

Clinical Study of Drakshadi Yoga in Childhood Kasa (Cough)

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ABSTRACT

Aim of study: -The aim of study was to evaluate Clinical efficacy of Drakshadi Yoga a plant preparation in the children suffering from Kasa (cough). Drakshadi Yoga which contains *Draksha (Vitis vinifera)*, *Pippali (Piper longum)*, *Haritaki (Terminalia chebula)* and *Vasa (Adhatoda vasica)*. All these drugs have been described to have anti cough and antimicrobial properties in scholarly article.

Material & methods: - For clinical study, a total number of 15 cases including male and female child were registered. Test Drug was given in dose 8-10mg/kg/dose thrice in a day for 14 days in children suffering from cough. All the treated cases were assessed at each follow up on 3rd day, 7th day and 14th day. Efficacy of drugs was assessed clinically on the basis of score provided as per the scoring table and also on the basis of investigations

Result: - Signs and symptoms of Kasa persist maximum up to 2nd follow up, and on 3rd follow up improvement in clinical signs and symptoms were found significant.

Conclusion: - In all cases significant improvement was observed.

Keywords: - Kasa, Cough, Upper Respiratory Tract Infection, Drakshadi yoga.

INTRODUCTION

Respiratory complaints are well described clinical presentation in the modern medical science. It is classified under the broader heading of Respiratory Tract Disorders, which is a bunch of different symptoms and diseases. In developing and even developed countries, pediatric Outdoor Patients Department (OPD) has more than 50% of patients having respiratory tract complaints.^[1,2] As cough is the most dominating symptom of respiratory diseases,^[3] in which majority patients having recurrent cough as the manifestation of recurrent respiratory disease. According to National centre for health statistics, 62 million cases of common cold and cough occurs each year.

In ayurvedic samhitas disease *Kasa* clearly correlate with cough and its Pathophysiology exactly correlates with the mechanism of cough reflex.^[4]

Non judicious use of antibiotics and corticosteroids^[5] in modern system of medicines during present era has led to iatrogenic suppression of host immunity and birth of multidrug resistant traits of pathogens.^[6] This phenomenon in turn results in the recurrence of Respiratory Tract Infection (RTI).^[7] In contemporary system of medicine, antibiotics, anti-histamines, bronchodilators, cough expectorants etc. are commonly used for the management of RTI. Although, they all are effective in reducing the severity of the RTI and suppressing the symptoms, yet, none of

these modalities of treatments provide a permanent cure, and have limitations owing to their effects.

While reviewing of latest government data, in the last decade, year by year mortality rate due to diseases of respiratory system is increasing [8] It was 4.3% in year 2002, 5.7% in 2006, 9.5 % in 2009 and reached to 10.6 % in year 2010. [8]

While comparing the major categories for death in the year 2011 with 8.27%, respiratory tract disorders. It stands 3rd in major six categories for death. [9] In age group 1-4 years, it is 2nd major cause for death with 13.58%. Status is same with 8.45% of total death for age group of 5-14 years.

This study was planned for assessment of clinical efficacy of *Drakshadi Yoga*, which contains *Draksha* (*Vitisvinifera*), *Vasa* (*Adhatodavasica*), *Haritaki* (*Terminalia chebula*) and *Pippal i*(*Piper longum*) in Kasa as per indication made by Yoga ratnakara in Balaroga dhikara, in the form of syrup base to improve the palatability for children.

MATERIALS AND METHODS

The clinical interventional trials are of paramount importance in the field of medical sciences, as the data generated by appropriate clinical trial is the most reliable evidence for further use of the formulation in human population.

In this clinical study, total number of 25 children were registered from the O.P.D of *Kaumarbhritya /Bal- Roga*, O.P.D no. 25, S.S. Hospital, Ayurveda wing, I.M.S, B.H.U, after proper screening on the predesigned Performa. The 15 cases were selected on the basis of following exclusion and inclusion criteria.

A. Inclusion criteria:

- Age between 6 month to 14 years.
- Both male and female children
- Case of productive and dry cough.
- Case of acute or chronic cough.
- Associated with or without blood.
- Mild pain in chest present or absent.

- Not associated with life threatening disease.

B. Exclusion criteria:

- Status asthmaticus
- Severe pneumonia
- Patient suffering from life threatening diseases such as Hepatic, Renal, CVS, CNS, Respiratory and Hematological disorders.
- Not accepting orally
- Cardiac Asthma
- Pleural effusion, Pneumothorax, Pulmonary Tuberculosis.

All 15 registered cases were received Drakshadi yoga in syrup form. Test Drug (Drakshadi yoga) was given in dose 8-10mg/kg/dose thrice in a day for 14 days in children suffering from cough.

Treated Group- : Treated with Drakshadi Yoga

Investigations: The following investigations were used during the study, Routine blood investigations [Hemoglobin (Hb)%, Total Leukocyte Count (TLC), Differential leucocyte Count (DLC), Erythrocyte sedimentation Rate (ESR)], Absolute eosinophil Count (AEC).

Collection and Preparation of medicines:

The fresh part of medicinal plant was collected and the plants were identified and authenticated by the Prof. N. K. Dubey, Professor in Department of Botany, Banaras Hindu University, Varanasi with the voucher specimen no. as given: (Appendix-IV)

1. *Adhatoda vasica* Nees. (Voucher specimen no. Acanth. 2017/4)
2. *Piper longum* L. – (voucher specimen no. Piper 2017/2)
3. *Terminalia chebula* Retz.(voucher specimen no. combret. 2017/1)
4. *Vitis vinifera* L.(Voucher specimen no Vita. 2017/1)

Medicine was prepared as recommended by the *Sharangdharasamhita*. The idea to have trial of the drugs in syrup form is for *kasa* of pediatric age group only.

drug dose determination for Drakshadi Yoga: Syrup Drakshadi Yog given in 8-10mg/kg/dose thrice in a day for 14 days.
Follow up: Every effort was made to get information from the patient's nearest

attendant at each follow up. They were asked for first follow up on day 3rd, 2nd follow up on day 7th and 3rd follow up on day 14th.

Table :1 Objective Parameters (Scoring system)

S.N.	Sign and Symptoms	Scores			
		0	1	2	3
1	Dry cough	No cough attacks	Occasional dry Cough Attacks	Intermittent dry cough	Very frequent dry cough attacks/ Paroxymal cough
2	Productive cough	No cough attacks	Occasional productive Cough attacks	Intermittent productive cough	Very frequent productive cough attacks/ Paroxymal cough
3	Sore throat	No sore throat	Irritation in throat	Pain in throat	Difficulty in swallowing and talking
4	Nasal Block	No Nasal Block/subsided	Mild nasal block no noisy breathing normal breathing through nose	Moderate nasal block breathing through nose with difficulty noisy nasal breathing present	Severe nasal block, patient is mouth breather during sleep
5	Wheezing	No sound/subsided	Occasional/very low intensity sound	Moderate intensity sound	High intensity sound
6	Crepitation	No sound/subsided	Occasional/very low intensity sound	Moderate intensity sound	High Intensity sound

OBSERVATION AND DISCUSSION

Table:2 Age wise distribution of cases in Kasa

Age	Treated Group (n=15)
6 mn-2 yrs	5(33.3%)
2-5 yrs	3(20%)
5-10yrs	5(33.3%)
>10yrs	2(13.3%)

As the table no,2 shows most of the children suffering from kasa are found between age group 6 month to 10 years

Table No:3 Sex wise distribution of cases in Kasa

	Male (% of Male)	Female (% of Female)
Treated Group (n=15)	8(53.3%)	7(46.7%)

Incidence of cough is 53.3% in male while 46.7% in female children.

Table No.: 4 Intra-group correlation of Dry Cough

Group	Dry Cough Grade	No. and % of cases				Within group Comparison (Friedman's test)
		Registration	FU1 (3 rd day)	FU2 (7 th day)	FU3 (14 th day)	
Group treated (n=15)	0-Absent	8(53.3%)	9(60%)	13(86.7%)	15(100%)	$\chi^2=19.645$ P=0.000
	1-Mild	0(0.0%)	3(20%)	2(13.3%)	0(0.0%)	
	2-Moderate	4(26.7%)	3(20%)	0(0.0%)	0(0.0%)	
	3-Severe	3(20%)	0(0.0%)	0(0.0%)	0(0.0%)	

Percentage of patients having symptom dry cough had good improvement from moderate and severe dry cough in Treated group. So all the children has good effect against dry cough.

Table No. :5 Intra-group correlation of Productive Cough

Group	Productive Cough Grade	No. and % of cases				Within group Comparison (Friedman's test)
		Registration	FU1 (3 rd day)	FU2 (7 th day)	FU3 (14 th day)	
Treated Group (n=15)	0-Absent	7(46.7%)	7(46.7%)	11(73.3%)	14(93.3%)	$\chi^2=22.562$ P=0.000
	1-Mild	0(0.0%)	5(33.3%)	4(26.7%)	1(6.7%)	
	2-Moderate	4(26.7%)	3(20%)	0(0.0%)	0(0.0%)	
	3-Severe	4(26.7%)	0(0.0%)	0(0.0%)	0(0.0%)	

Patients having symptom productive cough, 93.3% cases had improved to absent productive cough from moderate to severe productive cough in last follow.

Table No :6 Intra-group correlation of Sore Throat

Group	Sore Throat Grade	No. and % of cases				Within group Comparison (Friedman's test)
		Registration	FU1 (3 rd day)	FU2 (7 th day)	FU3 (14 th day)	
Treated Group (n=15)	0-Absent	6(40%)	9(60%)	14(93.3%)	15(100%)	$\chi^2=23.833$ P=0.001
	1-Mild	2(13.3%)	5(33.3%)	0(0.0%)	0(0.0%)	
	2-Moderate	5(33.3%)	0(0.0%)	1(6.7%)	0(0.0%)	
	3-Severe	2(13.3%)	1(6.7%)	0(0.0%)	0(0.0%)	

In last follow up all the cases had 100% improvement in sore throat. So, all the children have good effect against sore throat.

Table No.: 7 Intra-group correlation of Blocking of Nose

Group	Nasal block Grade	No. and % of cases				Within group Comparison (Friedman's test)
		Registration	FU1 (3 rd day)	FU2 (7 th day)	FU3 (14 th day)	
Treated Group (n=15)	0-Absent	2(13.3%)	5(33.3%)	14(93.3%)	15(100%)	$\chi^2 = 33.919$ P = 0.000
	1-Mild	2(13.3%)	8(53.3%)	1(6.7%)	0(0.0%)	
	2-Moderate	6(40%)	2(13.3%)	0(0.0%)	0(0.0%)	
	3-Severe	5(33.3%)	0(0.0%)	0(0.0%)	0(0.0%)	

On second follow up, 91% improvement was seen in patients having symptom blocking of nose. It means the drugs are found effective in reducing nasal block.

Table No.8: Intra-group correlation of Wheezing

Group	Wheezing Grade	No. and % of cases				Within group Comparison (Friedman's test)
		Registration	FU1 (3 rd day)	FU2 (7 th day)	FU3 (14 th day)	
Treated Group (n=15)	0-Absent	12(80%)	13(86.7%)	14(93.3%)	15(100%)	$\chi^2 = 6.429$ P = 0.093
	1-Mild	2(13.3%)	2(13.3%)	1(6.7%)	0(0.0%)	
	2-Moderate	1(6.7%)	0(0.0%)	0(0.0%)	0(0.0%)	
	3-Severe	0(0.0%)	0(0.0%)	0(0.0%)	0(0.0%)	

66.6% cases were improved from mild to moderate wheezing initially on 7th day of treatment.

Table No. 9: Intra-group correlation of Crepitations

Group	Crepitation Grade	No. and % of cases				Within group Comparison (Friedman's test)
		Registration	FU1 (3 rd day)	FU2 (7 th day)	FU3 (14 th day)	
Treated Group (n=15)	0-Absent	13(86.7%)	13(86.7%)	14(93.3%)	15(100%)	$\chi^2 = 5.667$ P = 0.129
	1-Mild	0(0.0%)	1(6.7%)	1(6.7%)	0(0.0%)	
	2-Moderate	2(13.3%)	1(6.7%)	0(0.0%)	0(0.0%)	
	3-Severe	0(0.0%)	0(0.0%)	0(0.0%)	0(0.0%)	

there is 50% improvement was seen from mild to moderate crepitations on second follow up. So drug is found effective against crepitations.

Table No.:10 Mean Difference of Hemoglobin (Hb%) at Registration and FU3 :

Groups	Hb% Mean ± SD		Within the group comparison (Paired 't' test)
	At registration (Day -0)	3 rd follow up (Day-14)	
Treated Group (n=15)	12.26± 0.53	12.40±1.40	-0.133±0.639 t = -0.807 P =0.433

The mean value of hemoglobin concentration was increased on day 14 of treatment. Thus, the drugs have good effect in enhancing Hb%.

Table No: 11 Mean Difference of TLC (Total leukocyte count) at Registration and FU3:

Groups	TLC Mean ± SD		Within the group comparison (Paired 't' test)
	At registration (Day -0)	3 rd follow up (Day-14)	
Treated Group (n=15)	10299.33± 2283.06	9466±1630.55	833.333±777.033 t = 4.154 P =0.001

The mean value of total leukocyte count was decreased on day 14 of treatment i.e. reduced to normal value after treatment. Thus, the drugs have good effect in reducing the infection.

Table No:12 Mean Difference of N (Neutrophil count) at Registration and FU3:

Groups	Neutrophils count Mean ± SD		Within the group comparison (Paired 't' test)
	At registration (Day -0)	3 rd follow up (Day-14)	
Treated Group (n=15)	58.80± 9.033	55.60±4.939	3.200±6.090 t = 2.033 P =0.061

The mean value of neutrophil count was decreased on day 14 of treatment. This means changes is also within the normal range. The mean decrease in Neutrophils count is 5.4% by drug. This change in neutrophil count is statistically significant.

Table No:13 Mean Difference of ESR (Erythrocyte Sedimentation Rate) at Registration and FU3

Groups	ESR Mean ± SD		Within the group comparison(Wilcoxon Signed Ranks Test)
	At registration (Day -0)	3 rd follow up (Day-14)	Day0 – Day14
Treated Group (n=15)	21.47± 13.89	9.67±4.86	Z = -3.098 P =0.002

Mean decreases in Erythrocyte sedimentation rate (ESR) on day 14 of treatment. This mean decrease is also within the normal range. Thus, it can be saying that the drug used in the study have beneficial effect on Erythrocyte Sedimentation Rate.

Table No :14 Mean Difference of AEC (Absolute Eosinophil Count) at Registration and FU3

Groups	AEC (Absolute Eosinophils Count) Mean ± SD		Within the group comparison(Wilcoxon Signed Ranks Test)
	At registration (Day -0)	3 rd follow up (Day-14)	Day0 – Day14
Treated Group (n=15)	325.46± 18.61	241.27±159.63	Z = 2.669 P =0.008

Mean decreases in Absolute Eosinophil Count (AEC) on day 14 of treatment. But this mean decrease is also within the normal range. So, it can be saying that the drugs used in the study have beneficial effect on absolute eosinophil count.

SUMMARY & CONCLUSION

Efficacy of drug was assessed clinically on the basis of score provided as per the scoring table and also on the basis of investigations. In this study the incidence of *kasa* is found more in males as compared to female. Maximum cases belong to age between 6 months to 2 years.

Signs and symptoms of Kasa persist maximum up to 2nd follow up, and on 3rd follow up improvement in clinical signs and symptoms were significant. Almost all the clinical features were found absent except productive cough.

In the analysis of laboratory investigations significant improvement was observed in increasing of HB%, as well as in reducing of TLC, ESR and AEC.

The *Adhatoda vasica* documented for its potent anti-inflammatory, antioxidant, antiallergic, antitussive, antiasthmatic, bronchodilatory and smooth muscle relaxant activity. [10]

Pharmacological properties of extract of *Terminalia chebula* may validate the popular use of this herb in cough related to numerous respiratory diseases [11]

The *P. longum* have activity against *E. coli*, *P. aeruginosa*, *Bacillus cereus*, *Shigella dysenteriae*, *Salmonella typhi*, *Staphylococcus aureus*, *Klebsiella pneumonia*. [12]

Study shows that Drakshadi yoga is effective in reducing the cough by means of anti-inflammatory, antioxidant, antiallergic, antitussive, antiasthmatic, bronchodilatory and smooth muscle relaxant activity. Also reduces non-judicious use of antibiotics and corticosteroids and decreases the suppression of host immunity and birth of multidrug resistant traits of pathogens.

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