



Efficacy Of Nidigdhikadi Kwatha And Devadarvyadi Kwatha In The Management Of Tamaka Shwasa (Bronchial Asthma) – An Open Labeled Randomized Comparative Clinical Trial

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Abstract:

Background: Asthma, affecting individuals across all age groups, poses a significant challenge in our society. Bronchial asthma is a prevalent and potentially severe condition marked by chronic airway inflammation and heightened responsiveness, causing symptoms such as breathlessness, bronchoconstriction, wheezing, difficulty with expectoration, and discomfort when lying supine. The condition Tamaka Shwasa, as detailed in Ayurveda within the Hikka-Shwasa Chikitsa Adhyaya, closely parallels the modern medical understanding of Bronchial asthma and is considered Yappa, or manageable but persistent. **Aim:** This study aims to assess and compare the effectiveness of Nidigdhikadi Kwatha and Devadarvyadi Kwatha in treating Tamaka Shwasa. **Materials and Methods:** The study involved 43 patients diagnosed with Tamaka Shwasa, aged between 20 and 65 years, who met the inclusion criteria and were selected randomly. Twenty patients were assigned to Group A, receiving Nidigdhikadi Kwatha, and another 20 were placed in Group B, receiving Devadarvyadi Kwatha. Nidigdhikadi Kwatha is detailed by Acharya Sharangdhar in Kwathadi Kalpana, while Devadarvyadi Kwatha is mentioned in Yogaratnakara for the management of Shwasa Roga. Both formulations were administered orally at a dosage of 40 ml twice daily over a four-week trial period, followed by a two-week follow-up. Results indicated that both Nidigdhikadi Kwatha and Devadarvyadi Kwatha demonstrated favourable clinical and percentage-based outcomes in subjective and objective evaluations of Tamaka Shwasa. **Conclusion:** The trial demonstrated significant effects on asthma symptoms, with the trial group experiencing a greater overall percentage of relief compared to the control group.

Keywords: Tamaka Shwasa, Bronchial Asthma, Nidigdhikadi Kwatha, Devadarvyadi Kwatha

I. INTRODUCTION:

At current scenario, many chronic recurrent airway disorders are progressively seen all over the global population. *Ayurveda* has described one of the such disorder as *Tamaka Shwasa* in one of the types of *Shwasa Roga*.

The disturbance of Pranavaha Srotas results in various form of Shwasa Roga. When normal physiological functions of Pranavayu become impaired and it is vitiated due to obstruction by Kapha and its upward movement, Shwasa Roga ensues. ^[1]Tamaka Shwasa originates from the Pittasthana ^[2]and is caused by various Vata and Kapha-provoking factors ^[3]mentioned in classical texts, leading to the vitiation of Kapha and Vata Doshas. This ultimately results in obstruction within the Pranavaha Srotas, manifesting as Shwasa Roga. ^[4] Ayurveda classical texts describe Maha, Urdhva, and Chhinna Shwasa as incurable conditions. ^[5] In such cases, treatment is considered ineffective and thus is not advised. Kshudra Shwasa, on the other hand,

does not require medication.^[6] *Tamaka Shwasa* is *Sadhya* in initial phase & if not treated in early condition it becomes *Yaapya Vyadhi*.^[7] So, *Tamaka Shwasa* can be treated with the appropriate treatment.

Bronchial asthma mentioned in Modern Medicine closely resembles with the disease entity *Tamaka Shwasa*. Bronchial asthma is common and potentially serious illness characterized by chronic inflammation is associated with hyper-responsiveness that leads to recurrent episodes of wheezing, breathlessness, chest tightness & coughing, particularly at night & in the early morning. It occurs due to the mainly increased exposure to air borne allergen, particularly house dust mites, exposure to occupational allergens, pollutants etc. Asthma affects about 339 million people in all region of the world & the most death occurs in older adults.^[8] The prevalence of asthma has increased over time and an additional 100 million people worldwide are expected to develop asthma by the year 2025.^[9]

For this present research work *Shamana Yogas* that has been chosen to treat the *Tamaka Shwasa*, are *Nidigdhikadi Kwatha* taken from *Kwathadi kalpana* mentioned in *Sharangdhara Samhita* which have *Kapha-Vata shamaka* properties by *Katu, Tikta Rasa & Ushna Virya* as well as *Vatanulomaka* property and *Devadarvyadi Kwatha* mentioned in *Shwasa Rogadhikar* in *Yogaratanakar* which has the same properties as *Nidigdhikadi kwatha*.

II. AIM & OBJECTIVES

To evaluate and compare the efficacy of *Nidigdhikadi Kwatha* and *Devadarvyadi Kwatha* in the management of *Tamaka Shwasa*.

III. MATERIALS AND METHODS:

In the present study 43 patients of *Tamaka Shwasa* were registered. The Patients who fulfilled the clinical diagnostic criteria of *Tamaka Shwasa* (Bronchial Asthma) were randomly selected, irrespective of their sex, religion, occupation etc. from the OPD and IPD of Govt. Akhandanand Ayurvedic College and Hospital, Ahmedabad and Govt. Maniben Ayurvedic hospital, Ahmedabad. Amongst them 20 and 20 patients were completed respectively in both the groups i.e., 22 in group-A (*Nidigdhikadi Kwatha*) and 21 in group-B (*Devadarvyadi Kwatha*). Two patients from group-A and one patient from group-B had left the treatment for various reason before completion. The study was carried out after obtaining ethical clearance of institutional ethical committee (ethical clearance no:136; Dated- 28/12/2020). It also registered at Clinical Trial Registry of India (CTRI) (Registration No. CTRI/2021/03/032464) and prior to registration informed written consent of each patient was taken.

For diagnosis, Complete medical history, signs and symptoms, *Dashavidha Pariksha*, *Nidana Panchaka* & physical examination of each patient was compiled.

❖ Inclusion criteria:

- Patients having age ≥ 20 years and ≤ 65 years of male & female.
- Patients up to 5-year chronicity of *Tamaka Shwasa* were selected.
- Patients with minimum classical signs and symptoms of *Tamaka Shwasa* described in *Ayurvedic* classical text and Modern texts had been included.
- PEF: $>50-70\%$

❖ Exclusion criteria:

- Patients below 20yrs and above 65 yrs.
- Patients suffering from emphysema, Tuberculosis Infection, congestive cardiac failure, cor-pulmonale, acute or severe exacerbation, cardiac asthma, pulmonary fibrosis, pregnant and lactating mothers, malignancy & very chronic & serious conditions require immediate intervention are excluded.
- Patient with $< 50\%$ PEF are not considered.

IV. INVESTIGATIONS:

Laboratory investigation including Spirometry with peak flow meter which is done in each patient. Also, other investigation includes Complete blood count- Hb, ESR, RBC, Total WBC, Sputum examination, Urine routine & Microscopic examination, X-ray- Chest PA view done if required.

V. STUDY DESIGN

This trial was Interventional type, Open labeled randomized comparative clinical trial and randomization done through Computer generated randomization chart.

VI. GROUPING:

1. NIDIGDHIKADI KWATHA (GROUP A)

In this group 22 patient were registered and among them 20 patients had completed the treatment course. *Nidigdhikadi Kwatha* contains the *Kantakari, Guduchi, Sunthi* and as a *Prakshepa dravya Pippali churna*. This drug given in the dose of 40 ml in empty stomach twice in a day for a period of 4 weeks.

2. DEVADARVYADI KWATHA (GROUP B)

In this group 21 patient were registered and among them 20 patients had completed the treatment course. *Devadarvyadi Kwatha* has six drugs. It contains the *Devadaru*, *Vacha*, *Vyaghri*, *Vishvabhesaja*, *Pushakarmoola*, *Katphal*. On empty stomach 40 ml dose twice in a day for 4 weeks given through oral administration.

Pathya-apathya was advised to follow as per mentioned in classics for *Tamaka Shwasa* in both the groups. After completion of treatment, patients were asked to follow up for 2 weeks.

VII. CRITERIA FOR ASSESSMENT:

The registered patients were assessed on the basis of relief in the cardinal signs and symptoms of the disease were taken as subjective criteria. And Laboratory investigations CBC, Absolute eosinophil count & Peak expiratory flow rate were taken as objective criteria for assessment. Assessment was done before (day 0 -first visit), end of trial period (4 weeks of medication) and during follow up period.

Table No 01: Scoring criteria for subjective parameters

Shwasa Kricchrata(Breathlessness) 0- Not troubled by shortness of breath on level or uphill 1- Troubled by shortness of breath on level or uphill 2- Walks slower than the persons of the same age 3- Stops for breath after walking about 100 meters / stops after few minutes of walking on ground level 4- Breathlessness on dressing or undressing/ too much breathlessness
Ghurghurakam (Wheezing) 0- Normal breathing sounds heard 1- Wheezing heard only on localized part of chest with stethoscope at time of attack. 2- Wheezing heard on localized part of lung with stethoscope without attack 3- Wheezing heard on whole lungs with stethoscope 4- Wheezing heard even without stethoscope
Kasa (Coughing) 0- No cough 1- Dry cough without pain/wet with easy expectoration 2- Dry cough with pain/expectoration with slight difficulty 3- Dry cough with severe pain/feeling of restlessness because of difficulty in expectoration 4- Frequent coughing patient becomes unconscious/fainting
Parsve Avagrihyate (Chest tightness) 0- No such feeling of chest tightness 1- Mild chest tightness during attack 2- Moderate chest tightness during attack 3- Severe chest tightness during attack
Pinasa(Rhinitis) 0- No <i>Pinasa</i> 1- <i>Pinasa</i> along with attack 2- Very often <i>Pinasa</i> even without attack 3- Very often without attack 4- Always persist
Kanthodhwamsa (Hoarseness of voice) 0- No 1- Occasional 2- Very often 3- Always
Shleshma Vimokshante Sukham (get relief after expel out the sputum) 0- No such feeling 1- During attack 2- Very often 3- Always

Lalate Sweda(Sweating) 0- No sweating 1- Mild sweating only after continuous <i>Shwasa-kashtata</i> 2- Moderate sweating 3- Profuse sweating during <i>Shwasa- kashtata</i>
Aasino Labhate Saukhyam (get relief with sitting posture) 0- No effect 1- Temporary feels better 2- Sitting posture gives relief 3- Spontaneous sitting posture/can't sleep
Parshwashula (pain in thoracic region) 0- No <i>Shula</i> 1- Along with attack/cough 2- Very often without attack, relieved by <i>Snehana / Swedana</i>
Asamyaka Nidra(Disturbed sleep) 0- Sound Sleep 1- Undisturbed late sleep. 2- Sleep disturbed in late night and early morning 3- No sleep

VIII. RESULT ASSESSMENT

- (1) **Complete Remission:** -100% relief in signs and symptoms of Tamaka Shwasa.
(2) **Marked Improvement:** - 76-99% improvement in sign and symptoms of Tamaka Shwasa.
(3) **Moderate Improvement:** - 51-75% of relief in sign and symptoms of Tamaka Shwasa.
(4) **Mild Improvement:** - 26-50% relief in sign and symptoms of Tamaka Shwasa.
(5) **Unchanged:** - Below 25% relief in sign and symptoms of *Tamaka Shwasa*.

STATISTICAL ANALYSIS

Statistical analysis of data obtained was done by using mean(x), median, standard Deviation (S.D.), Standard error (S.E.), Wilcoxon sign rank test, Mann Whitney Test, Unpaired 't' test, Paired t-test. The obtained results were thus interpreted as,

Insignificant or No effect	-	$P > 0.05$
Significant	-	$P < 0.05$
Significant	-	$P < 0.01$
Highly Significant	-	$P < 0.001$

OBSERVATIONS

Total 43 patients of Tamaka Shwasa were registered in two groups for purpose of treatment, out of which 40 patients were completed the course of treatment (20 in each group) and 03 patients were dropped out. Hence, the 40- patients observation data are given as below:

100% of patients were having Symptoms *Shwasakastata Vega*, 77.5% of patients were having *Ghurghurukam*, 75% of patients were having *Kasa Pravriti*, 75% of patients were having *Aasino Labhate Saukhyam*, 70% of patients were having *Asamyaka Nidra*, 57.5% of patients were having *Shleshama Vimokshyate Sukhama* and *Pinasa*; 45% of patients were having *Parsvavagrihyate* and *Lalate sweda pradurbhava*, 35% of patients each were having *Parshwashula* and *Kanthodhwamsa*.

Table no. 02: Effect of both the drugs on signs & symptoms

Sr. no.	Signs & Symptoms	Group	N	Median Score D.F.		% Relief	W	P	S
				B.T.	A. T				
1.	<i>Shwasa Kricchrata</i>	A	20	3	1	65.42%	-210	<0.001	HS
		B	20	3	1	60%	-210	<0.001	HS
2.	<i>Ghurgurakam</i>	A	20	2	0	75%	-153	<0.001	HS
		B	20	2	0	53.12%	-153	<0.001	HS
3.	<i>Kasa</i>	A	20	3	1	75%	-136	<0.001	HS
		B	20	2	1	53.33%	-105	<0.001	HS
4.	<i>Parshva Avghrihyte</i>	A	20	2	0.5	68.52%	-45	0.004	S
		B	20	2	0.5	66.66%	-55	0.002	S
5.	<i>Pinasa</i>	A	20	3	1	67.59%	-45	0.004	S
		B	20	2.5	1	60.41%	-136	<0.001	HS
6.	<i>Kanthodhwamsa</i>	A	20	2	0	86.67%	-15	0.063	IS
		B	20	2.5	1	30%	-10	0.125	IS
7.	<i>Shleshma Vimokshante Sukham</i>	A	20	2	0	69.05%	-55	0.002	S
		B	20	2	1	57.57%	-55	0.002	S
8.	<i>Lalate Sweda</i>	A	20	1	0	43.33%	-45	0.004	S
		B	20	2	1	66.66%	-45	0.002	S
9.	<i>Aasino Labhate Saukhyam</i>	A	20	2	0.5	72.22%	-120	<0.001	HS
		B	20	3	2	28.12%	-55	0.002	S
10.	<i>Parshwa Shoola</i>	A	20	2	0	83.33%	-15	0.063	IS
		B	20	3	1	53.33%	-25	0.016	S
11.	<i>Asamyaka Nidra</i>	A	20	2	1	50%	-55	0.002	S
		B	20	1	0	25.79%	-45	0.004	S

EFFECT OF BOTH DRUGS ON SIGNS & SYMPTOMS

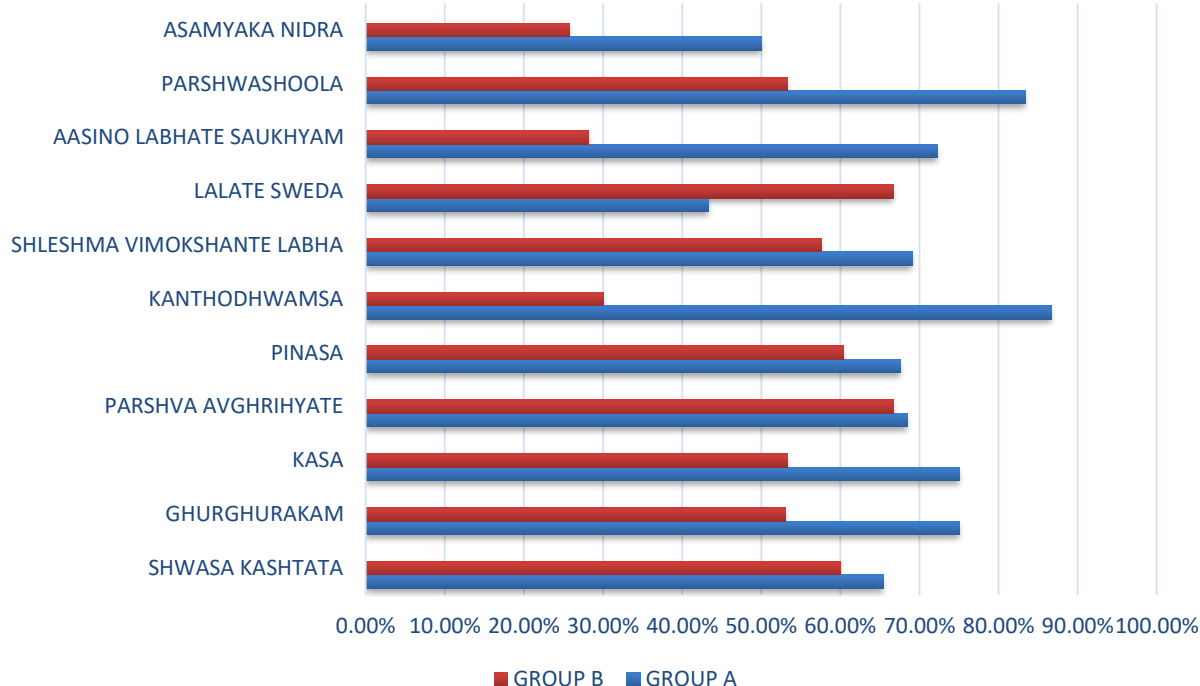


Chart no. 01 Effect of both drugs on Subjective criteria

Table no. 03: Effect on Peak Expiratory Flow Rate

Group	Mean Score			% Relief	SD +/-	SE +/-	't'	P	S
	B.T	A.T	D.F.						
A	260	314.5	-54.5	22.06%	32.68	7.30	-7.458	<0.001	HS
B	274.5	316.5	-42	19.35%	19.35	4.33	-9.703	<0.001	HS

Table no. 04: Overall effect of therapy on 40 patients of *Tamaka Shwasa*

Assessment	Group A		Group B	
	No. of Pt.'s	%	No. of Pt.'s	%
Complete Remission (100)	0	0	0	0
Markedly Improvement (76-99)	3	15%	1	5%
Moderate Improvement (51-75)	15	75%	15	75%
Mild Improvement (26-50)	2	10%	4	20%
No Effect (25)	0	0	0	0

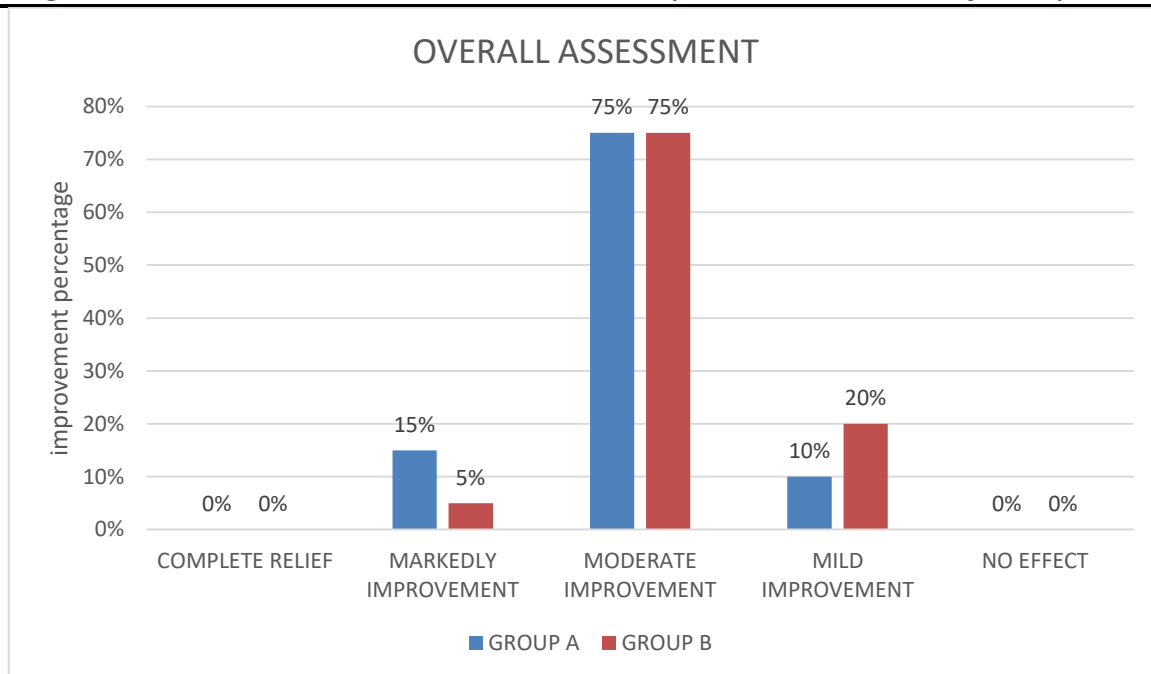


Chart no. 02: Overall Assessment

IX. DISCUSSION:

The result of trial drug shown improvement in *Shwasakashtata Vega*, *Ghurghurakam*, *Kasa Pravriti*, these *Lakshanas* had statistically highly significant results in both groups but percentage wise in comparison to control drug Trial drug was more effective. *Asino Labhate Saukhyam* shows highly significant in trial group. *Parshva avghrihyate*, *Shleshma Vimokshyate Sukham*, *Lalate sweda*, *Asamyaka Nidra* had statistically significant result. Most of the symptoms showed statistically significant result in both groups. Other associated symptoms were decreased in both groups but trial drug was more effective in most of the symptoms.

Probable Mode of Action

1. *Nidigdhikadi Kwatha*^[10]

This yoga consists of 4 ingredients: *Kantakari*^[11], *Guduchi*^[12], *Sunthi*^[13] and *Pippali*^[14]. Whole yoga is *Katu* and *Tikta Rasa Pradhana* so, it acts on *Vata* and *Kapha Dosha*. *Katu Rasa* is Stimulates the *Agni*, improve digestion, dilates the channels and balances the *Kapha dosha* while *Tikta Rasa* cleanses the throat, improve the digestion, clears the *Kapha* from Respiratory tract, *Kledahara*, *Jwaraghna*, *Aruchihara*. So, above mentioned therapeutic indication of *Rasa* of *Nidigdhikadi Kwatha* acts on *Samprapti Vighatana* of *Tamaka Shwasa*. It has *Laghu*, *Snigdha*, *Tikshna guna* with *Dipana*, *Pachana*, *Anulomana karma* which acts on the *Sama Kapha* and *Sama Vata dosha* that will improve the metabolism of body. It also has *Rasayana* effect which improves the state of *Dhatu*s in the body and also acts well in allergic condition. So, due to above mentioned properties it mainly acts on the respiratory tract by expectorant, anti-inflammatory activity and causing bronchodilation.

2. *Devadarvyadi Kwatha*^[15]

It consists of 6 drugs, which are *Devadaru*^[16], *Vacha*^[17], *Kantakari*, *Shunthi*, *Pushkarmoola*^[18] and *Katphala*^[19]. This *Yoga* are *Kapha- Vata Shamaka* in nature. It is dominated by *Katu- Tikta Rasa*. As both *Rasa* mainly acts on *Agni* and normalize the state of *Agni* which helps to cure the symptoms of *Sama Vata* and *Sama Kapha Dosha* in *Pranavaha Srotasa*. So, by this virtue it is provide relief in asthmatic symptoms. Majority of content were having *Laghu*, *Ushna* and *Tikshna guna*. These *Guna* were beneficial for *Aamapachana*, *Agnidipti*, Pacify the *Kapha* and *Srotosodhana*. By this action *Malarupa Kapha* production from *Dushita Rasa dhatu* got reduced. Majority of the contents of this *yoga* were having *Ushna virya*. So, it was alleviating the *Vata* and *Kapha dosha*.

Overall assessment in Group A, total improvement in subjective criteria was 69.29% and in Group B total improvement was 57.59%. In Group A, PEFr was increased by 22.06%. In Group B, PEFr was increased by 19.35% which showed statistically highly significant. And in Group A overall assessment showed 75% had moderate relief and in 15% patients with marked improvement while mildly improvement was seen in the status of 10% patients. While in Group B overall assessment result showed 75% cases found moderate improvement, mild improvement was seen in 20% and in 5% markedly improvement was seen. No any patient found with complete relief in both groups because of *Yapya* nature of *Tamaka Shwasa*. (Chart No.02)

X. Conclusion:

The present comparative clinical study demonstrates that the majority of patients in both groups experienced moderate relief; however, Group A showed a higher percentage of patients with marked improvement. No patients in either group achieved complete remission, highlighting the **Yapya nature** of **Tamaka Shwasa**, which suggests the disease is manageable but not completely curable.

Thus, the intervention used in Group A appears to be more effective in providing symptomatic relief and improving pulmonary function in patients with Tamaka Shwasa.

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