Doses were calculated as per the age of the patients using Young's Formula.

Table no.2: Drug Dose

S. No.	Age (Yrs)	Dose Drug A/ Drug B
1.	3-5	3 gm in divided doses
2.	6-9	~= 4.5 gm in divided doses
3.	10-12	~= 6 gm in divided doses

Route of Administration: Oral

Sahapana*: Madhu* (Honey)

Anupana: *Koshna Jala* (Luke warm water)

Kala *: Bhojanottara*, two divided doses

Duration of Treatment: 28 days

Follow up: One month (Fortnightly visit)

A total of 63 patients were registered in the present clinical trial, out of them 56 patients (i.e. 29 in Group A and 27 in Group B) completed the treatment, and 7 (i.e. 3 in Group A and 4 in Group B) discontinued.

Primary Outcome

- Reduction in ***Gudamukha Paryasti*** **(Worms Passing in stool)** symptom of *Krimi*.
    - The assessment was done before and after the treatment.

Secondary Outcome

- Reduction in the other clinical features of *Krimi Roga* i.e. *Jvara* (Fever), *Vivarnata* (Discoloration), *Shoola* (Abdominal pain), *Sadana*(Fatigue), *Bhaktadwesha* (Anorexia), *Hrillasa* (Nausea), *Asyasansravana* (Drooling of Saliva), *Swasakrichhrata* (Dyspnea), *Atisara* (Diarrhoea), *Vistambh* (Constipation), *Avipaka* (Indigestion), *Karshya* (Cachexia), *Gudakandu* (Pruritus ani).
    - The assessment was done before and after the treatment.

Statistical method

Paired and Unpaired t-test were used.

RESULT

Outcomes and Estimation:

Table no.3: Effect on symptoms of *Krimi* in Group A

Cardinal Features	n	BT	AT	BT-AT	% change	SE	P
1. *Jvara* (Fever)	7	0.241	0.034	0.206	**85.71**	0.0765	**0.0116**
2. *Vivarnata* (Discoloration)	13	0.448	0.172	0.275	**61.53**	0.0844	**0.0009**
3. *Shoola* (Abdominal pain)	27	0.931	0.137	0.793	**85.18**	0.0765	**<0.0001**
4. *Sadana*(Fatigue)	13	0.448	0.172	0.275	**61.53**	0.0844	**0.0029**
5. *Bhaktadwesha* (Anorexia)	16	0.551	0.068	0.482	**87.50**	0.0944	**<0.0001**
6. *Hrillasa* (Nausea)	13	0.448	0.137	0.310	**69.23**	0.0874	**0.0014**
***7. Asyasansravana* (Drooling of Saliva)**	22	0.758	0.206	0.551	**72.72**	0.0939	**<0.0001**
8. *Swasakrichhrata* (Dyspnea)	8	0.275	0.172	0.103	**37.50**	0.0575	**0.0831**
9. *Atisara* (Diarrhoea)	14	0.482	0.137	0.344	**71.42**	0.0898	**0.0006**
10. *Vistambh* (Constipation)	11	0.379	0	0.379	**100**	0.0916	**0.0003**
***11. Avipaka (*Indigestion)**	10	0.344	0.034	0.310	**90**	0.0874	**0.0014**
12. *Karshya* (Cachexia)	18	0.620	0.517	0.103	**16.66**	0.0575	**0.0831**
13. *Gudakandu* (Pruritus ani)	25	0.862	0.241	0.620	**72**	0.0916	**<0.0001**
***14. Gudamukha Paryasti* (Worms Passing in stool)**	27	0.931	0.275	0.655	**70.37**	0.0898	**<0.0001**

Vidangadi Churna showed statistically significant results ($p<0.05$) in all the cardinal

features of *Krimi Roga* except *Swasakrichhrata* and *Karshya*.

Table no.4: Effect on symptoms of *Krimi* in Group B

Cardinal Features	N	BT	AT	BT-AT	% change	SE	P
1. *Jwara* (Fever)	7	0.259	0.037	0.222	**85.71**	0.0815	**0.0113**
2. *Vivarnata* (Discoloration)	10	0.370	0.111	0.259	**70**	0.0859	**0.0057**
3. *Shoola* (Abdominal pain)	24	0.888	0.148	0.740	**83.33**	0.0859	**<0.0001**
4. *Sadana*(Fatigue)	11	0.407	0.074	0.333	**81.81**	0.0924	0.0013
5. *Bhaktadwesha* (Anorexia)	15	0.555	0.074	0.481	**86.66**	0.0979	**<0.0001**
6. *Hrillasa* (Nausea)	13	0.481	0.111	0.370	**76.92**	0.0947	**0.0006**
7. *Asyasansravana* (Drooling of Salivation)	18	0.666	0.148	0.518	**77.77**	0.0979	**<0.0001**
8. *Swasakrichhrata* (Dyspnea)	6	0.222	0.037	0.185	**83.33**	0.0761	**0.0223**
9. *Atisara* (Diarrhoea)	11	0.407	0	0.407	**100**	0.0963	**0.0003**
10. *Vishtambha* (Constipation)	13	0.481	0.148	0.333	**69.23**	0.0924	**0.0013**
***11. Avipaka* (Indigestion)**	9	0.333	0	0.333	**100**	0.0924	**0.0013**
12. *Karshya* (Cachexia)	17	0.629	0.370	0.259	**41.76**	0.0859	**0.0057**
13. *Gudakandu* (Pruritus ani)	26	0.962	0.222	0.740	**76.92**	0.0859	**<0.0001**
14. Gudamukha Paryasti (Worms Passing in stool)	26	0.962	0.148	0.814	**84.61**	0.0761	**<0.0001**

Krimighna Dashemani Churna showed statistically Significant results ($p<0.05$) in all the Cardinal features of *Krimi Roga.*

COMPARATIVE EFFICACY OF GROUP A AND GROUP B

Table no.5: Comparative effect on symptoms of *Krimi* in Group A and Group B

Cardinal Features	Df	% of change		Mean difference ±SEM	P
		Group A	Group B		
1. *Jwara* (Fever)	54	85.71	85.71	0.01533 ± 0.1117	0.8914
2. *Vivarnata* (Discoloration)	54	61.53	70	-0.01660 ± 0.1206	0.8910
3. *Shoola* (Abdominal pain)	54	85.18	83.33	-0.05236 ± 0.1148	0.6500
4. *Sadana*(Fatigue)	54	61.53	81.81	0.05747 ± 0.1250	0.6475
5. *Bhaktadwesha* (Anorexia)	54	87.50	86.66	-0.001277 ± 0.1361	0.9925
6. *Hrillasa* (Nausea)	54	69.23	76.92	0.06003 ± 0.1287	0.6428

7. *Asyasansravana* (Salivation)	54	72.72	77.77	-0.03321 ± 0.1357	0.8077
8. *Swasakrichhrata* (Dyspnea)	54	37.50	83.33	0.08174 ± 0.09465	0.0391
9. *Atisara* (Diarrhoea)	54	71.42	100	0.06258 ± 0.1316	0.6363
10. *Vishtambha* (Constipation)	54	100	69.23	-0.04598 ± 0.1303	0.7257
***11. Avipaka* (Indigestion)**	54	90	100	0.02299 ± 0.1272	0.8572
12. *Karshya* (Cachexia)	54	16.66	41.76	0.1803 ± 0.08940	0.0480
13. *Gudakandu* (Pruritus ani)	54	72	76.92	0.1201 ± 0.1261	0.3455
14. *Gudamukha Paryasti* (Worms Passing in stool)	54	70.37	84.61	0.1596 ± 0.1186	0.1840

There were reported statistically significant differences ($p<0.05$) in *Swasakrichhta* and *Karshya* symptoms between the two groups. Both the drugs are effective in managing *Krimi Roga* but the *Krimighna Dashemani Churna* was significantly better at managing the *Swasakrichhta* and *Karshya* than *Vidangadi Churna*. In other symptoms, there were no statistically significant differences ($p>0.05$) between the two groups seen.

Table No. 6: Comparative overall effect of Group A and Group B

Parameters	**Group A**	**Group B**	**P**	
Overall effect	**70.096 %**	**79.860 %**	0.6219	**>0.05**

The difference in the overall effects of Group A and Group B was statistically insignificant efficacy of the two drugs and *Vidangadi Churna* (Group A) is equally effective as *Krimighna Dashemani Churna* in the management of *Krimi Roga.*

DISCUSSION:

The ancient literature review revealed that *Acharyas* had the knowledge of *Krimi* and *Krimi* as causative factors for different diseases. Name, number, and characteristic features are given in the Vedic and post-Vedic literature. Descriptions of *Krimi* in Samhitas are in combined form. One can include all the microorganisms, parasites, helminths, bacteria, and viruses under the concept of *Krimi Roga*, but protozoa and helminths are nearer. *Acharya* Charaka has classified *Krimi* as *Sahaja* and *Vaikarika*, which means they were aware of the non-pathogenic nature of *Krimi* and described it as *Sahaja Krimi*. It can be believed that all these categories, such as *Shleshmaja, Raktaja, Purishaja*, may be classes of protozoa and helminths and were classified based on their habitats.

In the present study, 44.44% of patients were belonging to the age group of 06 to 09 years. Intestinal parasites are among the most common infections in school-age children in developing countries. Male comprises 50.80%, whereas females were 49.20%, shows that worm infestation is almost equally prevalent in both sexes. 52.38% belonged to lower socio-economic status and 47.61% to Middle socio-economic status. The lower socioeconomic status contributes to a majority of the population in worm infestation due to a lack of sanitation facilities, lack of education, food, and proper medication. But on another hand, irregular diet patterns, overeating, consumption of junk food, and an increasingly sedentary lifestyle have increased worm infestation in middle-class socioeconomic status too. 65.07% were students in Primary class. The better-educated or higher-class children can follow their parents and hygienic practices more easily than uneducated or lower-grade children. Mothers of 55.55% of patients were illiterate. The education status of the mother has a direct and more impact on the child's health as mostly they are primary caretakers. 57.14% were consuming water from the Bore well. Water can also have an injurious effect on health if the source is not free from pollution and infection. The most likely pollutant is human faeces that have not been disposed of and have spread because of a lack of sanitation and hygiene. 50.79% of patients were having a pica eating habit and 49.20% were not having such a habit. Pica is a compulsive eating disorder in which an individual eats non-food items. Dirt, clay, and flaking paint are the most common items eaten. These non-food items can be contaminated with eggs or larvae of worms and can enter our bodies. 65.07% of patients had dirty nails. The nails can carry dirt which might be contaminated with eggs of worms and can enter the body through one's own fingers. 73% were consuming mix diet i.e. Vegetarians and Non-vegetarians. Pork, mutton, meat, etc. have key roles behind the spreading of helminths. 57.14% of patients were having irregular dietary patterns. Irregular dietary can affect digestion and cause a favorable environment for *Krimi* in the body. 63.49% were having low BMI (i.e. < 18). Worm infection can make children malnourished and prone to illness. This is the result of the parasites living in the intestinal tract and feeding on nutrition that should have been absorbed by the body.

Vidangadi Churna is an ayurvedic polyherbal compound composed of five herbs (i.e. *Vidanga*, *Haritaki*, *Kampillak*, *Saindhava,* and

Yavakshara) in an equal proportion which is mentioned by *Acharya* Chakrapani for *KrimiChikitsa*[18]. *Vidanga* possesses Antibacterial, Antiprotozoal, and Anthelmintic properties[19] with *Krimighna*, *Deepana,* and *Vishagna* effects. *Haritaki* has Anthelmintic, Antiviral Antibacterial properties[20] and is *Tridoshara*, *Krimighna*, *Rechana* and *Deepana-Pachana*. *Kampillaka* has Purgative Activity and Anthelmintic effect[21]. *Yava* has an antiprotozoal effect[22] with *Kapha-Pitta Shamak* and *Sroto-Shodhaka* properties. *Saindhava* is a laxative and has *Deepana-Pachana* and *Tridoshahara* effects. A review of *Vidangadi Churna* has also concluded its antibacterial, antihelminthic, anti-filarial, antiparasitic, and antimicrobial properties[23]. The combination has dominance of *Katu-Kashayarasa*, *Laghu*, *Ruksha*, *Tikshna Guna*, and *Ushna Virya. Krimighna Dashemani Churna* is a combination of ten herbs proposed by *Acharya* Charak for their *Krimighna* property[24]. The contents of the *Krimighna Dashemani* possess antimicrobial, antibacterial, anthelminthic, larvicidal, and anti-parasitic properties[25][26][27][28][29][30]. They also have *Deepana-Pachana*, *Rechana*, *Krimghna*, *Shulghna,* and *Kapha-pittahara* effects. The *Krimighna Dashemani* has the dominance of *Katu*, *Tikta,* and *Kashaya Rasa; Laghu*, *Ruksha,* and *Tikshna Guna*; *Ushna Virya*, and *Katu Vipaka.* The *Rasa, Guna, Virya,* and *Vipaka* of both the compounds are all antagonists to the *Prakriti* of *Krimi* and *Kapha* and hence countering the *Krimi* with *Prakriti Vighata*. The *Rechana* (Laxative/ Purgative), and *Sroto-shodhaka* properties help in *Apkarshana* (expelling out) of the *Krimi* (worms) from the intestine and correct the *Srotodushti*. The *Deepana-Pachana* properties improve the status of *Agni* and improve digestion which further helps to avoid creating an environment that can favor the growth of *Krimi*.

Vidangadi Churna was almost equally effective as *Krimighna Dashemani Churna* in treating *Jwara*, *Shoola, Bhaktadwesh, Asayasansravana,* and *Gudakandu*. *Vidangadi Churna was* found to be more effective than *Krimighna Dashemani Churna* in treating *Vistambha* but less effective than *Krimighna Dashemani Churna* in treating *Swasakrichhrata, Karshya, Avipaka, Atisara, Gudamukha paryasti* features of *Krimi Roga*. No adverse effects were reported by any of the patients during the course of treatment.

CONCLUSION:

Vidangadi Churna was effective in treating helminths but not as effective as *Krimighna Dashemani Churna*. By observing the overall

results obtained and difference between Group A and Group B was statistcically insignificatnt, it can be concluded that *Vidangadi Churna* is as effective as *Krimighna Dashemani Churna* in the management of intestinal worm infestation.

Limitation of the present study

- Parents are not easily convinced to enroll in the study as they don't care much about worm infestation and its ill effect. They simply self-medicate their children with OTC (Over the counter) available anthelminthic drugs.
- The study was carried out only on the clinical features of *Krimi* mentioned in Ayurveda.
- There was palatability issues as both the drugs were in *Churna* forms.

REFERENCES:

1. Baveja CP, Baveja V. Medical Parasitology, 4th edition, Arya Publishing Company; Sirmour (HP); 2019;91
2. Ghai OP. Common Protozoal and Helminthic infections. Ghai Essential Pediatrics. In: Paul VK, Bagga A, Editor. Mehta Publishers, 2003;223.
3. Soil-transmitted helminth infections. WHO. 2023Jan18 [cited 2023Oct13] Available from: https://www.who.int/news-room/fact-sheets/detail/soil-transmitted-helminth-infections
4. *Sharma RD, Chaturvedi C, Tewari PV. Helminthiasis in children and its treatment with Iindigenous drugs.* Ancient Science of Life *1985, 4:245-247*.
5. Soil-transmitted helminth infections. WHO. 2023Jan18 [cited 2023Oct13] Available from: https://www.who.int/news-room/fact-sheets/detail/soil-transmitted-helminth-infections
6. Kashinath Shastri, Gorakhnath Chaturvedi. Charaka Samhita of Agnivesa, Vimanasthana, Chapter 7 verse no. 9. Varanasi; Chaukhambha Bharati Academy; 2009: 725
7. Kashinath Shastri, Gorakhnath Chaturvedi. Charaka Samhita of Agnivesa, Vimanasthana, Chapter 7 verse no. 9-13. Varanasi; Chaukhambha Bharati Academy; 2009: 725-727
8. Ambikadutta Shastri. Commentary: Ayurveda Tattva Sandipika on Sushruta Samhita, Uttaratantra, Chapter 54, verse no. 20. Varanasi; Chaukhambha Sanskrit Sansthan; 2006:400.
9. Atrideva Gupta. Astanga Hrdayam of Vagbhata, Chapter 15, verse no. 51. Varanasi; Chaukhambha Prakashan; 2012:374
10. Jaymini Pandey. Commentary: Nirmala on Harita Samhita, Chapter 5, verse no. 1-2. 1st edition, Varanasi; Chaukhamba Visvabharati, 2010:251
11. KH Krishnamurthy, PV Sharma. Bhela Samhita, Sutrasthana, Chapter 26, Verse no. 31-33.

Varanasi; Chaukhambha Visvabharati; 2008:117

12. *Vijay Rakshit*, Shrikanth Datt. Commentary: Madhukosh on Madhava Nidana of Madhavakara, Chapter 7, verse no. 1. Varanasi; Chaukhambha Surbharati Parkashan; 2018:228
13. Bulusu Sitaram. Bhavaprakasha of Sri Bhavamisra, Madhyama Khanda, Chapter 7, verse no. 1-17. 1st edition, Varanasi; Chaukhambha Sanskrit Bhawan; 2010;159-161.
14. Brahmanand Tripathi, Commentary: Dipika Hindi Vyakhyaya on Sarangadhara Samhita, Purva Khanda, Chapter 7, verse no. 14-18. Varanasi; Chaukhambha Surbharati Parkashan; 2011:92-93.
15. Ghai OP. Common Protozoal and Helminthic infections. Ghai Essential Pediatrics. In: Paul VK, Bagga A, Editor. Mehta Publishers, 2003;223.
16. Ambikadatta Sashtri, Commentary: Ayurveda Tatva Sandipika on Sushrut Samhita, Uttar Tantra, Chapter 54, verse no. 19, Varanasi; Chaukhamba Sanskrit Sansthan; 2015:510
17. Kashinath Shastri, Gorakhnath Chaturvedi. Charaka Samhita of Agnivesa, Vimanasthana, Chapter 7 verse no. 14-15. Varanasi; Chaukhambha Bharati Academy; 2009: 727-728
18. Jagdishwar Tripathi. Commentary: Bhavarthasandipini on Chakradatta, Chapter 7, verse no. 7. 7th edition, Varanasi; Chaukhamba Sanskrit Series Office; 2012:109
19. *Bharat L, Neeraj M. Importance of Embelia ribes: an update*. IJPSR *2013; 4(10): 3823-3838.*
20. *Prakash CG. Biological and pharmacological properties of Terminalia chebula* Retz. *(Haritaki)- An Overview*. International Journal of Pharmacy and Pharmaceutical Sciences *2012; 4:62-68.*
21. Gangwar M, Goel RK, Nath G. Mallotus philippinensis Muell. Arg (Euphorbiaceae): ethnopharmacology and phytochemistry review. Biomed Res Int. 2014; 2014:213973.
22. *Sinha A, Meena AK, Panda P, Srivastava B, Gupta MD, Padhi MM. Phytochemical, Pharmacological and Therapeutic Potential of Hordeum vulgare* Linn. *-A Review*, Asian Journal of Research in Chemistry *2012, 5 (10):1303-1308*
23. *Gupta D, Saini SL, Sharma T. Antimicrobial Potential of Polyherbal Formulation Vidangadi Churna – A Review*. International Journal of Pharmaceutical & Biological Archives *2017; 8 (6): 18-20.*
24. Kashinath Shastri, Gorakhnath Chaturvedi. Charaka Samhita of Agnivesa, Vimanasthana, Chapter 4 verse no. 15. Varanasi; Chaukhambha Bharati Academy; 2009:82
25. *Goyal BR, Agrawal BB, Goyal RK, Mehta AA. Phyto-pharmacology of Moringa oleifera Lam.—an overview.* Natural Product Radiance *2007; 6(4):347-353*

26. *Damanhouri Z, & Ahmad A. A Review on Therapeutic Potential of Piper nigrum L. (Black Pepper): The King of Spices.* Med Aromat Plants *2014, 3:3*
27. *Pawar VA, Pawar PR. Costus speciosus: An Important Medicinal Plant*. International Journal of Science and Research *2014; 3(7): 28-33.*
28. Sharma PV. Dravyaguna-Vijnana Vol. 2; Chaukhamba Bharati Academy; Varanasi; 2011; 66
29. *Hasan S. Pharmacological and medicinal uses of Achyranthes aspera.* International Journal of Science, Environment and Technology *2014;3(1):123-9.*
30. *Chhatre S, Nesari T, Somani G, Kanchan D, Sathaye S. Phytopharmacological overview of Tribulus terrestris.* Pharmacognosy reviews. *2014 Jan; 8(15):45.*

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