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To Study the Efficacy of *Krishnadi choorna* in Management of *Tamak shwas w.s.r. to Bronchial asthma*

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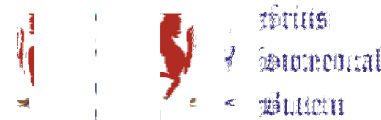
Tamak Shwas,
Krishnadi Choorna,
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ABSTRACT

In the Current Study 60 Patients of *Tamak Shwas* have been selected randomly divided in two groups. The patients showing classical symptoms of *Tamak Shwas* such as *Shwaskruchhrata* (Dyspnoea), *Kasten Bhashya* (Difficult in Expectorations) *Ghur-Ghurak Shabda* (Wheezing or Rhonchi) During night, *Kasten Shleshma Moksha* (Difficult in Expectorations), *Kasa* (Cough), , *Anidra* (Insomnia) etc. were included in this study. For the present study we were given *Krishnadi Choorna* orally. It reduces Respiratory Rate effectively & increases Expansion of Chest, Breath Holding Time, and Peak Expiratory Flow Rate & Sustained Maximal Inspiration which was highly significant statistically as compared with Tab. Deriphyllin. At the end of the study it was found that *Krishnadi Choorna* in Group A is more effective than in Group B.

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Introduction

In the literature of *Ayurveda* there is various chapters which deals with behavioral & dietary changes according to diurnal changes. It suggests if one follows these rules we can lead to healthy life for longer period. Shwas Propounded by *Lord Atreya* in *Charak Samhita*¹ It is a disease of *Pranvaha Srotasa*. Shwas arises due to dust, smoke, wind residing in cold place using cold water physical exertion, intake of rough food, irregular meals, vitiation of ama. Bronchial Asthma has 4 to 5 % of the population in United states is affected. Data from the Centers of Disease control and prevention suggest that 10 to 11 million persons had acute attack in 1998, which resulted in 13.9 million outpatient visits, 2 million request for urgent care, and 423,000 hospitalization which are total >\$6 billion.^[2] Nearly 5 to 10% population suffer from it. In India, prevalence of asthma has been found to be around 6%³. This disease can start at any age, but in a majority it starts before 10 years of age. It is twice more common amongst boys than girls, whereas in adults the male – female ratio is usually equal. This alarming raise in the prevalence of Tamak Shwas can be accounted to factors such as Atmospheric pollution, rapid environmental changes, adaptation of newer dietetic preparations and tremendous psychological stress.

Aim and Objectives

- To Study the efficacy of *Krishnadi Choorna* in *Tamak Shwas*,
- To study Nidanpanchak & modes of management of Tamak Shwas in Ayurvedic aspect.
- To study the aetiopathogenesis & management of Bronchial Asthama in modern aspect

Methods and Materials

Group A: - 30 Patients were treated with “*Krishnadi Choorna*”.

Dose: - 5 gm Twice a Day, after meal for 15 days

Group B:- 30 Patients were treated with “*Tab.Deriphyllin*”

Dose: - 100 mg Thrice day.

Design: A randomized, open label, controlled clinical trial will be conducted on diagnosed patients.

Inclusion Criteria

Age 16 to 60 years

Sex – Both male & female

The patients having signs & symptoms of *Tamak Shwas* as mentioned by *Charak*⁴ are as follows:

- *Shwaskruchhrata* (Dyspnoea)
- *Kasa* (Cough)
- *Ghur-Ghurak Shabda* (Wheezing or Rhonchi) During night.
- *Kasten Shleshma Moksha* (Difficult in Expectoration)
- *Kasten Bhashya* (Difficult in Expectoration)
- *Anidra* (Insomnia)

Exclusion Criteria

- Age – below 16 & above 65 yrs.
- Patients having with signs & symptoms of Cardiac & Renal Asthma.
- Patients suffering from Neurological disorders like epilepsy, hemorrhagic stroack, Meningitis.
- Patients having Psychological disorders.
- Patients having Malignancies.
- Patients having Hypertension.
- Pregnancy & Lactating mother.
- Patient suffering structural lung disease like Tuberculosis, Carcinoma of respiratory tract.

Objective Criteria

- X-Ray chest PA view to rule out other respiratory disease
- Peak Flow Meter for lung capacity
- Spirometry for vital capacity of lung
- ESR
- Eosinophils Count

Preparation of Drug

The drug was prepared in the dept. of *Rasa shastra and Bhaishjya Kalpana*, CSMSS Ayurved Mahavidyalaya, Aurangabad. Contents of *Krishnadi Choorna* are as follows⁵,

Pippali – 1 part
Saindhav – 1 part

Pippali

Piper longum: Piperine 4 to 5% pipalsterol, pipartine. Two alkaloids piperalongumine and piperlonguminine and isobutylamide of piperic acid respectively an unidentified steroid, reducing sugar, glycosides, sesamin and methyl 3,4,5 trimethoxycinnamate (roots).⁶

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Common salts, or simply, salt is the name given to the varied natural and industrial forms of sodium chloride. In the pure state, it is composed of sodium (NaCl) with 39.4 per cent sodium and 60.6 per cent chlorine. But it is often found mixed with small quantities of Mg, Ca, K compounds, etc. Salt is very widely distributed and abundant. Salt occurs as extensive deposits of rock salts, as salt solutions or brines, as efflorescent, earthy crusts, and as sublimation products near volcanoes. Of these types only the first two are of commercial importance. Rock salt occurs in sedimentary rocks, while natural brines of various concentrations occur in sea –water contains on the average about 3.33 per cent in the polar seas to 3.55 per cent and upwards near the equator.

Rock salt or halite is the mineral form of sodium chloride, crystallizing typically in cubes and having perfect cubic cleavage. Rock salt occurs in crystalline, massive and granular to compact forms and is a brittle mineral with a conchoidal fracture and vitreous industries. It is colorless when pure, but often tinged grey, blue, brown or pink because of associated impurities.

Effect of Krishnadi Choorna (Group-A) & Tab. Deriphylline (Group-B) on physical Parameters.

Respiration rate

Group A: The mean grade score of Respiratory rate was 22.86 at the start of the treatment which was reduced to 18.56 at the end of treatment its 't' value is 12.14 (P<0.05%) which is statistically significant.

Group B: The mean grade score of Respiratory rate was 22.9 at the start of the treatment which was reduced to 19.43 at the end of treatment its 't' value is 13.20 (P<0.05%) which is statistically significant.

Expansion of chest

Group A: The mean grade score of Expansion of chest was 83.86 at the start of the treatment which was increase to 85.06 at the end of treatment its 't' value is 9.2 (P<0.05%) which is statistically significant.

Group B: The mean grade score of Expansion of chest was 83.86 at the start of the treatment which was increase to 84.86 at the end of treatment its 't' value is 9.2 (P<0.05%) which is statistically significant.

Breath Holding Time

Group A: The mean grade score of Breath holding time was 10.53 at the start of the treatment which was increased to 12.20 at the end of treatment its 't' value is 10.37 (P<0.05%) which is statistically significant.

Group B: The mean grade score of Breath holding time was 10.46 at the start of the treatment which was increased to 11.83 at the end of treatment its 't' value is 1.80 (P<0.05%) which is statistically significant.

Peak Expiratory Flow Rate

Group A: The mean grade score of Peak Expiratory flow rate was 165.33 at the start of the treatment which was increased to 195.66 at the end of treatment its 't' value is 14.16 (P<0.05%) which is statistically significant.

Group B: The mean grade score of Peak Expiratory flow rate was 170.66 at the start of the treatment which was increased to 192.66 at the end of treatment its 't' value is 38.96 (P<0.05%) which is statistically significant.

Sustained Maximal Inspiration

Group A: The mean grade score of Sustained maximal inspiration was 3.7 at the start of the treatment which was increased to 5.8 at the end of treatment its 't' value is 4.61 (P<0.05%) which is statistically significant.

Group B: The mean grade score of Sustained maximal inspiration was 14.03 at the start of the treatment which was increased to 40.44 at the end of treatment its 't' value is 4.6 (P<0.05%) which is statistically significant.

Effect of Krishnadi Choorna (Group-A) & Tab. Deriphylline (Group-B) on Heomatological Parameters

Haemoglobin

Group A: The mean grade score of Haemoglobin was 10.67 at the start of the treatment which was increase to 10.80 at the end of treatment its 't' value is 5.66 (P<0.05%) which is statistically significant.

Group B: The mean grade score of Haemoglobin was 12.48 at the start of the treatment which was increase to 12.61 at the

end of treatment its 't' value is 1.07 (P<0.05%) which is statistically significant.

WBC

Group A : The mean grade score of White Blood cell was 6930 at the start of the treatment which was reduce to 7063.33 at the end of treatment its 't' value is 13.85 (P<0.05%) which is statistically not significant.

Group B :The mean grade score of White Blood cell was 6863.33 at the start of the treatment which was reduce to 6946.66 at the end of treatment its 't' value is 6.9 (P<0.05%) which is statistically not significant.

Neurophil

Group A: The mean grade score of Neutrophil was 52.10 at the start of the treatment which was reduce to 53.86 at the end of treatment its 't' value is 6.66 (P<0.05%) which is statistically significant.

Group B: The mean grade score of Neutrophil was 61.53 at the start of the treatment which was reduce to 60.13 at the end of treatment its 't' value is 30 (P<0.05%) which is statistically significant.

Lymphocyte

Group A: The mean grade score of Lymphocyte was 34.73 at the start of the treatment which was reduce to 36.30 at the end of treatment its 't' value is 10.98 (P<0.05%) which is statistically significant.

Group B :The mean grade score of Lymphocyte was 34.13 at the start of the treatment which was reduce to 36.50 at the end of treatment its 't' value is 8.15 (P<0.05%) which is statistically significant.

Eosinophil

Group A: The mean grade score of Eosinophil was 7.06 at the start of the treatment which was reduce to 4.50 at the end

of treatment its 't' value is 11.56 ($P < 0.05\%$) which is not significant statistically.

Group B: The mean grade score of Eosinophil was 3.66 at the start of the treatment which was reduce to 3.06 at the end of treatment its 't' value is 7.82 ($P < 0.05\%$) which is not significant statistically.

ESR

Group A: The mean grade score of ESR was 16.9 at the start of the treatment which was reduce to 12.83 at the end of treatment its 't' value is 9.44 ($P < 0.05\%$) which is statistically significant.

Group B: The mean grade score of ESR was 19.7 at the start of the treatment which was reduce to 16.2 at the end of treatment its 't' value is 29.46 ($P < 0.05\%$) which is statistically significant.

Effect of Krishnadi Choorna (Group-A) & Tab. Deriphylline (Group-B) on Subjective Parameters

Shwaskricchata

Group A: It was observed in 30 patients of Group A i.e. 100% there was 61.53% relief observed after treatment. At the end of treatment its 'Z' value is 12.76 ($P < 0.05\%$) which is statistically significant.

Group B: It was observed in 30 patients of Group A i.e. 100% there was 58.49% relief observed after treatment. At the end of treatment its 'Z' value is 12.74 ($P < 0.05\%$) which is statistically significant.

Kasa

Group A: It was observed in 30 patients i.e. 100% there was 65.30% relief observed after treatment. At the end of treatment its 'Z' value is 12.80 ($P < 0.05\%$) which is statistically significant.

Group B: It was observed in 30 patients i.e. 100% there was 55.76 % relief observed after treatment. At the end of

treatment its 'Z' value is 12.76 ($P < 0.05\%$) which is statistically significant.

Ghur - Ghurakshabda

Group A: It was observed in 30 patients i.e. 100% there was 57.14% relief observed after treatment. At the end of treatment its 'Z' value is 12.59 ($P < 0.05\%$) which is statistically significant.

Group B: It was observed in 30 patients i.e. 100% there was 61.81% relief observed after treatment. At the end of treatment its 'Z' value is 12.49 ($P < 0.05\%$) which is statistically significant.

Kastenshlesma moksa

Group A: It was observed in 30 patients i.e. 100% there was 63.63% relief observed after treatment. At the end of treatment its 'Z' value is 12.71 ($P < 0.05\%$) which is statistically significant.

Group B: It was observed in 30 patients i.e. 100% there was 65.00% relief observed after treatment. At the end of treatment its 'Z' value is 12.64 ($P < 0.05\%$) which is statistically significant.

Krcchen Bhashya

Group A: It was observed in 30 patients i.e. 100% there was 60.86% relief observed after treatment. At the end of treatment its 'Z' value is 12.84 ($P < 0.05\%$) which is statistically significant.

Group B: It was observed in 30 patients i.e. 100% there was 60.97% relief observed after treatment. At the end of treatment its 'Z' value is 12.92 ($P < 0.05\%$) which is statistically significant.

Anidra

Group A: It was observed in 30 patients i.e. 100% there was 53.84% relief observed after treatment. At the end of treatment its 'Z' value is 12.53 ($P < 0.05\%$) which is statistically significant.

Group B: It was observed in 30 patients i.e. 100% there was 56.25% relief observed after treatment. At the end of treatment its 'Z' value is 12.59 (P<0.05%) which is statistically significant.

Discussion

Features like appetite, digestion, weight gain, improved due to improved nutrition at the cellular level by *deepan-pachan* (carminative and digestive) and *agnivardhan* (increase digestive power of individual) properties of *Pippali* improved nutrition to each and every body tissue results in improvement in features like general and mental feeling of well being, ability to work and fatigue *Krishnadi Choorna* through *Vata-kaph* pacifying, *srotoshodhan* and *Kapha nissarana* properties makes the pathway clear for proper circulation of *Vata* thus relieving various respiratory signs and symptoms⁸. It was observed that Respiratory Rate reduces significantly. Expansion of Chest, Breath Holding Time & Sustained Maximum Inspiration Increases significantly in Group A as compared to Group B. Haemocrit value of Hb increases significantly. Lymphocyte, Neutrophils & ESR reduces significantly in Group A as compared to Group B. Mild changes were shown in WBC & Eosinophil count. No side effects were observed from the drug during the present study in both groups.

Conclusion

During the comparative study values of both the Groups has been compared and the conclusion were drawn. This it seems that the significant effect of *Krishnadi Choorna* (Group A) is more effective than Tab. Deriphyllin (Group B). On the basis of this study, it can be concluded that trial drug, "*Krishnadi Choorna*" is very much effective in the management of respiratory diseases as an adjuvant. No untoward effects of the drugs

were noted during the trial and follow -up period.

The drug also may act *Mulasthana* of *Pranvaha Strotas*. Even then there is still wide scope to work on *Tamakshwas*. It will be benefited to the Scholars who is interested to work on same topic. Through *Tamak Shwas* is described *Yapya* in Ayurvedic classics, if once sets in, the complication of *Tamak Shwas* and side effects of long term uses of modern anti Asthmatic agents can be controlled or prevent with the best use of this Ayurvedic formulation. It can be evaluated by various ways in same disease. *Krishnadi Choorna* can be compared either Ayurvedic or Modern drugs which is available in the market for the treatment of *Tamak Shwas* i.e. *Bronchial Asthma*. There is wide scope to see the effect of the same drug either in *Vega-Avastha* or *Avegavastha* of *Tamak Shwas*, even it may be tested in the management of *Status Asthmaticus*. It can also seen, whether the drug is able to break down *Samprapti* of *Tamak Shwas* and *Pathogenesis* of *Bronchial Asthma*.

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Table 1: Showing effect of therapy on physical parameter of 30 patient of *Tamak shwas* Group A

Sr. No.	Physical Parameter	Mean BT	Mean AT	% of relief	SD	SE	t value	p value %
1	Respiratory rate	22.86	18.56	18.80	2.03	0.37	8.62	< 0.05
2	Expansion of chest	83.86	85.06	1.43	0.69	0.12	13.83	< 0.05
3	Breath Holding Time	10.53	12.2	15.82	0.76	0.14	11.14	< 0.05
4	Peak Expiratory Flow rate	165.33	195.66	18.34	11.08	2.02	16.5	< 0.05
5	Sustained Maximal Inspiration	3.7	5.8	53.98	0.45	0.08	25.37	< 0.05

Table 2: Showing effect of therapy on physical parameter of 30 patient of *Tamak shwas* in Group B

Sr. No.	Physical Parameter	Mean BT	Mean AT	% of change	SD	SE	t value	p value %
1	Respiratory rate	22.9	19.43	15.15	2.02	0.36	9.4	< 0.05
2	Expansion of chest	83.86	84.86	1.19	0.52	0.09	11.77	< 0.05
3	Breath holding time	10.46	11.83	13.09	0.62	0.11	9.6	< 0.05
4	Peak expiratory flow rate	170.66	192.66	12.89	10.38	1.89	12.16	< 0.05
5	Sustained maximal inspiration	14.03	5.66	40.44	0.49	0.09	17.77	< 0.05

Table 3: Showing effect of therapy on Hb, WBC, Neutrophil, Eosinophil & ESR Group A

Sr. No.	Investigation	Mean BT	Mean AT	% of change	SD	SE	t value	p value %
1	Haemoglobin	10.67	10.8	0.2	0.03	5.66	< 0.05	Haemoglobin
2	WBC	6930	7063.33	75.80	13.85	9.6	<0.05	WBC
3	Neutrophil	52.10	53.86	2.89	0.52	6.66	< 0.05	Neutrophil
4	Lymphocyte	34.73	36.30	1.53	0.27	10.98	< 0.05	Lymphocyte
5	Eosinophil	7.06	4.50	1.28	0.23	11.56	< 0.05	Eosinophil
6	Erythrocyte Sedimentation rate (ESR)	16.9	12.83	2.37	0.43	9.44	< 0.05	Erythrocyte Sedimentation rate (ESR)

Table 4: Showing effect of therapy on Hb, WBC, Neutrophil, Eosinophil & ESR. of Group B

Sr. No.	Investigation	Mean BT	Mean AT	% of change	SD	SE	t value	p value %
1	Haemoglobin	12.48	12.61	0.75	0.13	1.07	< 0.05	Haemoglobin
2	WBC	6863.33	6946.66	61.02	11.15	6.9	< 0.05	WBC
3	Neutrophil	61.53	60.13	0.51	0.09	30.00	< 0.05	Neutrophil
4	Lymphocyte	34.13	36.50	2.12	0.38	8.15	< 0.05	Lymphocyte
5	Eosinophil	3.66	3.06	0.95	0.17	7.82	< 0.05	Eosinophil
6	Erythrocyte Sedimentation rate (ESR)	19.7	16.2	0.74	0.13	29.46	< 0.05	Erythrocyte Sedimentation rate (ESR)

Table 5: Statistical analysis of symptoms of patient of *Tamak Shwas* Wilcoxon – matched pairs signed ranks test.

Symptoms	Sum of ranks of BT	Sum of ranks of AT	No. of Pairs	Z	Comment (Critical valu of z at 5% level of significance=1.96)
<i>Shwaskrucchrata</i>	52	20	30	12.76	Highly Significant
<i>Kasa</i>	49	17	30	12.80	Highly Significant
<i>Ghur-Ghur Shabda</i>	63	27	30	12.59	Highly Significant
<i>Kasten Shelsma Moksha</i>	55	20	30	12.71	Highly Significant
<i>Krucchren Bhashyata</i>	46	18	30	12.84	Highly Significant
<i>Anidra</i>	41	16	30	12.92	Highly Significant

Table 6: Statistical analysis of symptoms of patient of *Tamak Shwas* Wilcoxon – matched pairs signed ranks test.

Symptoms	Sum of ranks of BT	Sum of ranks of AT	No. of Pairs	Z	Comment (Critical valu of z at 5% level of significance=1.96)
<i>Shwaskrucchrata</i>	53	22	30	12.74	< 0.05 Highly Significant
<i>Kasa</i>	52	23	30	12.76	< 0.05 Highly Significant
<i>Ghur-Ghur shabda</i>	55	21	30	12.49	< 0.05 Highly Significant
<i>Kasten Shelsma Moksha</i>	60	21	30	12.64	< 0.05 Highly Significant
<i>Kastena Bhashya</i>	52	24	30	12.53	< 0.05 Highly Significant
<i>Anidra</i>	48	21	30	12.59	< 0.05 Highly Significant