

## EFFECT OF THE VACHADI YOGA BASED ON THE RELATIVE PREDOMINANCE OF DOSHIKA CHARACTERISTICS IN DIARRHEAL STOOL OF INFANTS

Pravin Masram<sup>1\*</sup>, Singh BM<sup>2</sup>, Singh AK<sup>3</sup>

1. Ph.D. Scholar, Dept. of Kaumarbhritya, I.P.G.T. & R.A., Gujarat Ayurved University Jamnagar, Gujarat, India.
2. Professor & Head, Department of Kaumarbhritya/Balroga, Faculty of Ayurveda, IMS, Banaras Hindu University, Varanasi, Uttar Pradesh, India.
3. Professor, Dept. of Dravyaguna, Faculty of Ayurveda, IMS, Banaras Hindu University Varanasi, Uttar Pradesh, India.

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### Abstract

Atisara (diarrhea) is a very common and well-described disease in almost all textbooks of Ayurveda. However, very little description is available for Balatisara i.e. infantile diarrhea, which occurs during infantile period or Bala-kala in spite of its high incidence during this period. However, a number of drugs/recipes in different books are mentioned for the treatment of diarrhea, but it is very difficult to decide which one recipe is more effective in particular Dosha specific diarrhea i.e. having predominant and/or suppressive Doshika stool characteristics. Hence, this study was ensued, to know the effect of syrup Vachadi Yoga in Dosha specific Atisara of Bala (Infant) based on the Tartam of Doshika characteristics, after getting approval from the ethical committee. All the registered infants (n=63) were categorized into Doshaja Atisara groups based on Dosha specific stool characteristics and associated features. All the gathered data were analyzed by applying paired 't' statistical test. Overall, effect of Vachadi yoga suggest its significant effect [P<0.001] in various types of Doshajanya Atisara mainly on the Vatapradhana Pittajatisara and Pittapradhana Vatajatisara.

**Kew words:** Balatisara; Infantile diarrhea; Vachadi yoga.

### \*Address for correspondence:

Dr. Pravin Masram,  
Dept. of Kaumarbhritya,  
I.P.G.T. & R.A., Gujarat Ayurved University,  
Jamnagar, Gujarat, India – 361 008  
E-mail: [pravinmasram15@gmail.com](mailto:pravinmasram15@gmail.com)

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## INTRODUCTION

Diarrheal disease is the second leading cause of death in children under five years old age and responsible for killing 1.5 million children every year. Most people who die from diarrhea actually die from severe dehydration and fluid loss. Malnourished children, having impaired immunity, are at risk of life-threatening diarrhoea.<sup>[1]</sup> Diarrhea is defined as the passage of watery stools at least three times in 24 hours period. However, recent change in the consistency of stools is more important than the frequency.<sup>[2]</sup> Atisara (diarrhea) means excessive passing of stool from anus.<sup>[3]</sup> Atisara (diarrhea) has been dealt in much detail in Ayurvedic literature. Atisara in infants is considered because of Pittajanya Stanya Dusi (Breast milk vitiated by Pitta Dosh),<sup>[4]</sup> which suggests Atisara of Ksheerapa or Balatisara (infantile diarrhea) and may be broadly classified as in adult viz. Vataja, Pittaja, Kaphaja, Sannipataja, Bhayaja and Shokaja<sup>[5]</sup> and further in accordance to Tartama doshika characteristics. Drugs such as Vacha (*Acorus calamus*), Musta (*Cyperus rotundus*), Ativisha (*Aconitum heterophyllum*) and Indrayava (*Holarrhena antidysenterica*) have been mentioned to treat the diarrhea.<sup>[6]</sup> Vacha is used in Jirna Atisara (chronic diarrhea).<sup>[7]</sup> Ativisha is useful in Atisara (diarrhea), worm infection, fever and cough.<sup>[8]</sup> Decoction of Musta is given with honey in Atisara.<sup>[9]</sup> Seed and bark of Kutaja, Ativisha added with honey is used with rice water in Pittaja-atisara.<sup>[10]</sup> An experimental study on Vacha has shown good anti-diarrheal property.<sup>[11]</sup> Many experimental and clinical studies<sup>[12][13][14]</sup> on these drugs have proved their anti-diarrheal and anti-dysenteric effect. The stem bark crude aqueous and alcoholic extracts of *Holarrhena antidysenterica* also exhibit anti-bacterial activity against known enteric pathogens.<sup>[15]</sup> Ativisha work has anti-inflammatory, astringent, tonic, febrifuge, antispasmodic properties.<sup>[16]</sup> Paste of *Aconitum heterophyllum* dried tuber mixed with water and sugar taken orally and used to

treat diarrhea, body ache and tonic.<sup>[17]</sup> Clinical trial of Ativisha on 30 patients has proved its Atisaraghna property.<sup>[18]</sup> Musta is also used as anti-diarrheal drugs<sup>[19]</sup>, and *Cyperus rotundus* Linn. is found to be more useful in gastrointestinal disease condition like amoebiasis and giardiasis.<sup>[20]</sup>

As no study or textual reference is available on the efficacy of all these drugs in combination except their use in day-to-day practice and single drug indication in Atisara caused by different Dosh. Hence, the present study was planned to validate the effect of Vachadi Yoga in various Doshaja Atisara in terms of statistical analysis of changes occurred in clinical symptoms and laboratory findings.

## MATERIAL AND METHODS

### Selection of Patients

Total 63 children were registered after proper screening on the predesigned proforma, getting approval from the ethical committee and considering followings inclusion and exclusion criteria. The Ethical committee clearance number is Dean /2010/74.

#### (A) Inclusion Criteria

Patients age up to one year, who was suffering from loose, watery, increased frequency with or without foul smell and mucus in the stool with mild to moderate dehydration.

Patients, who had not responded to other anti-diarrheal treatment, were included in the study.

#### (B) Exclusion Criteria

Patients suffering from severe dehydration/persistent vomiting, dysentery, cholera, signs of shock, septicemia, meningitis and any associated bleeding disorder or sign of any severe illness.

## Laboratory Investigations

The following investigations were advised in each case at registration and at final follow up –

Stool: Culture/ Sensitivity for bacterial growth.

Stool: Routine/ Microscopy & Macroscopic study for parasite such as protozoal ova/cyst; RBC, WBC, pus cells, epithelial cells; color, consistency etc. Under Hematological study, Hemoglobin, TLC, DLC, ESR was investigated.

## Preparation of Syrup Vachadi yoga

For the formation of syrup Vachadi Yoga, equal quantity of raw form of Vacha, Musta, Ativisha, and Indrayava drugs were taken, crushed and coarse powder (Yavkutta) was formed. Thereafter, Kwathas (Decoction) was prepared as per Kwatha Kalpana described in Sharangdhara Samhita.<sup>[21]</sup> After filtration of Kwatha, the water content of Kwatha was evaporated by leaving 10 % of total raw drugs as residue, also known as dried water extract. Thereafter, syrup of known concentration of dry drug (s) i.e. each 5 ml Vachadi Yoga contains 200 mg of dry extract, was prepared. Syrup contains dry extract of all ingredient of Vachadi yoga in 200 mg.

## Drug administration

Syrup Vachadi Yoga was given 8 mg/kg/dose, twice in a day. Drug dose decided according to Yogaratnakar.<sup>[22]</sup> Dose of Churna for one year old infant is 12 Ratti i.e.1500 mg (1 Ratti = 125 mg).

The average weight of one-year infant is 10 kg, and then dose for one-year-old infant is 1500 mg or 150 mg/kg/day.

In preparation of syrup, dried water extract was used. A prepared dried water extract of said drugs yielded 10 % of total raw drugs

taken as Churna (powder). The dose of Churna for one-year-old infant is 1500 mg, while on the basis of 10 % yield, it is 150 mg. Then per kg dose or dried water extract will be 150/10 = 15mg, thus dose of Syrup Vachadi Yoga was taken 8 mg/kg/dose in round figure and given twice in a day by considering increased potency after processing.

## Follow up

First follow up was advised after 24 hours to assess the response of the drug and hydration status, while the patient attendant/parents were asked to report after 48 hours (2<sup>nd</sup> follow up). If infant has not shown response in accordance to criteria mentioned in scoring system then such cases were shifted to modern medicine antidiarrheal as per the clinical symptom and not included further in clinical trial, and considered as no responder to trial drug.

## Criteria for making diagnosis of Balatisara as per Doshaja features

For making diagnosis, sign and symptoms along with associated clinical features mentioned for each Dosha were considered. (Table 1)

## Color of the stool

Vataja Atisara: Black/Reddish

Pittaja Atisara: Yellow

Yellow color is also age dependent e.g. during infantile period normal stool color is yellow [golden yellow color in breast feeder infants] Green: This color of stool is usually considered under Pittaja Atisara but the root cause of this feature is Vata Dosha because exaggerated Vata can enhance the intestinal motility which results in passage of bile salt in turn infant pass greenish colored stool. Therefore, if green color stool is associated with other features of Pittaja, is considered as Pittaja features and if not associated with Pittaja but has associated with Vataja like sound, frothy, pain etc is considered as Vataja

features. However, the management requires correction of both Dosha.

Kaphaja Atisara: White

### Smell of the stool

Vataja Atisara: Without smell

Pittaja Atisara: Foul smell: This feature is considered as Pittaja feature when it is associated with fever, a specific feature of Pittaja Dosha.

Kaphaja Atisara: Foul Smell: This feature is considered as a Kaphaja Dosha when it is not associated with fever but is associated with mucus/white color stool/ semisolid in combination.

### Consistency of the stool

Vataja Atisara: Watery: If this feature is associated with other features of Vata Dosha like passage of stool with sound, frothy/pain/abdominal distension etc.

Pittaja Atisara: Due to Dravatva and Saratva, stool may be watery or semi-liquid but this feature should also be associated with other features of Pittaja such as fever, yellow/green color, slimy but not due to presence of visible mucus.

Kaphaja Atisara: Semisolid: This feature is usually present in Kaphaja Atisara, usually this feature is associated with other features of Kapha Dosha such as presence of mucus, nausea etc.

### Quantity of the stool

Vataja Atisara: Alpa (small quantity): If it was associated with other features of Vata, this feature was considered under Vataja Atisara.

Kaphaja Atisara: Alpa (small quantity): is a feature of two type of Doshaja atisara i.e. Vataja and Kaphaja when this feature was associated with increased frequency,

considered under Vata Dosha and if it was associated with mucus, nausea or relatively reduced appetite, considered as a feature of Kaphaja Dosha.

### Frequency

Vataja Atisara: Frequently: If increased frequency was associated with the other features of Vataja such as watery, small quantity and painful defecation, included in Vataja Atisara

Pittaja Atisara: Forcefully (Drutam) and frequently

Kaphaja Atisara: Frequently: when a child has other features of Kaphaja Atisara such as mucus (Shleshma), Picchilata (viscus or sticky) then it was considered under the Kaphaja Atisara.

### Mucus (Sleshma/Picchilata)

Vataja Atisara: No mucus present

Pittaja Atisara: No mucus present

Kaphaja Atisara: Classical feature of Kapha, if it is visible in stool and /or presence of sticky stool.

### Rakta (Blood)

Vataja Atisara: No blood present

Pittaja Atisara: May be present after aggravation of Pitta Dosha during the course of disease and associated with usually other features

Kaphaja Atisara: No blood present

### Associated Features:

Vomiting, reduced appetite: In Kaphaja Atisara

Fever: In Pittaja Atisara

Pain in abdomen, Gargling sound: In Vataja Atisara.

Common cold, Running nose Cough: In Vataja Atisara present if it is not complicated (without fever), In pittaja Atisara present if it is associated with fever.

### Assessment of changes in condition

Assessment for changes in Balatisara during therapy was done by applying following scoring system,

Stool scoring and sign/symptom scoring system: Scoring of stool characteristic is based on improvement or deterioration from the normal/abnormal stool characteristics and the features observed or informed by the mother or caring attendant of patient. (Table 1 & 2)

## OBSERVATION AND RESULTS

Out of 63 registered patients, five patients were dropped on subsequent follow-ups because of failure to attend OPD on said date of follow-up, and rest of the fifty eight cases were categorized as shown in Table 3.

Maximum cases (5.91%) were observed as Vatapradhana Pittaja Atisara followed by the Pittaja (18.96%) and Pitta-Pradhana Vataja Atisara (18.96%) and no cases was found in Kaphapradhan Vataja Atisara out of (Table 3) possible combination of Atisara. Balatisara (Diarrhea) categorized on the basis of Taratama i.e. predominance of particular Dosha in the present study. Minimum cases (n=2) were enrolled in Vataja and Sannipataja Atisara.

Sex, age, weight and season wise distribution were mentioned in Table 4.

All 58 cases of both sex (male: female = 38:20) were treated with syrup Vachadi yoga. According to age wise distribution, most of infants (44.82%) belongs to 6 - 9 months age

group, followed by 3-6 months (22.41%) then 9-12 months (17.24%) and 0-3 months (15.51%). Season wise distribution of infantile diarrhea has shown maximum cases (n=3) in rainy season (Jul, Aug, Sep, Oct).

### Stool Characteristics

Frequency of stool: Out of 58 cases, Reduction in frequency of stool were highly significant in Pittaja Atisara ( $p < 0.001$ ), Vatapradhan Pittaja Atisara ( $p < 0.001$ ), Vatapradhan Kaphaja Atisara ( $p < 0.006$ ), Pittapradhan Vataja Atisara ( $p < 0.001$ ) while in Pittapradhan Kaphaja Atisara, there was a significant response after first follow up. (Table 5)

### Consistency of stool

Significant response of Vachadi Yoga on the stool consistency in diarrhea cases was observed only in Vatapradhan Pittaja Atisara group after first follow up. (Table 6)

### Foul smell in stool

Effect of Vachadi Yoga on foul smell in diarrhea cases was found significant after FU-I in Vatapradhana Pittaja and Pittapradhana Kaphaja Atisara groups. (Table 7)

### Color of stool

Response of Vachadi yoga on color of stool in diarrhea cases was assessed and found highly significant in Vata-Pittaja Atisara, while in Pittapradhan Vataja Atisara ( $p < 0.05$ ) response was significant after first follow up. (Table 8)

### Others Features

Response of Vachadi yoga on mucus, vomiting and fever in diarrhea cases were found highly significant ( $p < 0.001$ ), whereas response was found significant in perianal rashes and proctitis inflammation of the lining of the rectum, ( $p < 0.05$ ). (Table 9)



**Table 1: Stool Scoring Criteria**

Stool characteristics	Score				
	0	1	2	3	4
Frequency	-	5-10/d, having normal color, consistency, smell	<5/d; having abnormal color, consistency or smell	6-10/d; having abnormal color, consistency or smell	>10/d; having abnormal color, consistency or smell
Color	-	Yellowish (normal )	Relatively reduced Yellowish, Whitish, Reddish, Greenish, and blackish	Yellowish White Red Green Black	-
Mucus	Absent	Not visible	Occasionally	Frequent	-
Foul smell	-	No foul smell	Mild foul smell	Excessive foul smell	-
Consistency	-	Soft and Formed	Semisolid	Watery	-
Frothy	Absent	Not visible	Present		

**Table 2: Sign and symptom scoring criteria**

Sign and Symptom	0	1	2	3	4
Cough	Absent	Subside	Present	-	-
Fever	Afebrile (Absent)	Subside	Mild	Moderate	High
Distension of Abdomen	Absent	Subside	Mild [Occasional]	Moderate [most of the time associated with the stool passage]	Severe [Always associated with passage of stool]
Pain in Abdomen	Absent	Subside	Mild [Occasional before or during defecation]	Moderate [most of the time baby has cry before or during defecation]	Severe [excessive cry before, during or between two defecation]
Appetite	Normal	Subside	Reduced	Significantly reduced	
Vomiting	Absent	Subside	1-2/d	3-4/d	>5/d
Perianal rashes/ proctitis	Absent	Subside	Minimal rashes	Rashes over perianal area	Rashes over perianal area & proctitis

**Table 3: Grouping and Incidence of type of Atisara in Infants at registration [n=58]**

Diagnosis	n=58	%
1.Vataja Atisara	(n=2)	3.44%
2.Pittaja Atisara	(n=11)	18.96%
3.Kaphaja Atisara	(n=2)	3.44%
4.Tridoshaja	(n=4)	6.89%
5.Vatapradhana pittaja Atisara	(n=15)	25.91%
6. Vatapradhana Kaphaja Atisara	(n=6)	10.34%
7.Pittapradhan Vataja Atiasra	(n=11)	18.96%
8 Pittapradhan Kaphaja Atiasra	(n=5)	8.62%
9.Kaphapradhan Vataja Atisara	(n=0)	-
10.Kaphapradhan pittaja Atisara	(n=2)	3.44%

**Table 4: Sex, Age, and Season wise distribution of Balatisara (diarrhea) cases**

Sex	N	%
Male	38	65.51
Female	20	34.48
Season*	N	%
Winter	4	6.89
Summer	23	39.65
Rainy	31	53.44
Age [In Month]	N	%
0-3	9	15.51
3-6	13	22.41
6-9	26	44.82
9-12	10	17.24

\*Season – Winter (Nov, Dec, Jan, Feb); Summer (Mar, Apr, May, June); Rainy (Jul, Aug, Sep, Oct)

**Table 5: Frequency of stool (n=58)**

Sr. No	Group	BT (Mean ± SD)	FU1 (Mean ± SD)	BT - FU1 (Mean ± SD)	Within the group comparison (Paired t test) (BT-FU1)
1	Vataja Atisara (n=2)	3.00±0.00	1.00±0.00	-	-
2	Pittaja Atisara (n=11)	3.27±0.46	1.63±0.67	1.63±0.80	t=6.70 p=<0.001 HS
3	Kaphaja Atisara (n=2)	3.50±0.70	1.50±0.70	-	-
4	Tridoshaja (n=4)	3.75±0.50	1.75±0.95	2.00±1.41	t=2.82 p=>0.05 NS
5	Vatapradhana pittaja Atisara (n=15)	3.80±0.41	1.81±0.91	1.93±0.30	t=6.40 p=< 0.00HS
6	Vatapradhana Kaphaja Atisara (n=6)	3.66±0.51	1.50±0.83	2.16±1.16	t=4.45 p=<0.006HS
7	Pittapradhan Vataja Atiasra (n=11)	3.54±0.93	2.27±0.90	1.27±0.90	t=4.54 p=<0.001 HS
8	Pittapradhan Kaphaja Atiasra (n=5)	2.60±0.54	1.40±0.54	1.20±0.83	t=4.66 p=<0.05 S
9	Kaphapradhan Vataja Atisara (n=0)	-	-	-	-
10	Kaphapradhan pittaja Atisara (n=2)	3.50±0.70	1.00±0.00	2.50±0.70	t=5 p=>0.05 NS

Infants of Pittaja and Vata–Pradhan Pittaja Atisara groups, who have received the Vachadi Yoga, has shown highly significant response, while the infants suffering from the Tridoshaja, Vatapradhana Kapha, Pittapradhan Vata and Pitta-pradhana Kapha Atisara, also have shown significant response as evident

from intra-group comparison. (Table 10) On intergroup comparison, there is no significant difference among the various groups. (Table 11) Overall assessment of response of Vachadi Yoga on the diarrhea cases was done and found highly significant (p<0.001) response after first follow up. (Table 12)

**Table 6: Consistency of stool**

Sr. No	Group	BT (Mean ± SD)	FU1 (Mean ± SD)	BT - FU1 (Mean ± SD)	Within the group comparison (Paired t test) (BT-FU1)
1	Vataja Atisara (n=2)	3.00±0.00	2.50±0.70	0.50±0.70	t=1.00 p=>0.05NS
2	Pittaja Atisara (n=11)	2.90±0.30	2.90±0.30		
3	Kaphaja Atisara (n=2)	2.00±0.00	2.00±0.00		
4	Tridoshaja (n=4)	3.00±0.00	3.00±0.00		
5	Vatapradhana pittaja Atisara (n=15)	3.00±0.00	2.73±0.45	0.26±0.45	t=2.25 p=<0.05 S
6	Vatapradhana Kaphaja Atisara(n=6)	3.00±0.00	3.00±0.00		
7	Pittapradhan Vataja Atiasra(n=11)	3.00±0.00	2.72±0.46	0.27±0.46	t=1.93 p=>0.05 NS
8	Pittapradhan Kaphaja Atiasra(n=5)	2.80±0.44	2.80±0.44		
9	Kaphapradhan Vataja Atisara (n=0)	-	-	-	-
10	Kaphapradhan pittaja Atisara (n=2)	3.00±0.00	2.50±0.70	0.50±0.70	t=1.00 p=>0.05 NS

**Table 7: Foul smell in stool (n=58)**

Sr. No	Group	BT (Mean ± SD)	FU1 (Mean ± SD)	BT - FU1 (Mean ± SD)	Within the group comparison (Paired t test) BT-FU1
1	Vataja Atisara (n=1)	-	-	-	-
2	Pittaja Atisara (n=2)	3.00±0.00	2.75 ±0.46	0.25 ± 0.46	T=1.52 p>0.05 NS
3	Kaphaja Atisara (n=2)	3.00±0.00	1.00±0.00	-	-
4	Tridoshaja (n=3)	3.00±0.00	2.66±0.57	0.33±0.57	t=1.00 p=>0.05 NS
5	Vatapradhana Pittaja Atisara (n=12)	3.00±0.00	2.16±0.83	0.83±0.83	t=3.45 p=>0.05 S
6	Vatapradhana Kaphaja Atisara (n=5)	2.80±0.44	2.00±1.09	0.60±0.60	t=1.00 p=>0.05 NS
7	Pittapradhan Vataja Atiasra (n=7)	3.00±0.00	2.42±0.53	0.57±0.53	t=2.82 p=>0.05 S
8	Pittapradhan Kaphaja Atiasra (n=4)	3.00±0.00	2.75±0.50	0.25±0.50	t=1.00 p=>0.05 NS
9	Kaphapradhan Vataja Atisara (n=0)	-	-	-	-
10	Kaphapradhan pittaja Atisara (n=2)	3.00±0.00	1.50±0.70	1.50±0.70	t=3.00 p=>0.05 NS



**Table 8: Color of stool (n=58)**

Sr. No	Group	BT (Mean ± SD)	FU1 (Mean ± SD)	BT - FU1 (Mean ± SD)	Within the group comparison (Paired t test) (BT-FU1)
1	Vataja Atisara (n=2)	3.00±0.00	3.00±0.00		
2	Pittaja Atisara (n=11)	2.63±0.67	1.90±1.04	0.72±1.27	t=1.89 p=>0.05 NS
3	Kaphaja Atisara (n=2)	1.00±0.00	1.00±0.00		
4	Tridoshaja (n=4)	2.50±1.00	1.50±1.00	1.00±1.15	t=1.73 p=>0.05 NS
5	Vatapradhana pittajaAtisara (n=15)	2.73±0.73	1.40±0.82	1.33±0.97	t=5.29 p=<0.05 HS
6	Vatapradhana Kaphaja Atisara(n=6)	2.33±1.03	1.66±1.03	0.66±1.63	t=1.00 p=>0.05 NS
7	Pittapradhan Vataja Atiasra(n=11)	1.90±1.04	1.00±0.00	0.90±1.04	t=2.88 p=<0.05 S
8	Pittapradhan Kaphaja Atiasra(n=5)	2.60±0.89	1.80±1.09	0.80±1.09	t=1.63 p=>0.05 NS
9	Kaphapradhan Vataja Atisara (n=0)	-	-	-	-
10	Kaphapradhan pittaja Atisara (n=2)	3.00±0.00	3.00±0.00		

**Table 9: Incidence and overall effect of Vachadi yoga, on other features of Atisara (diarrhea) cases [n=58] before and after treatment**

Sr. No	Signs& symptoms	BT (Mean ± SD)	FU1 (Mean ± SD)	BT - FU1 (Mean ± SD)	Within the group comparison (Paired t test) (BT-FU1)
1	Mucus (n=14)	3.00±0.00	1.00±0.00	1.46±0.83	t=7.12 p=<0.00 HS
2	Vomiting (n=8)	2.12±0.47	1.00±0.00	1.12±0.35	t=9.00 p=<0.00 HS
3	Fever(n=25)	2.16±0.47	1.00±0.00	1.16±0.35	t=12.27 p=<0.00 HS
4	Perianal rashes (n=6)	2.16±1.16	1.16±0.40	1.00±0.63	t=3.87 p=<0.05 S

**DISCUSSION**

Fifty-eight cases of diarrhea have been categorized into 10 groups, according to the predominance of Doshika features. 25.91%, 18.96 and 18.96 % infants were suffering from the Vatapradhana Pittaja Atisara followed by the Pittaja and Pitta-pradhana Vataja Atisara.

Comparison within groups according to particular stool characteristics of patients belonging to the particular Doshika group indicates highly significant change in stool frequency in Pittaja Atisara (p=<0.001), Vatapradhan Pittaja Atisara (p=<0.001), Vatapradhan Kaphaja Atisara (p=<0.006,

**Table 10: Intra-group comparison of various groups of Atisara (diarrhea) in terms of total score (paired t-test)**

Sr. No	Group	BT (Mean ± SD)	FU1 (Mean ± SD)	BT - FU1 (Difference Mean ± SD)	Within the group comparison (Paired t test) (BT-FU1)
1	Vataja Atisara(n=2)	15.00±5.65	10.50±3.53	4.50±2.12	t=3.00 p>0.05NS
2	Pittaja Atisara (n=11)	15.90±2.82	11.45±2.42	4.45±1.21	t=12.27 p<0.00HS
3	Kaphaja Atisara (n=2)	15.00±2.82	9.00±1.41	6.00±1.41	t=6 p>0.05NS
4	Tridoshaja (n=4)	19.50±2.83	12.75±3.09	6.75±3.09	t=4.36 p<0.05 S
5	Vatapradhana pittaja Atisara(n=15)	15.33±2.19	10.20±2.59	5.13±2.19	t=9.03 p<0.00 HS
6	Vatapradhana Kaphaja Atisara(n=6)	14.50±2.16	10.16±1.32	4.33±3.20	t=3.31 p<0.05 S
7	Pittapradhan Vataja Atiasra(n=11)	14.27±4.88	10.54±1.51	3.72±3.74	t=3.30 p<0.05 S
8	Pittapradhan Kaphaja Atiasra(n=5)	13.40±1.51	11.00±1.58	2.40±1.81	t=2.94 p<0.05 S
9	Kaphapradhan Vataja Atisara (n=0)				
10	Kaphapradhan pittaja Atisara (n=2)	21.00±1.41	14.00±0.00	7.00±1.41	t=7.00 p>0.05 NS

**Table 11: Inter group comparison (n=58)**

Sr. No	Group	BT (Mean ± SD)	FU1 (Mean ±SD)
1	Vataja Atisara(n=2)		
2	Pittaja Atisara (n=11)	15.90±2.94	11.45±2.42
3	Kaphaja Atisara (n=2)		
4	Tridoshaja (n=4)	19.50±2.38	12.75±3.09
5	Vata pradhana pittaja Atisara (n=15)	15.33±2.19	10.20±2.59
6	Vatapradhana Kaphaja Atisara(n=6)	14.50±2.16	10.26±1.32
7	Pittapradhan Vataja Atiasra (n=11)	14.27±4.88	10.54±1.54
8	Pittapradhan Kaphaja Atiasra (n=5)	13.40±1.51	11.00±1.58
9	Kaphapradhan Vataja Atisara (n=0)		
10	Kaphapradhan pittaja Atisara (n=2)		
Inter Group comparison post hoc test		F=2.25 P=>0.05	F=1.16 P=>0.05
Significant Pair		-	-

**Table 12: Effect of Vachadi yoga in term of overall assessment of Vachadi yoga in Balatisara (diarrhea) as per Intra-group comparison (paired 't') (n=58)**

Sr. No	Group	BT (Mean ± SD)	FU1 (Mean ±SD)	BT-FU1 (Mean ±SD)	t-value p-value significance
1	n=58	15.44±3.39	10.84±2.27	4.60±2..63	t=13.30 p<0.001 HS

Pittapradhan Vataja Atisara ( $p < 0.001$ ) while in Pittapradhan Kaphaja Atisara suggest significant changes. These findings suggest that drug is effective in Vata and Pitta Dosha induced frequency of stool. Significant improvement has been found in consistency of stool of infants belonging to the Vatapradhana Pittaja Atisara. Drug syrup Vachadi Yoga has shown significant changes in stool smell after first follow up of Vatapradhana Pittaja and Pittapradhana Kaphaja. Improvement in stool color has also been found in infantile diarrhea of groups Vatapradhana Pittaja and Pittapradhana Vataja Atisara as evident from the p-value shown in Table 8.

Mucus in stool, vomiting, fever and perianal rashes with or without proctitis had been found in 14, 8, 25 and 6 cases of diarrhea respectively. On intra-group comparison, highly significant effect of Vachadi yoga is found in reducing mucus, vomiting, and fever, while effect on perianal rashes, it has significant effect. Intra-group comparison of mean of all the stool characteristics of patients, belonging to the particular Doshika group, suggests that syrup Vachadi Yoga has highly significant effect on all over the signs and symptoms of infants belonged to Pittaja and Vatapradhan Pittaja Atisara groups. The trial drug has the significant effect on the infants belonged to Tridoshaja, Vatapradhana Kaphaja, Pittapradhan Vataja and Pittapradhana Kaphaja Atisara group. When all the Doshika groups were compared to each other, syrup Vachadi yoga has not shown significant effect on patients of one group over any other group as evident from Table 11.

Finally, effect of Vachadi yoga over the entire stool and other characteristics, without considering categorization into Doshika group, had shown highly significant ( $P < 0.001$ ) improvement from the registration on first follow up. (Table 12) In patients of all categorized Doshika Atisara groups, the trial drug Vachadi Yoga has significant effect on the frequency of stool.

Result of all the groups of Atisara suggests the effect of Vachadi Yoga due to the properties of the ingredients present in it. Ingredients of Vachadi Yoga drug have pacify the Vata-Kapha Dosha, Srotoshodhaka (clear the channels), Deepana-Pachana (Stimulate the hunger and help in digestion), Grahi (water absorbent), Jwaraghna (decrease the fever), pacify the Kapha-Pitta and all Dosha (Vata Pitta, Kapha) and improving absorption.

Result of all the groups of Atisara suggests effect of Vachadi Yoga is found due to combined effect of all ingredients present in it, mainly by pacifying the Vata and Pitta Dosha and improving absorption. Antidiarrheal and Antibacterial properties of drugs are also responsible for having effect.

## CONCLUSION

Diarrhea occurs in all three seasons with predominance in rainy season, and most common in infants belongs in between 6-9 months of age. Vachadi yoga is found more effective in reducing the frequency of stool in all type of Doshika Atisara and has leading effect on the Vatapradhana Pitta and Pittapradhana Vata. Thus, Vachadi Yoga syrup can be used rationally in management of infantile diarrhea occurs in rainy season after weaning having predominance of Vata and Pitta Dosha.

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