

Research Article

Effect of Bhumyamalaki Syrup in Balatisara with special reference to Viral Diarrhea

Ajay R. Chavan

Associate Professor, Department of Kaumarabhritya

M.E.S. Ayurved Mahavidyalaya, Ghanekhunt, Lote, Tal. – Khed, Dist. - Ratnagiri, Maharashtra, India - 422003.

* **Corresponding Author:** Dr. Ajay R. Chavan , **E-mail:** dr.ajayrchavan@gmail.com

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ABSTRACT:

Balatisara is one of the commonest diseases in developing countries like India. Children in developing countries suffer from 10 to 15 episodes of loose motions in the first five years of life. Out of these, 3 to 5 episodes occur in the first year of life. There are 5 billion episodes of Diarrhea every year out of which 3.5 million children die. Thus one child is dying of Diarrhea every minute in the world.

The present study was conducted on children presenting with viral Diarrhea in between the age group of 1 to 10 years. The study was based on 30 patients. They were divided into two groups, each group consisting of a minimum of 15 patients. Group A was given Bhumyamalaki syrup and Group B was given simple sugar syrup as placebo in the dose of 5 ml QID for 7 days for 1 to 5 years and 10 ml QID for 7 days for 5 to 10 years. The cases were recorded according to the case proforma prepared for the present study and observations were graded according to the gradation chart prepared. Results of the clinical trials were statistically analyzed and the comparison between the groups was done. It was seen that Bhumyamalaki syrup is better in controlling the viral Diarrhea than the Sugar syrup.

KEY WORDS: Balatisara, Bhumyamalaki syrup, Sugar syrup, viral Diarrhea

INTRODUCTION:

Ayurveda, the indigenous system of medicine is an integral part of Indian culture. Herbal drugs have been in use for centuries by our ancient Acharyas for preventing and curing various ailments. Atisara is one of the commonest diseases found in pediatric practice. Diarrhea is a condition characterized by an increase in frequency, fluidity and weight of the stool, compared to normal bowel habit of the child.¹When it occurs in children, it is a cause of concern for the parents as the child will have sunken eyes, flabby skin and looks severely ill and weak, even if Diarrhea occurs for a day or two. The parents would want the doctor immediately to stop it within a short duration, as this may lead to severe complications in the children, if not treated at the earliest.

Many more herbal combinations are described in Ayurveda and their therapeutic effect in Atisara is yet

to be explored. The antiviral effect of Bhumyamalaki syrup is still to be proved by modern research methods. Bhumyamalaki is known well for its antiviral activity, particularly for Hepatitis B virus.² 90 % of infantile Diarrheas are due to enteroviruses. Lolimbaraja has indicated Bhumyamalaki in treating Atisara.³

MATERIALS AND METHODS:

Source of Data:

30 Cases of viral Diarrhea (Vataja Atisara) were selected randomly from the Out Patient Department of S.D.M.C.A. & H., Hassan irrespective of their sex, caste, creed etc.

Criteria for Diagnosis: Following criteria were considered to diagnose the case of viral Diarrhea,

1. Profuse watery stools
2. No blood or mucus in stools
3. No foul smelling to stools
4. Low-grade fever
5. Vomiting
6. Dehydration

Criteria for Inclusion:

1. Patient suffering from viral Diarrhea in between the age group of 1-10 years were selected.
2. Children with the symptoms of viral Diarrhea were considered for the study.
3. Patient with mild & moderate dehydration was selected for the study.

Criteria for Exclusion:

1. Patients above 10 years and below 1 year were excluded.
2. Patients suffering from viral Diarrhea with severe dehydration were excluded.
3. Children suffering from "Pravahika & Visuchika" were excluded.
4. Patient suffering from Atisara as Upadrava in another disease.

Method for the Preparation:

Bhumyamalaki Syrup:

Bhumyamalaki Svarasa was prepared first as explained in classic. Then sugar base was prepared using sugar and plain water. It was followed by mixing of Svarasa and sugar base in the ratio 1:4. Sodium benzoate was added later on as a preservative in the quantity of 0.025 mg.

Simple sugar syrup:

The sugar syrup was prepared using sugar and plain water. Its consistency was made same as that of Bhumyamalaki syrup. Here also sodium benzoate was added as a preservative in the quantity of 0.025 mg.

Dosage for both Syrups:

Children of age 1 to 5 years – 5 ml. q. 6 hours
 Children of age 5 to 10 years – 10 ml. q. 6 hours
 Medicine was administered daily for 7 days.

Method of Sampling:

30 patients of viral Diarrhea were treated by randomly dividing them into two groups each comprising of 15 patients.

Bhumyamalaki Group: The patients of this group were given Bhumyamalaki syrup. Medicine was administered daily for 7 days.

Sugar Syrup Group: The patients of this group were given sugar syrup. Medicine was administered daily for 7 days.

Investigations:

Stool examination:

Physical examination –

Color, Mucus, Consistency, Blood

Chemical examination –

Reducing substance, Occult blood

Microscopic examination –

Leukocytes, RBC's, Pus cells

Haematological examination –

ESR, Total leukocyte count, Differential leukocyte count

Examinations like Mala Vegas /day, consistency, fever, vomiting, abdominal pain, appetite and hydration status were done before and after treatment.

Parameters for assessment of results:

The following observatory factors were considered as guidelines to assess the drug response to viral Diarrhea,

Mala Vega:

Duration required to regularize MalaVega.

Consistency:

Time required to restore normal consistency of stools.

Fever:

Time required to normalize body temperature.

Vomiting:

Time required to stop episodes of vomiting.

Abdominal pain:

Time required to stop abdominal pain.

Appetite:

Time required to regularize appetite or Agni.

Hydration status:

Time required to achieve 'no dehydration' status.

Criteria for the overall response of the patient:

1. The drug response to viral Diarrhea is evaluated and grouped under 4 headings as follows,
2. Good response
3. Fair response
4. Moderate response
5. Poor response

Criteria for good response:

1. If the frequency of Dravamala Pravritti (Mala Vega/day) is restored to the normal within 72 hours.
2. The normal consistency of stools is achieved within 72 hours.
3. Fever was controlled within 24 hours.
4. Vomiting was controlled within 24 hours.
5. Abdominal pain was controlled within 24 hours.
6. Appetite was normalized within 24 hours.
7. State of normal hydration was restored within 24 hours.

When the above criteria are fulfilled, the result is categorized as good response.

Criteria for Fair Response:

When the above criteria are fulfilled within 120 hours (5 days) of drug trial, the result is categorized as fair response.

Criteria for moderate response:

When the above said criteria are fulfilled within 5 to 7 days the result is considered a moderate response.

Poor Response:

When the above mentioned criteria are controlled to a notable extent after 7 days, the result is considered a poor response.

OBSERVATIONS AND RESULTS:**Incidence of Observed Symptoms****OBSERVATIONS AND RESULTS:****Table No. 1: Incidence of Observed Symptoms**

Symptom	No. of cases observed		Percentage (%)	
	Group A	Group B	Group A	Group B
Increased frequency	15	15	100	100
Watery consistency	15	15	100	100
Fever	12	12	80	80
Vomiting	11	12	73.33	80
Abdominal pain	10	12	66.66	80
Reduced appetite	14	11	93.33	73.33
Dehydration	15	15	100	100

Effects of Bhumyamalaki Syrup on the Patients of Viral Diarrhea

The effects of Bhumyamalaki syrup administered for 7 days to the patients of viral diarrhea on their various parameters were as follows:

Effect on Mala Vega:

Bhumyamalaki syrup, after 7 days of treatment, caused 73.19 % reduction in Mala Vegas, which was statistically highly significant. (Table - 2)

Table No. 2: Response to Bhumyamalaki Syrup on Mala Vega

Days of Treatment	Mean score		% of reduction in mean score	S.D (±)	S.E (±)	't' Value	'p' Value
	BT	AT					
Day 1	7.46	6.13	17.82	1.17	0.30	4.39	< 0.001
Day 2	7.46	4.46	40.21	1.41	0.36	8.21	< 0.001
Day 3	7.46	3.80	49.06	1.44	0.37	9.81	< 0.001
Day 4	7.46	3.20	57.10	1.43	0.37	11.49	< 0.001
Day 5	7.46	2.66	64.34	1.37	0.35	13.53	< 0.001
Day 6	7.46	2.46	67.02	1.55	0.40	12.42	< 0.001
Day 7	7.46	2.00	73.19	1.30	0.33	16.26	< 0.001

Effect on Consistency:

Bhumyamalaki syrup, after 7 days of treatment provided 67.48 % improvement in consistency, which was statistically highly significant. (Table No. 3)

Table No. 3: Response to Bhumyamalaki Syrup on Consistency

Days of Treatment	Mean score		% of reduction in mean score	S.D (±)	S.E (±)	't' Value	'p' Value
	BT	AT					
Day 1	2.86	2.80	02.09	0.25	0.06	1.00	> 0.05
Day 2	2.86	2.53	11.53	0.48	0.12	2.64	<0.05
Day 3	2.86	2.20	23.07	0.48	0.12	5.29	< 0.001
Day 4	2.86	2.20	23.07	0.48	0.12	5.29	< 0.001
Day 5	2.86	1.73	39.51	0.35	0.09	12.47	< 0.001
Day 6	2.86	1.40	51.04	0.51	0.13	11.00	< 0.001
Day 7	2.86	0.93	67.48	0.45	0.11	16.35	< 0.001

Effect on Fever:

Bhumyamalaki syrup, after 7 days of treatment, provided 88.49 % reduction in fever, which was statistically highly significant. (Table No. 5)

Table No. 4: Response to Bhumyamalaki Syrup on Fever

Days of Treatment	Mean score		% of reduction in mean score	S.D (±)	S.E (±)	't' Value	'p' Value
	BT	AT					
Day 1	1.13	1.06	6.19	0.25	0.06	1.00	> 0.001
Day 2	1.13	0.86	23.89	0.45	0.11	2.25	> 0.001
Day 3	1.13	0.73	35.39	0.63	0.16	2.44	> 0.001
Day 4	1.13	0.53	53.09	0.61	0.15	4.18	< 0.001
Day 5	1.13	0.26	76.99	0.51	0.13	6.50	< 0.001
Day 6	1.13	0.20	82.30	0.59	0.15	6.08	< 0.001
Day 7	1.13	0.13	88.49	0.65	0.16	5.91	< 0.001

Effect on Vomiting:

Bhumyamalaki syrup, after 7 days of treatment, provided 89.24 % reduction in vomiting, which was statistically highly significant. (Table No. 5)

Table No. 5: Response to Bhumyamalaki Syrup on Vomiting

Days of Treatment	Mean score		% of reduction in mean score	S.D (±)	S.E (±)	't' Value	'p' Value
	BT	AT					
Day 1	1.86	1.20	35.48	0.48	0.12	5.29	< 0.001
Day 2	1.86	1.00	46.23	0.63	0.16	5.24	< 0.001
Day 3	1.86	0.73	60.75	0.83	0.21	5.26	< 0.001
Day 4	1.86	0.53	71.50	0.89	0.23	5.73	< 0.001
Day 5	1.86	0.46	75.26	1.03	0.26	4.75	< 0.001
Day 6	1.86	0.40	78.49	1.06	0.27	5.35	< 0.001
Day 7	1.86	0.20	89.24	1.23	0.31	5.22	< 0.001

Effect on Abdominal Pain:

Bhumyamalaki syrup, after 7 days of treatment, provided 89.68 % reduction in abdominal pain, which was statistically highly significant. (Table No. 6)

Table No. 6: Response to Bhumyamalaki Syrup on Abdominal Pain

Days of Treatment	Mean score		% of reduction in mean score	S.D (±)	S.E (±)	't' Value	'p' Value
	BT	AT					
Day 1	1.26	1.20	04.76	0.25	0.06	1.00	> 0.001
Day 2	1.26	1.20	04.76	0.25	0.06	1.00	< 0.001
Day 3	1.26	0.80	36.50	0.63	0.16	2.82	< 0.001
Day 4	1.26	0.60	52.38	0.61	0.15	4.18	> 0.001
Day 5	1.26	0.53	57.93	0.59	0.15	4.78	> 0.001
Day 6	1.26	0.26	79.36	0.84	0.21	4.58	> 0.001
Day 7	1.26	0.13	89.68	0.99	0.25	4.43	> 0.001

Effect on Appetite:

Bhumyamalaki syrup, after 7 days of treatment, provided 95 % improvement in appetite, which was statistically highly significant. (Table No. 7)

Table No. 7: Response to Bhumyamalaki Syrup on Appetite

Days of Treatment	Mean score		% of reduction in mean score	S.D (±)	S.E (±)	't' Value	'p' Value
	BT	AT					
Day 1	1.20	1.13	05.83	0.25	0.06	1.00	> 0.001
Day 2	1.20	0.93	22.50	0.45	0.11	2.25	> 0.001
Day 3	1.20	0.66	45.00	0.63	0.16	3.22	> 0.001
Day 4	1.20	0.46	61.66	0.59	0.15	4.78	< 0.001
Day 5	1.20	0.20	83.33	0.37	0.09	10.24	< 0.001
Day 6	1.20	0.13	89.16	0.45	0.11	9.02	< 0.001
Day 7	1.20	0.06	95.00	0.51	0.13	8.50	< 0.001

Effect on Dehydration:

Bhumyamalaki syrup, after 7 days of treatment, provided 95.89 % improvement in hydration, which was statistically highly significant. (Table No. 8)

Table No. 8: Response to Bhumyamalaki Syrup on Dehydration

Days of Treatment	Mean score		% of reduction in mean score	S.D (±)	S.E (±)	't' Value	'p' Value
	BT	AT					
Day 1	1.46	1.14	21.91	0.25	0.06	1.00	> 0.001
Day 2	1.46	1.26	13.69	0.41	0.10	1.87	> 0.001
Day 3	1.46	0.86	41.09	0.50	0.13	4.58	< 0.001
Day 4	1.46	0.46	68.49	0.53	0.13	7.24	< 0.001
Day 5	1.46	0.20	86.30	0.45	0.11	10.71	< 0.001
Day 6	1.46	0.06	95.89	0.50	0.13	10.69	< 0.001
Day 7	1.46	0.06	95.89	0.50	0.13	10.69	< 0.001

Effect on Mala Vega:

Sugar syrup, after 7 days of treatment, provided 36.84 % reduction in Mala Vegas, which was statistically highly significant. (Table No. 9)

Table No. 9: Response to Sugar Syrup on Mala Vega

Days of Treatment	Mean score		% of reduction in mean score	S.D (±)	S.E (±)	't' Value	'p' Value
	BT	AT					
Day 1	7.6	7.40	2.63	0.41	0.10	1.87	> 0.001
Day 2	7.6	6.86	9.73	0.96	0.24	2.95	> 0.001
Day 3	7.6	6.20	18.42	0.73	0.19	3.75	> 0.001
Day 4	7.6	5.93	21.97	0.72	0.18	8.91	< 0.001
Day 5	7.6	5.73	24.60	0.83	0.21	8.67	< 0.001
Day 6	7.6	4.93	35.13	0.72	0.18	14.27	< 0.001
Day 7	7.6	4.80	36.84	0.77	0.20	14.0	< 0.001

Effect on Consistency:

Sugar syrup, after 7 days of treatment, provided 45.39 % improvement in consistency, which was statistically highly significant. (Table No. 10)

Table No. 10: Response to Sugar Syrup on Consistency

Days of Treatment	Mean score		% of reduction in mean score	S.D (±)	S.E (±)	't' Value	'p' Value
	BT	AT					
Day 1	2.93	2.86	2.38	0.25	0.06	1.00	< 0.001
Day 2	2.93	2.73	6.82	0.41	0.10	1.87	< 0.001
Day 3	2.93	2.46	16.04	0.51	0.13	3.50	< 0.001
Day 4	2.93	2.26	22.86	0.48	0.12	5.29	< 0.001
Day 5	2.93	2.26	22.86	0.48	0.12	5.29	< 0.001
Day 6	2.93	1.93	34.12	0.37	0.09	10.24	< 0.001
Day 7	2.93	1.60	45.39	0.48	0.12	10.58	< 0.001

Effect on Fever:

Sugar syrup, after 7 days of treatment, provided 67.14 % reduction in fever, which was statistically highly significant. (Table No. 11)

Table No. 11: Response to Sugar Syrup on Fever

Days of Treatment	Mean score		% of reduction in mean score	S.D (±)	S.E (±)	't' Value	'p' Value
	BT	AT					
Day 1	1.40	1.26	10.00	0.35	0.09	1.46	> 0.001
Day 2	1.40	1.26	10.00	0.35	0.09	1.46	> 0.001
Day 3	1.40	1.13	19.28	0.45	0.11	2.25	> 0.001
Day 4	1.40	0.80	42.85	0.63	0.16	3.67	> 0.001
Day 5	1.40	0.53	62.14	0.51	0.13	6.50	< 0.001
Day 6	1.40	0.53	62.14	0.51	0.13	6.50	< 0.001
Day 7	1.40	0.46	67.14	0.59	0.15	6.08	< 0.001

Effect on Vomiting:

Sugar syrup, after 7 days of treatment, provided 74.27 % reduction in vomiting, which was statistically highly significant. (Table No. 12)

Table No. 12: Response to Sugar Syrup on Vomiting

Days of Treatment	Mean score		% of reduction in mean score	S.D (±)	S.E (±)	't' Value	'p' Value
	BT	AT					
Day 1	2.06	1.46	29.12	0.63	0.16	3.67	> 0.001
Day 2	2.06	1.26	38.83	0.86	0.22	3.59	> 0.001
Day 3	2.06	1.00	51.45	0.96	0.24	4.29	< 0.001
Day 4	2.06	0.66	67.96	1.18	0.30	4.58	< 0.001
Day 5	2.06	0.60	70.87	1.06	0.27	5.35	< 0.001
Day 6	2.06	0.53	74.27	1.06	0.27	5.60	< 0.001
Day 7	2.06	0.53	74.27	1.06	0.27	5.60	< 0.001

Effect on Abdominal Pain:

Sugar syrup, after 7 days of treatment, provided 75.90 % reduction in abdominal pain, which was statistically highly significant. (Table No. 13)

Table No. 13: Response to Sugar Syrup on Abdominal Pain

Days of Treatment	Mean score		% of reduction in mean score	S.D (±)	S.E (±)	't' Value	'p' Value
	BT	AT					
Day 1	1.66	1.13	31.92	0.51	0.13	4.00	> 0.001
Day 2	1.66	0.93	43.97	0.59	0.15	4.78	< 0.001
Day 3	1.66	0.66	60.24	0.75	0.19	5.12	< 0.001
Day 4	1.66	0.66	60.24	0.75	0.19	5.12	< 0.001
Day 5	1.66	0.53	68.02	0.83	0.21	5.26	< 0.001
Day 6	1.66	0.46	72.28	0.94	0.24	4.93	< 0.001
Day 7	1.66	0.40	75.90	0.96	0.24	5.10	< 0.001

Effect on Appetite:

Sugar syrup, after 7 days of treatment, provided 74 % improvement in appetite, which was statistically highly significant. (Table No. 14)

Table No. 14: Response to Sugar Syrup on Appetite

Days of Treatment	Mean score		% of reduction in mean score	S.D (±)	S.E (±)	't' Value	'p' Value
	BT	AT					
Day 1	1.00	0.93	7.00	0.25	0.06	1.00	> 0.001
Day 2	1.00	0.73	27.00	0.45	0.11	2.25	> 0.001
Day 3	1.00	0.53	47.00	0.51	0.13	3.50	> 0.001
Day 4	1.00	0.40	60.00	0.50	0.13	4.58	< 0.001
Day 5	1.00	0.33	67.00	0.48	0.12	5.29	< 0.001
Day 6	1.00	0.26	74.00	0.59	0.15	4.78	< 0.001
Day 7	1.00	0.26	74.00	0.59	0.15	4.78	< 0.001

Effect on Dehydration:

Sugar syrup, after 7 days of treatment, provided 85.71 % improvement in hydration, which was statistically highly significant. (Table No. 15)

Table No. 15: Response to Sugar Syrup on Dehydration

Days of Treatment	Mean score		% of reduction in mean score	S.D (±)	S.E (±)	't' Value	'p' Value
	BT	AT					
Day 1	1.40	0.93	33.57	0.51	0.13	3.50	> 0.001
Day 2	1.40	0.80	42.85	0.63	0.16	3.67	> 0.001
Day 3	1.40	0.40	71.42	0.53	0.13	7.24	< 0.001
Day 4	1.40	0.33	76.42	0.45	0.11	9.02	< 0.001
Day 5	1.40	0.33	76.42	0.45	0.11	9.02	< 0.001
Day 6	1.40	0.26	81.42	0.51	0.13	8.50	< 0.001
Day 7	1.40	0.20	85.71	0.41	0.10	11.22	< 0.001

Results after 7 days of treatment -**Table No. 16: Response to Sugar Syrup on Dehydration**

Sr. No.	Effect	Bhumyamalaki Syrup	Sugar Syrup
1.	Reduction in Mala Vegas	73.19 %	36.84 %
2.	Improvement in consistency	67.48 %	45.39 %
3.	Reduction in fever	88.49 %	67.14 %
4.	Reduction in vomiting	89.24 %	74.27 %
5.	Reduction in abdominal pain	89.68 %	75.90 %
6.	Improvement in appetite	95 %	74 %
7.	Improvement in dehydration	95.89 %	85.71 %

SUMMARY:

As per present study, in Bhumyamalaki syrup group, 73.33 % of patients had marked improvement and 26.67 % of patients had moderate improvement. In Sugar syrup group, 53.33 % of patients showed moderate improvement and 46.67 % of patients had mild improvement.

CONCLUSION:

Bhumyamalaki syrup provided better relief in comparison to sugar syrup in the symptoms of Mala Vega, consistency, fever, vomiting, abdominal pain, appetite and dehydration. Sugar syrup did not give any better relief in comparison to Bhumyamalaki syrup in any of the above symptoms. On the basis of above results and comparison, it can be concluded

that Bhumyamalaki syrup can be recommended as one of the drugs for the treatment of viral Diarrhea.

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