

EFFECT OF PUNARNAVADI MANDURA AND DADIMADI GHRITA IN THE MANAGEMENT OF PANDU (IRON DEFECIENCY ANEMIA) IN CHILDREN

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ABSTRACT

Introduction: Iron deficiency anemia is currently the most widespread micronutrient deficiency affecting nearly 1.5 billion people. In our country 50% of children are anemic. Children during phase of rapid growth such as pre-school age and adolescence are at higher risk of developing iron deficiency anemia. Iron deficiency anemia can be clinically manifested by pallor, anorexia, irritability and pica. Well-documented feature in children like growth retardation, mental retardation and reduces general activity. The features of iron deficiency anemia are almost similar with that of *Panduroga* mentioned in *Ayurvedic* classics like *Shotha* around the *Nabhi*, *Swethata of Akshi*, *Nakha* and *Vakthra* (face), *Agnimandya*, *Akshikuta Shotha*. *Punarnavadi Mandura* and *Dadimadi Ghrita* are mentioned in the management of *Pandu*. *Mandura* (Fe₂O₃) directly increases serum ferritin because “*Sarvada sarvabhavanam samanyam vridhikaranam*”. *Punarnava* as name indicates regeneration; it may help to decrease the load of Kidneys as it has *Mutral* properties, while *Dadimadi Ghrita* helps for better digestion and absorption. Considering all the above, the study is planned to find the efficacy of *Punarnavadi Mandura* and *Dadimadi Ghrita* in the management of *Pandu* (Iron deficiency anemia). **Objective:** To assess the efficacy of *Punarnavadi Mandura* and *Dadimadi Ghrita* in the management of *Pandu* (Iron Deficiency Anemia). **Methodology:** 50 patients fulfilling the inclusion and exclusion criteria were randomly selected for the study. *Punarnavadi Mandura* 500mg B.D and *Dadimadi Ghrita* 10 ml B.D with Luke warm water for a period of 84 days (3 lunar months) given to the patients. The cases were recorded according to the case Performa and observations were done. **Results:** Symptoms were statistically analyzed for any change before and after the study. In the study, statistically significant changes (P = <0.001) were observed in the signs and symptoms of *Pandu Rogi* (IDA). There was a statistically significant response in hemoglobin concentration & other hematological investigation like MCHC, MCV, PCV, Reticulocyte Count, Peripheral Blood Smear, Serum Iron, Serum Ferritin & Total Iron Binding Capacity in the group (P <0.001). **Conclusion:** *Punarnavadi Mandura* and *Dadimadi Ghrita* are effective in the management of *Pandu Roga* (Iron Deficiency Anemia).

Keywords: *Pandu Roga*, Iron Deficiency Anemia (IDA), *Punarnavadi Mandura* and *Dadimadi Ghrita*.

INTRODUCTION

Anemia is the most common form of malnutrition mostly due to deficiency amongst adolescents today. It is of public health significant in our country, anemia prevalence being > 30%. Adolescents (10-19 yrs) constitute more than 20% of our population in India and >50 suffer from IDA. Adolescence is the most vulnerable phase of life associated with high iron requirements for growth and development accompanied by expansion of blood volume, muscle mass. Global data base by WHO (2000) on child growth and malnutrition and national Family Health Survey-2 (2000) in India, have suggested high prevalence of IDA (56%) in school going children.

Pandu Roga is a *Varnopalakshita Vyadhi* where paleness is pathognomonic. Iron Deficiency Anemia is a disease that has similar paleness, constitutional symptoms, pathogenesis and etiology. *Charaka* had recommended the usage of *Punrnavadi Mandura & Dadimadi Ghrita in Pandu Roga*. The pharmacodynamics study of individual constituents of this drug has revealed a wide range of action over the etiopathology of *Pandu Roga*.

This study was carried out to assess the efficacy of *Punrnavadi Mandura & Dadimadi Ghrita in Pandu Roga* (IDA) in children of 10-14 years age group.

Research Design:

Study Type: Interventional	Control: Not controlled
Purpose: Treatment	No. of Groups: One
Masking: Open label	Sample Size: 50

Diagnostic criteria: Diagnosis was established on the basis of history, symptoms mentioned in classical texts and by objective parameters / investigations mentioned in contemporary texts.

Inclusion criteria: Children of either sex aged between 10 to 14 years, Children with iron deficiency anemia Hb% in between 8gm-10gm %, willing and able to participate for 16 weeks.

AIM AND OBJECTIVES:

- To assess the efficacy of *Punarnavadi Mandura* and *Dadimadi Ghrita* in the management of *Pandu* (Iron Deficiency Anemia).

MATERIALS AND METHODS:

Source of data: 303 School children were screened for the study.

51 Diagnosed cases of *Pandu* (IDA) were included for study.

Methods of collection of data: Patients who were fulfilling the diagnostic and inclusion criteria were selected for the study.

Selection of patients and method of study: By following the inclusion and exclusion criteria, 51 children presenting characteristics features of Anemia were randomly included in the present study. Such selected children were examined thoroughly and record was made on the assessment criteria as per the case sheet specially prepared for the purpose.

Drug and dosage: *Punarnavadi Mandura* 500mg B.D and *Dadimadi Ghrita* 10 ml B.D with Luke warm water.

Method of preparation: *Dadimadi Ghrita & Punarnavadi Mandura* is prepared according to classical method of preparation. (API)

Exclusion criteria: Children suffering from major systemic illness necessitating long term drug treatment, Children with evidence of malignancy, concurrent serious Hepatic Dysfunction, Renal Dysfunction and H/o Hypersensitivity to any of the trail drugs.

Duration of study: Duration of the treatment was 12 weeks.

Follow up: During Treatment: Every 14 days for a period of 12 weeks.

After Treatment: Follow-Up Period 4 weeks.

Assessment criteria:

Subjective parameters: Improvement in the signs and symptoms of the disease like

1) *Durbalata* (Weakness), 2) *Shrama* (Fatigueness), 3) *Bhrama* (Dizziness), 4) *Shirashula* (Headache), 5) *Hridayaspandana* (Palpitation), 6) *Shvasa* (Breathlessness), 7) *Hatanala* (Irritability), 8) *Aruchi* (Taste disturbances) 9) *Panduta* (Pallor) 10) *Nakravakrata* (Brittle nails) 11) *Mrudbhakshana* *Prekshana* (Pica) 12) *JihwaPaka* (Glossitis) 13) *MukaPaka* (Angular stomatitis) 14) *Karnanada* (Ringing in the ears).

Objective parameters: 1) Hb (g/dl), 2) Mean corpuscular haemoglobin concentration (MCHC) (g/dl), 3) Mean Corpuscular Volume (MCV) (fl) 4) Packed Cell Volume (PCV) (%) 5) Reticulocyte count, 6) Peripheral Blood Smear 7) Serum ferritin 8) Serum Iron 9) Total Iron Binding Capacity (TIBC)

Laboratory investigations: Hb%, TC count, DC count, ESR, M.C.H.C, M.C.V, P.C.V%, Reticulocyte count, Peripheral Blood Smear, Serum iron, Serum ferritin, Total Iron Binding Capacity (TIBC), Fasting Blood Sugar, Blood Urea, Serum Uric Acid, Serum Creatinine, S.G.O.T, S.G.P.T, Total protein, S. Albumin, S. Globulin, A/G ratio, Serum Bilirubin, Serum Alkaline Phosphatase, Stool routine and microscopic.

OUTCOMES

Primary Outcome Measure

- Change in Hb%

Secondary Outcome Measures

- Symptomatic relief.
- Change in Serum ferritin level.
- Change in Peripheral Blood Smear Picture.

Response of Laboratory Investigation

Hemoglobin percentage:

Marked Response: Increase of Hb% between 2.1-3.0gm % or more

Moderate Response: Increase of Hb% between 1.1-2.0 gm%

Mild Response: Increase of Hb% between 0-1.0 gm%

Unchanged: No change in Hb%.

OBSERVATIONS:

Treatment status: In the present study, 1 patient was dropout during the study as he was suffering from Tonsillitis. Remaining 50 of the patients were completed the clinical study.

Age Incidence: 31 % patients were in 10-11 years age group, 27% patients were in 11-12 years age group, 18% patients were in 12-13 years age group and 24% patients were in 13-14 years age group. The data point towards onset of *Pandu* (IDA) in childhood period. It is more common in small children due to intake of diet which is deficient in iron, may be the cause.

Prakriti & Samhanan: Most of the patients having *Pittaja*, *KaphaPittaja* *Prakriti* and more than 75% of patients having *Avara Samhanana* which was calculated on the basis of body mass index.

Sex incidence: 36 (71 %) patients were Females and 15 (29%) were Males in the present study.

Symptoms wise Distribution: Various general symptoms in the patients of anemia were registered for the present study. Incidence of *Durbalata* and *Pandutha* was found in 100% of the cases, *Shrama* in 94%, *Brahma* in 79%, *Shirashula* in 84%, *Hridayaspandana* in 69%, *Shvasa* in 70%, *Hatanala* in 92%, *Aruchi* in 82%, *Nakhavakrata* in 4%, *Mrudbhakshana* in 14%, *Jihwapaka* in 12%, *Mukapaka* 22%, and *Karnanada* in 30% cases was found.

RESULTS & DISCUSSION

Table 1: showing Effect of *Punrnavadi Mandura & Dadimadi Ghrit* in subjective parameters in %

Symptoms	14 th day	28 th day	42 nd day	56 th day	72 nd Day	84 th day	16 th week
<i>Durbalata</i> (Weakness)	26	54	86	94	100	100	100
<i>Shrama</i> (Fatigue)	19.14	53.19	74.46	91.48	100	100	100
<i>Bhrama</i> (Dizziness)	30.7	53.8	87.17	94.87	100	100	100
<i>Shirashula</i> (Headache)	47.61	71.42	92.85	100	100	100	100
<i>Hridayaspandana</i> (Palpitation)	61.76	79.41	94.11	94.11	100	100	100
<i>Shvasa</i> (Shortness of breath)	51.42	82.85	91.42	100	100	100	100
<i>Hatanala</i> (Irritability)	43.40	82.6	95.65	97.8	100	100	100
<i>Aruchi</i> (Taste disturbances)	36.58	73.17	85.36	100	100	100	100
<i>Pandutha</i> (Pallor)	12.00	24	52	86	100	100	100
<i>Nakravakrata</i> (Brittle nails)	50	50	50	100	100	100	100
<i>Mrudbhakshana Prekshana</i> (Pica)	100	100	85.71	100	100	100	100

Other symptoms like *JihwaPaka*, *MukaPaka*, and *Karnanada* are not present in most of patients.

Pandu Roga is a disease characterized by *Panduta* (Pallor) of body which has great resemblances with ‘Anemia’ with reduction in number of RBCs per cu mm of blood and quantity of Hb% resulting in pallor and associated other symptoms.

In Ayurveda “*Pandu Roga*” is considered as a *Pitta* dominant disorder. When *Pitta* dominant *Vatadi Dosh* *vitiates Raktadidhatu* it causes *Dhatushaithiliyata* and *Gauravata*. Which further leads to deficiency of *Bala*, *Varna*, *Oja*, *Rasa*, *Rakta*, *Meda*, and altered skin color which is known as “*Pandu Roga*”.

Though disease starts with asymptomatic status without much serious effect, as initially there will be physiological adaptation when the disease progress-

es causes extreme debility with symptoms like palpitation, dyspnoea on exertion, fatigability, metabolic defects resulting in emaciation and wasting of body and a feeling of sickness. Same pathological changes can be explained in Ayurvedic science as “*Dhatukshaya*” followed by “*Ojokshaya*” resulting in symptoms like *Hatanala*, *Hatendriya* etc as the lakshana of *Pandu Roga*.

Drugs are known for their *Rasayana*, *Deepana*, *Pachana*, *Raktavardhaka* properties. As the disease is concerned with the *Kshaya of Rasa and Rakta*, there is *Uttrottara Dhatukshaya*. Therefore by consideration above pathology of the disease *Punarnavadi Mandura* and *Dadimadi Ghrita* were selected. These drugs having a *Rasayana* property regulates the metabolism, gives immunity and strength.

Table 2: Showing Effect of *Punarnavadi Mandura & Dadimadi Ghrita* in Hb% (in grams)

		N	Mean score	% of relief	S. D	S. E	‘t’	‘p’	Remark
Before Treatment			09.49						
DURING TREATMENT	14 th Day	50	09.96	4.67	0.26	0.03	12.27	<0.001	S
	28 th day	50	10.42	8.92	0.32	0.04	20.09	<0.001	S
	42 nd day	50	10.95	13.32	0.45	0.06	22.67	<0.001	S
	56 th day	50	11.25	15.60	0.49	0.07	24.96	<0.001	S
	70 th day	50	11.53	17.64	0.56	0.07	25.64	<0.001	S
End of Treatment	84 th day	50	11.84	19.79	0.55	0.07	30.03	<0.001	S
Follow up	16 th week	50	11.99	20.82	0.53	0.07	32.98	<0.001	S

Table 3: Showing Total improvement in Hb%

Response	'Hb' Concentration	
	No. of Patients	%
Unchanged	00	00
Mild	00	00
Moderate	13	26
Marked	37	74

Table 4: Showing Effect of *Punarnavadi Mandura & Dadimadi Ghrita* in MCHC (g/dl)

	N	Mean score	% of relief	S. D	S. E	't'	'p'	Remarks	
Before Treatment		31.64							
During Treatment	42 nd day	50	32.88	3.65	1.50	0.21	5.64	<0.001	S
After Treatment	84 th day	50	33.59	5.55	2.17	0.30	6.05	<0.001	S

Table 5: Showing Effect of *Punarnavadi Mandura & Dadimadi Ghrita* in MCV (fl)

	N	Mean score	% of relief	S. D	S. E	't'	'p'	Remarks	
Before Treatment		76.40							
During Treatment	42 nd day	50	78.87	2.99	3.61	0.51	4.62	<0.001	S
After Treatment	84 th day	50	82.09	6.68	5.88	0.83	6.59	<0.001	S

Table 6: Showing Effect of *Punarnavadi Mandura & Dadimadi Ghrita* in PCV (%)

	N	Mean score	% of relief	S. D	S. E	't'	'p'	Remarks	
Before Treatment		35.46							
During Treatment	42 nd day	50	36.89	4.08	2.33	0.32	4.56	<0.001	S
After Treatment	84 th day	50	37.38	4.89	3.07	0.43	4.19	<0.001	S

Table 7: Showing Effect of *Punarnavadi Mandura & Dadimadi Ghrita* in Reticulocyte count

	N	Mean score	% of relief	S. D	S. E	't'	'p'	Remarks	
Before Treatment		0.96							
During Treatment	42 nd day	50	1.17	20.51	0.28	0.04	5.93	<0.001	S
	84 th day	50	1.40	30.82	0.20	0.02	15.29	<0.001	S

Table 8: Showing Effect of *Punarnavadi Mandura & Dadimadi Ghrita* in Peripheral Blood Smear.

Assessment Stage	Peripheral Blood Smear					
	Microcytic Hypochromic		Normocytic Hypochromic		Normocytic Normochromic	
	No of Pts	%	No of Pts	%	No of Pts	%
Baseline	35	70	15	30	00	0.00
42 nd day	00	00	28	56	22	44
84 th day	00	00	1	02	49	98

Table 9: Showing Effect of *Punarnavadi Mandura & Dadimadi Ghrita* in Serum ferritin ($\mu\text{g/L}$)

		N	Mean score	% of relief	S. D	S. E	't'	'p'	Remarks
Before Treatment			8.85						
During Treatment	42 nd day	19	10.92	18.84	2.453	0.56	3.65	<0.001	S
	84 th day	19	19.38	54.33	5.483	1.25	8.37	<0.001	S

Table 10: Showing Effect of *Punarnavadi Mandura & Dadimadi Ghrita* in Serum Iron ($\mu\text{g/dl}$)

		N	Mean score	% of relief	S. D	S. E	't'	'p'	Remarks
Before Treatment			53.36						
During Treatment	42 nd day	50	90.57	39.50	11.07	1.56	28.85	<0.001	S
	84 th day	50	119.22	53.96	21.79	3.08	20.87	<0.001	S

Table 11: Showing Effect of *Punarnavadi Mandura & Dadimadi Ghrita* in Total Iron Binding Capacity ($\mu\text{g/dl}$)

		N	Mean score	% of relief	S. D	S. E	't'	'p'	Remarks
Before Treatment			408.53						
During Treatment	42 nd day	50	309.23	23.28	54.61	7.72	12.31	<0.001	S
	84 th day	50	261.52	85.70	12.12	12.12	11.92	<0.001	S

Table 12: Effect of *Punarnavadi Mandura & Dadimadi Ghrita* in other Laboratory Investigation

Lab Investigation	N	Mean score		% of relief	S. D	S. E	't'	'p'	Remark
		BT	AT						
TLC	50	7728	9140	-18.86	9680	1369	-1.06	-	NS
ESR	50	13.24	11.14	16.76	9.35	1.32	1.67	<0.10	NS
B/Urea	50	24.36	20.28	16.03	7.36	1.04	3.74	0.001	S
S/UA	50	4.10	3.82	6.48	0.84	0.12	2.21	0.05	S
S/Creatinine	50	0.76	0.59	21.20	0.24	0.03	4.72	0.001	S
SGOT	50	26.43	21.28	14.73	5.55	0.786	4.95	0.01	S
SGPT	50	19.3	19.28	0.165	10.81	1.52	0.02	<0.10	NS
T.Protein	50	14.48	7.31	47.61	4.19	0.59	11.62	0.001	S
S.Albumin	50	4.25	4.07	5.35	0.54	0.07	2.95	0.01	S
S.Globulin	50	3.73	3.28	12.60	0.72	0.10	4.59	0.001	S
D.Bilirubin	50	0.39	0.30	23.23	0.18	0.02	3.49	0.01	S
I.Bilirubin	50	0.27	0.22	34.53	0.29	0.04	2.28	0.01	S
S.Alk.phos	50	70.77	69.30	1.40	22.09	3.124	0.31	<0.10	NS

The Total Count increased in the patients, but the increase was not significant statistically. The decrease seen in the levels of blood parameters like Blood Urea, Serum Uric Acid, Serum Creatinine, SGOT, Total Protein, Serum Albumin, Serum Globulin, Serum Direct Bilirubin and Serum Indirect Bilirubin and were statistically significant, but decreased. ESR, SGPT and Serum Alkaline Phosphatase were not statistically significant.

These routine blood tests are to find any major illness. These procedures were performed for health profile of patients to observe any side effects of the drugs before and after treatment. As effect of the study drugs were not shown any insignificant result, & while administration of *Punarnavadi Mandura* and *Dadimadi Ghrita* through the oral route is not shown any side effects such as colicky pain, gastric distress, constipation, diarrhea, nausea and vomiting,

so we can claim that *Punarnavadi Mandura* and *Dadimadi Ghrita* are safe.

Discussion of Effect of Therapy:

Symptoms were scored and statistically analyzed for any change before and after the study. In the group statistically significant change (P = <0.001) was observed. All 50 patients showed marked improvement.

Panduta was observed in 100% patients before treatment, and showed improvement at 14th day was 12%, followed by 24% improvement on 28th day, 52% improvement on 42nd day, 86% improvement on 56th day and 100% improvement from 70th day of follow up onwards.

The most important presenting sign of *Pandu Roga* is *Panduta* where luster of the skin is lost. This is one of the conclusive sign of *Pandu* and more striking symptom of such patient, the *Varna* and *Prabha* are related with *Raktadhatu* and *Pitta Dosha*, particularly the *Bhrajaka* and *Ranjaka Pitta*. It is also the property of *Ojas* and excess *Ojakshaya*, *Raktakshaya* and *Pitta Vikriti* leading to *Panduta*. Regarding the effect of therapy, very satisfactory results were seen.

There was considerable decrease in signs and symptoms of diseases after treatment. And in follow up also, good improvement was seen mainly because of treatment was given for longer period of time and drugs are having *Rasayana* properties.

Hematological values which are used for the assessment are Hb%, MCV, PCV, MCHC, Serum Ferritin, Serum Iron, TIBC, PBS and Reticulocyte count.

Haemoglobin percentage was the most useful, cost effective investigation for assessment of anemic status. In the present study all the cases were examined for Hb%, before treatment 14th day, 28th day, 42nd day, 56th day, 70th day, 84th day and Follow up. After treatment, both trial drugs were found to be effective in increasing the Hb % and when statistically analyzed results were found significant.

Net Increase of Haemoglobin level, between 1.1 to 2.0 gm/dl in 13 patients, between 2.1 to 3.0 gm/dl in 28 patients, more than 3.1gm/dl in 09 patients was observed.

Effect of drug for all other investigations carried out before treatment, during treatment and after treatment to assess the effect of drug was found encouraging and statistically analysis was significant for all investigation.

After administration of therapy peripheral Reticulocytosis is noted. Reticulocytosis is followed by a rise in the hemoglobin level, the regular response of iron deficiency anemia to adequate amounts of iron is an important diagnostic and therapeutic feature.

Responses to Iron Therapy in Iron-Deficiency

Time after iron administration	Response
12–24 hours	Replacement of intracellular iron enzymes; subjective improvement; decreased irritability; increased appetite
36–48 hours	Initial bone marrow response; erythroid hyperplasia
48–72 hours	Reticulocytosis, peaking at 5–7 days
4–30 days	Increase in haemoglobin level
1–3 months	Repletion of stores

It was also observed that with above therapy RBC indices and Iron profile which are used mainly in identifying and classifying types of anemia and also monitoring response to therapy of anemia. With

above medications we got positive response. PCV, MCV, Serum Ferritin, Serum Iron increased and TIBC decreased which was expecting result in case of IDA.

Probable mode of action of - Punarnavadi Mandura and Dadimadi Ghrita :

Ingredients of Punarnavadi Mandura - Punarnava, Trivrit, Pippali, Maricha, Shunti, Haridra, Vidanga, Devadaru, Chitraka, Kustha, Daruharidra, Amalaki, Haritaki, Bibithaki, Danti, Chavya, Kutaja, Pippalimula, Musta, Gomutra and Mandura Bhasma.

Ingredients of Dadimadi Ghrita –Dadima, Chitraka, Pippali, Dhanyaka, Shunti, Goghrita and Jala.

Analysis of the pharmacodynamic properties of the Punarnavadi Mandura and Dadimadi Ghrita the Rasa present in the individual drug reveals that maximum drug have *Katu and Tikta Rasa* being predominant in *Akasha Mahabhuta* and *Laghu Guna*. Its function increases the metabolism and reduces the formation of *Ama* by virtue of *Tikta* and *Katu rasa*. *Vipaka* of most of the ingredients of both the drug is *Katu Vipaka* and *Madhura Vipaka*. *Madhura Vipaka* is said to be increases all the *Dhatu*s, nourishes *Man*a and *Indriyas*, al so alleviate *Vata Dosha* and increases the vital strength. *Katu Vipaka* increases the overall metabolism.

Punarnavadi Mandura & Dadimadi Ghrita contains mainly *Pippali*, which is best *Rasayana*, *Amanashaka*, *Deepana*, *Pachana*, *Vatanulomaka* and *Agni Deepaka*.

Mandura Bhasma is a natural source of iron and is best for children (*Balanam Atishasyat*). It is *Sheeta* in *Guna* and *Virya* and *Param Raktavridhikar* (best haematonic) in *Karma*. *Amalaki* (*Emblca officinalis*) is richest source of Vitamin C which helps in absorption of iron and has a good effect on circulatory system. It keeps check on all the toxins in the body circulating in blood; it possesses *Tikta rasa*. It helps in producing good quality red blood cells. *Triphala* is *Rasayana* (rejuvenative), *Trikatu* is *Deepana* (appetizer) and *Trimada* is *Pachana* (digestive). Presence of the herbal ingredients in the herbomineral medicine *Punarnavadi Mandura* may decrease the common hazards of oral iron therapy.

Pippali, *Maricha* and *Shunti* which are present, by their *Dipana-Pachana* properties increases the *Agnibala* there by increases the bio-availability of various micronutrient from the food ingested leading to *Prashasta Dhatu* (healthy tissue).

Experimental studies on albino rats, significant hematanics and cytoprotective activity of *Mandura Bhasma* have been already proved.

The selection of 2 formulations for the study was because, *Dadimadi Ghrita* does the *Samprapti Vighatana of Pandu and Punarnavadi Mandura gives Rasayana effect and act as Vyadhiprathyanika Chikitsa*.

All the patients who were administered *Punarnavadi Mandura and Dadimadi Ghrita* tolerated it well. No side/ toxic effects were noticed in any of the patients during or after the course of the therapy. It is experienced that *Punarnavadi Mandura and Dadimadi Ghrita* seems to be a safe drug to be administered orally in the management of *Pandu Roga* (Iron deficiency anaemia).

CONCLUSION

According to the Ayurvedic classics the nearest correlation of iron deficiency anemia can be made with *Pandu Roga*, because predominance of *Panduta* or pallor in the whole body is termed as *Pandu Roga*. The description of *Pandu Roga* is available since Vedic period. *Pandu Roga* is *Pitta Pradhana Tridoshaja Vyadhi*.

The present clinical study shows the hematonic potential of *Punarnavadi Mandura and Dadimadi Ghrita*. It is evident that the treatment of *Pandu* (Iron deficiency anemia) with *Punarnavadi Mandura and Dadimadi Ghrita* shows statistically significant increase in hematological values like blood Hb%, MCHC, MCV, PCV etc.

After 12weeks treatment with *Punarnavadi Mandura and Dadimadi Ghrita* overall 100% children showed marked improvement in clinical features of *Pandu*.

After 12weeks treatment with *Punarnavadi Mandura and Dadimadi Ghrita* Overall 26 % patients shown moderate improvement and 74% patients shown marked improvement in Hb%.

From the study it was found that the drug “*Punarnavadi Mandura* and *Dadimadi Ghrita*” had no noticeable side effect. Palatability of the trial drugs *Punarnavadi Mandura* and *Dadimadi Ghrita* was good in children.

From the above results we can say that the drug *Punarnavadi Mandura* and *Dadimadi Ghrita* definitely play a significant role in the management of *Pandu* (IDA). As per the observations and results found in the clinical study, the trial drug *Punarnavadi Mandura* and *Dadimadi Ghrita* is an effective medicine to manage the cases of *Pandu*.

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