Published online in http://ijam.co.in ISSN No: 0976-5921

International Journal of Ayurvedic Medicine, Vol 13 (4), 2022; 1033-1042

A Randomized clinical trial of efficacy of *Murvadhya churna* in Kaphaja kasa with special reference to chronic Bornchitis

Research Article

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Abstract

Kaphaj kasa is one of the conditions in which the vitiated cough causes obstruction to the *marga* of *pranavata* producing *Ghana* (thick sputum), *Snigdha* (slimy), *Bahala* (profuse sputum) and *Sandra kapham* (viscid sputum). Chronic bronchitis is characterized by cough associated with sputum on most days for at least 3 consecutive months for more than 2 successive years. Coughing is stimulated by irritation or inflammation of the respiratory tract which is caused most frequently by infection or sinus drainage secondary to rhinitis. Oral administration of the medicines is one among the important *Shamana* line of treatment which is easily administered, well accepted and also effective *shodhana* in adults. Many more herbal combinations are described in *Ayurveda* and their therapeutic effect on *kasa* is not yet explored. Hence it is need of us to bring out permanent remedy which will be safe, cheap and effective. Aim: To study the efficacy of *Murvadhya Churna* in the management of *Kaphaj kasa* with special reference to chronic bronchitis. Material and methods: A total 90 patients of the age group 16-60 years presenting with signs and symptoms of *Kaphaj kasa* w.s.r. to Chronic Bronchitis were selected randomly from OPD of the department of *Kayachikitsa*. The 45 patients of trial group were treated with *Murvadhya Churna* and 45 patients of control group were subjected to *Haritakyadi Gutika*.

Key Words: *Kaphaj kasa,* Chronic Bronchitis*, Murvadhya Churna, Haritakyadi Gutika.*

Introduction

Ayurveda is a system of medicine with historical roots in the Indian subcontinent (1). *Ayurveda* an ancient medical science which deals with the study of preservation of health and life along with the treatment of disease occurs (2).

As per *Ayurveda* disease is a state of disturbance in the homeostasis of *Tridoshaja*, *Asatmendriyartha samayoga, pradnyaparadha* and *parinama* are the root cause of the diseases. The above three factors are very important in preventive and curative aspects. Disease creates an obstacle in the achievement of good health. *Kasa* is a symptom reflex, complication or an independent disease (3). There are 5 types of *Kasa* which are *vataj, pitaj, kaphaja, kshayaja, kshataja (4).*

Kaphaj kasa is one of the conditions in which the vitiated cough causes obstruction to the *marga* of *pranavata* producing *Ghana* (thick sputum), *Snigdha* (slimy), *Bahala* (profuse sputum) and *Sandra kapham i.e.,* viscid sputum (5). The *hetu* of the disease is caused due to consumption of *Guru ahara, abhishyandi ahara, Madhura ahara, Snigdha ahara* and *viharaja nidan* include *Swapna vichesta*. In the disease the *vata* and *kapha* are the two key pathological factors involved in the *Samprapti* of *Kaphaj kasa (6).*

Chronic bronchitis is characterized by cough associated with sputum on most days for at least 3 consecutive months for more than 2 successive years. The initial symptoms are repeated attacks of productive cough which shows steady increase in severity during the winter months and present all the year round with recurrent respiratory infection (7). Chronic bronchitis is a pathological condition followed by chronic cough and mucous secretion. The causes of chronic bronchitis are long term exposure to irritants that damage the lungs and kidneys. Cigarette smoking is one of the main causes. Exposure to other inhales irritants can contribute to chronic bronchitis. Air pollution and chemical fumes or dusts from the environment or workplace. Chronic bronchitis is treated with Bronchodilators, Anti-inflammatory drugs that is steroids, Oxygen therapy and Anti tussives (8). These drugs are used for immediate relief of cough and do not serve as substitute for the therapy of underlying pathological condition. *Ayurveda* has not only provided wide range of drugs but also provided the various preventive measure while curing a disease. *Kaphaj kasa* displays many features in common with the collections of signs and symptoms that are specially diagnosed with Chronic bronchitis. Productive cough is a sudden noisy expulsion of air from the lungs that effectively removes sputum from the respiratory tract and helps to clear the

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airways. Coughing is stimulated by irritation or inflammation of the respiratory tract which is caused most frequently by infection or sinus drainage secondary to rhinitis. Oral administration of the medicines is one among the important *shamana* line of treatment which is easily administered, well accepted and also effective *shodhana* in adults. Many more herbal combinations are described in *Ayurveda* and their therapeutic effect on *kasa* is not yet explored. Hence it is need of us to bring out permanent remedy which will be safe, cheap and effective.

Keeping above facts in mind, the present clinical study is undertaken by choosing *Murvadhya churna (9)* with *Madhu* explained in *Gadnigraha kasa* chapter which is indicated in *kaphaj kasa.*

Hypothesis

Null Hypothesis(H^0): *Murvadhya Churna* is not significantly effective in *Kaphaja Kasa.*

Alternative Hypothesis (H^1):

- H1-*Murvadhya Churna* is significantly effective in *Kaphaja Kasa*.
- H2-*Murvadhya Churna* is significantly effective than *Hareetakyadi Gutika* in *Kaphaja Kasa*.

Aim:

To study the efficacy of *Murvadhya Churna* in the management of *Kaphaj kasa* with special reference to chronic bronchitis.

Objectives

Primary objectives

To study the efficacy of *Murvadhya Churna* in *Kaphaj kasa.*

Secondary objectives

1. To compare the efficacy of *Murvadhya Churna* and *Haritakyadi Gutika* in the management of *Kaphaja Kasa*.
2. To review literature on *Murvadhya Churna* and its mode of action.

Material and methods

A total 90 patients of the age group 16-60 years presenting with signs and symptoms of *Kaphaj kasa* w.s.r. to Chronic Bronchitis were selected randomly from OPD of the department of *Kayachikitsa*. The 45 patients of trial group were treated with *Murvadhya Churna* and 45 patients of control group were subjected to *Haritakyadi Gutika*.

Criteria for selection of patients:

Inclusion Criteria:

- Patient fulfilling the diagnostic criteria.
- Patients will be selected irrespective of Gender & religion between the age group of 16 to 60 years.
- Patient who are willing to take treatment (with prior informed consent).
- Patient from all socio-economic status

Exclusion criteria:

- Patient with *vataj, pittaj, kshayaj, kshataj kasa.*
- Patient having Tuberculosis, cancer of bronchus, pleurisy.
- Patient taking oral contraceptive pills & injected depot contraceptive preparations.
- Patient below age 16 years and above 60 years
- Pregnant and lactating mothers.

Withdrawal criteria

Patient can be withdrawn from the trial if:

- Occurrence of serious adverse effects and they will be reported
- The protocol has been violated or patient has become uncooperative.
- If patient who will be unable to follow prescribed medicine and do's/don't measure

Assessment Criteria: (10)

Assessment will be done based on following subjective parameters:

Table 1: Assessment parameters

Sr no.	Parameter	Details	Score
1	***Kasavega* (Cough)**	Absent	0
		Mild (1-5 cough attacks/day)	1
		Moderate (6-10 cough attacks/day)	2
		Severe (above 10 cough attacks/day)	3
2	***Nisthivan* (Expectoration)**	Absent	0
		Mild (1-3 times/ day)	1
		Moderate (4-6 times/day)	2
		Severe (more than 6 times/day)	3
3	***Peenasa* (Nasal Discharge)**	Absent (No Nasal discharge)	0
		Mild (Nasal discharge less quantity)	1
		Moderate (Yellowish nasal discharge with heaviness in headache.)	2
		Severe (Yellowish nasal discharge in large quantity with headache.)	3
4	***Shwas-kashtata* (Dyspnoea)**	Absent (Respiration (16-20/min))	0
		Mild (Respiration (21-25/min))	1
		Moderate (Respiration (26-30/min))	2
		Severe (Respiration above 30/min))	3
5	***Agnimandhya* (Dys-pepsia)**	Absent	0
		Mild (Present food digest in 4 to 6 hours)	1
		Moderate (Present food digest in 8 hours.)	2
		Severe (Present food digest more than 12 hours.)	3

Objective criteria

1. WBC
2. ESR

Follow ups: - 7th 14th 21st days.

The graded values were later totally and individually scored and assessed statistically to find out the rate of effect of treatment. The age, gender, occupation, habitat wise distribution of patients with socioeconomic status was also recorded and assessed statistically. The effect of treatment in each group was assessed separately by analysing the pre-treatment and post treatment data, scores and values. The comparison of the effect of therapy of two groups done by statistical analysis.

Trial group drug

Table 2: *Murvadhya Churna*

Sr.No.	*Dravya*	Latin name	*Rasa*	*Virya*	*Vipaka*	*Doshaghnata*	*Karmukatva*	Parts Used	quantity
1	*Murva*	*Marsdenia tenacissima*	*Tikta kashaya*	*ushna*	*katu*	*tridoshshamaka*	*Deepana pachana*	Root	10 gm
2	*Pippal*	*Piper longum*	*madhur*	*sheet*	*madhur*	*Kaphavatvardhak pittashamak*	*Kledana*	Fruit	10 gm
3	*Chavya*	*Piper cheba*	*Katu tikta*	*ushna*	*katu*	*kaphavataghana*	*vatanuloma*	Root	10 gm
4	*Chitraka*	*Plumbago zylenica*	*katu*	*ushna*	*katu*	*Kaphaghana vataghana*	*Pittaprakapi Deepana pachana*	Root Bark	10 gm
5	*Vacha*	*Acorus calamus*	*Tikta katu*	*ushna*	*katu*	*Kaphaghana vataghana pittakar*	*Kapha vilayana*	Rhizome	10 gm
6	*Patha*	*Cissampelos pariera*	*Tikta katu*	*ushna*	*katu*	*kaphavataghan*	*Deepan pachana grahi*	Root, Stem	10 gm
7	*Shirish*	*Albizia lebbeck.benth*	*Kashaya tikta madhur*	*Alpa ushna*	*katu*	*Kaphaghana Vataghana pittaghana*	*kaphashodhan*	Bark	10 gm
8	*Ajwain*	*Trachyspermum ammi*	*Kau tikta*	*Ushna*	*katu*	*Kaphaghana*	*Shoolahara vatanuloma*	Seeds	10 gm
9	*Elaichi*	*Elletaria cardomomum*	*Katu madhur*	*sheet*	*madhur*	*Kaphaghana pittaghana*	*kasaghana*	Seeds	10 gm
10	*Nagarmotha*	*Cyperus scariosus*	*Tikta kashaya katu*	*sheeta*	*katu*	*Kapha pittaghana*	*Pachana*	Tuber	10 gm
11	*Marich*	*Piper nigrum*	*katu*	*ushna*	*katu*	*Vataghana pitaakar*	*kaphashosh*	Fruit	10gm
12	*Renuka*	*Vitex agnus*	*Katu tikta*	*sheeta*	*katu*	*Kaphahara pittakar*	*Medhya vatahara*	Root	10gm
13	*Ativisha*	*Aconitum heterophyllum*	*Katu tikta*	*ushna*	*katu*	*kaphaghana*	*Deepana pachana*	Root	10gm
14	*Kutaki*	*Picrorhiza kurroa*	*Katu tikta*	*ushna*	*katu*	*pittaghana*	*Hrudya Dipana jvarahara*	Root Rhizome	10gm
15	*Jeera*	*Cuminum cyminum*	*katu*	*ushna*	*katu*	*pittaghana*	*Deepana grahi*	Seeds	10gm
16	*indrayav*	*Holarrhena antidysentrica*	*Katu tikta*	*sheeta*	*katu*	*tridoshamaka*	*Dipana sangrahi*	Seeds	10gm
17	*Shunthi*	*Zingiber officinale*	*katu*	*ushna*	*madhua*	*vatakaphaghana*	*Dipana pachana*	Rhizome	10gm
18	*Vidanga*	*Embelia ribes*	*katu*	*ushna*	*katu*	*kaphaghana*	*truptighana*	Fruits	10gm
19	*Bharangi*	*Clerodendron serratum*	*Tiktakatu kashay*	*ushna*	*katu*	*kaphagna*	*vataghana*	Root	10gm
20	*Hingu*	*Ferula narthex*	*katu*	*ushna*	*katu*	*Kaphagna vataghana*	*Jantughana*	Resin	10gm
21	*Pippalimool*	*Piper longun*	*katu*	*ushna*	*katu*	*kaphavataghana*	*deeapana*	Root	10gm

Murvadhya Churna was prepared in *Rasa Shastra* and *Bhaishajya Kalpana* department of *Ayurveda Rugnalaya.* Nicely powder drug filtered through cloth is called *Churna*, *Rajas* or *Kshoda* (Pulvis powder). It was administered in doses of the one *Karsha (*12 grams*)*. Jaggery was added to this powder in equal quantity and one pinch of fried *Hingu*. *Churnas* were administered with equal quantities of honey. (11)

Table 3: Control Group Drug: *Haritakyadi Gutika (12)*

Sr.No	*Dravya*	*Latin name*	*Rasa*	*Virya*	*Vipaka*	*Doshaghnata*	*Karmukatva*
1	*Haritaki*	*Terminalia chebula*	*Kashaya pancharasa*	*Ushna*	*Madhur*	*Tridoshahara*	*Anuloma, Rasayana,*
2	*Nagara*	*Zinziber*	*Katu*	*Ushna*	*Madhur*	*Vatakaphahara*	*Deepana,*
3	*Musta*	*Cyperus*	*Katu, Tikta*	*Sheeta*	*Katu*	*Kaphapittahara*	*Deepan,*
4	*Guda*	*Saccharum*				*Vatapittahara*	*Anabhishyandi*

Table 4: Drug Regimen

Subject	Group A	Group B
Types	Trial	Control
Name of drug	*Murvadhya churna*	*Haritakyadi Gutika*
Route of administration	Oral	Oral
Kalpana	*churna*	*gutika*
Dose	2 gm	4 *gutikas* of 250 mg each
Anupana	Honey	Hot water
Treatment duration	21days	21days
No of patient	45	45
Observation	0th, 7th , 14th, 21th	0th, 7th,14th, 21th
Indication	*Kaphaj kasa*	*Kaphaj kasa*
Main reference of research work	*Gadnigrah dwitiya kayachiktsa khandatmaka adhyay 10*	*Chakradatta kasarogdhikar chhepat,Achyuta varrier*

Data thus collected during the study, summarized and statistically analyzed as per protocol.

Statistical Analysis and its Interpretation

Subjective Parameters (By Wilcoxon Singed Ranks Test)

Table 5: *Kasavega*

Group	BT/AT	N	Mean	SD	Median	W	P
Group A	**BT**	**45**	2.733	0.447	3	990	<0.0001
	AT	**45**	0.578	0.69	0		
Group B	**BT**	**45**	2.689	0.468	3	1035	<0.0001
	AT	**45**	0.889	0.647	1		

Group A: As value of p is less than 0.05, significant difference was observed between mean of BT and AT score in *Kasavega* symptom. Hence it is concluded that *Murvadhya Churna* is significantly effective to reduce *Kasavega* in *Kaphaj kasa* (Chronic Bronchitis).

Group B: As value of p is less than 0.05, significant difference was observed between mean of BT and AT score in *Kasavega* symptom. Hence it is concluded that *Haritkyadi Gutika* is significantly effective to reduce *Kasavega* in *Kaphaj kasa* (Chronic Bronchitis).

Table 6: *Nisthivan*

Group	BT/AT	N	Mean	SD	Median	W	P
Group A	**BT**	**45**	2.778	0.42	3	1035	<0.0001
	AT	**45**	0.466	0.587	0		
Group B	**BT**	**45**	2.689	0.468	3	1035	<0.0001
	AT	**45**	0.711	0.588	1		

Group A: As value of p is less than 0.05, significant difference was observed between mean of BT and AT score in *Nisthivan* symptom. Hence it is concluded that *Murvadhya Churna* is significantly effective to reduce *Nisthivan* in *Kaphaj kasa* (Chronic Bronchitis).

Group B: As value of p is less than 0.05, significant difference was observed between mean of BT and AT score in *Nisthivan* symptom. Hence it is concluded that *Haritkyadi Gutika* is significantly effective to reduce *Nisthivan* in *Kaphaj kasa* (Chronic Bronchitis).

Table 7: *Peenasa*

Group	BT/AT	N	Mean	SD	Median	W	P
Group A	**BT**	**45**	2.4	0.719	3	1035	<0.0001
	AT	**45**	0.4	0.539	0		
Group B	**BT**	**45**	2.333	0.768	3	1035	<0.0001
	AT	**45**	0.688	0.701	1		

Group A: As value of p is less than 0.05, significant difference was observed between mean of BT and AT score in *Peenasa* symptom. Hence it is concluded that *Murvadhya Churna* is significantly effective to reduce *Peenasa* in *Kaphaj kasa* (Chronic Bronchitis).

Group B: As value of p is less than 0.05, significant difference was observed between mean of BT and AT score in *Peenasa* symptom. Hence it is concluded that *Haritkyadi Gutika* is significantly effective to reduce *Peenasa* in *Kaphaj kasa* (Chronic Bronchitis).

Table 8: *Swashkashthata*

Group	BT/AT	N	Mean	SD	Median	W	P
Group A	**BT**	**45**	2.756	0.434	3	1035	<0.0001
	AT	**45**	0.377	0.534	0		
Group B	**BT**	**45**	2.444	0.692	3	861	<0.0001
	AT	**45**	0.6	0.617	1		

Group A: As value of p is less than 0.05, significant difference was observed between mean of BT and AT score in *Shwashkashtata* symptom. Hence it is concluded that *Murvadhya Churna* is significantly effective to reduce *Shwashkashtata* in *Kaphaj kasa* (Chronic Bronchitis).
Group B: As value of p is less than 0.05, significant difference was observed between mean of BT and AT score in *Shwashkashtata* symptom. Hence it is concluded that *Haritkyadi Gutika* is significantly effective to reduce *Shwashkashtata* in *Kaphaj kasa* (Chronic Bronchitis).

Table 9: *Agnimandya*

Group	BT/AT	N	Mean	SD	Median	W	P
Group A	**BT**	**45**	2.8	0.404	3	1035	<0.0001
	AT	**45**	0.467	0.587	0		
Group B	**BT**	**45**	2.533	0.694	3	990	<0.0001
	AT	**45**	0.622	0.649	1		

Group A: As value of p is less than 0.05, significant difference was observed between mean of BT and AT score in *Agnimandya* symptom. Hence it is concluded that *Murvadhya Churna* is significantly effective to reduce *Agnimandya* in *Kaphaj kasa* (Chronic Bronchitis).
Group B: As value of p is less than 0.05, significant difference was observed between mean of BT and AT score in *Agnimandya* symptom. Hence it is concluded that *Haritkyadi Gutika* is significantly effective to reduce *Agnimandya* in *Kaphaj kasa* (Chronic Bronchitis).

Objective parameters: (By Paired t Test)

Table 10: E.S.R.

Group	BT/AT	N	Mean	SD	t	P
Group A	**BT**	**45**	15.511	4.104	11.002	<0.0001
	AT	**45**	10.822	3.150		
Group B	**BT**	**45**	13.756	5.192	7.771	<0.0001
	AT	**45**	9.356	2.698		

Group A: As value of p is less than 0.05, significant difference was observed between mean of BT and AT score in E.S.R. Hence it is concluded that *Murvadhya Churna* is significantly effective to improve E.S.R. level in *Kaphaj Kasa.*
Group B: As value of p is less than 0.05, significant difference was observed between mean of BT and AT score in E.S.R. symptom. Hence it is concluded that *Haritkyadi Gutika* is effective to improve E.S.R. level in *Kaphaj Kasa.*

Table 11: Neutrophils

Group	BT/AT	N	Mean	SD	t	P
Group A	**BT**	**45**	50.733	6.907	12.818	<0.0001
	AT	**45**	34.222	7.781		
Group B	**BT**	**45**	45.489	9.706	9.493	<0.0001
	AT	**45**	32.244	7.215		

Group A: As value of p is less than 0.05, significant difference was observed between mean of BT and AT score in Neutrophils. Hence it is concluded that *Murvadhya Churna* is significantly effective to improve Neutrophils level in *Kaphaj Kasa.*
Group B: As value of p is less than 0.05, significant difference was observed between mean of BT and AT score in Neutrophils. Hence it is concluded that *Haritkyadi Gutika* is effective to improve Neutrophils level in *Kaphaj Kasa.*

Table 12: Eosinophils

Group	BT/AT	N	Mean	SD	t	P
Group A	**BT**	**45**	6.956	2.522	10.865	<0.0001
	AT	**45**	3.111	1.722		
Group B	**BT**	**45**	6.578	3.130	9.750	<0.0001
	AT	**45**	2.911	2.087		

Group A: As value of p is less than 0.05, significant difference was observed between mean of BT and AT score in Eosinophils. Hence it is concluded that *Murvadhya Churna* is significantly effective to improve Eosinophils level in *Kaphaj Kasa.*

Group B: As value of p is less than 0.05, significant difference was observed between mean of BT and AT score in Eosinophils symptom. Hence it is concluded that *Haritkyadi Gutika* is effective to improve Eosinophils level in *Kaphaj Kasa*.

Comparison between Group A and Group B:

Subjective Parameters (By Mann Whitney's U Test)

Table 13: *Kasavega*

Group	N	Difference of mean (BT	Mean Rank	U	P	Result
Group A	**45**	2.156	51.4	747	0.031	Significant
Group B	**45**	1.8	39.6			

As value of p is lower than 0.05, significant difference was observed between the mean of difference of Group A and Group B in *Kasavega* symptom. Mean difference of Group A is more than that of Group B. Hence it is concluded that *Murvadhya Churna* is effective than *Haritkyadi Gutika* to reduce *Kasavega* in *Kaphaj kasa* (Chronic Bronchitis).

Table 14: *Nisthivan*

Group	N	Difference of mean (BT	Mean Rank	U	P	Result
Group A	**45**	2.311	51.53	741	0.0268	Significant
Group B	**45**	1.978	39.46			

As value of p is lower than 0.05, significant difference was observed between the mean of difference of Group A and Group B in *Nisthivan* symptom. Mean difference of Group A is more than that of Group B. Hence it is concluded that *Murvadhya Churna* is more effective than *Haritkyadi Gutika* to reduce *Nisthivan* symptom in *Kaphaj kasa* (Chronic Bronchitis).

Table 15: *Peenasa*

Group	N	Difference of mean (BT	Mean Rank	U	P	Result
Group A	**45**	2	51.9	724.5	0.0189	Significant
Group B	**45**	1.644	39.1			

As value of p is lower than 0.05, significant difference was observed between the mean of difference of Group A and Group B in *Peenasa* symptom. Mean difference of Group A is more than that of Group B. Hence it is concluded that *Murvadhya Churna* is more effective than *Haritkyadi Gutika* to reduce *Peenasa* in *Kaphaj kasa* (Chronic Bronchitis).

Table 16: *Swashkashthata*

Group	N	Difference of mean (BT	Mean Rank	U	P	Result
Group A	**45**	2.378	52.78	680.5	0.007	Significant
Group B	**45**	1.844	38.12			

As value of p is lower than 0.05, significant difference was observed between the mean of difference of Group A and Group B in *Swashkashthata* symptom. Mean difference of Group A is more than that of Group B. Hence it is concluded that *Murvadhya Churna* is more effective than *Haritkyadi Gutika* to reduce *Swashkashthata* in *Kaphaj kasa* (Chronic Bronchitis).

Table 17: *Agnimandya*

Group	N	Difference of mean (BT -AT)	Mean Rank	U	P	Result
Group A	**45**	2.333	52.26	708	0.0132	Significant
Group B	**45**	1.911	38.73			

As value of p is lower than 0.05, significant difference was observed between the mean of difference of Group A and Group B in *Agnimandya* symptom. Mean difference of Group A is more than that of Group B. Hence it is concluded that *Murvadhya Churna* is more effective than *Haritkyadi Gutika* to reduce *Agnimandya* in *Kaphaj kasa* (Chronic Bronchitis).

Objective Parameters (By Unpaired t Test):

E.S.R.:

Table 18: Unpaired t Test between the Group A and Group B

Sr. No.	Group	N	Mean	SD	t	P
1	**Group A**	45	4.689	2.859	0.407	0.684
2	**Group B**	45	4.4	3.798		

As value of p is higher than 0.05, insignificant difference was observed between the mean of difference of Group A and Group B in E.S.R. Mean of Group A is found more than that of Group B, but it is not more than observed by chance.

Hence it is concluded that *Murvadhya Churna* and *Haritkyadi Gutika* both were equally effective to improve E.S.R. in Kaphaj Kasa.

Table 19: Neutrophils

Sr. No.	Group	N	Mean	SD	t	P
1	Group A	45	16.511	8.641	1.72	0.0889
2	Group B	45	13.244	9.359		

As value of p is higher than 0.05, insignificant difference was observed between the mean of difference of Group A and Group B in Neutrophils percentage. Mean of Group A is found more than that of Group B, but it is not more than observed by chance.

Hence it is concluded that *Murvadhya Churna* and *Haritkyadi Gutika* both were equally effective to improve Neutrophils percentage in *Kaphaj Kasa.*

Table 20: Eosinophils

Sr. No.	Group	N	Mean	SD	t	P
1	Group A	45	3.844	2.374	0.344	0.731
2	Group B	45	3.667	2.523		

As value of p is higher than 0.05, insignificant difference was observed between the mean of difference of Group A and Group B in Eosinophils percentage. Mean of Group A is found more than that of Group B, but it is not more than observed by chance.

Hence it is concluded that *Murvadhya Churna* and *Haritkyadi Gutika* both were equally effective to improve Eosinophils percentage in *Kaphaj Kasa.*

Table 21: According to % Relief in Subjective parameters

Sr. No.	Symptoms	% Relief	
		Group A	Group B
1	***Kasavega***	78.86	66.94
2	***Nisthivan***	83.20	73.55
3	***Peenasa***	83.33	70.48
4	***Swashkashthata***	86.29	75.45
5	***Agnimandya***	83.33	75.44
	Avg. % Relief	**83.01**	**72.37**

Table 22: According to % Relief in Objective parameter

Sr. No.	Objective Parameters	Mean difference	
		Group A	Group B
1	**E.S.R.**	4.689	4.4
2	**Neutrophils**	16.511	13.244
3	**Eosinophil**	3.844	3.667

Table 23: Overall Effect of Therapy according % Relief

Sr. No.	Criteria	Improvement Grade	No. of patients	
			Gr. A	Gr. B
1	75% to 100%	Marked	29	20
2	50% to 75%	Moderate	15	21
3	25% to 50%	Mild	1	4
4	00% to 25%	Unchanged	0	0

Discussion on Observation

Age: In the present study maximum number of patients i.e.,43 patients were from the age 31 to 40 followed by 18 in 41 to 50 group, 16 in 18 to 30 group followed by 13 in 51 to 60 group.

Gender: In the present study maximum no. of patients i.e., 51 were male and 39 were female

Occupation: According Occupation wise distribution was found that, maximum no. of patients i.e., Housewife were 36 followed by Student 26 followed by service 15 followed by 13 Worker.

Education: According Education wise distribution was found that, maximum no. of patients i.e., 78 were literate and 12 were illiterate.

Diet: - According Diet wise distribution was found that maximum no. of patients was 67 mix diet and 23 vegetarians.

Changes in symptoms before and after treatment:

A) Changes in *Kasavega* Group A and Group B

On score scale it was seen that 78.86 relieved was seen in group A and relieved 66.94 was seen in Group B. As value of p is less than 0.05 it shows that highly significant results were observed in Group A (Trial Group) than in Group B (Control Group).

B) Changes in *Nisthivan* Group A and Group B.

On score scale it was seen that 83.20 relieved was seen in Group A and relieved 73.55 was seen in Group B. As value of P is lea than 0.05 it shows that highly significant results were observed in Group A (Trial Group) than in Group B (Control Group).

C) Changes in *Peenasa* Group A and Group B.

On score scale it was seen that 83.33 relieved was seen in Group A and relieved 70.48 was seen in Group B. As value of P is lea than 0.05 it shows that highly significant results were observed in Group A (Trial Group) than in Group B (Control Group).

D) Changes in *Shwaskashtata* Group A and Group B.

On score scale it was seen that 86.29 relieved was seen in Group A and 75.45 relieved was seen in Group B. As value of P is lea than 0.05 it shows that highly significant results were observed in Group A (Trial Group) than in Group B (Control Group).

E) Changes in *Agnimandhya* Group A and Group B.

On score scale it was seen that 83.33 relieved was seen in Group A and relieved 75.44 was seen in Group B. As value of P is lea than 0.05 it shows that highly significant results were observed in Group A (Trial Group) than in Group B (Control Group).

Wilcoxon Ranked Sign test and Paired t test was applied to both groups subjective and Objective criteria separately to observe whether the difference between BT and AT score is significant or not.

Group A

H_0: *Murvadhya Churna* is not effective to reduce symptoms and objective criteria in *Kaphaja Kasa*.

H_1: *Murvadhya Churna* is effective to reduce symptoms and objective criteria in *Kaphaja Kasa*.

In the case of all symptoms and objective criteria *Kasavega, Nisthivan, Peenasa, Agnimandhya, Swaskasthata,* ESR and Neutrophils and Eosinophils the test has shown highly significant difference between BT and AT symptoms scores. H1 is accepted and H0 is rejected here. Hence it was concluded that *Murvadhya Churna* is effective to reduce *Kasavega, Shwaskasthata, Agnimandhya, Peenasa, Nisthivan*, ESR, Neutrophils, Eosinophils symptoms and objective criteria in *Kaphaja Kasa*.

Group B

H_0: *Haritakyadi Gutika* is not effective to reduce symptoms and objective criteria in *Kaphaja Kasa*.

H_1: *Haritakyadi Gutika* is effective to reduce symptoms and objective criteria in *Kaphaja Kasa*.

In the case of all symptoms and objective criteria *Kasavega, Peenasa, Nisthivan, Agnimandhya, Swaskasthata,* Neutrophils and Eosinophils, ESR the test has shown highly significant difference between BT and AT symptom scores.H1 is accepted and H0 is rejected here. It was concluded that *Haritakyadi Gutika* is effective to reduce *Kasavega, Peenasa, Nisthivan, Agnimandhya, Swaskasthata,* ESR, Neutrophils and Eosinophils and Objective criteria in *Kaphaja Kasa*.

The drug showing result is almost equal not exactly equal.

Both groups were compared and analyzed statistically by Mann Whitney's U test and t test.

H_0: *Murvadhya Churna* is not effective than *Haritakyadi Gutika* to reduce the symptoms of *Kaphaja Kasa*.

H_1: *Murvadhya Churna* is effective than *Haritakyadi Gutika* to reduce the symptoms of *Kaphaja Kasa*.

In the case of symptoms *Kasavega, Nisthivan, Peenasa, Agnimandhya, Shwashkashata*, ESR and Neutrophils, eosinophils have shown significant difference between mean differences of Group A and Group B. Ho is rejected and H1 is accepted here. It was hence concluded that *Murvadhya Churna* is effective than *Haritakyadi gutika* to reduce symptoms.

Kaphaj Kasa is a common disease in our community. Based on etiology and Symptomatology it was correlated to Chronic Bronchitis. Environmental factors such as pollutants, allergens, smoke, dust, cigarette smoking have great influence on this disease as these are unavoidable factors. Hence, it is need of time to ascertain an effective management of *Kaphaja Kasa*.

The Trial drug *Murvadhya Churna* showed highly significant results in both Subjective and Objective Parameters. It is easily absorbed and digested. Therefore, it can be concluded that *Murvadhya Churna* forms an excellent mean for *Samprapti Vighatana* of *Kaphaj Kasa.*

As described by all *Ayurvedic Samhitas* that aggravated *vata* and *Kapha* is the chief causative factors in the *samprapti* of *Kaphaj Kasa*. *VataKapha shaman* (orally) is the treatment for *Vatakaphashamana*. *Murvadhya Churna* contains *Murva, Chitrak, Pippal, Pippalimool, Chavya, Bharangi, Ajwain, Vacha, Patha, Shirish, Nagarmotha Marich, Renuka, Ativish, Kutki, Jeera, Indrayava, Sunth, Vidanga, hingu. Murva* having *Rasa tikta, Kashaya, Virya Ushana, Vipaka Katu,* having *Deepana*, *Pachana* Properties. *Pippal* having *Rasa Madhur, Virya sheet, Vipaka Madhur* having *Kaphapittashamak* properties. *Pippalimool* having *Katu rasa, Ushna Virya, Vipaka katu* having *Kaphavatghna, deepana, Pachana* properties. *Chavya* having *Katu tikta rasa, Ushna Virya, Vipaka Katu,* having *Kaphavatghana*, *deepana*, *pachana* properties. *Chitraka*

having *Rasa Katu, Ushna Virya, Katu Vipaka* having *kapha vilayana* properties. *Vacha* having *Tikta katu rasa, Ushna Virya, Katu Vipaka* and *Deepana, pachana, grahi* properties. *Patha* having *Tikta Katu rasa, Ushna Virya, Katu Vipaka Kaphavataghana* Properties. *Shirish* having *Kashay tikta Madhura rasa, Ushna virya* and *Katu Vipaka* and *Kaphavataghana* properties. *Ajwain* having *Katu tikta rasa, Ushna Virya* and *Katu Vipaka* and *Kaphagna* properties. *Elaichi* having *Katu Madhur rasa* and *Sheet Virya* having *Kasaghna* properties. *Nagarmotha* having *Tikta kashaya katu rasa*, *Sheet virya, Vipaka Katu* having *Kapha pithagna* property. *Marich* having *Katu rasa Ushna Virya* and *Vipaka katu Vattaghna Pitakar* properties. *Renuka* having *Katu tikta rasa, sheet virya, katu vipaka* and *medhya Vatahara. Ativisha* having *Katu tikta rasa, ushna virya, Vipaka Katu* and *Kaphagna* Properties.

Kutaki having *katu tikta rasa, ushna Virya, Vipaka katu* having *pittaghna* properties. *Jeera* having *katu rasa, Ushna Virya, Vipaka katu* having *Deepana Jwarahara* properties. *Indrayav* having *katu tikta rasa, sheet virya, Vipaka Katu, Tridoshashamaka* properties. *Sunth* having *Katu rasa, Ushna Virya, Madhur Vipaka* and *Vatakaphagna* Properties. *Vidanga* having *katu rasa, ushana virya, Vipaka katu* and *Kaphagna* properties. *Bharangi* having *Tikta katu kashay rasa, ushana virya, vipaka katu* having *kaphagna* properties. *Hingu* having *Katu rasa, Ushna Virya, Katu Vipaka, Kaphavataghna* properties. Along with these *Madha* is given as *Anupana*.

Madha having *Guna Laghu, Grahi, Lekhanam* balances *Kapha* & *Pitta Guna*.

By this way the trial drug possesses producing *Ushna Veerya, Madhura Vipaka, Kasahara Dipana karma* along with the *rasayana* property which helps in pacifying the vitiated *vayu* simultaneously smoothening the mucus membrane of the throat region. *Ushna Veerya, Tikshna guna and katu –tikta rasa* present in the trial drug helps in clearing out the *margavarodha* and clears out the *Kapha*. Meanwhile *Ushna Veerya* and *Madhura Vipaka* also present in the trial drugs helps in pacifying the *Vata*.

The total effect of the therapy is evaluated by taking relief in percentage of each patient. Out of 45 patients in Group A, Good improvement was seen in 29 patients. Moderate improvement was seen in 15 patients. Mild Improvement was seen in 1 patient. In Group B, out of 45patients, Good improvement was seen in 20 patients, Moderate improvement was seen in 21 patients and mild improvement was seen in 4 patients. For *Kasavega* Symptom 78.86% in Group A and 66.94% in Group B. For *Nisthivan* 83.20% in Group A and 73.55% in Group B, for *Peenasa* 83.33% in Group A and 70.48% in Group B for *Shwaskashtatha* 86.29% in Group A and 75.45% in Group B, for *Agnimandhya* 83.33% in Group A and 75.44% in Group B.

Conclusion

Murvadhya churna was highly significant in relieving *kasavega*, *shwaskashtata*, *agnimandya, peenasa, Nishthivan*. It reduces ESR to certain extent and normalize eosinophils and neutrophil counts. By using *Murvadhya Churna* on *Kaphaja Kasa* symptoms as *Kasavega, Nisthivan, Peenasa, Agnimandhya, Shwaskastata* were got the 75% to 100% relief. By using *Hareetakyadi Gutika* on *Kaphaja Kasa* symptoms as *Kasavega, Nisthivan, Peenasa, Agnimandhya, Shwaskashtata* were got the 50 to 75% relief. In view of Observations and Statistical analysis, we concluded that *Murvadhya Churna* Showing significant results than *Hareetakyadi Gutika* in some symptoms of *Kaphaja Kasa*.

Probable mode of action

Murvadhya Churna is having *Ushna Veerya* which mitigates the *sheet guna* of *Vata* and *Kapha*. *Deepana* and *Pachana* properties of *Chitraka, Shirish, Vacha, Elaichi, Renuka, Ativisha* Makes *Agnivardhan* and *Aam Pachana* at the *Amashaya.* Therefore, the ultimate goal is achieved that *Kapha* Migrates in its own *sthan.* Already said properties of *Pippali* enhance the *Dhatugata agni* of *rasa Dhatu* which helps in controlling the vitiation of *Kapha* as the *Kapha* is *mala* of *Rasa*. *Pippalimool* (*Shleshma Sanghata Nashan*) Breaks down *Kapha* useful in thick Sputum, sinusitis and Asthama. *Maricha* because of its *Chedana* (cutting) and *Shoshana* drying effect in it increases digestion strength balances *Kapha* and *Vata dosha*. *Mustha* Having properties like anti-inflammatory activity, anti-allergic activity.

Scope of further study:

The present study was conducted with limited time, limited facilities and limited number of patients. A study of larger group of patients may help to comprehend the mode of action of the trial drug. In the Future additional studies may be performed to take the present issue further in a proper perspective and future possibilities of reduction of modern drug requirement.

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