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Clinical Effectiveness of *Vasa Kantakari Kwatha* in the Management of *Tamak Shwasa* (Bronchial Asthma) in Children

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Abstract: ***Respiratory diseases, particularly asthma, present a significant global health burden. Tamaka Shwasa, an Ayurvedic concept, is closely correlated with bronchial asthma, characterized by an imbalance of Vata and Kapha, resulting in obstruction of the respiratory passages. This study aimed to evaluate the clinical effectiveness of Vasa Kantakari Kwatha in managing Tamaka Shwasa in children. A total of 10 children aged 5 - 12 years with mild persistent bronchial asthma participated in a 30 - day trial. The drug, composed of Vasa (Adhatoda vasica) and Kantakari (Solanum virginianum), was administered in calculated doses based on the child's age. Efficacy was assessed using subjective parameters (cough, wheezing, dyspnoea, and others) and objective parameters (CBC, FEV1, ESR). Results showed highly significant improvements in symptoms such as cough (55.55%), wheezing (50%), dyspnea (53.57%), and sleep disturbance (68%). Objective parameters, including WBC count, eosinophils, Hb, ESR, FEV1, and PEFR, also showed significant positive changes. The average overall effectiveness of the treatment was 60.09% which suggested that Vasa Kantakari Kwatha was found an effective formulation in managing Tamaka Shwasa having no adverse effects.***

Keywords: Adhatoda Vasica, Ayurveda, Asthma, Bronchitis, Breathlessness, Cough, Dyspnea, *Kantakari*, Solanum virginianum, Vasa

1. Introduction

Respiratory disease is responsible for a major burden of morbidity and untimely death. [1] Asthma is one of the most common chronic non communicable diseases currently affecting a large mass of people with almost worldwide distribution. [2] *Shwasa Roga* is very well described in *Ayurvedic* textbooks like *Charaka Samhita, Sushruta Samhita, Ashtanga Hridaya* and *Ashtanga Samgraha*. According to *Acharya Charaka* the aggravated *Vayu* along with vitiated *Kapha* obstructs the channels of *Prana, Udaka, and Annavaha Srotas* and spreads throughout the body cumulatively produces *Shwasa*. [3] Ayurveda has described five types of *Shwasa Roga* and *Tamaka Shwasa* is one amongst them. *Tamaka Shwasa* is a "*Swatantra" Vyadhi* i. e., independent disease entity and having its own aetiology, pathophysiology and management. *Tamak Shwasa* has been considered as a "*Yapya Vyadhi*" (palliative). [4] It is well co - related with bronchial asthma which results due to derangement of *Pranavah Srotasa* (respiratory system) in which *Prana Vayu* is vitiated that is unable to perform its normal physiologic function due to obstruction through cough and moves in upward direction (*Pratilom Gati*). [5]

Detailed description of *Tamaka Shwasa* including pathogenesis, signs and symptoms, and treatment is available in Ayurveda classics. [6] The specific pathogenesis of *Shwasa Roga* is described as exposure to etiological factors leads to vitiation of *Kapha* along with *Vata* which causes obstruction of *Pranavaha Srotas*. This generates movement of *Vayu* in all direction in *Pranavaha Srotas* and body, ultimately causes *Shwasa roga*. [7] Vitiated *Vata* runs through channels and reaches head - neck region. It exaggerates the regional *Kapha* by increasing epithelial secretion and produce pinasa. These secretions or *malarupi kapha* obstructs the passage of air and produces *ghurgurshabda* or wheezing sound. Clinical features of *Tamak Shwasa* as described by *Acharya Charak* are as follows - *Pinasa, Griva - sirasa sangraha, Ghurghur shabda* (wheezing), *Pramoha, Kanthodhwasa* (itching in kantha pradesh), *Parshvagraha, Ushnam abhinandte* (affinity to hot drinks, food items), *Meghambhhhita Pragvatah Shleshmachabhivardhate, Lalate sweda, Sleshmani vimokshante Mahuratum sukham, Vishushkashyate, Muhur Shwasa, Muhuschiva avadhyamyate, bhrushum artiman.* [8]In the current study, it has been planned to explore the effectiveness of *Vasa Kantakari Kwatha* in the management of *Tamaka Shwasa* in children.

Aim And Objective

To explore the clinical effectiveness of *Vasa Kantakari Kwatha* in alleviating symptoms associated with *Shwasa* in children.

2. Materials and Methods

Children of both sexes, between the age of 5 - 12 years with mild persistent cases of Bronchial Asthma, were registered in the trial from OPD and IPD, Sanjeevani hospital, PGIA, Jodhpur. **IEC & CTRI Registration.** The study obtained Institutional Ethics Committee clearance DSRRAU/PGIA/IEC/2023 - 24/704 and registered at Clinical Trial Registry of India (CTRI/2024/03/064783). A

written informed consent from each patient was taken before enrolling in the clinical trial.

Inclusion Criteria

1) Individual between age group of 5 to 12 years of both sexes.
2) All the case of both sexes, cast, and religion has been included in the study.
3) Children diagnosed as *Shwasa* as per contemporary medical sciences as per clinical features mentioned in Ayurvedic texts.
4) Children with no family history of bronchial asthma.

Exclusion Criteria

1) Children below 5 and above 12 years of age.
2) Patients suffering from chronic respiratory disorders like pulmonary tuberculosis, chronic lung disease, pulmonary edema, lung carcinoma has been excluded from present study.
3) Patient suffering from cardiac disease, chronic pulmonary disorders like tuberculosis, bronchiectasis, chronic lung disease, bronchogenic carcinoma etc has been excluded from study.

Study Design

Table 1: Study design of the project

Name of Drug	*Vasa Kantakari Kwatha* (kalpita yoga)
Number of Patients	10
Dose	As per Kashyapa Samhita (*Khilsthana* 3/88 - 89)
Type of Study	Single Arm Open label
Duration of Drug Trial	30 days
Route	Oral
Purpose	Treatment
End point	Efficacy

Trial Drug -

The raw material was procured from Nagarjuna Pharmacy, PGIA, Jodhpur as shown in Table - 2.

Table 2: Depicting the ingredients of *Vasa Kantakari Kwatha*

S. No	Drug Name	Botanical Name	Quantity
1.	*Vasa*	*Adhatoda vasica*	1 Part
2.	*Kantakari*	*Solanum virginianum*	1 Part

Drug's Dosages and Frequency

The dose of *Kwatha* to be administered was calculated based on Young's Formula according to age of the child as per Table – 3

Young Formula: $\frac{\textit{Adult dose X Age in years}}{\textit{Age}+12}$

Table 3: Depicting the dosages of *Vasa Kantakari Kwatha* in children by Young Formula

Age of Child (Years)	5 yrs	6 yrs	7 yrs	8 yrs	9 yrs	10 yrs	11 yrs	12 yrs
Dose Calculated as Per Above Formula (Ml) Per Day (Grams)	28 gm	32 gm	36 gm	38 gm	42 gm	44 gm	46 gm	48 gm

Coarse powder of raw drug was used for preparing *Kwatha* of above quantity as per the age of child per day in 2 divided doses i. e. BD and honey/ Adrak swaras was advised as per desired amount to increase its palatability.

Assessment -

Efficacy of the treatment was analysed by specific scoring pattern of **subjective parameters** before and after 30 days which includes specified symptoms - Kasa (Cough), *Ghurghuraka* (Wheezing), *Shwasakrichchhata (*Dyspnea), Use of Accessory Muscles (Sternomastoid Activity), *Nidralpata* (Disturbance in Sleep), *Bhasana kricchthta* (Difficulty in Speaking), Nasal Discharge, Colour of Face. **Objective parameters** include CBC, ESR, FEV1 which were also analysed before and after treatment.

3. Observations and Results

General observation in trial

Total 11 patients were selected for the study of *Tamaka Shwasa (*Bronchial Asthma) but only 10 patients completed their trial for study.

Table 4: Depicting the Demography Data of the Present Study

Contents	Details	No of patients	%
1. Age	05 - 08	1	10
	09 - 10	4	40
	11 - 12	5	50
2. Gender	Male	7	70
	Female	3	30
3. Socioeconomic Status	Middle	7	70
	Lower	3	30
4. Desh	*Janghal*	10	100
5. Sharirik Prakriti	*Vata - Kapha*	4	40
	Pitta - Kapha	3	30
	Vata - Pitta	2	20
	Kapha - Vata	1	10
6. Mansika Prakriti	*Rajasika - Tamasika*	10	100
7. Samhanana	*Pravar*	2	20
	Madhyam	5	50
	Avar	3	30
8. Satmya	*Pravar*	2	20
	Madhyam	5	50
	Avar	3	30
9. Satva	*Madhyam*	4	40
	Avar	6	60
10. Vyayamshakti	*Pravar*	2	20
	Madhyam	4	40
	Avar	4	40
11. Abhyavaran Shakti	*Pravar*	2	20
	Madhyam	3	30
	Avar	5	50
12. Jaran Shakti	*Pravar*	2	20
	Madhyam	4	40
	Avar	4	40
13. Vaya	*Annada*	10	100
14. Agni	*Mandagni*	6	60
	Samagni	0	0
	Tikshnagni	0	0
	Vishmagni	4	40

Effect of Therapy on Subjective & Objective Parameters -

Table 5: Effect of *Vasa Kantakari Kwatha* on the Subjective Parameters

Subjective	Mean		Median		SD		W	P - Value	% Effect	Result
	BT	30th day	BT	30th day	BT	30th day				
Coughing	2.7	1.2	3.00	1.00	0.48	0.78	45.000	0.009	55.55	VS
Wheezing	2.6	1.3	3.00	1.00	0.52	0.48	45.000	0.009	50	VS
Dyspnoea	2.8	1.3	3.00	1.00	0.42	0.48	55.000	0.006	53.57	VS
Use of Accessory Muscles (Sternomastoid Activity)	2.3	0.9	2.00	1.00	0.68	0.56	55.000	0.006	60.8	VS
Sleep Disturbance	2.5	0.8	2.50	1.00	0.58	0.63	55.000	0.006	68	VS
Difficulty In Speaking	2.4	0.5	2.5	0.00	0.70	0.71	55.000	0.006	79.16	VS
Nasal Discharge	2.4	1.4	2.51	1.5	0.70	0.70	28.000	0.022	41.66	S
Colour of Face	2.5	0.7	3.0	1.0	0.52	0.48	55.00	0.009	72	VS

*VS - Very significant *S - Significant

Table 6: Effect of *Vasa Kantakari Kwatha* on the Objective Parameters

Investigations - CBC		Mean	N	SD	SE	t - Value	P - Value	% Change	Result
WBC	BT	8.004	10	2.213	0.700	4.45	0.002	24.07	S
	AT	6.077	10	1.837	0.581				
Neutrophils	BT	4.660	10	1.790	0.566	0.29	0.789	2.22	NS
	AT	4.556	10	0.659	0.525				
Lymphocytes	BT	3.472	10	1.506	0.48	0.73	0.485	8.81	NS
	AT	3.166	10	1.958	0.62				
Eosinophils	BT	0.591	10	0.330	0.104	2.81	0.021	39.7	S
	AT	0.356	10	0.188	0.059				
Monocytes	BT	0.591	10	0.243	0.08	0.61	0.555	6.44	NS
	AT	0.553	10	0.315	0.09				
Basophils	BT	0.059	10	0.0325	0.0103	0.34	0.738	5.08	NS
	AT	0.056	10	0.0317	0.0100				
Hb	BT	12.27	10	0.641	0.203	- 2.42	0.038	3.17	S
	AT	12.66	10	0.711	0.225				
ESR	BT	28.3	10	9.08	2.87	3.83	0.004	42.75	S
	AT	16.2	10	5.41	1.71				
FEV1	BT	1.135	10	0.392	0.124	- 15.50	0.000	17.79	ES
	AT	1.337	10	0.400	0.126				
PEFR	BT	191	10	28.8	9.1	- 4.26	0.002	31.9	VS
	AT	252	10	51.6	16.3				

Overall Effect of Therapy -

Table 7: Overall effect of therapy

Parameter	% Effect
Coughing	55.55%
Wheezing	50.00%
Dyspnoea	53.57%
Use of Accessory Muscles (Sternomastoid Activity)	60.8%
Sleep Disturbance	68%
Difficulty in Speaking	79.16%
Nasal Discharge	41.66%
Colour of Face	72%
Average % Effect	**60.09%**

4. Discussion

Ayurveda emphasizes on *Srotorodha* (obstruction of channels) in the manifestation of *Shwasa Roga*, which is the resultant of disturbance in the equilibrium of *Vata* and *Kapha*. *Tamas* word denotes "darkness. " The patient with *Tamaka Shwasa* feels darkness in front of their eyes. An *Amasayasamuttha Vikara* is *Tamaka Shwasa*. According to *Acharya Charaka*, *Tamaka Shwasa* is a *Kapha - Vataja Vikar*, and *Pitta Sthana* [9] is where it originated. Given that it is a condition with a *Kapha - Vata* predominance, it should be more prevalent whether at the time of *Balyaavastha*, when *Kapha* is typically dominant, or the *Vriddhavstha*, when *Vata* is typically dominant. [10]

Probable mode of action of the trial drug -

Hence, drugs that are beneficial in removing the obstruction and maintain the physiological equilibrium of *Vata* and *Kapha* are useful in pacifying *Tamaka Shwasa*. *Acharyas* have also provided specific guidelines in the management of *Tamaka Shwasa* with drugs having *Vata - Kapha Hara*, *Ushna*, and *Vatanulomana* properties. [11]

Tamak Shwasa is a *Pittasthana - originating*, *Kaphavata* - dominant illness of the *Pranavahasrotas*. Therefore, it is recommended to employ such drugs which have the ability to break down the etiopathogenesis of *Tamak Shwasa* and ameliorated its progression.

A medicine is expected to be effective if it exhibits the following qualities: *Swarya* (cleansing), *Shothahar* (anti - inflammatory), *Strotoshodhak* (cleansing of channels), *Vata Kapha Shamaka* (balancing *Vata* and *Kapha*), and *Kapha Nissarak* (*Kapha* - reducing). It is important that the medicine's *Ushna* (heat), *Tikshna* (sharpness), and *Katu* (pungency) are moderate enough to be manageable for younger patients during treatment. Many drug forms, especially powders, are commonly used due to their incomplete digestion. For this study, *Vasa Kantakari*

Kwatha was selected because it primarily possesses properties such as *Kapha - Vaatahara* (balancing *Kapha* and *Vata*), *Vatanulomana* (normalizing *Vata*), *Deepana - Pachana* (stimulating digestion and metabolism), and *Shwasa - Kashara* (beneficial for respiratory conditions).

Furthermore, various studies on these medications have shown their anti - inflammatory, anti - allergic, immunomodulatory, antioxidant, and bronchodilator effects. Both drugs have *Shwasaahar, Kaphanashak, Shothaar, Deepan - pachan, Kanthya* properties.

Kwatha had properties of the overall pharmacodynamics that are i. e., *Tikta, Katu & Kashaya Rasa, Laghu - Ruksha - tikhsha Guna, Ushna Virya* and *Katu Vipaka*.

5. Conclusion

Bronchial asthma, a prevalent condition affecting children globally, is known for its chronic and recurrent nature. *Tamaka Shwasa* in Ayurveda shows similar clinical features to bronchial asthma, suggesting a correlation between the two. The pathophysiology of asthma, involving inflammation and endobronchial obstruction, aligns with the predominance of *Vata* and *Kapha* in *Tamaka Shwasa*. Environmental factors like dust and smoke can trigger symptoms, particularly in the early morning when *Vata* and *Kapha Doshas* are dominant. This study showed the significant improvements in both subjective and objective parameters of *Tamaka Swasha*, with an average effectiveness of 60.09%. However, no adverse effects were reported during the entire study period and thereafter which concluded that the trial drug *Vasa Kantakari Kwatha* can be used an effective and safe solution in treating patients suffering from *Tamaka Shwasa.*

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Conflict of Interest
Nil

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