



Research Article

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EFFICACY OF *CHITRAKHAARITAKIAVALEHA* ON *TAMAKASHWASA* (BRONCHIAL ASTHMA) IN CHILDREN

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ABSTRACT

Tamaka Shwasa is a type of *Shwasa Roga* affecting the *Pranavaha Srotas*. *Pranavilomatva* (abnormal breathing pattern), *Hridaya Pidana* (chest tightness), *Ruddha Shwasa* (difficulty in breathing), *Ghurghurukama* (wheeze) and *Kasa* (cough) are the cardinal features of the disease. The parallel disease entity in contemporary medical science to this disorder is Bronchial Asthma. The aim of this study is to evaluate the efficacy of *Chitraka Haritaki Avaleha* (CHA) in the management of *Tamaka Shwasa* in children. In the present study 19 patients having sign and symptoms of *Tamakashwasa* in children were registered. Assessment was done on the basis of improvement in Subjective criteria (*Rogabala*, *Agnibala*, *Dehabala*, *Sattvabala*) and Objective criteria (Positive changes in blood picture, reduction in eosinophils count, ACQ, ACT, QOL). Improvement in overall effect of therapy- 11.11% patients have shown marked improvement, 66.66% patients have shown moderate improvement, 22.22% patients have shown mild improvement and 0% show no improvement. The drug (CHA) has shown significant improvement. CHA shows moderate improvement in mostly parameters to reduce the sign and symptoms of *Tamaka Shwasa*. Ayurvedic drugs impact a better result to improve the quality of life of *Tamaka Shwasa* patients.

Keywords: *Tamaka Shwasa*, Bronchial asthma, Ayurveda, *Chitraka Haritaki Avaleha* (CHA)

INTRODUCTION

Respiration is the process from the birth of Newborn till the last breath which is the sign of life. Any disturbance in this process leads to *Shwasa Roga*. *Tamaka Shwasa* is a type of *Shwasa Roga* affecting the *Pranavaha Srotas*. *Pranavilomatva* (abnormal breathing pattern), *Hridaya Pidana* (chest tightness), *Ruddha Shwasa* (difficulty in breathing), *Ghurghurukama* (wheeze) and *Kasa* (cough) are the cardinal features of the disease.¹ *Tamaka Shwasa* is a “*Swatantra*” *Vyadhi* having its own etiological factors, patho-physiology and management. It is mentioned as *Yapya Vyadh*² i.e. a disease of chronic nature in *Charaka Samhita*, while *Sushruta* considered it as *Krichchra Sadhya Vyadhi*.³ The parallel disease entity in contemporary medical science to this disorder is Bronchial Asthma. Bronchial Asthma is a chronic inflammatory condition of the lung airways resulting in episodic airflow obstruction.⁴ Childhood Bronchial Asthma has multifactor causation. Geographical location, environmental, racial as well as factors related to behaviors and lifestyles are associated with the disease.⁵⁻⁶ This alarming raise in the prevalence of Bronchial Asthma can be accounted to factors such as atmospheric pollution, rapid environmental changes, adaptation of newer dietetic preparations and tremendous psychological stress. Though environmental control measures are important to avoid or eliminate factors that induce or trigger asthma flare-ups; various formulations are available in Ayurvedic classics to manage the condition. The treatment should be intended to remove the obstruction made by *Kapha* and regularize the function of *Vayu*.⁷ The drug combinations selected in this study are having properties to remove the obstruction made by

Kapha in the *Pranavaha Srotas* and related system and regularize the functioning of *Vayu*. By quality of *Rasayana* (immunomodulator) properties of drugs, they regularize the *Dhatwagni* and promote the normal condition of the child.

Aims and objectives

To evaluate the efficacy of *Chitrakaharitakiavaleha*

MATERIALS AND METHODS

Drugs: *Chitrakaharitakiavaleha* (for clinical study)

Design: Therapeutic Interventional Randomized clinical trial.

Participants: Patients suffering from *Tamaka Shwasa* were enrolled from OPD of *kaumarbhritya* department irrespective of their sex, caste, religion etc. Institutional ethics committee approved the protocol and written informed consent was obtained from the parents before starting the treatment. The inclusion criteria were: (a) Patients of 2 – 10 years of age of either sex. (b) Diagnosed cases of *Tamaka Shwasa* with at least 2 episodes of asthma symptoms during the previous year. (c) Patients on other drug therapy will be included only after completion of wash out period of 3 weeks. The exclusion criteria taken into account were: (a) Children of age below 2 years and above 10 years. (b) Evidence of active Concomitants Pulmonary Disease other than asthma. (c) Evidence of requirement of intubations for asthma, or had been hospitalized for asthma within one month before. Had Unresolved Sinus Disease or an unresolved upper or lower

respiratory tract infection within 2 weeks. (d) Patients on active Corticosteroid Therapy Or More Than 4 Short Courses of oral corticosteroids within the year preceding the screening visit, or any oral corticosteroids in the preceding 4 weeks; use of Astemizole, Nedocromil, Cromolyn, long acting β agonists, Ketotifen, or Theophylline within 2 weeks before. (e) Concomitant severe de-compensated systemic disease (cardiovascular, renal, hepatic, endocrine, hematological, neurological, immunological).

Trial object: *Chitraka Haritaki Avaleha*

Duration: 6 weeks

Follow up: 8 weeks

Intervention: A Total of 19 patients registered in the clinical trial.

Demographic data

Table 1: Age, Sex, Religion, Socioeconomic status wise distribution of 19 patients of *Tamaka Shwasa*

Age (Years)	No. of Patients	%
02 -04	5	26.3%
05 - 07	6	31.5%
08 - 10	8	42.1%
Sex	No. of Patients	%
Male	12	63.15%
Female	7	36.84%
Religion	No. of Patients	%
Hindu	16	84.2%
Muslim	2	10.5%
Others	1	5.26%
Socioeconomic Status	No. of Patients	%
Poor	4	21.05%
Lower Middle	10	52.63%
Middle	3	15.7%
Upper Middle	1	5.26%
Rich	1	5.26%

In the present study maximum number of patients i.e. 42.1% belongs to the age group 8-10 years. Majority of patients was males i.e. 63.15%. Maximum patients were Hindu i.e. 84.2%, Most of the patients belongs to Lower middle class i.e. 52.63%.

Chief Complaints of *Tamaka Shwasa*

Table 2: Distribution of patients on the basis of Chief Complaints of *Tamaka Shwasa*

Chief Complaints of <i>Tamaka Shwasa</i>	No. of Patients	%
<i>Shwaaskashta</i> (Breathlessness)	19	100
<i>Shwasa Vega</i>	19	100
<i>Kasa</i> (cough)	19	100
<i>Ghurghurakam</i> (Wheezing)	17	89.4
<i>Na Chapi Nidra Labhate</i> (Sleep disturbance)	10	52.63
<i>Kanthodhvamsa</i> (throat irritation)	9	47.3
<i>Kasamana Chhardi</i> (Cough followed by vomiting)	7	36.8
<i>Pinasa</i> (Nasal symptoms)	19	100
<i>Shleshma Vimokshante Muhurtam Labhate Sukham</i> (Relief after expectoration)	12	63.15
<i>Urah-parshwapida</i> (chest pain / chest tightness)	10	52.63
Eye Involvement	4	21.05
Itchy rashes	3	15.78
Eczema	1	5.26

Cardinal features

100% patients were having complained of breathlessness, *kasa* and *Pinasa* (Nasal symptoms) during attack *Na Chapi Nidra Labhate* (Sleep disturbance along with awakening in night), and *Ghurghuraka* (wheezing) was reported by 52.63% and 89.4%

CTRI Registration

The present clinical trial has been registered in Clinical Trials Registry – India (CTRI). The registration number is CTRI/2016/01/010563 [Registered on: 31/05/2016] - Trial Registered Retrospectively.

Ethical clearance

This trial has been cleared by Institutional Ethics Committee, Vide: Ref- PGT /7-A/Ethics/2015-2016/1470 dated 25/08/2015.

RESULTS

19 patients were registered, 17 completed their course of treatment and follow up and 2 discontinued.

respectively. *Parshwashula* (Chest tightness) was reported by 52.63% of patients. Itchy rashes were complained by 15.78% of patients. Relief after expectoration in 63.15%, Chest tightness in 52.63% *Kasamanachhardi* in 36.8% of patients were observed in study. Eye Involvement and eczema is complained by 21.05% and 5.26% of patients respectively.

Table 3: Distribution of patients on the basis of associated symptoms during attack

Associated symptoms during attack	Patients	%
<i>Shayanah Shwasa Peditah</i> (Discomfort in supine position)	14	73.68
<i>Asyodhvansate Kantha</i> (Hoarseness of voice)	9	47.3
<i>Megha-ambu-shita-pragvatai-shleshmalescha</i> <i>Abhivardhate</i> (Aggravating / Triggering factors)	19	100
<i>Jwara</i> (Fever)	03	15.78

100% patients were having Aggravating / Triggering factors of *Tamaka Shwasa*. 73.68% patients reported *Shayanah Shwasa Peditah* (Discomfort in supine position) and 47.3% reported *Asyodhvansate Kantha* (Hoarseness of voice). 15.78% of patients were having *Jwara*.

Observations on effect of therapy

Table 4: Effect of *Chitraka Haritaki Avaleha* on cardinal features of *Tamaka Shwaasa*

Features	N	BT	AT	% change	SD	SE	T	P
<i>Shwasakashitta</i>	17	1.94	1.23	36.5	0.92	0.223	3.165	< .05
Paroxysm of <i>Shwasa Vega</i>	17	1.294	0.235	81	0.827	0.201	5.0279	< 0.001
<i>Ghurghurakam</i>	17	1.353	0.471	88	0.485	0.118	7.5	< 0.001
<i>Kasa</i>	17	2.412	0.941	60	0.874	0.212	6.934	< 0.001
<i>Parshvashula</i>	17	1.941	0.588	69.7	0.996	0.242	5.599	< 0.001
<i>Shleshma Vimokshante</i> <i>Muhurtam Labhate Shukham</i>	17	1.353	0.471	65	1.054	0.256	3.453	< .005
<i>Pinasa</i>	17	1.529	0.706	54	0.827	0.201	4.693	< 0.001
<i>Na Chapi Nidram Labhate</i>	17	1.824	0.706	61	0.781	0.189	5.899	< 0.001
<i>Asino Labhate Saukhyam</i>	17	1.824	0.706	61.29	0.781	0.189	5.899	< .001
<i>Shirasah Samgraha</i>	17	0.882	0.235	73.35	0.493	0.119	5.416	< .001
<i>Pramohanamkasamana</i>	17	0.294	0.0588	79.9	0.437	0.106	2.219	< .05
<i>Kanthodhvamsa</i>	17	1.118	0.235	78.9	0.697	0.169	5.222	< 0.001
<i>Krichchhrabhashita</i>	17	1.00	0.471	52	0.717	0.174	3.043	< .05
Use of bronchodilator	17	1	0.294	70.6	0.985	0.295	2.954	< .05

Chitraka Haritaki Avaleha provided relief in all the cardinal and associated symptoms of *Tamaka Shwaasa*, irrespective of their *Doshic* presentations. The drug provided 36.5% relief in *Shwasakashitta*, 81% relief in Paroxysm of breathlessness, 88% relief in Wheezing. Cough was reduced by 60% while Chest tightness was reduced by 69.7%. Expectoration was reduced by 73% and Immediate relieve after expectoration was improved by 65%. Nasal symptoms, Hoarseness of voice, Catch during phonation was reduced by 54%, 78.9%, and 52% respectively. Awakening in the night was reduced by 61%. All changes made by the drug were statistically significant.

Table 5: Effect of *Chitraka Haritaki Avaleha* on changes in Respiratory Rate (R/R per min) and Breath Holding Time (B H T / sec)

Feature	n	BT	AT	% change	SD	SE	t	P
R/R per min	17	22.53	22.58	0.26	1.89	0.46	0.13	> 0.05
B H T / sec	17	10.17	12.7	2.53	2.98	0.72	-3.49	< 0.05

In *Chitraka Haritaki Avaleha* treated group, Respiratory Rate was increased by 0.26% while Breath Holding Time was increased by 2.53%. Change in Res. rate was statistically insignificant and change in BHT was statistically significant.

Table 6: Effect of *Chitraka Haritaki Avaleha* on Asthma Control Questionnaire (ACQ)

Feature (n = 17)	BT	AT	% change	SD	SE	T	P
Awakening in night due to asthma	1.29	0.41	68	0.85	0.20	4.24	< 0.001
Awakening at morning due to asthma	1.11	0.35	68.4	0.75	0.18	4.19	< 0.001
Limitation of activities	1.06	0.59	44.4	0.8	0.2	2.43	< 0.05
Shortness of breathing	1.65	0.77	53.33	0.93	0.23	3.9	= 0.001
Wheeze	1.53	0.53	65.3	1.1	0.26	3.89	= 0.001
Need of bronchodilator	0.88	0.24	72.7	1.12	0.27	2.39	< 0.001
Level of asthma control	1.29	0.41	88	0.78	0.19	4.66	< 0.001
ACT Score	0.82	0.23	71.4	0.72	0.17	3.4	< 0.05
Total ACQ	0.94	0.3	68	0.49	0.12	5.42	< 0.001

Awakening in night due to asthma was reduced by 68% while Awakening at morning due to asthma was reduced by 68.4%. Wheeze was reduced by 65.3% while Limitation of activities, Shortness of breathing, and Need of bronchodilator was reduced by 44.4%, 53.3%, and 65.3% respectively. Level of asthma control was reduced by 58.3% and ACT Score was increased by 71.4%. Total ACQ was decreased by 68%. The entire Asthma Control Questionnaire (ACQ) showed statistically significant results.

Table 7: Effect of *Chitraka Haritaki Avaleha* on Quality of Life Assessment

Feature (n = 17)	BT	AT	% change	SD	SE	t	P
General	3.47	4	15.02	0.514	0.125	-4.243	< 0.001
Physical	3.353	4.125	22	0.45	0.11	-6.708	< 0.001
Psychological	3.353	4.118	22.8	0.437	0.10	-7.2	< 0.001
Social	3.47	4.012	18.6	0.49	0.12	-5.416	< 0.001
Environmental	3.353	4.059	22.6	0.47	0.12	-6.2	< 0.001

Quality of Life Assessment was measured with the help of WHO Quality of Life Assessment parameters. General Assessment showed 15.02% improvement while Physical, Psychological, Social, and Environmental Assessment showed 22%, 22.8%, 18.6%, and 22.6% improvement respectively. All the changes were statistically significant.

Table 8: Effect of *Chitraka Haritaki Avaleha* on Agni Bala

Feature (n=17)	BT	AT	% change	SD	SE	t	P
Abhyavaharana Shakti	4	4.65	16.17	0.606	0.15	-4.40	< 0.001
Jarana Shakti	4.06	3.41	15.9	0.606	0.147	-4.4	< 0.001
Ruchi Aharakale	3.41	4.12	20.6	0.588	0.143	-4.95	< 0.001
Vata Mutra Mukti	3.94	4.59	16.4	0.606	0.147	-4.4	< 0.001

Improvement in *Agni Bala* of patients treated with was assessed *Chitraka Haritaki Avaleha* with the help of changes observed in *Abhyavaharana Shakti*, *Jarana Shakti*, *Ruchi Aharakale* and *Vata Mutra Mukti*. *Abhyavaharana Shakti* was improved by 16.17%, while *Jarana Shakti*, *Ruchi Aharakale* and *Vata Mutra Mukti* was improved by 15.9%, 20.6% and 16.4% respectively.

Table 9: Effect of *Chitraka Haritaki Avaleha* on Deha Bala

Feature (n=17)	BT	AT	% change	SD	SE	t	P
Balavridhhi	3.88	4.47	15.14	0.507	0.123	-4.78	< 0.001
Swara Varna Yoga	2.58	2.88	11.36	0.686	0.166	-1.768	< 0.001
Shariraupachaya	1.24	1.12	9.5	0.697	0.169	5.416	< 0.001

Improvement in *Deha Bala* was assessed with the help of changes observed in *Balavridhhi*, *Swara Varna Yoga* and *Sharira Upachaya*. *Balavridhhi* was improved by 15.14%, while *Swara Varna Yoga* and *Shariraupachaya* were improved by 11.36% and 9.5% respectively.

Table 10: Effect of *Chitraka Haritaki Avaleha* on Satva / Chetas Bala

Feature (n = 17)	BT	AT	% change	SD	SE	t	P
Nidralabhyothakalam	3.88	4.65	19.7	1.15	0.278	-2.75	< 0.001
Sukhena cha pratibodhanam	2.88	3.29	14.5	0.618	0.15	-2.746	< 0.001
Vaikarikanam cha swapnanamadarshanam	3	3	0	0	0	0	> 0.05
Mano Buddhi Indriyaavyapatti	3.12	3.35	7.5	0.437	0.106	-2.22	< 0.001

Improvement in *Satva / Chetas Bala* was assessed with the help of changes observed in *Nidralabhyothakalam*, *Sukhena cha pratibodhanam*, *Vaikarikanam cha swapnanamadarshanam* and *Mano Buddhi Indriyaavyapatti*. *Nidralabhyothakalam* was improved by 19.7% while *Sukhena cha pratibodhanam*, *Vaikarikanam cha swapnanamadarshanam* and *Mano Buddhi Indriyaavyapatti* was improved by 14.5%, 0% and 7.5% respectively. Relief in *Nidralabhyothakalam*, *Sukhena cha pratibodhanam*, *Mano Buddhi Indriyaavyapatti* is statistically significant (p < 0.001). While relief in *Vaikarikanam cha swapnanamadarshanam* is statistically insignificant (p > .005).

DISCUSSION

Aushadhi Kala and Anupana

Aushadhi Kala for *Shwasa Chikitsa* is mentioned as *Muhurmuhu*.

Demographic data

17 out of 19 patients registered in this study completed the therapy and follow up. Onset of Asthma can occur at any age, but children and young adults are the commonly affected age groups.⁸ Male (60%) were dominating in the study. Before puberty, the prevalence of asthma is 3 times higher in boys than in girls. Maximum patients were male suggest higher prevalence in male

supporting the genetic predisposition and higher prevalence in male.⁹ Most of patients were Hindu, because the study was conducted in Hindu dominant area. Majority of included subjects belonged to lower middle class, suggesting that not only poverty but also some other trigger factors like pollution etc plays a crucial role in etiology and pathogenesis of *Tamaka Shwasa* and increased rate of incidence in all the socioeconomic group.

Present complaints of Tamaka Shwasa

In children, noisy breathing is typically caused by a partial blockage or narrowing at some point in the airways.¹⁰ This is an important symptom to look for an initial assessment. Allergic rhinitis and skin allergy may coexist with or precede the onset of Asthma.¹¹ Complains of *Shwasakashtata* (breathlessness), *Na Chapi Nidra Labhate* (Seep disturbance along awakening in night), *Ghurghuraka* (wheezing), *Pinasa* (Nasal symptoms), *Kasa* (cough) and *Parshwashula* (Chest tightness) all these are cardinal features of Asthma observed in studied population. Symptoms like *Shleshma Vimokshante Muhurtam Labhate Sukhama* (Relief after expectoration), *Parshvashula* (Chest tightness), *Kasa* (cough) and *Kasa* with *Chhardi* (vomiting after coughing) suggest the severity of *Margavarodha* or *Avarana* made by *Kapha* in the *Pranavaha Srotas* that lead to symptoms (obstruction of the respiratory airways with that of mucous and secretions).

History of past illness

Majority was having H/O cough (100%) and repeated cold (100%), recurrent respiratory tract illness, allergic rhinitis and Skin allergy. Allergic rhinitis and skin allergy may coexist with or precede the onset of Asthma.

“Past history of repeated cold, recurrent respiratory tract infections and cough suggest the “*Chirakari Dushti of Pranavaha Srotas.*”

Adverse drug reactions

No adverse drug reactions have been reported by any of the patients during the treatment and follow up periods.

CONCLUSION

The present clinical trial is to evaluate the comparative efficacy of *Chitraka Haritaki Avaleha* in the management *Tamaka Shwasa* (Bronchial Asthma) in children. *Tamaka Shwasa* (Bronchial Asthma) is a chronic inflammatory condition of the lung airways resulting in episodic airflow obstruction. This disease is more predominant in children and aged population. *Tamaka Shwasa* is a disorder of *Pranavaha Srotas* which is treated with *Shamana* as well as *Shodhana* therapies. Among which *Shamana* therapy is more convenient in pediatric age group. *Chitrakaharitaki avaleha* is an important *Shamana Yoga* for the treatment of *Shwasa*. Selected drug in this study is having *Kapha-Vata* mitigating action, *Ushnavirya* and *Vatanulomana* properties. These are having properties to remove the impediment made by *Kapha* in the *Pranavaha Srotas* and related system and standardize the functioning of *Vayu*. By virtue of *Rasayana* (immunomodulatory) properties of drugs, they standardize the *Dhatwagni* and encourage the normal condition of the child.

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