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## EFFECT OF PIPPALI (PIPER LONGUM) CHURNA IN KAPHAJA KASA (RECCURENT WET COUGH) IN CHILDREN OF AGE 2-7 YEARS

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### Abstract:

**Introduction:** Kasa is a disease of pranavaha srotas, more common in children due to their inherent anatomical and immunological deficits. Kasa presents with constellation of symptoms with cough as main feature. In Kaphaja kasa the predominant dosha is kapha and it manifests as cough with white, thick and sticky expectoration. There are hardly any published data on recurrent cough in children and effect of Pippali (*Piper longum* Linn.) on kasa in children. Thus, the aim of the trial was to evaluate pippali churna on kaphaja kasa. **Materials and method:** An open label, quasi, experimental trial to evaluate Pippali churna on kaphaja kasa children aged 2 to 7 years. Assessment was done based on changes in clinical features using CASA-Q questionnaire before and after therapy. The changes were assessed using wilcoxon sign rank test. **Results:** The present study shows that Pippali churna is effective in reducing the clinical features of Kaphaja kasa and its impact in terms of reduced frequency of cough ( $p=0.002$ ), severity of cough ( $p=0.001$ ), shortness of breath ( $p=0.025$ ), annoyed after cough and sputum ( $p=0.002$ ), avoidance to public places ( $p=0.003$ ), interruption in activities ( $p=0.002$ ), conversation ( $p=0.007$ ) and improved sleep ( $p=0.008$ ). **Discussion:** Pippali churna is effective in reducing the symptoms of kaphaja kasa in children by virtue of its deepana, pachana, kapha hara and rasayana properties. Pippali churna with milk did not show any untoward effects in the proposed dose and duration of the study. **Conclusion:** Pippali churna by and large is effective on kaphaja kasa in children.

**Key words:** Ayurveda, CASA-Q, Kaphaja Kasa, Pippali churna, Rasayana

## INTRODUCTION

Kasa is a disease of pranavaha srotas (involving respiratory system) explained in Ayurveda. In fact, Kasa involves a constellation of clinical conditions manifesting with cough as a cardinal symptom. Kaphaja kasa is type of kasa with the lakshana as Bahula, Snigdha, Sandra, Ghana, Shweta, Madhura, Steevanayukta Kasa which means cough manifesting with thick viscid, white, sweetish expectoration.<sup>[1]</sup> More over if neglected it may lead into Dushta Pratishyaya, Tamaka shwasa, Kshataja Kasa, Raja yakshma.<sup>[2]</sup>

Cough is the fifth most common symptom for which patients seek care and prevalence rate of which is 25% in children worldwide.<sup>[3]</sup> Cough usually occurs in association with acute upper respiratory tract infection, acute pharyngitis and acute bronchitis as well as in chronic sinusitis, all rank among the top 10 reasons for visiting pediatrician.<sup>[4]</sup> As per vital statistics of India, year by year mortality rate due to Respiratory System disorders is increasing and is third among six major categories of death.<sup>[5]</sup> Current management guidelines includes antimicrobial therapy and anti cough formulations. These recommendations though successful in curbing the acute features still prevention of recurrence remains as a challenge to the modern medical fraternity.

Ayurveda proposes a comprehensive management guideline for kasa that includes drugs and formulations along with local therapy. Deepana (enhancing digestion), brihmana (nutritive) and srotoshodhana (tissue restorative) treatment forms the basic principles of kasa chikitsa.<sup>[6]</sup> This when clubbed with Rasayana (rejuvenation) therapy can yield better results to restrict recurrence.

The researches done on drugs mentioned in the treatment of kasa have confirmed expectorant, pharyngeal demulcent, mucolytic, mast cell stabilizing capacity etc. Pippali (*Piper longum*) is one such widely used herb with myriad actions on different systems including respiratory and immune system.<sup>[7]</sup>

## Materials and Methods

**Study drug:** Pippali churna with milk.

## Method of preparation

Dry Pippali procured from the local market and authenticated in the department of Dravyaguna at Sri Dharmasthala Manjunatheshwara College of Ayurveda, Hassan.

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powder of the same is prepared, packed (30 gram each) with labelling at the teaching pharmacy.

**RESEARCH DESIGN:** Open label, quasi experimental study.

### **Research setting**

Outpatient department and in patient department of Kaumarabhritya of Sri Dharmasthala Manjunatheshwara College of Ayurveda and hospital, Hassan, Karnataka, India.

### **Research population**

Children of age 2-7 years attending kaumarabhritya out patient department and in patient department with clinical manifestations of Kaphaja kasa.

**Sampling method:** Convenience sampling method

### **Inclusion criteria**

Children of age group 2-7 years with h/o recurrent kaphajakasa fulfilling diagnostic criteria irrespective of gender, religion and socio economic status.

### **Exclusion Criteria**

Kshatajakasa, kshayajakasa, kasa as an anubandha lakshana in other systemic disease like Pneumonia. Children suffering from any chronic illness of any system, developmental disorders, congenital anomalies, and diagnosed case of asthma, pulmonary tuberculosis, COPD and chronic debilitating illnesses.

**Duration of study:** 3 months

### **ASSESSMENT CRITERIA**

1. Signs and symptoms of Kaphaja kasa based on modified Cough and Sputum Assessment Questionnaire (CASA-Q)<sup>[8]</sup>
2. Recurrence of Kasa.

### **Technique of data collection**

As per the inclusion criteria, the children suffering from Kaphaja kasa were thoroughly interrogated; history and facts were noted in a specially designed clinical proforma. It

included age, gender, and dietary habits, family history, past illness, physical findings, clinical manifestations, treatment history and allergy history. Mechanical devices such as height weight scale, measuring tape, and thermometer were used as aids in collection of data. Proforma included the CASA-Q, the questionnaire for analyzing the impact of cough and sputum in routine activities of the child. Such collected data tabulated and analyzed using SPSS (Statistical package for social sciences) version 23 by using Wilcoxon's signed rank test.

### Treatment schedule

Children with kaphaja kasa were given Pippali churna 1 gram twice daily with 30ml milk for 90 days and assessed before and after the study as per the assessment criteria. All the subjects were asked to visit the researcher once in 15 days to ensure regularity in treatment.

### Observations

The demographic data showed that out of 11 children 4 were male and 7 females. Majority of them (81.2%) were from nuclear family and all of them were residing in urban area. Socioeconomic status assessment revealed that 7 were from upper middle class and 3 were from lower middle class and one child was from upper lower class. Changes observed on clinical manifestations of kaphaja kasa based on CASA- Q are summarized in table1.

**Table 1: Effect of Pippalichurna on features of cough based on CASA-Q (N=11):**

	Ranks	N	Mean Rank	Sum of Ranks	P value
Cough worsens Morning/day	Negative Ranks	3 <sup>a</sup>	2.50	7.50	0.317
	Positive Ranks	1 <sup>b</sup>	2.50	2.50	
	Ties	7 <sup>c</sup>			
Tiredness after cough	Negative Ranks	11 <sup>d</sup>	6.00	66.00	.001
	Positive Ranks	0 <sup>e</sup>	.00	.00	
	Ties	0 <sup>f</sup>			

Shortness of breath	Negative Ranks	5 <sup>g</sup>	3.00	15.00	.025
	Positive Ranks	0 <sup>h</sup>	.00	.00	
	Ties	6 <sup>i</sup>			
Annoyed by cough and Sputum	Negative Ranks	10 <sup>j</sup>	5.50	55.00	.002
	Positive Ranks	0 <sup>k</sup>	.00	.00	
	Ties	1 <sup>l</sup>			
Avoidance of public places due to cough	Negative Ranks	9 <sup>m</sup>	5.00	45.00	.003
	Positive Ranks	0 <sup>n</sup>	.00	.00	
	Ties	2 <sup>o</sup>			
Interference with activity	Negative Ranks	10 <sup>p</sup>	5.50	55.00	.002
	Positive Ranks	0 <sup>q</sup>	.00	.00	
	Ties	1 <sup>r</sup>			
Cough interrupts conversation	Negative Ranks	7 <sup>s</sup>	4.00	28.00	.007
	Positive Ranks	0 <sup>t</sup>	.00	.00	
	Ties	4 <sup>u</sup>			
Sleep disturbance	Negative Ranks	10 <sup>v</sup>	6.00	60.00	.008
	Positive Ranks	1 <sup>w</sup>	6.00	6.00	
	Ties	0 <sup>x</sup>			
Severity of cough	Negative Ranks	9 <sup>m</sup>	5.00	45.00	.003
	Positive Ranks	0 <sup>n</sup>	.00	.00	
	Ties	2 <sup>o</sup>			

In a pilot study to evaluate the effectiveness of pippali churna amongst 11 children suffering from recurrent kaphaja kasa following observations noted. All had cough in day time initially and at the end of the therapy, three were relieved of day time cough, while one child reverted to day cough after the treatment (P=0.317). Children who were

on Pippali churna showed significant reduction in Getting tired after coughing (0.001), shortness of breath (0.025), annoyed after cough and sputum (0.002), avoidance to public places (0.003), interruption in activities (0.002), conversation (0.007), sleep (0.008), except for cough bothering other people (0.157). There was significant reduction in night time sputum, frequency in sputum both (0.002), colour (0.011) and difficulty in bringing up sputum (0.003). There was highly significant reduction in cough severity (0.002) and number of episodes of cough (0.003).

## DISCUSSION

Cough is a symptom of respiratory pathology. More so cough has higher incidence in children owing to their anatomical and physiological peculiarities. Persistent cough indicates variation in the natural defence mechanisms and also may hint towards impending severe infections like pneumonia or Koch's disease.<sup>[3]</sup> Thus, early management and preventing the episodes of cough is essential. Control of recurrent episodes and improvement in quality of sleep, activity and reduction in severity of cough indicate better control of the disease. Thus, in the current study overall significant results noted in the management of kasa as evaluated by using CASA-Q. This can be attributed to expectorant, pharyngeal demulcent, mucolytic, mast cell stabilizing properties of pippali.<sup>[7]</sup> Through-out the study only one child presented with heart burn and burning micturation around the end of first week which was due to wrong dose of pippali adapted and got corrected on adjusting proper dose adjustment. There were no drop outs in the study indicating effectiveness of the drug. One child had acute exacerbation of cough that demanded concurrent medications for effective control of cough.

## CONCLUSION

Pippalichurna in a dose of one gram with milk twice daily is effective in treatment of kaphajakasa in children. Further validation with a controlled study in a larger sample is essential.

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