

A CLINICAL STUDY ON *DADIMADYA GHRITA* IN CHILDHOOD IRON DEFICIENCY ANEMIA (*PANDU*)Mandeep Kaur^{1*}, Keerti Verma² and Reena Dixit³¹MD Scholar, Final Year, Department of Kaumarbhritya, Rishikul Campus, Haridwar, Uttarakhand Ayurved University, India.²Prof. and HOD, Department of Kaumarbhritya, Rishikul Campus, UAU, Haridwar, Uttarakhand, India.³Prof. Department of Kaumarbhritya, Rishikul Campus, UAU, Haridwar, Uttarakhand, India.

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ABSTRACT

Ayurveda is India's ancient science of evoking inner health by aligning with the elements and rhythms of nature. The concept of universal interconnectedness, the body's constitution (*prakriti*), and life forces (*doshas*) are the primary basis of *ayurvedic* medicine. Over the last century, our eating habits have changed dramatically. The way we shop, cook and dine has been altered by our attitudes towards food. This leads to people having exceptionally less nutritional food. Children require the diet that should contain all the essential nutrients as they are in phase of their rapid growth and development. Nutritional disorders results from either deficiency or excess of any nutrients. Most common cause of anemia include nutritional deficiencies particularly- Iron deficiency. WHO shows predominance of 74% of Iron Deficiency Anemia in Indian Children. In *Ayurveda*, "*PANDU ROGA*" is the pallor on the skin which occurs due to the quantitative and qualitative deficiency of *Rakta Dhatu* caused either in the form of deficiency of hemoglobin and/or red blood cells. Considering *Panduta* (pallor) as the predominant sign, the disease is termed as *Pandu Roga*. *Pandu Roga* is characterised by discoloration of skin to *sweta*, *pita* and *harita* or presence of *Ketaki dhuli nibha chaya*. It is characterised as "*Varnopalakshita Roga*". Nearest correlation of *Pandu* can be made with Iron deficiency anemia because of predominance of *panduta* or pallor in the body. Thus, in the present study Iron deficiency anemia (*Pandu*) has been taken as the subject of intervention with the drug "*Dadimadya Ghrita*".

KEYWORDS: *Ayurveda*, *Pandu Roga*, *Varnopalakshita Roga*, Iron Deficiency Anemia, *Dadimadya Ghrita*.**INTRODUCTION**

By aligning with nature's elements and rhythms, *Ayurveda* elicits inner health. One of the oldest systems of healing on earth, *Ayurveda* was envisioned over 5,000 years ago by ancient sages of India.

'*Ayurveda*' means "wisdom of life" in Sanskrit. Our macrocosm - the sun, the moon, and the elements - has perpetual rhythmic influences on our lives and well-being. Space, air, fire, water, and earth are the five elements of the world around us according to *Ayurvedic* wisdom. A life synchronized with rhythmic and elemental influences revitalizes our bodies and reconnects our spirits. The goal is to restore equilibrium to the *doshas*- combinations of these elements—within your body and the environment.

The fundamental tenets of *ayurveda* medicine are the idea of universal interconnection, the body's constitution (*prakriti*), and life forces (*doshas*).

Similar to scientific medicine, *ayurveda* has both preventive and restorative aspects-

- *Ayurveda* emphasizes the need for a strict code of personal and social hygiene, the specifics of which depend on individual, climatic, and environmental requirements.
- The restorative aspects of *Ayurveda* include the use of herbal medications, external medications, physiotherapy, and diet. The fundamental tenet of *Ayurveda* is that preventive and therapeutic approaches should be tailored to the unique needs of each patient.

Our diets have become almost unrecognizably different from those of our grandparents over the past century due to the drastic changes in our eating habits. People end up eating food that is incredibly low in nutrition as a result. Additionally, in order to create a high yield, the marketable green vegetables are grown in high compost concentrations.

People see the negative impacts of many diseases as a result of these actions, which contribute to the public health's decline. "PANDU ROGA" is one of these illnesses that are very prevalent, especially in poor countries like India. Today, iron deficiency anemia is regarded as one of the major illnesses.

Nutritional diseases are caused by nutritional deficiencies or excesses.^[1] Iron deficiency is the most prevalent nutritional deficiency that causes anemia. Folate, Vitamin B₁₂, and Vitamin A deficiency are further problems.^[2] The most prevalent dietary shortfall in the world is an iron deficiency.

Children are more vulnerable than adults because

- They receive insufficient nourishment due to their rapid growth.
- They have poor eating and hygiene habits.
- A more muted immune reaction at first to more recent illnesses and invasions.

Even children from wealthy homes suffer from poor nutrition, which causes a variety of illnesses like ANEMIA. This is due to both a lack of parental attention to the nutritional benefits of food.

Anemia is recognized to have negative impacts on children's health, and it has been linked to decreased IQ, mental development, coordination, language development, academic accomplishment, and higher morbidity from infectious infections. Instead of placing emphasis just on "IRON" therapy and "IRON" loading, *Ayurvedic* treatment places a strong emphasis on correct "AGNI" function, which is crucial for proper digestion, absorption, and assimilation of nutrients to meet the demands of the body.

For *Pandu's* well-being, growth, and development, an *ayurvedic* approach to treatment is urgently needed.

In light of the foregoing, a study is planned to assess the effectiveness of *Dadimadya Ghrita*, described in the *Charak Samhita* under *Pandu Roga Chikitsa Adhayay* for the management of iron deficiency anemia in children.

PREVALENCE

Although anemia has long been recognized as a growing medical problem, little progress has been made, and the prevalence of anemia worldwide continues to be unacceptably higher. According to the WHO, 74% of Indian children have iron deficiency anemia.^[3] According to reports, prevalence rates for various age groups are as follows:

0–4 years = 30%;

5–14 years = 48%^[4]

According to the National Family Health Survey III,

Urban Children -71%

Rural children-84%

Overall- 79%

According to *Ayurveda*, "PANDU ROGA" is the paleness of the skin that results from a quantitative and qualitative lack of *Rakta Dhatu*, which can be produced by a lack of hemoglobin or red blood cells. The illness is designated as *Pandu Roga* with *Panduta* (pallor) being the primary symptom. Due to the preponderance of *panduta* or pallor throughout the entire body, the closest correlation between *Pandu Roga* and iron-deficiency anemia (IDA) can be drawn. *Pandu Roga* is largely caused by *Mandagni*. Although *Pandu* in children isn't mentioned in *Brihatrayi* of *Ayurveda*, *Acharya Kashyapa* interpreted it to mean dyspepsia and weariness in newborns and young children, pallor of the sclera, nails, and face, as well as peri-umbilical and peri-orbital edema.^[5]

NEED OF STUDY

- Iron preparations prescribed by allopathic physicians to treat iron deficiency have negative effects that might be modest to severe. A variety of iron salts, including ferrous fumarate, ferrous sulfate, ferric ammonium citrate, iron dextran, ferrous calcium citrate, and ferrous gluconate, are used in modern iron formulations.^[6]
- Constipation, heartburn, nausea, gastrointestinal discomfort, and diarrhea have all been reported as side effects of long-term IDA treatment with these medications.^[7]
- *Ayurvedic* medications, on the other hand, use natural herbs, extracts, and plants that not only avoid negative health effects but also boost immunity and support the patient's overall wellbeing.
- *Dadimadya Ghrita*, which was used in this study, affects intestinal *Agni* through its *Deepana* and *Pachana Karma*, maintaining the intestinal flora required for iron absorption.

AIMS AND OBJECTIVES

- To evaluate the efficacy of *Dadimadya Ghrita* in childhood iron deficiency anemia.
- To study the etiopathogenesis of *Pandu*.
- To provide an economic, safe and effective *Ayurvedic* formulation in the management of iron deficiency anemia.
- To study the adverse effect of the drug during the clinical trial.

MATERIALS AND METHODS

Selection of the Patients: A series of 35 patients suffering from Iron Deficiency anemia were selected from OPD of *Kaumarbhritya* department, Rishikul Hospital, UAU, Haridwar. Patients fulfilling the inclusion and exclusion criteria were registered and scoring of clinical features were done on the basis of assessment criteria.

❖ **DETAILS OF THE GROUP**

Table No. 1.

Groups	Registered Patients	Completed Treatment	Formulation	Dose & Duration
Single	35	30	<i>Dadimadya Ghrita</i>	According to age 5-10 Yrs (Two divided doses) for 3 months.

- Out of 35 patients, 30 patients have completed their treatment. 05 patients had left against their medical advice. Hence, the final assessment of the result was done in 30 patients.

❖ **INCLUSION CRITERIA**

- Children having classical features of iron deficiency anemia and *pandu*.
- Age – between 5-10 years
- Hb conc. - 7 gm/dl -11gm/dl (Mild to moderate classification of anemia according to ICMR).

❖ **EXCLUSION CRITERIA**

- Age – Below 5 years and above 10 years.
- Hb conc. < 7gm/dl (Severe classification of anemia according to ICMR).
- Any other type of anemia except Iron deficiency anemia.
- Known case of children having peptic ulcer, malignancy.
- IDA associated with any severe complication like Malabsorption syndrome.
- Associated cardiac complaints, renal disorders and chronic debility.
- Known case of children having illness like T.B., Juvenile diabetes.
- Prediagnosed children having positive stool investigation report for parasite.

❖ **Type of Study**

- Randomized open label clinical trial.
- Period of Study: 4 months
- a) With drug – 3 months
- b) Without drug – 1 month.

- Follow Up: There are 6 follow ups Each at the interval of 15 days and a subsequent follow up without medicine 1 month after the end of trail.

❖ **Dose of Drug**

Table no. 2: Dose of Drug.

Age (in years)	Dose (Two divided doses)
5 years	7 gms
6 years	8 gms
7 years	9 gms
8 years	9.5 gms
9 years	10 gms
10 years	11 gms

❖ **Criteria for withdrawal**

- Aggravation of symptoms
- Intercurrent illness
- Personal matters
- LAMA [Leave Against Medical Advice].

❖ **Study Design**

- **Selected drug** - *Dadimadya Ghrita*
- **Grouping** - A single group
- **No. of Patients** - 35
- **Formulation of drug** - *Ghrita*
- **Route of administration** - Oral.

❖ **ASSESSMENT CRITERIA**

- a) **On the basis of Subjective Parameters:** The following clinical findings were assessed before and after treatment.

Table no. 3: Subjective Parameters.

S. No.	Parameters	Grade 0	Grade 1	Grade 2	Grade 3
1.	<i>Panduta</i> (Pallor)	No pallor	Pallor visible on conjunctiva	Pallor visible on conjunctiva & nails	Pallor visible on conjunctiva, nails & face
2.	<i>Aruchi</i> (Anorexia)	Normal urge to have food	Dislike to have food but take normal diet	Less intake of his/her previous diet	Very less intake of his/her previous diet
3.	<i>Balakshya</i> (Weakness)	No feeling of weakness during daily activities	Sometimes feeling of weakness but perform daily activities	Often feeling weakness & affected daily activities	Daily activities reduced due to weakness
4.	<i>Rukshtha</i> (<i>Twaka, hashta padatala, mukha, nakha</i>)	Not present	Present in twaka	Present in twaka, hashta padatala & mukha	Present in twaka, hashta padatala, mukha & nakha.
5.	<i>Mritika Bhakshana</i> (Pica)	No desire to eat any non-edible substance (clay, chalk, etc)	Eat non edible substance sometimes	Eat non edible substance very often	Eat non edible substance on regular basis

b) Objective Parameter

The objective assessment will be done on the basis of changes in relevant laboratory parameters before and after the trial.

- Hbgm%
- Serum Iron
- TIBC

The research work “**Evaluation of Dadimadya Ghrita in Childhood Iron Deficiency Anemia**” was conducted in children aged 5 to 10 years in a single group. There were 35 patients registered in all, 30 of them received therapy and 5 of them left against medical advice (LAMA).

Table No. 4: Chief Complaints.

Symptoms	No. of Patients	Percentage
<i>Panduta</i>	35	100%
<i>Aruchi</i>	28	80%
<i>Balakshaya</i>	27	77%
<i>Rukshata</i>	26	74%
<i>Mritikabhakshan</i>	17	49%

Out of total 35 children, the major complaint was *Panduta* which was seen in 100% of the children, *Aruchi* was seen in 80% of the children, 77% complaint

Balakshaya, *Rukshata* was complaint by 74% of the patients and 49% were having complaint of *Mritikabhakshan*.

Table No. 5: Effect of Therapy on Subjective Criteria.

Symptoms	Mean Score			Relief %	W ±	p-value	Result
	B.T.	A.T.	Diff.				
<i>Panduta</i>	2.034	0.33	1.704	83.77	465.00	<0.001	HS
<i>Aruchi</i>	2.19	0.42	1.77	80.82	351.00	<0.001	HS
<i>Balakshya</i>	1.84	0.4	1.44	78.26	325.00	<0.001	HS
<i>Rukshata</i>	1.64	0	1.64	100	325.00	<0.001	HS
<i>Mritikabhakshana</i>	1.4	0.26	1.14	81.42	105.00	<0.001	HS

Table No. 6: Effect of Therapy on Objective Criteria.

Parameters	Mean Score			Relief %	t-value	p-value	Result
	B.T.	A.T.	Diff.				
Hb gm%	9.086	10.9	1.814	19.96%	16.621	<0.001	HS
Serum Iron	45.285	74.956	29.671	65.5%	20.975	<0.001	HS
TIBC	436.943	335.67	101.273	23.17%	13.585	<0.001	HS

❖ **OVERALL EFFECT OF TREATMENT MODULE IN GROUP**

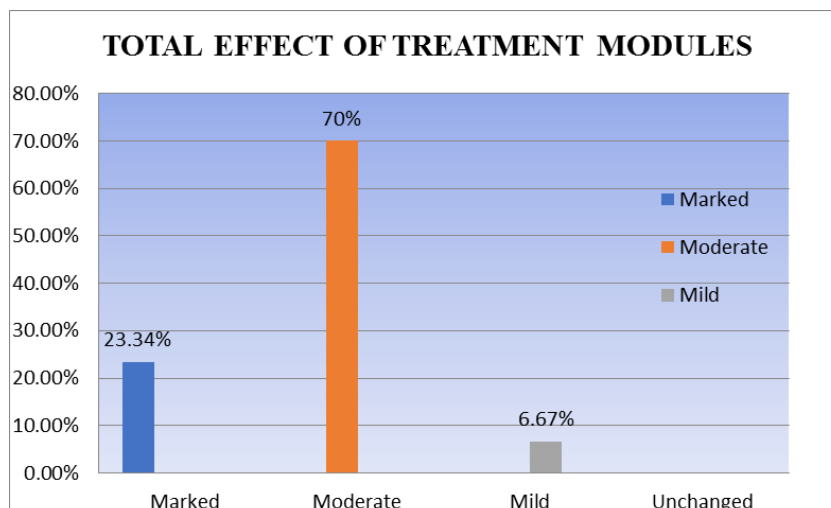
After full observation of treatment modules, it was found that

- **Marked improvement** was observed in 07 patients (23.34%).

- **Moderate improvement** was seen in 21 patients (70%).

- **Mild improvement** was observed in 02 patients (6.67%).

- **No improvement** was observed in none of the patients.



❖ **DISCUSSION****PROBABLE MODE OF ACTION OF DADIMADYA GHRITA**

- *Dadima* possess *Shonitasthapana* and *Hridya* property due to which it acts as *Raktadhatu vardhak*. Its *Laghu*, *Snigdha guna* and *Madhur*, *Amla rasa* have *Tridosha shamaka* property.
- *Dhanayaka* is *Madhur*, *Snigdha* in *Guna* and *Ushna* in *Virya*, hence pacifies *Vata dosha* and does *Vatanulomana*.
- *Chitraka* has *Deepana*, *Pachana* property because of which it works on *Mandagni* and alleviates *Ama*.
- *Shringbera* has *Raktashodhaka* property due to which it acts as *Raktadhatuwardhak*. Its *Laghu*, *Snigdha Guna*, *Katu rasa* and *Ushna virya* have *Kapha shamaka* property.
- *Pippali* have *Rasayana*, *Raktavardhak* and *Raktashodhaka* property because of which it acts as *Ojavardhak* and *Raktadhatuwardhak*.
- *Go-ghrita* because of its properties is *Tridoshashamaka*, *Agnivardhaka* and *Balavardhaka*.
- Effect on **Panduta**: The first parameter i.e. *Panduta* have shown highly significant result (P<0.001) with 83.77% relief. This is due to *Raktavardhak* action of *dadima* and *Raktavardhak* & *Raktashodhaka* property of *Shringbera* & *Pippali*.
- Effect on **Aruchi**: In the study, *Aruchi* showed highly significant result with 80.82% relief. This is because of *Deepana* & *Pachana* property of *Chitraka*.
- Effect on **Balakshya**: In this single group clinical study, highly significant improvement was observed in *Balakshya* (P<0.001). The relief percentage was 78.26%. This is due to *Rasayana* property of *Pippali* and *Balvardhak* action of *Go-ghrita*.
- Effect on **Rukshata**: Highly significant improvement was observed in *Rukshata* (P<0.001) with 100% relief because of *Madhur*, *Snigdha* property of *Go-ghrita* and *Dhanyaka*.
- Effect on **Mitikabhakshan**: A significantly significant effect (P 0.001) was reported with 81.42% alleviation in *Mitikabhakshan*. This effect may be due to *Deepana* & *Pachana* properties of drug that helps in proper absorption of nutrients, hence reducing the craving for inedible substances.
- Effect on **Hb**: Hb gm % showed highly significant result with 19.96% relief. This is again due to *Raktavardhaka* and *Raktashodhaka* properties of drug.
- Effect on **Serum Iron**: Highly significant improvement was observed in Serum Iron. The relief percentage was 65.5%. Increase in Hb gm % leads to increase in Serum Iron levels.
- Effect on **TIBC**: In this clinical study, TIBC showed highly significant result with 23.17% relief. Increment in Hb values leads to reduction in TIBC.

❖ **CONCLUSION**

- *Pandu* is described as '*Pitta Pradhana Tridoshaja*' and '*Varnopalakshita Vyadhi*' wherein paleness is pathognomic.
- Management of *Pandu Roga* is done by *Tridoshashamaka*, *Srotoshodhana*, *Rasayana* & *Pandughna*. The drug taken for the trail was *Dadimadya Ghrita*.
- The present study was conducted in the children with *Pandu Roga* in between the age group of 5 to 10 yrs. 35 patients were registered in single group, 30 patients completed the course of study and 5 patients discontinued.
- In subjective parameter, *Panduta*, *Aruchi*, *Balakshya*, *Rukshata* and *Mritikabhakshana* showed highly significant result in the study.
- In Objective parameters, Hb gm%, Serum iron, TIBC had highly significant result in the study.
- After complete observation of treatment, it was found that in this study **Marked improvement** was seen in 07 patients i.e. 23.34%, **Moderate improvement** was seen in 21 patients i.e.70% where as **Mild improvement** was seen in 02 patients i.e. 6.67% and **unchanged** results were seen in none of the patients.
- **It was concluded that *Dadimadya Ghrita* is effective for the management of Childhood Iron Deficiency Anemia and there was no side effect observed in any of the patient during the clinical trial.**

RECOMMENDATION

"*Dadimadya Ghrita*" has shown significant results on the signs & symptoms of *Pandu Roga*. To have better efficacy in the treatment of *Pandu Roga* it is recommended that:

"The study should be carried out with a large number of patients and long duration to evaluate and analyze the results."

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