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Clinical Study of *Balchaturbhadra Churna* in the Management of Kasa Roga (Allergic Bronchitis) in Children

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ABSTRACT

Kasa, a condition resembling allergic bronchitis in children, is characterized by irritation of the respiratory mucosa leading to coughing. This study aimed to evaluate the clinical efficacy of *Balchaturbhadra Churna* in managing *Kasa* in children aged 3 to 10 years. A total of 10 children with mild persistent allergic bronchitis were enrolled in a single-arm, open-label trial. The drug was administered for 30 days, with dosage determined using Young's formula. The primary endpoints were alleviation of subjective symptoms (e.g., chest pain, dry cough, hoarseness) and improvement in objective parameters (e.g., CBC, ESR, WBC). Significant improvements were observed in both subjective symptoms, such as reduced chest pain (55% relief), and objective parameters, including a reduction in ESR (45.35% relief) and eosinophils (34.5% relief). The therapy demonstrated statistically significant results in reducing symptoms of *Kasa*, with no adverse effects reported during the study. Thus, *Balchaturbhadra Churna* was proved to be a safe and effective treatment for managing *Kasa* in children.

Key Words: Allergic, Ayurveda, Ativisha, *Balchaturbhadra*, Children, Cough, *Kasa*, *Musta*, *Pippali*, *Karkashingi.*

INTRODUCTION

Kasa is *Pranavah Strotodusthijanya Vyadhi*. It is one of the independent diseases. Cough occurs due to irritation of respiratory mucosa and the mechanism of respiratory system helps to bring out secretion from trachea and bronchi. Recurrent attacks make one suffer and may have its adverse effects on the day today life. Cough occurs in association with acute upper respiratory infection, *acute pharyngitis*, acute bronchitis and chronic sinusitis, all of which rank among the top 10 reasons for visiting physician. (1) *Kasa* caused due to vitiation of *Tridoshas* (Three body constituent). The vitiated *Prana Vayu* along with *Udana Vayu* which further gets aggravated in association with other *Doshas* and expelled out abruptly with a "coughing sound" like the *broken bronze* vessel, called as *Kasa*.[2] If it is neglected and not treated properly at proper time then the condition worsens. *Acharya Charaka* defines *Kasa* as – Release of obstructed *Vayu* with the production of abnormal sound is called as *Kasa*. This maybe dry (without secretions) or productive with secretions (3).

Acharya Sushruta defines *Kasa as*- Production of a typical sound obtained from broken bronze vessel is the cardinal symptom of the disease [(4).] *Nidana* (etiology) of *Kasa* mentioned in the classics can be categorized as *Samanya* and *Vishesh Nidana*. *Samanya Nidana* mentioned by *Acharya Sushruta and Acharya Madhava* are *Dhoom, Dhooli, Raja, Vyayama, Rukhsya Anna Sevan, Bhojanvimargaman, Chavathuvegavarodh, VisheshNidana.* [5,6] *Acharya Charaka* explained the *Samprapti* (pathogenesis) of *Kasa*,[7] as because of *Vataprakopa*, downward movement of *Prana Vayu* is obstructed and thus attains upward movement with *Udana Vayu* and localized in throat and chest. Obstruction at chest and neck region forces them to get filled up in the channels of head and neck. After that sudden extension or jerky movement in areas *of Hanu* (temporomandibular joint), *Manya*(neck) and the whole body accompanied by contraction of thoracic cage and eyes leading to increase in the intrathoracic pressure, all directed towards glottis. Then there is Forceful expulsion of air because of the sudden opening of glottis producing a typical sound is called *Kasa* which is either dry due to absence of sputum or accompanied with sputum. In *Ashtanga Sangraha Acharya* explained that due to *Vata Prokopa, ApanaVayu* is obstructed and it attains upward movement. [(8)] In the current study, it has been planned to explore the effectiveness of *Balchaturbhadra churna* in the management of *Kasa rog* in children.

AIM AND OBJECTIVE

To explore the clinical effectiveness of *Balchaturbhadra churna* in alleviating symptoms associated with *Kasa* in children.

MATERIALS AND METHODS

Children of both sexes, aged 3 to 10 years with mild persistent allergic bronchitis, were enrolled in the trial from the OPD and IPD departments of Sanjeevani Hospital, PGIA, Jodhpur.

IEC & CTRI Registration

The study received clearance from the Institutional Ethics Committee (DSRRAU/PGIA/IEC/2023-24/705) and was registered with the Clinical Trial Registry of India (CTRI/2024/04/065244). Written informed consent was obtained from each participant prior to their inclusion in the clinical trial.

INCLUSION CRITERIA-

1. Individual between age group of 3 to 10 years of both sexes.
2. All the case of either sex, cast, and religion shall be included in the study.
3. Children diagnosed as *Kasa* as per contemporary medical sciences as per clinical features mentioned *in Ayurvedic* texts.

EXCLUSION CRITERIA-

1. Children below 3and above 10 years of age.
2. Patients having other acute and chronic upper and lower respiratory tract disease such as Pulmonary tuberculosis, Chronic lung disease, Bronchiectasis, Bronchogenic Carcinoma, Pneumonia, Bronchiolitis etc.
3. Patients having cardiac disease will be excluded from the study.
4. Patients having endocrinal disorders, protein energy malnutrition (PEM) disorder, and inborn error of metabolism.

STUDY DESIGN-

Table no.-1 Depicting the Study Design

Name of drug	***Balchaturbhadra Churna***
Number of patients	10
Dose	As per young's formula
Type of study	Single arm open label
Duration of drug trial	30days

Route	Oral
Purpose	Treatment
Endpoint	Efficacy

TRIAL DRUG PREPARATION-

Table no.-2 depicting the ingredients of *Balchaturbhadra churna*

S. No.	Drugs	Botanical Name	Quantity
1.	*Musta*	*CyprusrotundusLinn*	1part
2.	*Pippali*	*PiperlongumLinn*	1part
3.	*Ativisha*	*Aconitum heterophyllumWall*	1part
4.	*Shringi*	*Pistaciaintegerrima*	1part

DOSAGE:

Young Formula: - $\frac{Adult\ dose\ X\ Age\ in\ years}{Age + 12}$

Table no.-3 depicting the dosages of *Balchaturbhadra churna* in children by Young Formula

Age of child (years)	3 yrs	4 yrs	5 yrs	6 yrs	7 yrs	8 yrs	9 yrs	10 yrs
Dose (gm)	2.5 gm	3 gm	3.5 gm	4 gm	4.5 gm	5 gm	5.2 gm	5.5 gm

Where adult dose of *CHURNA* mentioned in *Sharangadhara Samhita* is *1 Karsh* i.e. 12gm.

Frequency–The quantity of this *churna* as per the age of child per day in 2divided doses i.e.BD

ASSESSMENT CRITERIA-

Subjective Parameters: Before and after 30 days which included specified symptoms *Hrauitshoola, parshwashoola, urshashoola, shirashool, swarabheda, moha, daurbalya* etc.

Objective Parameters: CBC, ESR, Chest Xray.

OBSERVATIONS AND RESULTS:

General observation in trial-Total 11 patients were selected for the study of *Tamaka Shwasa* (Bronchial Asthma) but only 10 patients completed their trial for study.

Table no.-4 depicting the Demography Data of the Present Study

Contents	Details	No of patients	%
1. Age	03-04 years	3	30
	05-06 years	2	20
	07-10 years	5	50
2. Gender	Male	5	50
	Female	5	50
3.Religion	Hindu	10	100
	Muslim	0	00
	Others	0	00
4.Socioeconomic Status	*Upper class*	0	00
	Middle class	10	100
	Lower	0	00
5.Dietary Habits	*Vegetarian*	10	100
	Non vegetarian	0	00
	Mix	0	00
6. Habitat	*Urban*	10	100
	Rural	0	00
7. Desh	*Janghal*	10	100
8. *Sharirik Prakriti*	*Vata- Kapha*	6	60
	Pitta-Kapha	2	20
	Vata-Pitta	2	20

9. *Mansika Prakriti*	*Rajasika- Tamasika*	10	100
10. Samhanana	*Madhyam*	09	90
	Avar	01	10
11.*Satmya*	*Madhyam*	7	70
	Avar	3	30
12. *Satva*	*Madhyam*	4	40
	Avar	6	60
13. *Vyayamshakti*	*Madhyam*	7	70
	Avar	3	30
14.*Abhyavarana Shakti*	*Madhyam*	7	70
	Avar	3	30
15. *Jaran Shakti*	*Madhyam*	6	60
	Avar	4	40
16. *Vaya*	*Annada*	10	100
17. *Agni*	*Mandagni*	6	60
	Madhyama	1	10
	Vishmagni	3	30
18.*Koshtha*	*Mradu*	2	20
	Madhyama	7	70
	krura	1	10
19.*Nidra*	*Alpa nidra*	4	40
	Ati nidra	6	60

EFFECT OF TRIAL DRUG- *BALCHATURBHADRA CHURNA* ON SUBJECTIVE & OBJECTIVE PARAMETERS:

Table no.-5 Effect of *Balchaturbhadra Churna* on the Subjective Parameters

S. N	Chief Complaint	Mean score		Diff	% Relief	S.D.	S.E.	W	P	S
		BT	30th day							
1.	Chest Pain	2.70	1.00	1.70	33.34	0.675	0.213	55	0.002	VS
2.	Pain in flanks	2.70	0.70	2.00	75.0	0.471	0.149	55	0.002	VS
3.	Pain in throat region	2.90	2.30	2.10	70.0	0.994	0.316	45	0.0039	VS
4.	Headache	2.50	0.70	1.80	71.67	0.788	0.249	55	0.002	VS
5.	Hoarseness in voice	2.70	0.70	2.00	76.67	0.471	0.149	55	0.002	VS
6.	Dryness of chest, throat and mouth	2.80	0.90	1.90	68.34	0.567	0.179	55	0.002	VS
7.	Horripilation	2.70	0.40	2.30	85.0	0.675	0.213	55	0.002	VS
8.	Resonant sound during cough	2.50	0.50	2.00	81.67	0.471	0.149	55	0.002	VS
9.	Weakness	2.50	0.60	1.90	78.34	0.567	0.179	55	0.002	VS
10	Unconsciousness	2.60	0.20	2.40	93.34	0.516	0.163	55	0.002	VS
11.	Dry cough	2.40	0.30	2.10	88.34	0.738	0.233	55	0.002	VS
12.	Semi solid cough	2.20	0.30	1.90	83.34	0.875	0.277	45	0.0039	VS
13.	Effect of unctuous, sour, saline food	2.50	0.40	2.10	86.67	0.316	0.100	55	0.002	VS

*n- sample size, BT- Before treatment, AT – After treatment, Diff.- Difference, S.D.- Standard Deviation, S.E- Standard error, W – sum of all ranks in Wilcoxon sign rank test, 'P' value –Probability of observations, S – Significance of obtained P Value, ES- Extremely Significant, VS- Very Significant, S- Significant.

Table-6 Effect of *Balchaturbhadra Churna* on the Objective Parameters

S.no	Lab Invest.	Mean score		Diff	% Relief	S.D.	S.E.	T	P	S
		BT	AT							
1.	Hb	12.01	12.53	-0.520	4.97	0.886	0.280	1.855	0.0967	NS
2.	WBC	8.288	6.459	1.829	19.46	2.371	0.749	2.440	0.0374	S
3.	Neutrophil	5.037	4.793	0.244	0.49	1.536	0.485	0.5022	0.6276	NS
4.	Lymphocyte	3.910	3.106	0.804	21.33	1.393	0.440	1.825	0.1012	NS

5.	Monocyte	0.548	0.534	0.014	1.43	0.216	0.068	0.2048	0.8423	NS
6.	Eosinophil	0.575	0.344	0.231	34.50	0.220	0.069	3.309	0.0091	VS
7.	Basophil	0.058	0.042	0.016	13.04	0.027	0.008	1.863	0.0954	NS
8.	ESR	32.30	17.50	14.80	45.35	5.138	1.625	9.109	<0.0001	ES

***T- Paired t-test Value, N.S.-non-significant**

DISCUSSION

Allergic bronchitis is a condition that affects the bronchial tubes, causing inflammation and irritation due to exposure to allergens. *Acharya Charaka* defines *Kasa* as - Release of obstructed *Vayu* with the production of abnormal sound is called as *Kasa*. This may be dry (without secretions) or productive (with secretion) [9] *Acharya Sushruta* defines *Kasa* as - Production of a typical sound obtained from broken bronze vessel is the cardinal symptom of the disease[10]. *Nidana* (etiology) of *Kasa* mentioned in the classics can be categorized as *Samanya* and *Vishesh Nidana*. *Samanya Nidana* mentioned by *Acharya Sushruta* and *Acharya Madhava* are *Dhoom, Dhooli, Raja, Vyayama, Rukhsya Anna Sevan, Bhojanvimargaman, Chavathuvegavarodh.* [11]

Probable mode of Action of trial drug:

Kasa have *Kapha, and Vata* predominance. For its management, *Acharyas* have explained that those drugs have *Kapha-Vataghna, Ushnaveeryakatu rasa & Dipana-Pachan* properties are useful. Drugs with these properties is useful in the management of *Kasa. Balchaturbhadra Churna has been* selected from, *Bhaishajya Ratnavali* [12] *in Bal rogadhikar chapter 71. Balchaturbhadra Churna* is mentioned in the management of the *Kasa Roga in children.* Therefore, in this present study, it had been considered a trial drug.

Table no.-7 Pharmacodynamic properties of trial drugs

S.NO	DRUG	RASA	GUNA	VIRYA	VIPAKA	DOSHAGNATA PRABHAVA
1.	*Musta*	*Tikta, katu*	*Laghu*	*Sheeta*	*Madhura/katu*	*Kaphahara, pittahara*
2.	*Ativisha*	*Tikta, Katu*	*Laghu*	*Ushna*	*Katu*	*Kaphahara, pittahara*
3.	*Karkatshrung*	*Tikta, kashaya*	*Laghu*	*Ushna*	*Katu*	*Kaphahara, vatahara*
4.	*Pippali*	*Katu*	*Ushna, Snigdha, Laghu*	*Ushna*	*Madhura*	*Kaphahara, vatahara*

Furthermore, various studies on these medications have shown their anti-inflammatory, anti-allergic, immunomodulatory, antioxidant, and antibacterial, antispasmodic effects. Cough is mainly produced due to post-nasal dripping which causes throat irritation. Improvement in cough may be because of pacification of *Vata* and *Kapha Dosha* and removal of obstructing *Kapha* from the *Pranavaha Srotas* due to anti-tussive and mucolytic properties of the ingredient as *Karkatshringi.*

CONCLUSION

Allergic bronchitis, a common condition affecting children of all ages and both sexes, is characterized by recurrence and chronicity. It closely resembles the Ayurvedic condition of "*Kasa*," with *Vata* and *Kapha* dominance being comparable to the pathophysiology of allergic bronchitis, such as inflammation and endo-bronchial obstruction. This clinical study found statistically significant improvements in both subjective and objective parameters when treating *Kasa* with *Balchaturbhadra churna*, suggesting its efficacy in managing allergic bronchitis. Importantly, no adverse

effects were observed during the trial, making it a safe therapeutic option.

Declaration by Authors

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Conflict of Interest: The authors declare no conflict of interest.

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