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EFFECT OF PALASHBEEJADI AVALEHA AND KAMPILLAKA AVALEHA IN THE MANAGEMENT OF UDARA-KRIMI IN CHILDREN: A COMPARATIVE CLINICAL TRIAL

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ABSTRACT

Background- *Krimiroga* is one of the most common diseases found in pediatric practice. The awareness regarding the *Krimi* and its incidents in children was first described in *Atharvaveda.* In tropical countries, the incidences are high. **Material & method**- in 120 known patients of krimi, a total of 81 patients were taken and divided into two groups. In the first group, *Palashbeejadi avaleha*, and the second group- *Kampillaka avaleha* was given for 15 days. **Result**- The result of *Palashbeejadi Avaleha* on the cardinal sign and symptoms of*Krimi Roga* was statistically highly significant at <0.001 level in *Jwara* and *Bhakta-dwesh*. Significant results at <0.05 level in *Shoola, Hridroga, Sadanam, Bhrama,* and <0.01 level in *Atisara* were found. The effect was insignificant in *Vivarnata*, but no significant results were observed in any of the hematological parameters in both groups. **Discussion** - The drug *Kampillaka Avaleha* showed significant results in *Jwara, Shoola, Bhakta-dwesh*, and *Bhrama* & non-significant results in *Vivarnata, Sadanam,* and *Atisara*. *Kampillaka* has *Katu Rasa, Ushna Virya, Katu Vipaka, Laghu, Ruksha, Tikshana Guna* which are opposite with the *Guna* of *Kapha* and thus works as *Kapha-Vata Shamaka*. *Katu Rasa* corrects the *Agnimandya. Katu Rasa* is opposite to the *Prakriti* of *Krimi* acting as *Prakriti vighata* mode of *Krimi Chikitsa*. Due to these properties, it has a significant effect on some symptoms.

Keywords: Atharvaveda, hematological, Krimiroga, Vivarnata

INTRODUCTION

Tropical countries, like India, have relatively much higher incidence due to poor socio-economic status and altered lifestyles. Parasitic infestations are known to be globally endemic and constitute the greatest single cause of illness and disease.[1],[2]. The common intestinal parasites are Ascaris lumbricoides, Strongyloids stercoralis, Giardia intestinalis, etc. Among these certain types remain in the intestines and other travels outside the intestines to attack other organs. Some are so tiny; they can only be seen under the microscope. Most tapeworms and roundworms develop in the human body and lay their eggs there. The eggs then pass out of the body through stool and can infest others. [3] *Acharya Charaka*[4] has beautifully described threefold *Chikitsa* for *Krimiroga* viz. *Apakarshana (*removal of the parasite from the body by mechanical and therapeutic methods viz. purification of body), *Prakritivighata* (indicates the creation of such an environment in the gastro-intestinal tract, which hinders growth and development of the *krimi* at the place of habitat and causes the death of parasite) and *Nidaan parivarjana* (to avoid the causes). Purification method in children isn't desirable so keeping this in mind *Shamshaman* treatment is planned with suitable *Krimighana* drug which is described in classics.

Aim and Objectives

- To compare the effects of *Palshabeejadi Avaleha* and *Kampillaka Avaleha* in the management of *Udara-Krimi* in children.
- Follow-up study after completion of the duration of treatment to assess the sustainability of treatment.

Material and method

120 patients, who had cardinal signs and symptoms of *Krimiroga* according to Ayurveda and modern medical science, were advised for stool examination; out of which in 39 children, worms weren't present in any of the stool examinations, and therefore they were excluded from the trial. Rest 81 patients were registered for the trial. These 81 patients were selected on the basis of symptoms and presence of ova/cyst/worm in stool examination which was done in college attached hospital's laboratory. Among the study of these 81 patients, 09 patients dropped out, and the remaining 72 patients completed the full course of treatment.

Inclusion Criteria

- The patients attending the O.P.D. of *Kaumarbhritya* department having classical symptomatology of *Krimiroga* were selected for the study.
- Patients with the symptomatology of *Krimiroga* and positive stool examination for ova and or cyst of following parasites –
- Entamoeba histolytica, Entamoeba coli, Giardia lamblia, Ascaris lumbricoides, Enterobius vermicularis, Ancylostoma duodenale
- The children between 4 to 16 years irrespective of caste, religion, sex, habits, socio- economic status, and those who fulfill the diagnosis were selected for the study.

1. Exclusion Criteria
   1. Patients who have complaints of excessive skin disorders or *Raktadusti*.
   2. Any severe or systemic disorders.
   3. Moderate to severe dehydration due to diarrhea.
   4. Any complication occurs during the treatment period.

Criteria for Assessment

Subjective Assessment

Subjective assessment was done on the basis of cardinal signs and symptoms mentioned in the *Ayurveda* classics. The scoring system was applied according to the severity of signs and symptoms for a sound statistical analysis. [Table no. 1]

Objective assessment

Objective assessment was done on the basis of findings of the following laboratoryinvestigations before and after the trial.

Stool - Routine and microscopic examination

Urine - Routine and microscopic examination

Blood - Hb%, TLC, DLC, ESR & PCV.

Plan of Study

Patients were randomly divided into two therapeutic groups. After proper diagnosis, the selected patients were subjected to the drugs under trial.

Group-A – *Palashbeejadi-Avaleha* [5[
Group-B – *Kampillaka-Avaleha* [6]{7}
Dose – On the basis of Dilling's Formula (according to age in years)
Route of administration – Oral
Duration of therapy – 14 days
Anupana – Sukoshana Jala
Assessment of the efficacy of the trial drug

- Stool free from the ova/cyst after proper pathological examination after completion oftreatment.
- Absence of clinical signs and symptoms of *Krimiroga*.

Cured or uncured was decided on the basis of the following two points:
Cured- 100% relief in signs and symptoms, complete microscopic absence of ova/cyst in stool confirmed by Stool examination.
Marked Relief: More than 60% relief in sign and symptom
Moderate Relief: 30-59% relief in signs and symptoms.
Mild Relief: below 30% relief in signs and symptoms.
Unchanged (No Relief): no relief in symptoms
Result
The result of *Palashbeejadi Avaleha* on cardinal signs and symptoms of*Krimi Roga* was statistically highly significant at <0.001 level in *Jwara* and *Bhakta-dwesh*. Significant results at <0.05 level in *Shoola, Hridroga, Sadanam, Bhrama,* and <0.01 level in *Atisara* were found. The effect was insignificant in *Vivarnata*. [Table no. 2] The effect of *Kampillaka Avaleha* on cardinal signs and symptoms was highly significant at <0.001 levels in *Jwara*, with significant results at <0.05 levels in *Shoola, Bhrama,* and *Bhakta-dwesh*. The effect was insignificant in *Vivarnata, Hridroga, Sadanam* and *Atisara*. [Table no. 3] No significant results were observed in any of the hematological parameters in both groups. [Table no. 4 & 5]
In the *Palashbeejadi Avaleha group,* results were significant in E. histolytica, G. lamblia, E. vermicularis & A. duodenale & insignificant in A. lumbricodes. ROC area represents the combined effect of the drug in all parasites. the drug *Palashbeejadi Avaleha* had a significant result, in stool examination of intestinal parasites.[Table no.6] In *the Kampillaka Avaleha group,* The data shows that the drug had significant results only in E.histolytica and on an overall basis, the "p" value is more than 0.05 which indicates the insignificant result of the drug in intestinal parasites.[table no.7] When we see the result, maximum patients show marked improvement in signs and symptoms or no changes. [Table no 8]

DISCUSSION

The intestinal parasite is prime trouble in human beings. The incidence of *Krimiroga* is very high due to the unhygienic condition, illiteracy, and child's dependent age. *Krimiroga* hampers the growth and development of the child, decreases immunity, and creates many allergic phenomena. There are many modern medicines for parasitic infection along with a lot of hazardous side-effects. *The ayurvedic* medicinal system has a treasure of knowledge about every disease. Etiological factors are basic causes of diseases from which diseases are borne. Similarly, in the context of *Krimi Roga, Nidana* works in three modes; some may help for entry of ova and cyst into the human body, some may create indigestion and *Amotpatti* and some may accumulate faeces and creates a favorable atmosphere for *Krimiroga*. Use of contaminated water and food, factors related to personal hygiene and sanitation can also be included under the *Nidana* as it is a well-known fact that *Krimiroga* are infectious diseases and any factor leading to infection may be included among the etiological factors. In *Charaka Samhita*, mainly the herbal drugs and a general principle in the form of *Apakarshana, Prakriti Vighata,* and *Nidana Parivarjana* have been described for the treatment of *Krimiroga*. After this, *Acharya Sushruta, Vagbhata,* and *Sharngadhara* have described herbal drugs. In this study, eradication of *Krimi* is the utmost requirement so two drugs were selected i.e., *Palashbeejadi-Avaleha* and *Kampillaka-Avaleha*. By going through the *Samprapti* of the disease entity *Krimiroga*, it becomes evident that the *Kapha Dosha*

plays the important role in its pathogenesis. In other words, it is a *Kapha* predominant *Vyadhi* with the involvement of *Vata* and the *Dushya* involved is *Rasa*, A*nna*, *Purisha*, and *Rakta* (in the case of *Raktaja Krimi*). The *Srotodushti* '*Sanga'*(obstruction) *is* seen here. Considering all these, a drug tha t pacifies the *Kapha* and *Ama* does *Shodhana* of *Ruddha Srotas,* and corrects the status of *Agni* should be ideally prescribed to cure the *Krimiroga*. All the symptoms of *Krimiroga* are *Kaphaja* or *Vata-Kaphaja* disease. Since both the drugs possess *Vata-Kapha Shamana* and *Kaphaghana* properties because of their pharmacodynamics. *Kampillaka-Avaleha has Katu Rasa, Ushna Virya, Katu Vipaka, Laghu, Ruksha Guna* which is opposite to *Guna* of *Kapha* and thus work as a *Kapha-Vata Shamaka*. It also corrects the *Agnimandya* because of *Katu Rasa.*

Palashbeejadi-Avaleha

The drug *Palashbeejadi-Avaleha* showed a highly significant action on the cardinal symptoms like *Jwara* and *Bhakta-dwesh* and significant results in *Shoola, Hridroga, Sadanam, Atisara*, and *Bhrama*. But it had a non-significant result in *Vivarnata.*

The drug is having *Katu, Tikta, Kashaya Rasas; Ushna Virya and Katu Vipaka*. Due to its *Krimighana* action and building up a very unfavorable condition for *Krimi*, it effectively controls and cures the disease. The drug has not given significant results on hematological values. Despite the marked reduction in the clinical manifestation caused by *Krimi* none of the hematological parameters exhibited significant results. Based on stool examination, statistically significant results were observed in E. histolytica, G. lamblia, and E. vermicularis while non-significant results were seen in E. coli. Due to a smaller numberof cases, it is difficult to evaluate the efficacy of A. lumbricodes and A. duodenale. *Palashbeejadi-Avaleha* had dominance of *Katu, Tikta, and Kashaya Rasa, Ushna Virya and Katu Vipaka* so were able to break the *Samprapti* of *Krimiroga* and create an unfavorable environment for *Krimi*.

Kampillaka Avaleha

The drug *Kampillaka Avaleha* showed significant results in *Jwara, Shoola, Bhakta-dwesh,* and *Bhrama* & non-significant results in *Vivarnata, Sadanam,* and *Atisara*. *Kampillaka* has *Katu Rasa, Ushna Virya, Katu Vipaka, Laghu, Ruksha, Tikshana Guna* which are opposite with the *Guna* of *Kapha* and thus works as *Kapha-Vata Shamaka*. *Katu Rasa* corrects the *Agnimandya*. *Katu Rasa* is opposite to the *Prakriti* of *Krimi* acting as *Prakriti vighat* mode of *Krimi Chikitsa*. Due to these properties, it has a significant effect on some symptoms. This drug has not given significant results on hematological values. It may suggest that the drug hasn't shown good effects on *Rakta Dhatu*. *Kampillaka-Avaleha* has shown significant results in E. histolytica only and has insignificant results in all other parasites.

Comparison of both drugs-

Effect of therapy proved that both drugs were effective in *Krimiroga* but on the basis of signs & symptoms, hematological values, stool reports parameters prove that *Palashbeejadi-Avaleha* has shown better results in comparison to *Kampillaka-Avaleha.*

CONCLUSION

Intestinal worm infestations (*Udara-Krimi)* are the most devastating problems throughout the world and affect children more frequently than adults. in the present study, maximum patients were in the age group of 8-12 and belonged to the lower- middle class, suggesting the role of poor hygienic conditions, poor sanitation, and less awareness. Significant results are found in group A (*Palashbeejadi-Avaleha* treated group) in most of the symptoms except *Vivarnata* while in group-B (*Kampillaka-Avaleha* treated), significant improvement was found only in symptoms like *Jwara, Shoola, Bhakta-dwesh* and insignificant improvement in all other symptoms. Palasonin, Conessine, Kurchine, Ethanolic extract of E. ribes seeds, Nimbidin, Swertitin, etc. have an antihelmintic property and these all are present in *Palashbeejadi-Avaleha* so the combination of all these might have contributed for better results in Group-A. Hence, Ayurveda can add t o the management of *Udara-Krimi* (intestinal worm infestation) with better palatability and sustained effect in children with no adverse reaction.

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Table 1: Subjective assessment scoring according to *Ayurveda*

S. No.	FEATURES	GRADE
1.	*JWARA*	
	Always	3
	Most of the time	2
	Often	1
	No *Jwara*	0
2.	*VIVARNATA* (PALLOR)	
	Pallor (+++)	3
	Pallor (++)	2
	Pallor (+)	1
	No pallor	0
3.	*SHOOLA* (ABDOMINAL PAIN)	
	Often	3
	Most of the time	2
	Sometimes	1
	Never	0
4.	*HRIDROGA* (PALPITATION)- Due to anemia	
	Most of the time	3
	On mild exertion	2
	On exertion	1
	No palpitation	0
5.	*SADANAM* (Fatigue)	
	Always feeling fatigued	3
	Most of the time	2
	On exertion	1
	No fatigue	0

	Always feeling fatigued	3
	Most of the time	2
	On exertion	1
	No vertigo	0
7.	*BHAKTA-DVESHA* (ANOREXIA/ NAUSEA)	
	Always feeling nausea	3
	Feeling of Nausea on seeing the food	2
	Forceful eating	1
	No anorexia/ nausea	0
8.	*ATISAAR* (LOOSE STOOLS)	
	Always loose stools	3
	Most of the times	2
	Frequent loose stools	1
	No loose stool	0
6.	*BHRAMA* (Vertigo)	

Table 2: Effect of *Palashbeejadi-Avaleha* in Group A on cardinal signs andsymptoms of *Krimi-Roga*

Symptoms	Mean BT	Mean AT	Mean df	% Re-lief	SD	SE	p	Significance
Jwara (fever)	2.29	1.38	0.92	40.0	31.40	0.16	<0.001	H. S
Vivarnata (pallor)	2.30	2.25	0.05	2.17	7.90	0.05	>0.05	N. S
Shoola (Abdominal pain)	2.28	1.83	0.45	19.70	24.48	0.11	<0.05	S
Hridroga (palpitation)	2.50	2.13	0.38	15.00	20.07	0.18	<0.05	S
Sadanam(vertigo)	2.3	1.82	0.47	20.51	29.99	0.15	<0.05	S
Bhrama (vertigo)	2.83	2.33	0.50	17.65	14.93	0.22	<0.05	S
Bhakta-dwesh (anorex-ia/nausea)	2.07	1.29	0.78	37.50	32.43	0.13	<0.001	H. S
Atisara (Loose stools)	1.72	1.27	0.44	25.81	16.54	0.16	<0.01	S

BT- before treatment, AT- after treatment, df- difference, SD- standard deviation, SE- standard error, HS- highly significant, NS- nonsignificant, S- significant.

Table 3: Effect of Kampillaka-Avaleha in Group B on cardinal signs andsymptoms of Krimi-Roga

Symptoms	Mean BT	Mean AT	Mean df	% Re-lief	SD	SE	p	Significance
Jwara (fever)	1.86	1.19	0.67	35.90	29.95	0.23	<0.001	H. S
Vivarnata (pallor)	2.41	2.32	0.09	3.77	15.77	0.06	>0.05	N. S
Shoola (Abdominal pain)	1.56	1.24	0.32	20.51	29.03	0.11	<0.05	S
Hridroga (palpitation)	1.70	1.60	0.10	5.88	11.17	0.10	>0.05	N. S
Sadanam(vertigo)	1.64	1.57	0.07	4.35	6.30	0.07	>0.05	N. S
Bhrama (vertigo)	2.33	2.00	0.33	14.29	20.33	0.33	<0.05	S

Bhakta-dwesh (ano-rexia/nausea)	1.81	1.48	0.33	18.42	20.18	0.11	<0.05	S
Atisara (Loose stools)	1.53	1.47	0.07	4.35	16.54	0.07	>0.05	N. S

BT- before treatment, AT- after treatment, df- difference, SD- standard deviation, SE- standard error, HS- highly significant, NS- nonsignificant, S- significant.

Table 4: Effects of Palashbeejadi-Avaleha in Group A on Hematological values

Investigation	BT	AT	$\bar{X}$	%	SD	SE	P value	Result
Hb%	11.01	11.16	0.15	1.36	1.67	0.03	>0.05	NS
TLC	9180.56	9280.56	100	1.09	303.40	71.05	>0.05	NS
Neutrophils	60.11	59.89	-0.22	-0.37	1.81	0.23	>0.05	NS
Lymphocyte	30.53	30.11	-0.41	-1.36	4.10	0.29	>0.05	NS
Eosinophils	6.56	5.14	-1.41	-21.61	26.90	0.36	>0.05	NS
Monocyte	2.81	4.58	1.77	63.37	115.52	0.29	>0.05	NS
ESR	9.50	8.83	-0.66	-7.02	7.25	0.20	>0.05	NS
PCV	34.68	35.20	0.52	1.51	2.04	0.15	>0.05	NS

BT- before treatment, AT- after treatment, df- difference, SD- standard deviation, SE- standard error, Hb- hemoglobin, TLC- total leukocyte count, ESR- erythrocyte sedimentation rate, PCV-, NS- nonsignificant

Table 5: Effects of *Kampillaka-Avaleha* in Group B on Hematological values

Investigation	BT	AT	$\bar{X}$	%	SD	SE	P value	Result
Hb%	11.21	11.25	0.04	0.37	0.42	0.01	>0.05	NS
TLC	8975.00	8988.89	13.88	0.15	333.70	78.72	>0.05	NS
Neutrophils	60.42	60.31	- 0.11	-0.18	1.49	0.19	>0.05	NS
Lymphocyte	29.78	29.75	- 0.02	-0.09	2.52	0.16	>0.05	NS
Eosinophils	6.75	5.31	- 1.44	- 21.40	15.16	0.24	>0.05	NS
Monocyte	3.03	4.56	1.52	50.46	93.81	0.24	>0.05	NS
ESR	9.14	8.81	- 0.33	-3.65	5.90	0.12	>0.05	NS
PCV	34.66	34.87	0.21	0.61	1.63	0.12	>0.05	NS

BT- before treatment, AT- after treatment, df- difference, SD- standard deviation, SE- standard error, Hb- hemoglobin, TLC- total leukocyte count, ESR- erythrocyte sedimentation rate, PCV-, NS- nonsignificant

Table 6: Effect of *Palashbeejadi Avaleha* in Group A on Intestinal parasite based on stool examination

Parasite	BT	AT	ROC Area	SE	P value	Significance
E. histolytica	14	0	0.8472	0.1247	<0.005	S
E. coli	06	05				
G. lamblia	10	05				
E. vermicularis	06	04				
A. duodenale	05	03				
A. lumbricodes	01	01				

BT- before treatment, AT- after treatment, SE- standard error, S- significant

Table 7: Effect of Kampillaka-Avaleha in Group B on Intestinal parasites based on stool Examination

Parasite	BT	AT	ROC Area	SE	p Value	Significance
E. histolytica	13	4	0.5833	0.1723	>0.005	NS
E. coli	02	02				

G. lamblia	08	08				
E. vermicularis	10	10				
A. duodenale	01	01				
A. lumbricodes	04	04				

BT- before treatment, AT- after treatment, SE- standard error, NS- nonsignificant

Table 8: Overall effect of therapy based on 72 patients on the cardinal sign andsymptoms & stool report

Result	Group A	%	Group B	%	Total	%
Cured	00	00	00	00	00	00
Improved markedly	02	5.55	00	00	02	5.55
Moderately improved	16	44.44	14	38.88	30	41.66
Unchanged	18	50	22	61.11	40	55.55