



Research Article

“CLINICAL EVALUATION OF BIBHITAKI PHALA (*TERMINALIA BELLERICA ROXB.*) IN TAMAKA SHVASA (BRONCHIAL ASTHMA)”

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ABSTRACT

Tamak Shvasa is a major chronic respiratory disorders among five types of *Shvasa Roga* closely resembling Bronchial Asthma mentioned in Modern Medicine. *Bibhitaki* (*Terminalia bellerica Roxb.*) has been clearly indicated as single drug therapy in *Shvasa roga* in classical *ayurvedic* texts. *Bibhitaki* is well known for its Anti-allergic, Anti-inflammatory & Bronchodilator activity. An Open labelled controlled study was done on 90 patients (three groups of 30 patients each) at Ayurved Mahavidyalaya, Sion, Mumbai-22. Groups were labelled as A, B, C and were given *Bibhitaki choorna*, Tab Deriphylline and combination of both respectively for duration of 30 days. Weekly assessment was done on the basis of symptoms i.e. *Shvasa vega*, *Shvasa kashtata*, *Kantha ghurghurakama*, *Sashabda Shvasa*, *Kasa*, *Kapha Nishthivanama*, *Shleshma vimokshante muhurtam sukham*, *Urahshula*, *Peenasa*, *Griva shira sangraha*. Objective assessment was done by assessing Peak Expiratory Flow Rate, Breath holding time, Respiratory rate, Chest expansion weekly and Eosinophil count & ESR at initial and then after 30 days. Statistical analysis was done by applying Wilcoxon Matched-Pairs Signed Ranks test to Subjective criteria and Anova test to Objective criteria at baseline and at the end of study. Percentage improvement in signs and symptoms was found to be 57.89%, 63.25% and 71.49% in Group A, B & C respectively. Wilcoxon Matched-Pairs Test was found to be significant at 1 % level of significance ($p < 0.001$) and Anova test was found to be significant at 5 % level of significance ($p < 0.05$).

KEYWORDS:- Tamaka Shvasa, Bronchial Asthma, *Bibhitaki*, *Terminalia bellerica Roxb.*, Deriphylline

INTRODUCTION

About 300 million people worldwide are suffering from asthma and the number has risen by around 50 % in the last decade.^[1] Bronchial Asthma is reported in 1.2- 6.3% adults in most countries.^[2] This alarming rise in the prevalence of *Tamaka Shvasa* can be accounted to factors such as Atmospheric pollution, rapid environmental changes, adaptation of newer dietetic preparations and tremendous psychological stress. *Shvasa roga*

of the *Pranavaha Srotasa* is very commonest disease, occurring in worldwide population. In this region, *Shvasa roga* is very common due to the favourable environmental condition. *Shvasa* and *hikka* are the two disease indicated as fatal to life by *Acharya Charak*.^[3] Though in the Classics “*Shvasa*” is having five types, Asthma is mostly considered as *Tamaka Shvasa*. *Tamaka Shvasa* is mentioned as one of the variety among five types of *Shvasa*. *Tamaka Shvasa* is a *swatantra vyadhi*.

Tamaka Shvasa is characterised by symptoms like *Shvasa Kashata* (Dyspnoea), *Kantha ghurghurakama* (Wheeze), *Sashabda shvasa* (Ronchi), *Kasa* (Cough), *Kapha nishthivanama* (Expectoration), *Shleshma vimokshante muhurtam sukham* (relief after Expectoration), *Urashula* (Chest pain), *Peenas* (Nasal symptoms), etc. [4] It is mentioned as *Yapya vyadhi* [3] i.e. chronic in nature. *Acharya Vagbhata* has clearly indicated *Bibhitaki* (*Terminalia bellerica Roxb.*) in all types of *Shvasa* & *Kasa* as a single drug therapy [5]. *Bihitaki* has the following properties- *Kashaya Rasa*; *Madhura Vipaka*; *Ushna Veerya* & *Laghu, Ruksha Guna* [6] which plays a major role in relieving *Tamaka Shvasa*. Gallic acid & Tannic acid are the main active ingredients in *Bibhitaki*. [7] These ingredients are mainly responsible for Anti-Asthmatic activity of *Bibhitaki*.

MATERIALS AND METHODS

Selection of cases

There was random selection of patients from O.P.D. & I.P.D. of Sheth R.V. Ayurvedic Rugnalaya, Sion Mumbai. Known cases of *Tamak Shvasa* were taken. Study was carried out as per Ethical committee clearance no: AMS/1355/11-12.

Type of Study : Parallel Group, Open Labeled controlled

Duration of Study : 30 Days

Study Design: Total no of subjects: 90

Group A: 30 subjects: Patients were given *Bibhitaki choorna* 1 gm

Group B: 30 subjects: Controlled group, Patients were given Tab Deriphylline [8] (100mg)

Group C: 30 subjects: Patients were given *Bibhitaki choorna* 1 gm + Tab Deriphylline (100mg)

Inclusive Criteria:

- Patients of *Tamaka Shvasa*
- Age: 20 yrs. to 60 yrs.
- Sex : Both Male & Female irrespective of caste & religion
- Informed consent signed

Exclusive Criteria:

- Sex less than 20 years & more than 60 years.

- *Maha Shvasa, Urdhva Shvasa, Chhinna Shvasa*
- Asthma due to cardiac, renal or cerebral cause.
- Dyspnoea due to obesity, anaemia, ascites, CCF.
- Dyspnoea due to local cause like lung abscess, pneumonia, tumours of respiratory tract.
- Patients having Ca, Immuno-compromised hosts, HBsAg infection, Kochs & any major illness e.g. cardiovascular diseases.
- On drugs: Bronchodilators other than *Bibhitakī* like Anti-convulsants, Anti-psychotic, Anti-depressants, Steroids, etc

Drug Source : Powder of fruit of *Bibhitaki*

Formulation : *Choorna* (Powder)

Anupaan : Warm Water

Mode of Administration: Oral

Kaal : *Adhobhakta* (after food)

Follow Up : Weekly till 30 days (7th, 15th, 21st and 30th day)

Statistical test: Statistical analysis was done by applying Anova test⁶ to Objective criteria and Subjective assessment by Wilcoxon Matched-Pairs Signed Ranks Test⁶ and percentage improvement at baseline and at the end of study

Assessment of efficacy

Subjective improvement

Weekly assessment in reduction of following symptoms

1. *Shvasa vega*
2. *Shvasa Kashata*
3. *Khantha ghurghurakama*
4. *Sashabda shvasa*
5. Ronchi
6. *Kasa*
7. *Kapha nishthivanama*
8. *Shleshma vimokshante muhurtam sukham*
9. *Urashula*
10. *Peenas*
11. *Griva shira sangraha*

Objective improvement

Peak Expiratory Flow Rate, Breath holding time, Respiratory rate, Chest expansion were assessed weekly. Eosinophil count, ESR were assessed at initial and at the end of study^[9]

Gradations of Symptoms**1. Shvasa vega**

- 0 - No *Shvasa vega*
- 1 - *Shvasa vega* (1 or 2 bouts of *Shvasa vega* in a week)
- 2 - Moderate *Shvasa vega* (3 to 5 bouts of *Shvasa vega* in a week)
- 3 - Severe *Shvasa vega* (6 and more bouts of *Shvasa vega* in a week)

2. Shvasa Kashata/ Dyspnea

- 0 - No *Shvasa Kashata*
- 1 - Feels better on seating
- 2 - Feels better by using hot drink/fomentation
- 3 - Feels better by expectoration / broncho-dilation

3. Kantha ghurghurakama / wheeze

- 0 - No *Kantha ghurghurakama*
- 1 - Only at night
- 2 - At night & occasionally during day time
- 3 - Throughout day

4. Sashabda shvasa

- 0 - No sound
- 1 - Low pitch sound during attacks
- 2 - High pitch sound during attacks
- 3 - Always making sound

5. Ronchi / Crepts

- 0 - Absent on normal breathing but a few r/c on forced breathing
- 1 - A few scattered bilateral r/c on normal deep breathing
- 2 - r/c in between grade 1 & 3 on normal deep breathing
- 3 - Innumerable high pitched bilateral r/c on normal deep breathing

6. Kasa

- 0 - No cough

- 1 - Cough wet with easy expectoration.
- 2 - Cough expectoration with slight difficulty.
- 3 - Cough with some pain / feeling of restlessness because of difficulty in Expectoration.

7. Kapha nishthivanama

- 0 - No *Kapha nishthivanama*
- 1 - *Kapha nishthivanama* only in the early morning
- 2 - *Kapha nishthivanama* 2 - 3 times daily
- 3 - Always *Kapha nishthivanama*

8. Shleshma vimokshante muhurtam sukham

- 0 - No such feeling
- 1 - *Shleshma vimokshante muhurtam sukham* during attack
- 2 - Very often *Shleshma vimokshante muhurtam sukham*
- 3 - Always *Shleshma vimokshante muhurtam sukham*

9. Urashula

- 0 - No pain
- 1 - Pain during attack & subside immediately after attack
- 2 - Pain during attack & persists at least 2 days after attack
- 3 - Pain always, but not severe to enough to restrict the routine activity

10. Peenas

- 0 - No *Peenas*
- 1 - *Peenas* during attack & subside 1- 2 days
- 2 - *Peenas* during attack & persist for a week after the attack
- 3 - *Peenas* very often even without attack

11. Griva shira sangraha

- 0 - No *Griva shira sangraha*
- 1 - During attack & subside immediately after attack
- 2 - During attack & persist at least for two days after attack
- 3 - Always but not severe enough to restrict the routine activities

RESULTS

Table 1 : Symptom Wise Improvement In Percentage

Symptoms	Group-A	Group-B	Group-C
<i>Shvasa vega</i>	60.56	73.68	80.82
<i>Shvasa Kashata</i>	60.00	76.06	79.41
<i>Kantha ghurghurakama</i>	54.55	60.38	69.23
<i>Sashabda shvasa</i>	59.09	63.16	68.97
<i>Kasa</i>	61.82	59.65	73.21
Ronchi / Crepts	53.13	65.22	73.61
<i>Kapha nishthivanama</i>	60.38	48.08	64.15
<i>Shleshma vimokshante muhurtam sukham</i>	56.00	52.38	76.00
<i>Urashula</i>	53.06	62.00	66.10
Peenas	61.90	59.62	68.42
<i>Griva shira sangraha</i>	54.55	63.89	65.96
Total	57.89	63.25	71.94

Table 2 : Subjective Improvement Group A

No.	Symptom	Mean	SD	SE	W	Pairs	Z
1	<i>Shvasa vega</i>	1.433	0.935	0.171	253	22	4.10
2	<i>Shvasa Kashata</i>	1.300	0.877	0.160	276	23	4.19
3	<i>Kantha ghurghurakama</i>	0.800	0.961	0.176	91	13	3.16
4	<i>Sashabda shvasa</i>	0.867	0.86	0.157	153	17	3.61
5	<i>Kasa</i>	1.133	0.937	1.171	210	20	3.91
6	Ronchi / Crepts	1.133	0.9	0.164	210	20	3.91
7	<i>Kapha nishthivanama</i>	1.067	0.944	0.172	190	19	3.81
8	<i>Shleshma vimokshante muhurtam sukham</i>	0.933	0.907	0.166	153	17	3.61
9	<i>Urashula</i>	0.867	0.900	0.164	136	16	3.50
10	<i>Peenas</i>	0.867	0.973	0.178	120	15	3.39
11	<i>Griva shira sangraha</i>	0.600	0.724	0.132	105	14	3.28
							3.68

Table 3 : Subjective Improvement Group B

No.	Symptom	Mean	SD	SE	W	Pairs	Z
1	<i>Shvasa vega</i>	1.867	0.860	0.157	378	27	4.53
2	<i>Shvasa Kashata</i>	1.800	0.961	0.176	351	26	4.45
3	<i>Kantha ghurghurakama</i>	1.067	1.015	0.185	153	17	3.61
4	<i>Sashabda shvasa</i>	1.200	0.925	0.169	231	21	4.01
5	<i>Kasa</i>	1.133	0.973	0.178	190	19	3.81
6	Ronchi / Crepts	1.500	0.820	0.150	325	25	4.37
7	<i>Kapha nishthivanama</i>	0.833	0.792	0.145	171	18	3.71
8	<i>Shleshma vimokshante muhurtam sukham</i>	0.733	0.980	0.179	78	12	3.04
9	<i>Urashula</i>	1.033	0.890	0.163	190	19	3.81
10	<i>Peenas</i>	1.033	0.850	0.155	210	20	3.91
11	<i>Griva shira sangraha</i>	0.767	0.774	0.141	153	17	3.61
							3.90

Table 4 : Subjective Improvement Group C

No.	Symptom	Mean	SD	SE	W	Pairs	Z
1	<i>Shvasa vega</i>	1.967	0.809	0.148	406	28	4.62
2	<i>Shvasa Kashata</i>	1.800	0.551	0.101	465	30	4.78
3	<i>Kantha ghurghurakama</i>	1.200	0.997	0.182	210	20	3.91
4	<i>Sashabda shvasa</i>	1.333	0.884	0.161	276	23	4.19
5	<i>Kasa</i>	1.367	0.964	0.176	253	22	4.10
6	Ronchi / Crepts	1.767	0.626	0.114	435	29	4.70
7	<i>Kapha nishthivanama</i>	1.133	0.937	0.171	210	20	3.91
8	<i>Shleshma vimokshante muhurtam sukham</i>	1.267	1.084	0.191	210	20	3.91
9	<i>Urashula</i>	1.300	0.952	0.174	276	23	4.19
10	Peenas	1.300	0.952	0.174	231	21	4.01
11	<i>Griva shira sangraha</i>	1.033	0.890	0.163	190	19	3.81
							4.19

(P < 0.001, W = Sum of all signed rank)

Table 5 : Objective Assessment

	df	SS	MS	F
P. E. F. R.				
Between the Groups	2	3374	1687	21.93
Error	87	6694	76.94	
Breath Holding Time				
Between the Groups	2	19.26	9.628	20.32
Error	87	41.23	0.4739	
Respiratory Rate				
Between the Groups	2	24.63	12.32	10.5
Error	87	102	1.173	
Chest Expansion				
Between the Groups	2	15.27	7.636	16.4
Error	87	40.51	0.4657	
Eosinophil				
Between the Groups	2	1.867	0.9337	3.352
Error	87	24.23	0.2785	
E.S.R.				
Between the Groups	2	2037	1019	44.74
Error	87	1981	22.77	

(df = Degree of Freedom; SS = Sum of Squares; MS = Mean Sum of Squares; F = Fvalue)

Out of 90 patients 48 [53.33%] were males and 42 [46.67%] were females. Addictionwise categorisation showed that 13.33% were addicted to tobacco chewing, 7.78 % were addicted to smoking, 5.56 % were addicted to alcohol and rest 73.33 % were non-addicted. Chronicitywise 40 % patients were having *Tamak Shwasa* since more than 5 years, 27.78 % were having from 3-5 years, 18.89

% from 1-3 years and 13.33 % less than 1 year. Hereditywise 18.89 % were having paternal history, 14.44 % maternal history and 66.67 % with no family history. Comparison of subjective criteria showed that In group A, the total associated symptoms were relieved up to 57.89%, with average Z value-3.6 which was highly significant (p<0.001). The relief obtained in the B group on the total associated symptoms was up to 63.25% with average Z value-3.9 which was statistically highly significant (p<0.001) & The relief obtained in the C

group on the total associated symptoms was up to 71.49% with average Z value-4.19 which was statistically highly significant ($p < 0.001$). Thus better relief was provided in the C group i.e. in the patients with combination of both the therapies. Comparison of objective criteria showed that F value was Highly Significant at 87 degrees of freedom (pooled dF) for E.S.R., Chest Expansion, Breath Holding, P.E.F.R. and Significant for Respiratory Rate, Lymphocytes & Eosinophils at $p < 0.05$.

DISCUSSION

The purpose of this study was to examine the *Shvasahar* effect of *Bibhitaki* in comparison to Tab Deriphylline. *Bibhitaki* (*Terminalia bellerica* Roxb.) is indicated clearly by *Acharya Vagbhata* in all types of *Shvasa* & *Kasa*. *Tamaka Shvasa* is caused by vitiation of *Vata* & *Kapha dosha* predominantly. *Bibhitaki* acts mainly *Kaphaghna* by its *ushna Veerya*, *Kashaya rasa* & *Laghu*, *Ruksha gunas*. Its *vataghna karma* in *Tamaka Shvasa* is seen due to its *Madhur Vipaka* & *Ushna Veerya*. The main action of *Bibhitaki* is *Kapha Chedana* i.e. expectoration of mucus which reduces the *Sanga* in *Pranavaha srotasa*. Further *Ushna Veerya* causes broncho-dilatation which ultimately relieves *Tamaka Shvasa*. Gallic acid & Tannic acid are the main active ingredients in *Bibhitaki* which are known for its Anti-allergic, Anti-inflammatory & Bronchodilator activity. Gallic acid Inhibits Mediators like Histamine, Leukotrienes, etc which causes augmentation of Anti-allergic activity. Further Gallic acid causes broncho-dilatation which leads to easy expectoration of mucus. Inflammation reduction leads to decreased Plasma exudation & Mucus secretion. All this leads to relief in bronchial asthma. Thus from the above case studies of 90 patients the Anti-Asthmatic activity of *Bibhitaki* can be proved definitely but it is little less effective as compared to Tab Deriphylline of Classical modern

medicine. The combination of both gives quite better results as compared to single drug. Also there is need to work on *Bibhitaki* for its specific action like Bronchodilator activity. In Bronchial asthma there is increased Oxidative stress. Hence a study can also be done on Anti-oxidant activity of *Bibhitaki*. It is hoped that these efforts will provide a guideline for future researchers to plan their studies.

CONCLUSION

After studying 90 patients for 30 days following points were concluded.

- 1) *Bibhitaki* acts as an effective drug in *Tamaka Shvasa* (Bronchial Asthma) but it is slightly less effective as compared to Tab Deriphylline.
- 2) Percentage of *Tamaka Shvasa* (Bronchial Asthma) was observed more in *Kapha-Vataja prakruti*.
- 3) Conclusion of symptoms as per gradation system in patients of *Tamaka Shvasa - Bibhitaki* gave more relief in symptoms *Kasa*, *Kapha nishthivanama*, *Shleshma vimokshante muhurtam sukham*, *Peenas* compared to Tab Deriphylline.
- 4) The combination of *Bibhitaki* and Tab Deriphylline gives quite better results as compared to single drug.
- 5) *Bibhitaki* does not show any toxic effect.

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