ISSN 2456-3110
Vol 5 · Issue 4
July-Aug 2020

Journal of Ayurveda and Integrated Medical Sciences

www.jaims.in

JAIMS

An International Journal for Researches in Ayurveda and Allied Sciences

Charaka Publications

Indexed

Journal of
Ayurveda and Integrated Medical Sciences
ISSN 2456-3110
ORIGINAL ARTICLE July-Aug 2020

Effect of *Phaltrikadi Kwatha* in the management of *Pandu* in Children - An Open Clinical Trial

Dr. Vikas Kumar[1], Dr. Pankaja P. Savanur[2]

[1]Final Year Post Graduate Scholar, [2]Reader, Department of Kaumarbhritya, KAHER's Shri. B.M.K. Ayurved Mahavidyalaya, Shahpur, Belagavi, Karnataka, INDIA.

ABSTRACT

Background: *Pandu* (Anemia) is one of the commonest and most prevalent diseases in Pediatric population in India. Drugs available in the market used for treating Anemia (*Pandu*) have untoward effects like constipation, non-palatability, intolerance, loss of appetite etc. It is today's need to safely treat the *Pandu* (Anemia) in children with herbal preparations which are mentioned in many Ayurvedic Classics which are economical and safe. So *Phalatrikadi Kwatha* a formulation mentioned to be useful in the management of *Pandu Roga* was used in the present study. **Aim and Objectives: Primary:** To evaluate the efficacy of *Phalatrikadi Kwatha* in *Pandu* in children. **Secondary:** To evaluate the Efficacy of *Phalatrikadi Kwatha* in different *Prakruti* in *Pandu* in children. **Methodology:** This study was an interventional open labelled clinical trial and conducted on 30 diagnosed Patients of *Pandu* for a period of 30 days. Follow up was done on 10th, 20th, 30th days of study on the basis of subjective criteria and Hb% before treatment and after treatment. **Results:** Symptoms of Anemia and Hb% level were statistically analysed for any change before treatment, after treatment and during the follow up. Statistically significant changes ($p<0.05$) were observed in subjective *(Dourbalyata, Aruchi)* and objective (Hb%) parameters of *Pandu Rogi*. No significant difference was observed in different specific *Dosha* dominant *Prakruti*. **Conclusion:** *Phalatrikadi Kwatha* was found effective in the treatment of *Pandu* in children, thus showing significant results with respect to symptoms like *Dourbalyata, Aruchi* and increase in Hb%.

Key words: *Pandu Roga, Anemia, Phalatrikadi Kwatha, Hb%.*

INTRODUCTION

Pandu Roga can be effectively compared with Anemia on the ground of its similar clinical presentation. *Pandu* is a *Pitta Pradhana Tridhosaja* and *Varnopalakshita Vyadhi* where in paleness is pathognomonic. Anemia is a disease that has similar paleness, constitutional symptoms, pathogenesis and etiology. Symptoms of *Pandu* are *Panduta* of *Twak, Netra, Nakha, Anana, Daurbalya, Shrama, Bhrama, Swasa, Arohanaayasa, Aruchi, Pindikodvestana* and in *Pandu* line of treatment are *Shamana, Shodhana* and *Pathya.*[1]

According to 3rd National Family Health Survey 79% of Indian children are affected from Anemia including 71% of urban children and 84% of those in rural area.[2] By observing high prevalence of Anemia, Government of India launched National Nutritional Anemia control Programs.[2]

Mandagni is the main cause for *Pandu Roga*. Most of the drugs which are advised in the management of *Pandu Roga* possess *Katu Rasa, Tiksana, Snigdha* and *Laghu Guna, Kaphavatahara* and are having *Deepana, Pachana, Rasayana* properties. Drugs available in market have their own limitations and adverse effects

Address for correspondence:
Dr. Vikas Kumar
Final Year Post Graduate Scholar, Department of Kaumarbhritya, KAHER's Shri. B.M.K. Ayurved Mahavidyalaya, Shahpur, Belagavi, Karnataka, INDIA.
E-mail: vikas.k.mechu@gmail.com

Submission Date: 08/07/2020 Accepted Date: 12/08/2020

Access this article online

Quick Response Code

Website: www.jaims.in

DOI: 10.21760/jaims.5.4.2

ISSN: 2456-3110 ORIGINAL ARTICLE July-Aug 2020

like non-palatability, intolerance, loss of appetite, constipation etc.[3]

Phalatrikadi Kwatha is preparations in the management of *Pandu Roga*. The pharmacodynamic study of individual constituents of this drug has revealed a wide range of actions in *Pandu Roga*. It is a herbal combination, containing *Triphala, Amruta, Vasa, Tikta, Nimba, Bhunimba*, which has properties of *Deepana, Pachana* and *Kaphavata Shamana*. This drug was selected because it is economical as well as palatable with good safety profile. A quick overview through the indications clearly reveals that it is an apt formulation for the management of *Pandu Roga*. Therefore, the present study was an effort made to gather and to study and to document the effect of *Phalatrikadi Kwatha* in *Pandu Roga* with respect to reduction in signs and symptoms.

Materials and Methods

Study Design

An open clinical trial

Selection of cases

Based on the clinical features of *Pandu Roga* the patients were selected for the study.

Inclusion Criteria

1. Patients of either sex between the ages 6 -16 years.
2. Patients fulfilled diagnostic criteria were selected.
3. Hb between 8 gm % to 10 gm %.

Exclusion Criteria

1. Haematological disorders like sickle cell Anaemia, haemolytic anaemia etc.
2. Anaemia child who requires any form of Emergency management, PICA
3. Acute/chronic severe infections like Pneumonia, T.B.
4. Children having any known congenital disorders like CHD etc.

Selection of drug

Phalatrikadi Kwatha is mentioned in the context of treatment of *Pandu Roga* in *Cakradatta*.[4] The formulation was preserved with help of preservatives for easy administration. Honey mentioned as *Anupana* in original text were giving separately to the patients. *Phalatrikadi Kwatha* was taken as trial drug for the present study.

Approval of institutional ethical committee

Institutional Ethics committee's approval was taken for the open clinical trial.

Procurement of the drug

Trial raw drug was collected from pharmacy. Authentification was done in Central Research Facility, KAHER's Shri. BMK Ayurveda Mahavidyalaya, Belagavi. The trial drug were prepared as per classical method in the attached GMP certified Ayurveda Pharmacy of the institute. After that preservatives (Methyl Paraben, Propyl Paraben, Sodium Benzoate) added as per standard. Packaging was done in bottles as per required dose.

Analytical study of the trial drug

The trial drug was subjected to various physiochemical analytical tests to evaluate the standards of drugs was done in central research facility belagavi. The reports of analytical test of the trial drug *Phalatrikadi Kwatha* are mention below;

Nature of the preparation: *Kwatha* (liquid)

Organoleptic parameters

- **Colour -** Brown
- **Odour -** Fragrent
- **Taste -** Bitter

Table 1: Physiochemical Properties

Ph	4*
Specific gravity	1.028*
Total solid	7.762*
* These value are mean value of freshly prepared 3 samples.	

Microbial stability test was done in subsequent month upto 1 year and their finding was in normal limits.

ISSN: 2456-3110 ORIGINAL ARTICLE July-Aug 2020

Qualitative test was also done for organic and inorganic compounds.

Qualitative Analysis

Table 2: Test for Organic Compounds

Calcium	Present
Magnesium	Absent
Sodium	Present
Potassium	Absent
Iron	Present
Chloride	Present
Sulphates	Present
Carbonates	Absent
Nitrates	Present
Phosphate	Present

Laboratory investigations: Hb%

Assessment Criteria

Subjective Parameters

1. *Pandutwa* (Pallor)
2. *Daurbalyata* (weakness)
3. *Aruchi* (loss of appetite)
4. *Shrama* (Fatique)

Objective Parameters

1. Hb%

Grading of Assessment Crieteria

1. *Pandutwa* (Pallor)

Table 3: Grading for *Pandutwa*

Symptoms	Grading
No Pallor	0
Conjunctiva slightly pale, nail and other mucous membrane not pale	1
Conjunctiva slightly pale, nail and other mucous membrane slightly pale	2
Conjunctiva slightly pale, nails, mucous membrane pale	3

2. *Daurbalyata* (weakness)

Table 4: Grading for *Daurbalyata*

Symptoms	Grading
No *daurbalyata*	0
Not able to perform strenuous activities (E.g.- Outdoor games, lifting wt.)	1
Not able to perform moderate activities (E.g. climbing, Running etc.)	2
Cannot perform moderate but can perform mild activities without difficulty (E.g. routine works like bathing, walking, eating food etc.)	3
Even mild activities cannot be performed (Routine work cannot perform	4

3. *Aruchi* (loss of appetite)

Table 5: Grading for *Aruchi*

Symptoms	Grading
Take normal diet.	0
Less oral intake compare to routine diet.	1
Sometimes takes food properly, most of time avoid.	2
Patient avoid food.	3

4. *Shrama* (fatique)

Table 6: Grading for *Shrama*

Symptoms	Grading
No fatigue	0
Fatigue but not affecting patient daily activities.	1
Fatigue affecting patient daily activities	2
Activity reduced due to fatigue.	3

Analysis of data and use of statistical methods

- **Willcoxon matched pairs test:** used for comparison between the follow ups.

ISSN: 2456-3110 ORIGINAL ARTICLE July-Aug 2020

- **Paired t test:** used for Haemoglobin for comparison between before and after treatment.
- **Kruskal Wallis ANOVA followed by Mann-Whitney U test:** used for comparison between 3 groups (*Vata, Pitta, Kapha*) in term of assessment criteria at different follow up.

OBSERVATIONS

In demographic data gender wise distribution, 10 (67%) children were male & 20 (33%) children were female. Age wise distribution of 30 children 16 (53%), children belonged to the age group more or equal to 11yrs and 14 (46.67%) children belonged to the age group less or equal to 10 yrs.

In this study 27 (90%) children were from Hindu community and remaining 3 (10%) children were from other communities. 27 (90%) children were having *Mandagni* and 3 (10%) children were having *Samagni*. *Nidra* indicated that 24 (80%) children were having normal *Nidra* and 6 (20%) children having *Atinidra.* 14 (46.67%) children were having *Kapha* dominant *Prakruti*, 12 (40%) children were having *Pitta* dominant *Prakruti* and 4 (13.33%) children were having *Vata* dominant *Prakruti*.

RESULTS

Pandutwa scores have shown statistically non-significant results from 0th day to subsequent follow ups (10th, 20th, 30th day) with p value (>0.05) and have shown statistically non-significant results from 10th day to subsequent follow ups (20th, 30th day) with p value (>0.05).

Table 7: *Pandutwa* scores from 0th day to subsequent follow ups by Wilcoxon matched pairs.

Treatment time	Median	IQR	Mean	SD	Z-value	p-value
0th Day	2.00	0.00	1.83	0.38		
10th Day	2.00	0.00	1.83	0.38	--	--
0th Day	2.00	0.00	1.83	0.38		
20th Day	2.00	0.00	1.83	0.38	--	--
0th Day	2.00	0.00	1.83	0.38		
30th Day	2.00	0.00	1.80	0.41	--	--
10th Day	2.00	0.00	1.83	0.38		
20th Day	2.00	0.00	1.83	0.38	--	--
10th Day	2.00	0.00	1.83	0.38		
30th Day	2.00	0.00	1.80	0.41	--	--
20th Day	2.00	0.00	1.83	0.38		
30th Day	2.00	0.00	1.80	0.41	--	--

The mean scores decrease of *Pandutwa* was present in all the 3 *Prakruti* (*Vata*, *Pitta*, *Kapha*) but during pairwise comparison between *Kapha -Vata*, *Kapha - Pitta*, *Pitta-Kapha* it was not statistically significant with p value >0.5.

Table 8: Comparison of *Pandutwa* mean scores b/w 3 groups (*Kapha*, *Pitta*, *Vata*)

Time	KAPHA			PITTA			VATA			H-value	p-value	Pair wise comparisons		
	Mean	SD	Median	Mean	SD	Median	Mean	SD	Median			K vs P	K vs V	P vs K
0th Day	1.93	0.27	2.00	1.83	0.39	2.00	1.50	0.58	1.50	3.9770	0.1370	p=0.6807	p=0.2025	p=0.3320
10th Day	1.93	0.27	2.00	1.83	0.39	2.00	1.50	0.58	1.50	3.9770	0.1370	p=0.6807	p=0.2025	p=0.3320
20th Day	1.93	0.27	2.00	1.83	0.39	2.00	1.50	0.58	1.50	3.9770	0.1370	p=0.6807	p=0.2025	p=0.3320
30th Day	1.93	0.27	2.00	1.83	0.39	2.00	1.25	0.50	1.00	8.7890	0.0120 *	p=0.6807	p=0.0436 *	p=0.0896

Daurbalyata scores have shown statistically non-significant results from 0th day to 10th with p value >0.05, followed by statistically significant results b/w 0th day to subsequent follow ups (20th, 30th day) with p value 0.0001(i.e <0.05) which is highly significantand have shown statistically significant results from 10th

ISSN: 2456-3110 ORIGINAL ARTICLE July-Aug 2020

day t subsequent follow ups (20th, 30th day) with p value <0.05, followed by statistically significant results b/w 20th to 30th day with p value <0.05.

Table 9: *Daurbalyata* scores from 0th day to subsequent follow ups by Wilcoxon matched pairs test.

Treatment time	Median	IQR	Mean	SD	Z-value	p-value
0th Day	2.00	1.75	1.53	1.01		
10th Day	2.00	1.75	1.50	1.01	--	--
0th Day	2.00	1.75	1.53	1.01		
20th Day	1.00	2.00	1.07	0.87	3.2958	0.0010*
0th Day	2.00	1.75	1.53	1.01		
30th Day	1.00	1.00	0.80	0.61	4.1069	0.0001*
10th Day	2.00	1.75	1.50	1.01		
20th Day	1.00	2.00	1.07	0.87	3.1798	0.0015*
10th Day	2.00	1.75	1.50	1.01		
30th Day	1.00	1.00	0.80	0.61	4.0145	0.0001*
20th Day	1.00	2.00	1.07	0.87		
30th Day	1.00	1.00	0.80	0.61	2.5205	0.0117*

The mean scores decrease of *Daurbalyata* was present in all the 3 *Prakruti* (*Vata*, *Pitta*, *Kapha*) but during pairwise comparison between *Kapha-Vata*, *Kapha-Pitta*, *Pitta-Kapha* it was not statistically significant with p value >0.5.

Table 10: Comparison of *Daurbalyata* mean scores b/w 3 groups (*Kapha*, *Pitta*, *Vata*)

Time	KAPHA			PITTA			VATA			H-value	p-value	Pair wise comparisons		
	Mean	SD	Median	Mean	SD	Median	Mean	SD	Median			K vs P	K vs V	P vs K
0th Day	1.57	1.09	2.00	1.42	0.90	2.00	1.75	1.26	2.00	0.7020	0.7040	p=0.6070	p=0.7500	p=0.5048
10th Day	1.50	1.09	2.00	1.42	0.90	2.00	1.75	1.26	2.00	0.5300	0.7670	p=0.7773	p=0.6710	p=0.5048
20th Day	1.14	0.95	1.00	1.00	0.85	1.00	1.00	0.82	1.00	0.1230	0.9400	p=0.7576	p=0.8318	p=1.0000
30th Day	0.86	0.66	1.00	0.67	0.49	1.00	1.00	0.82	1.00	0.9040	0.6360	p=0.5371	p=0.7500	p=0.4669

Aruchi scores have shown statistically significant results from 0th day to subsequent follow ups (10th, 20th, 30th day) with p value 0.0001 (i.e. <0.05) which is highly significant and also have shown statistically significant results from 10th day to subsequent follow ups (20th, 30th day) with p value <0.05, followed by statistically significant results b/w 20th to 30th day with p value <0.05

Table 11: *Aruchi* scores from 0th day to subsequent follow ups by Wilcoxon matched pairs

Treatment time	Median	IQR	Mean	SD	Z-value	p-value
0th Day	1.00	1.00	1.23	0.63		
10th Day	0.00	1.00	0.47	0.57	4.1973	0.0001*
0th Day	1.00	1.00	1.23	0.63		
20th Day	0.00	0.00	0.20	0.41	4.5407	0.0001*
0th Day	1.00	1.00	1.23	0.63		
30th Day	0.00	0.00	0.03	0.18	4.5407	0.0001*
10th Day	0.00	1.00	0.47	0.57		
20th Day	0.00	0.00	0.20	0.41	2.5205	0.0117*
10th Day	0.00	1.00	0.47	0.57		
30th Day	0.00	0.00	0.03	0.18	3.1798	0.0015*
20th Day	0.00	0.00	0.20	0.41		
30th Day	0.00	0.00	0.03	0.18	2.0226	0.0431*

The mean scores decrease of *Aruchi* was present in all the 3 *Prakruti* (*Vata*, *Pitta*, *Kapha*) but during pairwise comparison between *Kapha -Vata*, *Kapha -Pitta*, *Pitta-Kapha* it was not statistically significant with p value >0.5.

ISSN: 2456-3110 ORIGINAL ARTICLE July-Aug 2020

Table 12: comparison of *Aruchi* mean scores b/w 3 groups (*Kapha* , *Pitta*, *Vata*)

Time	KAPHA			PITTA			VATA			H-value	P-value	Pair wise comparisons		
	Mean	SD	Median	Mean	SD	Median	Mean	SD	Median			K vs P	K vs V	P vs K
0th Day	1.29	0.61	1.00	1.33	0.49	1.00	0.75	0.96	0.50	2.0200	0.3640	p=0.9181	p=0.2648	p=0.2253
10th Day	0.50	0.65	0.00	0.50	0.52	0.50	0.25	0.50	0.00	0.6880	0.7090	p=0.8774	p=0.5592	p=0.4669
20th Day	0.21	0.43	0.00	0.25	0.45	0.00	0.00	0.00	0.00	1.1650	0.5580	p=0.8774	p=0.5240	p=0.4669
30th Day	0.07	0.27	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.1430	0.5650	p=0.7576	p=0.8318	p=1.0000

Shrama scores have shown statistically non significant results from 0th day to subsequent follow ups (10th, 20th, 30th day) with p value (>0.05) and was shown statistically non significant results from 10th day to subsequent follow ups (20th, 30th day) with p value (>0.05).

Table 13: *Shrama* scores from 0th day to next follow ups by Wilcoxon matched pairs test.

Treatment time	Median	IQR	Mean	SD	Z-value	p-value
0th Day	1.00	0.75	1.00	0.74	--	--
10th Day	1.00	0.75	1.00	0.74		
0th Day	1.00	0.75	1.00	0.74	--	--
20th Day	1.00	0.75	0.97	0.72		
0th Day	1.00	1.50	1.00	0.74	1.6036	0.1088
30th Day	1.00	0.75	0.90	0.66		
10th Day	1.00	1.50	1.00	0.74	--	--
20th Day	1.00	0.75	0.97	0.72		
10th Day	1.00	1.50	1.00	0.74	1.6036	0.1088
30th Day	1.00	0.75	0.90	0.66		
20th Day	1.00	0.75	0.97	0.72	--	--
30th Day	1.00	0.75	0.90	0.66		

The mean scores decrease of *Shrama* was present in all the 3 *Prakruti* (*Vata*, *Pitta*, *Kapha*) but during pairwise comparison between *Kapha -Vata*, *Kapha -Pitta*, *Pitta-Kapha*, it was not statistically significant with p value >0.5.

Table 14: Comparison of *Shrama* mean scores b/w 3 groups (*Kapha*, *Pitta*, *Vata*)

Time	KAPHA			PITTA			VATA			H-value	p-value	Pair wise comparisons		
	Mean	SD	Median	Mean	SD	Median	Mean	SD	Median			K vs P	K vs V	P vs K
0th Day	1.00	0.78	1.00	0.83	0.58	1.00	1.50	1.00	2.00	2.4170	0.2990	p=0.6070	p=0.2882	p=0.1456
10th Day	1.00	0.78	1.00	0.83	0.58	1.00	1.50	1.00	2.00	2.4170	0.2990	p=0.6070	p=0.2882	p=0.1456
20th Day	0.93	0.73	1.00	0.83	0.58	1.00	1.50	1.00	2.00	2.5390	0.2810	p=0.7773	p=0.2220	p=0.1456
30th Day	0.93	0.73	1.00	0.83	0.58	1.00	1.00	0.82	1.00	0.1980	0.9060	p=0.7773	p=0.8734	p=0.7160

The mean score of Hb% was improved from 9.29 to 9.55 which is statistically significant with p value 0.0001.

Table 15: Comparison of Hb% age at before and after treatment by Paired T test.

Treatment time	Mean	SD	Diff. mean	Diff. SD	Paired t	p-value
0th Day	9.29	0.68	-0.26	0.21	-6.8538	0.0001*
30th Day	9.55	0.66				

The mean increase of Hb% was present in all the 3 *Prakruti* (*Vata*, *Pitta*, *Kapha*) but during pairwise comparison between *Kapha -Vata*, *Kapha -Pitta*, *Pitta-Kapha*, it was not statistically significant with p value >0.5.

Table 16: Comparision OF Hb% b/n three group (*Vata, Pitta, Kapha*)

Time	KAPHA		PITTA		VATA		F-value	p-value	Pair wise comparisons		
	Mean	SD	Mean	SD	Mean	SD			K vs P	K vs V	P vs K
0th Day	9.24	0.66	9.37	0.67	9.28	0.92	0.1157	0.8912	p=0.8824	p=0.9946	p=0.9719
30th day	9.46	0.62	9.56	0.60	9.85	1.02	0.5199	0.6004	p=0.9320	p=0.5715	p=0.7322

ISSN: 2456-3110 ORIGINAL ARTICLE July-Aug 2020

DISCUSSION

Discussion on observation

Age: In present study incidence of anaemia was found in age group 11 yrs or more (53.33%) probably it may be due iron requirement due to rapid body growth and poor iron absorption which is required for haemoglobin synthesis.[5]

Agni: 27% of the children in this study had *Mandagni* assessed by their poor appetite. According to Ayurveda, all the diseases occur due to presence of *Mandagni.* It does improper digestion & improper absorption of nutrients & minerals.[6]

***Prakruti*:** Anaemia was found in 46.67% children of *Kapha* dominant *Prakruti*, 40% of *Pitta* dominant *Prakruti*. *Prakruti* plays a vital role in vitiation of *Doshas* and children with certain diseases. This finding revealed predominance of *Pitta Dosha* in pathogenesis of *Pandu*.[7]

Gender: The present study showed the ratio between Males to females 1:2 while it has been shown that the prevalence of anemia is greater among females as compared to males, the current study findings are not representatives of this possibly due to small sample size.

Religion: This data shows that *Pandu* is more prevalent in Hindu community (90%) compared to other communities. This may be due to the larger Hindu population in this region.

***Nidra*:** In this study 20% children had *Atinidra*, while 80% children had *Samyaka Nidra*. This *Atinidra* may be because in *Pandu* there is *Agnimandya* due to this weakness occurs due to obstruction in *Uttarotara Dhatuposhana* which leads to *Atinidra*.

Discussion of effect of therapy

Symptoms were scored and statistically analysed for any change before and after the study. In the group statistically significant change ($p<0.05$) was observed. All children showed good improvement.

Effect of drug on *Daurbalyata* (Generalized weakness)

Among 30 patients, all the patients were having *Daurbalyata*. This symptom might be more prominent in *Pandu Rogi* because of *Dhatu Kshaya* and *Ojo Kshaya* which is the result of pathogenesis of *Pandu.* In subsequent follow up, there is 28.66% relief from 10^{th} to 20^{th} day and 25.23 % from 20^{th} to 30^{th} day with $p<0.05$ which is statistically significant.

In *Phalatrikaadi Kwatha Amalaki, Haritaki, Guduchi* are having *Balya* and *Rasayana* property, it might replenishes and rejuvenate impaired *Dhatus* which ultimately increases *Bala* and decreases the weakness. Most of the drugs in the formulation are having *Deepana, Pacana* property which increase the *Agnibala* & decrease *Aruchi* in food which leads to *Uttarotara Dhatupoashana* ultimately decreasing *Dourbalyata*.

Effect of drug on *Aruchi*

Among 30 patient 27 patient were having *Aruchi*, this may be because *Pandu* is occurring mainly due to *Mandagni.* Among 27 patients after treatment there is 97.56% relief in aruchi with $p< 0.05$ which is statistically significant. This may be due to *Deepana, Pachana* drugs in formulaton.

Pandu occurs due to *Agnivikruti, Varnahani, Prabhahani, Utsahahani* and *Krishata* are seen. In this formulation most of the drugs having the properties like *Deepana, Pacana, Ruchya* which improve digestion and assimilation.

All ingredients in this formulation are having *Tikta Rasa* and *Laghu, Ruksha Gunas.* So it may help in *Jivha Mukha Shodhana* which might inturn lead to improvement in *Aruchi.*

Nimba, Vasa, Katuki having *Tikta Rasa* which act as Pitthara, *Deepana* and *Pacana* which may be helpful to increase the appetite.

Effect of drugs on haemoglobin

Among 30 patients after treatment there is increase Hb% in 83.33% there is mean increase in 0.26% with p

ISSN: 2456-3110 ORIGINAL ARTICLE July-Aug 2020

value < 0.05 which is statistically significant but clinically not significant.

Prakruti wise there was more increase in Hb% in *Vata Prakruti* due to *Balya* and *Rasayana* action of the drugs present in the formulation. But this was not statistically justified because of non-uniform distribution of patients in different *Prakruti* categories.

As the formulation which is containing aminoacids and iron content it might be helpful in the production of haemoglobin.

Amalaki is *Amla Rasa Pradhana*, being a rich source of Vit. C. which helps to increase the absorption of iron which may help in *Pandu Roga.*[8]

According to modern science honey contains vitamins-B_6, K, B12, A, C, Riboflavin, Niacin and minerals (Cu, Zinc, Pottasium & Iron etc) as we know Cu and Zinc play important role in *Pandu* (Anemia), Vitamin C increases the iron absorption from Gastrointestinal tract. Thus honey seems to be beneficial in *Pandu*.

Probable mode of action *Phalatrikadi Kwatha*

In the pathogenesis of *Pandu Pitta Prakopa* is one of the major entity and in this study, the used formulation is having the drugs with predominance of *Tikta Rasa*, which has *Pittashamana* effect and will help to alleviate the *Pitta Dosha* in body.

Tikta Rasa also having *Amapacana* effect so it will help in proper formation of *Rasa Dhatu* and thus the subsequent *Raktadhatu* formation.

Guduchi does the *Shamana* of *Raktagata Pitta* it also does *Raktaprasadana* (enhance the quality) and ultimately nourishes the subsequent *Dhatus*.

Krimi is one of the reason for the manifestation of *Pandu, Nimba* might help in such cases, which acts on *Raktaja* and *Kapha*ja *Krimi* due to its *Prabhava* and also having *Pittakaphahara* property.

In *Pandu* as there is *Srotodhoosti* caused due to excessive or aggravated *Doshas*, due to *Shodana* and *Bhedana* property of *Katuki* that is why it may act as *Shrotoshodana* ultimately *Samprapti Vighatana*.

Pandu being a *Santarpanajanya Vyadhi*, the line of treatment mentioned in *Pandu* is *Tikshna Virechana* and *Vamana* (*Apatarpana Chikitsa*). The formulation contains *Triphala, Tikta, Bhunimba* which acts as *Mriduvirechaka* which might have helped in the *Vighatana* of *Samprapti* of *Pandu*.

Mode of action of *Anupana* (Honey)

It contains fructose, digestive enzymes; which facilitate quick absorption of medicine as *Yogawahi.*[9]

Madhu is having *Tridoshara, Ruksha, Laghu Guna, Kasaya Anurasa* act as *Deepana, Pachana, Yogavahi, Shorotovishodhana* may be helpful in treating *Pandu* by reducing *Shrotodusti* and *Aruchi* thus increasing absorption of drug and food.

CONCLUSION

Phalatrikadi Kwatha was found effective in the treatment of *Pandu* in children, thus showing significant results with respect to symptoms like *Dourbalyata, Aruchi* and increase in HB%. No conclusion could be drawn on *Phalatrikadi Kwatha* in different *Prakrutis* due to non-uniform and less distribution in the category of different *Prakruti.*

REFERENCES

1. Agnivesha, Charak samhita edited by Yadavaji trikamji Acharya with Ayurvedadipika commentary by Chakrapanidatta, Chaukamba prakashan Varansi 2009, Chi.16/3, 4, P. 13-16.
2. Black J, MuthayyaS, ShethA, Determinants of anemia among young children in rural India. http:paediatrics publications.org.
3. Tripathy K D, Pharmacology, fifth edition, Jaypee Publication 2004, P.583
4. G. Prabhakara Rao Cakradatta, Edn. 2014, Chapter 8, P. 117
5. Ghai O P, Essential Paediatrics, Eighth Edition, CBS Publishers, P.330.
6. Tripathy B. Charaka Samhita, Agnivesha, Chaukhambha, Ed. 2004, Vimanasthana, Chapt.8, Vers E,15, P.513.

ISSN: 2456-3110 **ORIGINAL ARTICLE** July-Aug 2020

7. Vaidya Phadke G A, Dravyaguna Shastram, 1st Edn, Vaidya Vamanrao Dinanath Shuddh Ayurveda Pathyakrama Prakashan, Mumbai.
8. Ajayi O A, effect ascorbic acid supplementation on haematological response 1990;34:32-6
9. International Journal of Green Pharmacy, Vol.-12, Issue- 2018.

How to cite this article: Dr. Vikas Kumar, Dr. Pankaja P. Savanur. Effect of Phaltrikadi Kwatha in the management of Pandu in Children - An Open Clinical Trial. J Ayurveda Integr Med Sci 2020;4:7-15. http://dx.doi.org/10.21760/jaims.5.4.2

Source of Support: Nil, **Conflict of Interest:** None declared.

****