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Clinical Efficacy of *Kaṇṭakāryāvaleha* in the Management of *Kāsa*

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ABSTRACT

Introduction-*Kāsa* seems to be a very simple disease, if neglected or not managed properly; it may results in disease with poor prognostic condition. In *Āyurveda*, *kāsa* is considered as an independent disease unlike in modern science. It may also occur as a *lakṣaṇa* or an *upadrava* in other diseases. Cough (*Kāsa*) usually occurs in association with acute upper respiratory infection, acute pharyngitis, acute bronchitis and chronic sinusitis, all of which rank among top 10 reason for visiting family physicians. **Materials & Methods-** A non-randomized, single-armed, open-labeled clinical trial was conducted in fifteen patients having classical symptoms of *Kāsa*, administered with 6-10 gms of *kaṇṭakāryāvaleha* twice daily after meals for 15days. The assessment was based on subjective parameters, i.e., *śuṣkavaktraśuṣkoraha*, *śuṣkakaṇṭha*, *hṛtsūlapārśvaśūla* etc. The results were statistically analyzed using the Mann-Whitney test. **Results:** Moderate relief was found in 6 (40%) patients, complete relief was found in 9 (60%) patients. **Conclusion-** *Kaṇṭakāryāvaleha* can be considered as an effective formulation in the management of *Kāsa*.

KEYWORDS

Kāsa, Cough, *Pārśvaśūla*, *Kaṇṭakāryāvaleha*



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INTRODUCTION

Āyurveda is the most ancient science of life. It is not only the science of life but also philosophy of life. Its aim is to maintain good health & prevention of disease. With increasing trend of globalization and urbanization, disorders due to changing life style are in vogue. One such medical concern of global importance is respiratory illness. The living standard of human life is changing. The life style pattern is getting better adapted to the fast and furious growth on the globe. Thus there is a variation in immunity and affinity of attraction for diseases. This variation is seen changing from age to age, country to country in the world. To accomplish the *suhkha* or in the quest of happiness, man is always engaged to find the suitable ways to attain the happiness but unfortunately the body is invited by various diseases, which interrupt the ways of life and human is virtuously trying how to overcome it.

The essential disposition of living activity in a living being is said to be breathing, one of the basic activity of *prāṇavaḥasrotasa*. The lungs with their greater surface area (500 m²) are directly open to the external environment, with the exchange of gases, 16 times per minute making it one of the most vulnerable sites for disease. Thus structural, functional, and microbiological

changes within the respiratory system can be closely related to epidemiological, environmental, occupational, personal, and social factors. The primary respiratory diseases are responsible for a major burden of morbidity and ultimately death. As a result *prāṇavaḥasrotoduṣṭi* has become unavoidable making *kāsa* the most common disease to the extent of 60% of total disease recorded.

Kāsa has been described as a disease as well as a symptom making its appearance special. From time immemorial it has remained as a common ailment within human beings. *Kāsa*, early intervention is important in the field of medicine. Even with today's resources, *kāsa* remains a challenging pathological condition of the respiratory system and can turn heads up if neglected or mismanaged as it may result in poor prognostic conditions such as *kṣatajakāsa*, *kṣayajakāsa* and *tamakaśvāsa*. As a known fact *ucchavāsa* and *niśvāsa* or to say breathing in and breathing out, is the normal phenomenon of life. To and fro movement of air through the *prāṇavaḥasrotasa* is the vital sign of life, the normalcy of which suggests health. The abnormality in respiration indicates disease and its cessation leads to death. This unique sign of the commonest complaints in day to day practice and it is also a symptom of various disease of respiratory system. *Kāsa*



may not be life threatening but increasingly annoying and irritating the individuals in their routine activities. Moreover when neglected it may lead to a series of complications. Recurrent attacks make the individual suffer and may have its adverse effects on the studies. Cough usually occurs in association with acute upper respiratory infection, acute pharyngitis, acute bronchitis and chronic sinusitis, all of which rank among top 10 reason for visiting family physicians.

Cough is neither limited to the any age group nor any socio-economical class of society. Nobody can claim to have escaped from any aspect in the life. It not only has such high prevalence of the disease but is also increasing day by day. It is difficult to treat when this disease is chronic. So it is need of the hour to put some extra work to cure the same.

Cough is the most common symptom of airway and lung disease. More money is spent at the pharmacy on 'coughs and colds' than on any other symptom except perhaps 'aches and pains'. It can be a presenting symptom in lot of clinical conditions of the respiratory system in the view of both major pathy in India. At International meetings of the American Thoracic Society and The European Respiratory Society, cough is one of the most frequent items listed in the

proceedings' indices. Early intervention is necessary in case of *kāsa* (cough) as it is a potential *nidānārthākara vyādhi* (diseases as causative factors for other diseases) to produce *kṣhaya* (consumption)¹. Also it is important to treat at the earliest as it may hamper the proper *vṛiddhi* (growth and development) which is clearly described by *Ācārya Caraka*, that *avighāta* (absence of inhibiting factors) as *śārīravṛiddhikarabhāva* (factors responsible for growth of body)². Thus in the present work *kāsa* (cough) was taken as the subject of intervention. The present clinical study is designed to evaluate the effect of two different classical *yoga* described by the *ācārya* in their respective texts for the management of *kāsa* which are *–kaṇṭakāryāvaleha*^{3,4}. This is not the end of research work in this line; rather this step will pave ways for many other enthusiastic physicians / researchers to find a better cure for this lingering disease. The present clinical study was designed to evaluate the effect of classical *yoga* described by the *ācārya* in their respective texts for the management of *kāsa* which is *Kaṇṭakāryāvaleha*⁵.

Method of Preparation of Drug

A *kvātha* was prepared by adding 9.6 kgs (100 parts) of *yavakūtacūrṇa* of *kaṇṭakārī* in 24.576 lts of water and boiling the mixture till 6.144 lts was left. Fine powder



Table 1 Contents of *Kaṅṭakāryāvaleha*

S. No.	Sanskritname of drug	Botanical name	Part used	Quantity (mātrā)
1.	<i>Kaṅṭakārī</i>	<i>Solanum surattense</i> Burm.	Whole plant	100 part
2.	<i>Gudūcī</i>	<i>Tinospora cordifolia</i> Willd Miers ex Hook f. & thoms	Stem	1 part
3.	<i>Cavya</i>	<i>Piper retro fractum</i> Vahl.	Stem	1 part
4.	<i>Citraka</i>	<i>Plumbago zeylanica</i> Linn.	Root	1 part
5.	<i>Mustaka</i>	<i>Cyperus cariosus</i> R.Br.	Rhizome	1 part
6.	<i>Karkataśrṅgī</i>	<i>Pistacia integerrinia</i> Stewart ex Brandis	Gall	1 part
7.	<i>Śuṅṭhī</i>	<i>Zingiber officinale</i> Roxb.	Rhizome	1 part
8.	<i>Marica</i>	<i>Piper nigrum</i> Linn.	Fruit	1 part
9.	<i>Pippalī</i>	<i>Piper longum</i> Linn.	Fruit	1 parts
10.	<i>Dhanvayāsa</i>	<i>Fagonia cretica</i> Linn.	Whole plant	1 part
11.	<i>Bhārṅgī</i>	<i>Clerodendrum serratum</i> Linn. Moon.	Root	1 part
12.	<i>Rāsanā</i>	<i>Pluchia lanceolata</i> C.B. Clarke	Root/ leaf	1 part
13.	<i>Saṭhi</i>	<i>Hedychium spicatum</i> Buch-Ham.	Rhizome	1 part
14.	<i>Śarkarā</i>	<i>Saccharum officinarum</i> Linn.	-	20 parts
15.	Ghee	-	-	8 parts
16.	<i>Tīla taila</i>	<i>Sesamum indicum</i> Linn.	Seed Oil	8 parts
17.	<i>Madhu</i>	-	-	8 parts
18.	<i>Vamśalocana</i>	<i>Bambusa arundinacea</i> Willd	Latex	4 parts
19.	<i>Pippalī</i>	<i>Piper longum</i> Linn.	Fruit	4 parts

of the drugs is added from the serial no. 2 to 13 (Table no.1) each 96gms (1 part), 1920 gms of sugar, 960 gms of *gau ghṛuta* and 960 gms of *tīla taila* and cooked on low flame till thick paste was formed. The mixture was then allowed to cool and then 960 gms (8 parts) of honey, 480 gms (4parts) of *vamśalocana* and 480 gms (4parts) of *pippalīcūrṇa* was added and mixed well. The prepared compound was kept in a clean, air tight container, each container containing 200gms of medicine.

Method of Administration

15 *vātikakāsa* patients were administered 6-10 gms of *kaṅṭakāryāvaleha* twice daily after meals for 15 days.

Duration of the Trial

The trial was of 15 days where all patients were reviewed thrice on 0th day and 7th day and 15th day i.e. after every 7 days and the assessment was done.

Inclusion Criteria

1. Patients of either sex with age group 16-60 year.
2. Patient having classical signs and symptoms of *vātikakāsa*
3. Patients willing to sign the consent form.

Exclusion Criteria

1. The patients suffering from other systemic illness.
2. The patient taking treatment for some other illness.
3. Pregnant ladies.
4. Any other condition where the principle investigator thinks may be jeopardizing the



study.

AIMS AND OBJECTIVES

To study the efficacy of *Kaṇṭhakāryāvāleha* in *vātikakāsa*.

MATERIALS AND METHODS

Ethical Committee Approval Number IEC/ACA/2016/26

The 15 patients having classical symptoms of *vātikakāsa* attending the OPD of *Maulika Siddhanta*, National Institute of Ayurveda, Jaipur were selected irrespective of sex, caste, religion etc., taking due considerations of inclusion and exclusion criteria. The study was started after approval from the Institutional Ethics Committee IEC/ ACA/ 2016/ 26 dated 26.05.2016. Informed written consent was taken from each patient before starting the treatment.

Criteria for Assessment

Most of the signs and symptoms of *kāsa* are subjective in nature, to get the result subjectively and for statistical analysis, a scoring system have been adopted. The score thus obtained before and after treatment is taken for statistical analysis and percentage relief is taken to see the efficacy of drug. The details of the assessment of the symptoms rating is given below-

SUBJECTIVE PARAMETERS

Table 2 *Śuṣkoraḥa* (dryness in chest)

<i>Lakshana</i>		Grading	
1.	Not present	None	0
2.	Relieve just after food	Mild	1
3.	Mild increase at the time of digestion	Moderate	2
4.	Increase after digestion	Severe	3

Table 3 *Śuṣkakaṇṭha*(dryness in throat)

<i>Lakshana</i>		Grading	
1.	No dryness	None	0
2.	Mild dryness which subsides by taking water	Mild	1
3.	Causing of dryness patient drinks more water to moisten the mouth	Moderate	2
4.	Dryness not subsides by drinking water	Severe	3

Table 4 *Śuṣkavaktra* (dry mouth)

<i>Lakshana</i>		Grading	
1.	No dryness	None	0
2.	Difficulty in chewing	Mild	1
3.	Difficulty in swallowing	Moderate	2
4.	Difficulty in speaking and chewing	Severe	3

Table 5 *Hrt Śūla* (pain in heart)

<i>Lakshana</i>		Grading	
1.	No pain	None	0
2.	Mild pain with cough	Mild	1
3.	Moderate pain with cough	Moderate	2
4.	Pain with and without cough	Severe	3

Table 6 *Pāśv Śūla* (pain in flanks)

<i>Lakshana</i>		Grading	
1.	No pain at all	None	0
2.	Pain present at the time of cough and releive when bout is over	Mild	1



3.	Pain persist sometime after the bout of cough	Moderate	2
4.	Pain present all the time	Severe	3

Table 7 *Urah Śūla* (pain in chest)

Lakshana		Grading	
1.	No pain at all	None	0
2.	Pain present at the time of cough and relieve when bout is over	Mild	1
3.	Pain persist sometime after the bout of cough	Moderate	2
4.	Pain present all the time	Severe	3

Table 8 *Śirah Śūla* (headache)

Lakshana		Grading	
1.	No pain at all	None	0
2.	Pain present at the time of cough and relieve when bout is over	Mild	1
3.	Pain persist sometime after the bout of cough	Moderate	2
4.	Pain present all the time	Severe	3

Table 9 *Moha* (delusion)

Lakshana		Grading	
1.	Not present	None	0
2.	Only present at the time of cough	Mild	1
3.	Present for short duration after the cough	Moderate	2
4.	Present before & after the bout of cough	Severe	3

Table 10 *Kṣobha* (anxiety)

Lakshana		Grading	
1.	Not present	None	0
2.	Only present at the time of cough	Mild	1
3.	Present for short duration after the cough	Moderate	2
4.	Present before & after the bout of cough	Severe	3

Table 11 *Svarakṣaya* (horseness of voice)

Lakshana		Grading	
1.	Normal voice	None	0
2.	Present for short duration after the cough	Mild	1
3.	Present for longer duration	Moderate	2
4.	Present all time	Severe	3

Table 12 *Śuṣka Kāsa* (dry cough)

Lakshana		Grading	
1.	No cough	None	0
2.	Cough bouts 0-2 min., freq.1-2 times/day without pain	Mild	1
3.	Cough bouts 2-5min., freq.5-10 times/day without pain	Moderate	2
4.	Cough bouts >5min., freq.10-15 times/day without pain	Severe	3

Table 13 *Kapham Śuṣkam Kṛcchānmuktivā Alpatā Vrajat* (difficult expectoration with no or very little sputum, feel relieve after expectoration)

Lakshana		Grading	
1.	No such difficulty to expectorate	None	0
2.	Dry cough with no sputum without pain	Mild	1
3.	Dry cough with pain and expectoration with slight difficulty	Moderate	2
4.	Dry	Severe	3

All the patients under trial were asked for any changes or improvement in their growing feeling of well-being either physical or mental and their clinical manifestations produced by the drug under trial.

OBJECTIVE PARAMETERS

The following laboratory parameters were used before and after the course of the therapy for the assessment of any changes



produced during and after the present clinical research trail:-

Table 14 Lab Investigations

1.	CBC
2.	ESR
3.	Chest X-ray (wherever required)

OBSERVATION AND RESULTS

To access the efficacy of both groups, intergroup comparison was done. As the variables are nonparametric test used was

Mann-Whitney test.

Table 15 Results observed in Subjective Parameter

S. No.	Clinical Feature	N	Mean	Diff.	Change in %	SD	SE	T	p	Result		
			AT	BT								
1	<i>śuṣkoraḥa</i>	15	2.33	1.00	1.33	57.14	0.8997	0.2323	5.7394	0.0002	***	
2	<i>śuṣkakaṇṭha</i>	15	2.20	0.87	1.33	60.61	0.7237	0.1869	7.1351	0.0001	***	
3	<i>śuṣkavaktrām</i>	15	1.27	0.53	0.73	57.89	0.8837	0.2282	3.2139	0.0078	**	
4	<i>hṛtśūlam</i>	15	0.73	0.33	0.40	54.55	0.6325	0.1633	2.4495	0.0625	Ns	
5	<i>pāśvśūlam</i>	15	1.07	0.27	0.80	75.00	0.6761	0.1746	4.5826	0.0020	**	
6	<i>uraḥśūlam</i>	15	0.53	0.27	0.27	50.00	0.6172	0.1594	2.0917	0.1250	Ns	
7	<i>śiraḥśūlam</i>	15	1.07	0.53	0.53	50.00	0.7432	0.1919	2.7792	0.0313	*	
8	<i>Moha</i>	15	0.60	0.33	0.27	44.44	0.4577	0.1182	2.2563	0.1250	Ns	
9	<i>kṣobha</i>	15	0.53	0.07	0.47	87.50	0.7432	0.1919	2.4318	0.0625	Ns	
10	<i>svarakṣayām</i>	15	0.87	0.47	0.40	46.15	0.5071	0.1309	3.0551	0.0313	*	
11	<i>śuṣkamkās</i>	15	2.67	0.27	2.40	90.00	0.5071	0.1309	18.330	<0.0001	****	
12	<i>kaphamśuṣkamkr cchānamuktivāalp atāvrajat</i>	15	1.00	0.20	0.80	80.00	1.0142	0.2619	3.0551	0.0156	*	

Table 16 Results observed in Objective Parameters

VARIABLE	G	Mean			% of change	SD	SE	T	P	R
		BT	AT	Diff						
HB	B	13.91	14.13	-0.21	-1.53	0.54	0.14	-1.53	0.2996	NS
TLC	B	7266.67	7333.33	-66.67	-0.92	649.36	167.66	-0.40	0.6444	NS
ESR		19.67	9.13	10.53	53.56	10.20	2.63	4.00	0.0214	S
N	B	59.73	59.63	0.11	0.18	0.00	0.00		0.1312	NS
L	B	30.87	32.07	-1.20	-3.89	11.16	2.88	-0.42	0.5303	NS
E	B	4.00	3.93	0.07	1.67	4.00	0.91	0.07	0.9199	NS
M	B	5.40	5.53	-0.13	-2.47	3.52	0.27	-0.50	0.6702	NS
B	B	0.00	0.00	0.00	0.00	1.03	0.00	0.00		
TRBC	B	4.67	4.65	0.01	0.29	0.00	0.01	1.35	0.0704	NS
TPLC	B	2.33	2.41	-0.08	-3.29	0.20	0.06	-1.36	0.4331	NS
PCV	B	43.90	43.83	0.07	0.17	0.22	0.36	0.21	0.7646	NS
MCV	B	95.15	95.13	0.02	0.02	1.38	0.01	1.90	0.0824	NS
MCH	B	29.96	29.00	0.96	3.20	5.12	0.28	3.37	0.1984	NS
MCHC	B	31.36	31.23	0.13	0.43	2.03	0.52	0.25	0.8135	NS

(**HB** - Hemoglobin, **TLC**-Total Leucocytes Count, **ESR**-Erythrocyte Sedimentation Rate, **N** - Neutrophylls, **L** - Lymphocytes, **E** - Eosinophylls, **M** - Monocytes, **B** - Basophylls, **TRBC** - Total Red Blood Cell count, **TPLC** - Total platelets Count,

PCV - Packed Cell Volume, **MCV** - Mean Corpuscular Volume, **MCH** - Mean Corpuscular Hemoglobin, **MCHC** - Mean Corpuscular Hemoglobin Concentration).



In Table No. 16 no statistically significant changes in Hb%, TLC, N, L, E, M, B, TRBC, TPLC, MCV, MCH,PCV and MCHC profile but statistically significant result was found in ESR (<0.05).

DISCUSSION

As per the values in Table No 15, 74.19% relief was observed in the symptom of *śuṣkoraḥa*, 69.57% relief was observed in *śuṣkakaṇṭha*, 85.71% relief was observed in *śuṣkavaktra*, 81.82% relief was observed in *hṛtśūla*, 70% relief was observed in *pārśvasūla*, 42.86% relief was observed in *uraḥśūla*, 76.92% relief was observed in *śiraḥśūla*, 25% relief was observed in *moha*, 100% relief was observed in *kṣobha*, 81.82% relief was observed in *svarakṣaya*, 96.88% relief was observed in *śuṣkakāsa* and 87.50% relief was observed in *kaphaṃ śuṣkaṃ kṛcchānmuktvā alpatā vrajet*.

The symptoms like *śuṣkoraḥa*, *śuṣkakaṇṭha*, *śuṣkavaktra*, *hṛtśūla*, *pārśvasūla*, *uraḥśūla*, *śiraḥśūla*, *moha*, *kṣobha*, *svarakṣaya*, *śuṣkakāsa* and *kaphaṃ śuṣkaṃ kṛcchānmuktvā alpatā vrajet* were due to *vāta* vitiation. The effect of *kaṇṭakāryāvaleha* was seen on the *prāṇa* & *udāna vāyu*. These symptoms were mainly manifested in *kaṇṭha* & at the seat of *prāṇa* & *udāna vāyu*. The drug having *vāta* &

kapha śāmaka properties acts accordingly to pacify the vitiated *vāta* & *kapha*.

As per the description available in *Āyurveda* texts, therapeutic effect of a drug depends on certain pharmacodynamic properties of its particular content. These pharmacodynamic properties are *rasa*, *guṇa*, *vīrya*, *vipāka* and *prabhāva*.

According to *Āyurveda* pharmacodynamic, drug exert its action through *rasa*, some part through *vīrya*, some through *vipāka* and remaining some part through *prabhāva*⁶.

The ingredients of *kaṇṭakāryāvaleha* are predominantly *kaphavāta śāmaka*. Maximum ingredients are *uṣṇa vīrya*, *kaṭu*, *tikta rasa*, *kaṭu* and *madhura vipāka*, *laghu*, *snigdha* and *tīkṣṇa guṇa* which helps in alleviating the *kapha doṣa*, *anulomana* of *vātadoṣa* and *srotośodhana* helping the obstructed *udāna vāyu* to normalize and leading to *prakṛtagati* of *prāṇavāyu*, hence relieving the signs and symptoms of *kāsa*.

Kaṇṭakāryāvaleha being an *avaleha* formulation also acts on *sthanagatasamprāpti* of the disease. *Avalehakaḷpanā* in itself is responsible for the action of its constituents at *kaṇṭha* level for more time. Therefore it can be laid down that *kaṇṭakāryāvaleha* has potency in the breaking the *samprāpti* of *kāsa*. Drugs are having both *kāsaghna* and *kaphaghna* properties along with *dīpana*, *pācana* and



vātahara properties which are needed to bring back normalcy in respiratory tract. In general cough can better tackled by mucolytic, antitussive, expectorant, soothing and drugs with strong aromatic smell, which acts on different corners of the pathology, a similar attempt was done in the present study by using drugs discussed above.

CONCLUSION

The role of *kañtakāryāvaleha* are seen on *kaphadoṣa*, *anulomana* of *vātadoṣa* and *srotośodhana*, helping the obstructed *udānavāyu* to normalize and leading to *prakṛtagati* of *prāṇavāyu*, hence relieving the signs and symptoms of *kāsa*. *Kaṭu* and *tikta rasa* have local *kaphahara* action on the mucosa. This process explains the symptomatic relief from *kāsa*. The *laghu guṇa* of the drug does the *srotośodhana* by its property of purveyance in to the minute channels therefore cleansing them. The *uṣṇavīrya* of the drug helps in *kaphavāta samśamana* and *doṣavilayana*, *kaṭuvipāka* reduces *kleda* by its *lekhana* and *śodhana* property. *Pācana* followed by *dīpana* and *anulomana* process set rights the digestion and assimilation. Thus it can be concluded *kañtakāryāvaleha* can be used as safe, effective, and economically affordable

‘Therapeutic Agent’ in the management of *kāsa*.



REFERENCES

1. Agnivesa: Charaka Samhita: Ayurveda Dipika Commentary by Chakrapanidatta: Edited by Vaidya Jadavji Trikamji Acharya; Chaukhamba Surbharati Prakashan, Varanasi: Revised Edition 2008. Nidansthana; chapter 8, verse 19 Page no. 227-228.
2. Agnivesa: Charaka Samhita: Ayurveda Dipika Commentary by Chakrapanidatta: Edited by Vaidya Jadavji Trikamji Acharya; Chaukhamba Surbharati Prakashan, Varanasi: Revised Edition 2008. Sharirasthana; chapter 6, verse 12 Page no. 332.
3. Vagbhatt: Astanga Hridaya: Sarvangasundara Commentary by Arunadatta: Edited by Pt. Hari Sadasiva Sastri Paradakara: Chaukhamba Surbharati Prakashan, Varanasi: Edition 2014; Chikitsasthana Chapter 3 verse 63-66 Page no -491.
4. Susruta: Susruta Samhita: Nibandhasangraha Commentary by Sri Dalhanacharya: Edited by Vaidya Jadavji Trikamji Acharya: Chaukhamba Surbharati Prakashan, Varanasi: Reprint 2008. Sharirasthana; Chapter 8, verse 5-8: Page no. 380.
5. Shrangdharacarya: Shrangdhara Shamita: Edited by Bhramanad Tripathi Acharya; Chaukhamba Surbharati

Prakashan, Varanasi: Revised Edition 2017. Madyama Khand; chapter 8, verse 5-8 Page no. 140.

6. Agnivesa: Charaka Samhita: Ayurveda Dipika Commentary by Chakrapanidatta: Edited by Vaidya Jadavji Trikamji Acharya; Chaukhamba Surbharati Prakashan, Varanasi: Revised Edition 2008. Sutrasthana; chapter 26, verse 71-73 Page no. 148-149.