



## Research Article

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### A CLINICAL COMPARATIVE STUDY TO EVALUATE THE EFFICACY OF PIPPALI RASAYANA AND DHATRI LAUHA IN THE MANAGEMENT OF PANDU WITH SPECIAL REFERENCE TO IRON DEFICIENCY ANEMIA

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#### ABSTRACT

Nutritional deficiency anemia is India's most common blood disorder, affecting both the poor—due to lack of access to nutritious food—and the affluent, who often compromise diet quality and timing because of fast-paced lifestyles. These factors contribute to Pandu Roga in Ayurveda, which parallels iron deficiency anemia, the world's most widespread nutritional disorder. Considering its prevalence, the side effects of oral iron supplements, and the need for holistic metabolic correction, a comparative clinical trial was conducted in adults using Ayurvedic herb mineral formulations. In this clinical study, Pippali Rasayana and Dhatri Lauha were evaluated for Pandu Roga. Sixty subjects were randomly divided into two groups of 30 each: Group A received Pippali Rasayana (3.6 g/day), and Group B received Dhatri Lauha (500 mg twice daily), with Madhu and Ghrita as Anupana. The trial lasted 60 days. Statistical analysis using the unpaired Student's t-test showed significant improvement ( $P < 0.05$ ) in both groups. While subjective outcomes were similar, Dhatri Lauha demonstrated greater improvement in objective parameters.

**Keywords:** Iron Deficiency Anaemia, Pandu, Pippali Rasayana, Dhatri Lauha

#### INTRODUCTION

Pandu Roga closely resembles iron deficiency anemia, defined as inadequate red blood cell mass to deliver oxygen to tissues. Moderate anemia manifests as fatigue, weakness, loss of appetite, pallor, koilonychia, breathlessness, and palpitations.<sup>1</sup> Iron deficiency anemia reduces individual work capacity, leading to serious economic consequences and hindering national development.

Iron, though the third most abundant element, has a deficiency affecting nearly one-fifth of the global population ( $\approx 24.8\%$ )<sup>2</sup>. It ranks 9th among 26 risk factors in GBD 2000, causing 841,000 deaths and 35 million disability-adjusted life years lost.<sup>3</sup> India remains among the countries with very high prevalence. Mild anemia often goes unnoticed, but without treatment it can progress, leading to chronic health issues such as impaired fetal growth, delayed cognitive development, and reduced physical capacity.

According to Ayurveda, Agnimandya (weak digestion) is the root cause of disease. Impaired digestion produces poor-quality Ahara Rasa, leading to inadequate nourishment of Dhatus and resulting in tissue weakness (Uttarottara Dhatu Aposhana and Shaithilyata). This causes loss of tissue essence (Nihsara), reduced blood and fat (Alpa Rakta, Alpa Meda), diminished strength and immunity (Bala Kshaya), sensory dysfunction

(Indriya Shaithilya), and depletion of Ojas (vital immunity essence)<sup>4</sup>. The cardinal sign of Pandu Roga is Panduta—a pale, whitish-yellow discoloration of the skin—due to depletion of Rasa and Rakta Dhatus.

Here we can clearly see that Pandu doesn't reflect as only deficiency in the blood's ability to supply adequate oxygen to tissue and organs. Management in Ayurveda put more emphasis on regulating the metabolism thus maintaining homeostasis rather than supplementation as evident from the treatment principles and formulations mentioned for the same in the classics. Keeping this in mind, for the present clinical study, Pippali Rasayana and Dhatri Lauha were selected<sup>5,6</sup>. The hypothesis behind the selection of these compounds is that the mentioned compounds have properties of Deepana, Pachana and Rechana forming comprehensive and wholesome approach towards correcting the said condition. Both these Yogas, based on the virtue of their properties are thought of eliminating the morbid Doshas and increasing the Agni, thereby correcting the metabolism and enhancing the nutrient bioavailability.

#### MATERIALS AND METHODS

##### Clinical source

Multi-centered, mainly patients of either sex diagnosed with Pandu (Iron Deficiency Anemia) attending OPD & IPD of A.L.N Rao Memorial Ayurvedic Medical College & Hospital Koppa,

Karnataka, India, or its associated hospitals were selected for the study.

#### Methods of collection of data

Study population: Subjects diagnosed with Pandu (Iron Deficiency Anaemia) were incidentally selected strictly abiding to the inclusion and exclusion criteria. Then they were randomly categorized into two groups, each consisting of 30 subjects.

#### Study design

Single blind randomized comparative clinical study with pre and post study evaluation.

#### Sampling process sample size

A total of 60 patients identified with Pandu Roga were selected and randomly categorised into two groups, each comprising of 30 patients each. the study is carried out as per international conference of Harmonization-Good Clinical Practices Guidelines (ICH-GCP) or as per ICMR National Ethical Guidelines for Biomedical and Health Research Involving Human Participants.

Institutional ethical clearance number:ALNRAMC:169:2017-18.

#### Method of preparation

Selected fruits of Pippali  
(washed with distilled water and dried in indirect sunlight)

↓

Kept in drier  
(moisture content reduced to 5%, finally weighing 6.8 kg)

↓

Fine Choorna  
(with the help of grinder and sieved)

↓

Finally stored in airtight glass container, till their further use.

*Butea monosperma* (Palasha-red variety) bark (weighing 10 kg) was collected from the local market of Trivandrum (Kerala) and was pharmacognostically authenticated.

Palasha Twak obtained

↓

Chopped into small pieces, cleaned and dried completely

↓

Placed in a heap (open windless place) and ignited

↓

Swangasheetha

(time took for complete burning- 2 hours, Swangasheetha- 5 hours)

↓

White ash obtained was then weighed (1.650 kg) and collected in stainless steel vessel

↓

Ksharodaka preparation was done according to Acharya Susrutha (obtained ash with 6 parts of water).

Obtained Palasha Ksharodaka (9 l) was used for Bhavana of the prepared Pippali Choorna.

↓

After Bhavana, final product was fried in Go Ghrita (Cow ghee).

↓

Pippali Choorna was packed -each main packet containing total 216 gram (120 small sachets- each containing 1.8 gm of Choorna).

#### Diagram 1: Preparation of Pippali Rasayana.

Each main packet was properly labelled with following information

- Name of the product (special code was given KC351)
- Quantity
- Manufacturing date
- Expiry date
- Batch number

#### Pharmaceutical source

The formulations Pippali Rasayana and Dhatri Lauha were used as the therapeutical interventions in the present study. The raw drugs were collected, identified pharmacognostically and was prepared in the pharmacy attached to A.L.N. Rao Memorial Ayurvedic Medical College, Koppa, Karnataka, India as per the standard method of preparation of Pippali Rasayana as per Charaka Samhitha and Dhatri Lauha as per Bhaishajya Ratnavali were followed. The prepared Yogas were pharmaceutically analyzed and standardized.

#### Preparation of Pippali Rasayana<sup>5</sup>

Table 1: Ingredients of Pippali rasayana

| Drug               | Prayojya anga / Part used | Latin name                            |
|--------------------|---------------------------|---------------------------------------|
| Pippali            | Phala                     | <i>Piper longum</i> Linn.             |
| Palasha Kshra jala | Twak                      | <i>Butea monosperma</i> (Lam.) Kuntz. |
| Ghrita             | -                         | -                                     |

**Collection of drugs:** Fruits of *Piper longum* (weighing 10 kg) were collected from the local market of Koppa (Chikmagalur district, Karnataka) and were pharmacognostically authenticated.

Manufactured at A.L.N. Rao Memorial Ayurvedic Medical College, Koppa, Karnataka, India.

One such labelled main packet was given to the patient during the study period.

Clinical method of administration: Administered in Group A subjects, n=30

Subjects were given medicine required for 60 days of trial.

**Posology**

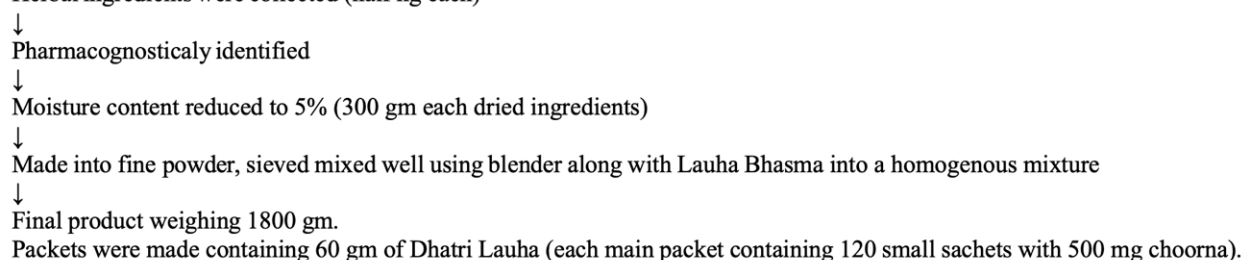
- Patient was given one packet (containing 120 small sachets) and was advised to have 1.8 gms (one small packet) of Pippali Choorna each time before and after morning food (2 small packets per day).
- Choorna was advised to have mixed with Madhu and Go Ghrita taken in unequal proportion (quantity sufficient).
- Patients were given 120 small packets for 60 days clinical trial.

**Preparation of Dhatri Loha<sup>6</sup>**

**Table 2: Ingredients of Dhatri Loha**

| Drug Name    | Latin Name                  | Prayojya Anga/Parts Used |
|--------------|-----------------------------|--------------------------|
| Amlaki       | <i>Emblica officinalis</i>  | Fruit pericarp           |
| Shunti       | <i>Zingiber officinalis</i> | Rhizome                  |
| Maricha      | <i>Piper nigrum</i>         | Fruit                    |
| Pippali      | <i>Piper longum</i>         | Root,Fruit               |
| Haridra      | <i>Curcuma longa</i>        | Rhizome                  |
| Lauha Bhasma |                             |                          |

Herbal ingredients were collected (half kg each)



**Diagram 2: Preparation of Dhatri Loha**

Clinical administration: Administered in Group B subjects, n=30  
 Subjects were given medicine required for 60 days of trial.

**Posology**

- 500 mg Choorna twice daily after food for 60 days.
- Subjects were given 1 pack containing 120 small sachets (500mg each) for the trial period of 60 days. Patients were advised to take 500 mg Choorna twice daily after food mixing with Madhu and Ghrita in unequal proportions.

Physical Trauma.

- Haemoglobinopathies like Sickle Cell Anemia, Leukemia, and Thalassemia.
- Subjects with HIV and HbsAg positive.
- Patients with uncontrolled systemic diseases like Diabetes Mellitus and Hypertension.
- Patients with infectious diseases.
- Unusual hemolysis due to Red Cell Membrane Defects, Hereditary Spherocytosis, Hereditary Elliptocytosis and Malaria.

**Criteria for the selection of patients**

**Inclusion criteria**

- Patients diagnosed with Pandu (Iron deficiency anemia) from either sex within the age group of 20-60 years.
- Hb% within the range of 6-12gm/dl in males and 6- 11gm/dl in females will be selected.

**Parameters of Study**

**Subjective Parameters** - Dourbalya, Hrudrava, Aarohanaayasa, Panduta, Bhrama, Aruchi, Agnimandya, Sheernalomata, Karnakshveda Pindikodweshtana were graded according to standardized gradations and assessed pre and post test.

**Exclusion criteria**

- Subjects with abnormal hemopoiesis like Megaloblastic anemia.
- Auto immune hemolytic anemia. Pregnant women.
- Unusual blood loss like Gastrointestinal bleeding and

**Objective Parameters taken for assessment:** Following laboratory blood investigations was used in the study Hb%, MCH, MCV, PCV, MCHC in all subjects, Serum ferritin and TIBC (in selected cases) for diagnosis and assessment of Iron Deficiency Anaemia.

**Table 3: Subjective Parameters and their scoring criteria**

| No | Parameters  | Range  | Score |
|----|---|--|-------|
| 1  | Daurbalya   | Absent   | 0     |
|    |   | Weakness but not affecting routine work                                  | 1     |
|    |   | Weakness affecting routine work but able to cop up (tolerable).          | 2     |
|    |   | Weakness enough to hamper the routine work requires bed rest to relieve. | 3     |
| 2  | Arohanaayasa  | Absent   | 0     |
|    |   | After more than 30 steps   | 1     |
|    |   | Felt after more than 20 steps  | 2     |
|    |   | After 10 steps   | 3     |
| 3  | Pāndutā (Pallor)<br>In Twak, Naka,<br>Netravartma, Jihva<br>Hastapadatala | Absent   | 0     |
|    |   | Mild- Present in any two of the sites                                    | 1     |
|    |   | Moderate - In any 3 of the sites   | 2     |
|    |   | Severe - In any 4 or all of the sites                                    | 3     |

|    |                  |   |   |
|----|------------------|---|---|
| 4  | Bhrama           | Absent  | 0 |
|    |                  | Occasionally present  | 1 |
|    |                  | Giddiness on change in posture  | 2 |
|    |                  | Frequent giddiness  | 3 |
| 5  | Hrudrava         | Absent  | 0 |
|    |                  | Palpitation on moderate exertion  | 1 |
|    |                  | Palpitation on mild exertion  | 2 |
|    |                  | Palpitation on resting position   | 3 |
| 6  | Karnakshweda     | Absent  | 0 |
|    |                  | Occasional and Tolerable  | 1 |
|    |                  | Occasional and Non-Tolerable  | 2 |
| 7  | Aruchi           | Absent  | 0 |
|    |                  | Willing towards specific tastes   | 1 |
|    |                  | Willing towards one taste only  | 2 |
|    |                  | Not able to appreciate taste in food  | 3 |
| 8  | Agnimandya       | Digestion within 3 hours  | 0 |
|    |                  | Digestion of light food within 3-6 hours  | 1 |
|    |                  | Digestion of light food within 6-9 hours  | 2 |
|    |                  | Digestion of light food within 9-12 hours   | 3 |
| 9  | Shirnalomata     | No falling of body hairs.   | 0 |
|    |                  | Mild falling of eyelashes and body hairs  | 1 |
|    |                  | Moderate falling of body hairs  | 2 |
|    |                  | Notable falling of body hairs   | 3 |
| 10 | Pindikodweshtana | No cramps   | 0 |
|    |                  | Cramps after heavy work, long walks (1 hour), exercise, lifting heavy objects etc | 1 |
|    |                  | Cramps after 1/2 hour of walk, climbing upstairs etc                              | 2 |
|    |                  | Cramps after 10 minutes of walk (light works) even during resting condition       | 3 |

### Statistical Analysis

The information gathered on the basis of observation made about various parameters was subjected to statistical analysis in terms of Mean, Standard deviation and Standard error (SE).

Paired and unpaired 't' test were carried out and the obtained results were interpreted as:  $p > 0.05$  – Insignificant  $P < 0.05$  – Significant

### RESULTS

#### Subjective Parameters

Effect on Daurbalya: Group A (Pippali Rasayana) showed 67% improvement (mean reduced from 1.93 to 0.63), while Group B (Dhatri Lauha) showed 72% improvement (mean reduced from 2.03 to 0.57). The results obtained regarding this parameter were highly significant in both groups.

Effect on Arohanayasa: Group A showed 51% improvement (mean reduced from 1.77 to 0.87), and Group B showed 59% improvement (mean reduced from 1.80 to 0.73). The results obtained regarding this parameter were highly significant in both groups.

Effect on Panduta: Group A showed 63.69% improvement (mean reduced from 1.57 to 0.57), while Group B showed 71.27% improvement (mean reduced from 1.73 to 0.50). The results obtained regarding this parameter were highly significant in both groups.

Effect on Bhrama: Group A showed 74% improvement, while Group B showed 90% improvement. The results obtained regarding this parameter were highly significant in both groups.

Effect on Hrudrava: Group A showed 58% improvement (mean reduced from 0.57 to 0.23), while Group B showed 63% improvement (mean reduced from 0.63 to 0.23). The results obtained regarding this parameter were highly significant in both groups.

Effect on Karnakshweda: Group A showed 66.6% improvement (mean reduced from 0.50 to 0.17), while Group B showed 84% improvement (mean reduced from 0.67 to 0.10). The results obtained regarding this parameter were highly significant in both groups.

Effect on Aruchi: Group A showed 90.5% improvement (mean reduced from 1.40 to 0.13), while Group B showed 87%

improvement (mean reduced from 1.57 to 0.20). The results obtained regarding this parameter were highly significant in both groups.

Effect on Agnimandya: Group A showed 86% improvement (mean reduced from 1.33 to 0.20), while Group B showed 90% improvement (mean reduced from 1.53 to 0.17). The results obtained regarding this parameter were highly significant in both groups.

Effect on Sheernalomata: Both groups showed 63% improvement. Group A mean reduced from 0.47 to 0.17, while Group B mean reduced from 0.63 to 0.23. The results obtained regarding this parameter were highly significant in both groups.

Effect on Pindikodweshtana: Group A showed 57% improvement (mean reduced from 1.70 to 0.73), while Group B showed 66.6% improvement (mean reduced from 1.70 to 0.57). The results obtained regarding this parameter were highly significant in both groups.

#### Objective Parameters

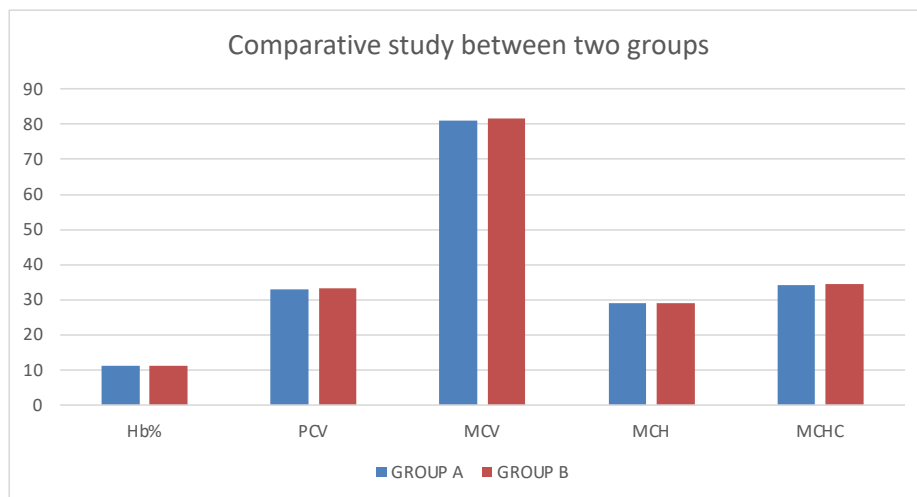
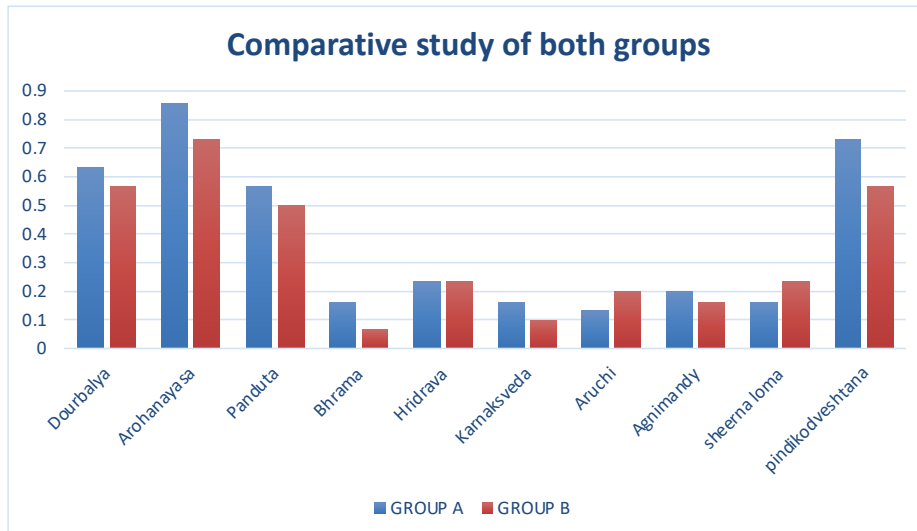
Effect on Hemoglobin (Hb%): Group A (Pippali Rasayana) mean increased from 10.25 to 11.17, while Group B (Dhatri Lauha) showed greater improvement, increasing from 9.70 to 11.85. The results obtained regarding this parameter were highly significant in both groups.

Effect on Packed Cell Volume (PCV): Group A mean increased from 29.48 to 32.89, while Group B mean increased from 29.23 to 33.18. The results obtained regarding this parameter were highly significant in both groups.

Effect on Mean Corpuscular Volume (MCV): Group A mean increased from 77.95 to 81.08, while Group B mean increased from 77.96 to 82.68. The results obtained regarding this parameter were highly significant in both groups.

Effect on Mean Corpuscular Hemoglobin (MCH): Group A mean increased from 26.5 to 29.09, while Group B mean increased from 25.61 to 29.34. The results obtained regarding this parameter were highly significant in both groups.

Effect on Mean Corpuscular Hemoglobin Concentration (MCHC): Group A mean increased from 31.17 to 34.20, while Group B mean increased from 31.30 to 35.50. The results obtained regarding this parameter were highly significant in both groups.



Analyzing the statistical data of the results obtained from both the groups, we can see that, Pippali Rasayana showed marked effects on reducing the subjective parameter like Agnimandya (in 24 subjects with Agnimandya, 75% of the trial subjects getting complete relief), Aruchi (in 24 subjects, 83% getting complete relief), Bhrama (in 13 subjects presented with complaint of Bhrama, 61% of subjects had complete relief), Sheernalomata etc. Whereas when we see Group B results, we can see marked reduction in subjective Parameters like Panduta (out of 27 subjects 44.44% attained complete relief), Pindikodveshtana, Bhrama, also in Aruchi, Agnimandya, Karnakshweda, Hrudrava etc. Both formulations has almost same significance in reducing parameters like Daurbalya, Arohanayasa etc.

## DISCUSSION

### Probable Mode of Action of Pippali Rasayana and Dhatri Lauha

The Ayurvedic texts emphasize multiple factors that impair Agni and thereby disrupt digestion and metabolism. Pandu is classified as a Santarpanotha Vyadhi, where deficient food intake is not considered central to its pathogenesis by ancient scholars. On examining formulations prescribed for Pandu, many include herbal ingredients such as Trikatu, which act as metabolic correctors and enhance nutrient bioavailability, regardless of whether metallic iron is present. In Charaka Samhita, of the 108 formulations indicated for Pandu, only 13 contain iron or other metals. Thus, an ideal preparation should focus on ingredients

that improve metabolism and absorption. In this context, the study compared Dhatri Lauha (containing Lauha Bhasma) with Pippali Rasayana (without iron).

The majority of the drugs included in the selected formulations for this study possessed Katu, Tikta, and Kashaya Rasa, along with Deepana-Pachana properties. Since Pandu is a condition characterized by Kleda Adhikya, the roles of Tikta and Kashaya Rasa are emphasized, as they are described as Kledopashoshana and Kleda Upayokta respectively. Pachana helps render the Doshas free from Ama (Nirama), as explained by Hemadri, while Deepana facilitates digestion and clears the Doshas from Dhātu, Srotas, and Ashaya. Together, Deepana-Pachana promote proper metabolism, digestion of Anna, Mala, Rasa, and removal of Ama, thereby lightening the Koshta. These properties fall under Langhana<sup>7</sup>, which Acharya Charaka prescribed as the best treatment for Rasa and Rakta Pradoshaja Vikara<sup>8</sup>.

Additionally, Katu Rasa is described as Margam Vivrunoti (removing obstructions) and Srotoshodaka, thereby enhancing microcirculation of Ahara Rasa throughout the body. Acharya Charaka also highlighted Rasayana Chikitsa in conditions of Ojakshaya and Dhatushaithilya. Both formulations selected here—Pippali Rasayana and Dhatri Lauha—possess Deepana, Pachana, and Rasayana properties, which improve microcirculation of high-quality Rasa Dhātu and support proper nourishment of successive Dhatus.

Classical texts further indicate Loharajas as the supreme drug for managing Pandu, reflecting the ancient scholars' awareness of iron deficiency in its pathogenesis.<sup>9</sup> Lauha is described as Raktavridhikara, enhancing both the quantity and quality of Rakta Dhatu. It is also considered the best Rasayana in Rasaratnasamuchaya, underscoring its therapeutic importance in Pandu.

Amlaki is described in Ayurveda as Deepana, Pachana, Rasayana, Rochana, Kledopashoshana, Yakrutuddechaka, and Tridoshashamaka—with a particular emphasis on Pittashamana. It corrects the Poshya Bhaga of Ahara Rasa, thereby enhancing assimilation of nutrients and supporting Uttarottara Dhatu Poshana. Modern science complements this view, as Amlaki is a rich source of Vitamin C, which reduces ferric iron to ferrous iron, keeping it soluble even at neutral pH and improving absorption. Vitamin C supplementation with meals is recognized as a potent enhancer of non-heme iron absorption<sup>10</sup>. Additionally, its antioxidants—Vitamin C, bioflavonoids, flavones, and carotenoids—reduce oxidative stress, a biochemical mechanism implicated in iron deficiency anemia.

Shunti and Maricha are also Deepana, Pachana, Rochana drugs, indicated in Samanya Daurbalya. Classical texts mention Shunti as Pandu Nashini (Dh. Ni) and Maricha as Yakrut Uddechaka and Rasayana (Kai. Ni). The Pramathya property of Maricha helps clear Srotoavarodha<sup>11</sup>, thereby improving circulation and nutrient delivery.

Haridra (Turmeric) further strengthens the therapeutic potential in anemia management due to its multiple pharmacological activities—haematinic, digestive, appetizer, antioxidant, hepatoprotective, and anti-inflammatory. Haridra is recognized not only for its antioxidant and hepatoprotective properties but also as an immune booster, particularly beneficial for individuals with low immunity. Being Katu Rasa Pradhana and endowed with Deepana-Pachana qualities, it promotes Agni and alleviates Aruchi-like symptoms of Pandu. Its Ruksha Guna helps counteract Dhatu Shaithilya (flabbiness of tissues) often seen in Pandu. By supporting liver function, Haridra aids in the conversion of Rasa into Rakta, thereby contributing to the production of high-quality Rakta Dhatu.

Pippali is described as Balya, Rasayana, and Pandurogaghna. Acharya Charaka, in Vimana Sthana, highlighted its Yogavahi property<sup>12</sup>, which allows it to act synergistically with other drugs and enhance their efficacy. As a Katu Rasa Pradhana Dravya with Madhura Vipaka, Pippali is Srotoshodaka (Margam Vivrunoti), clearing channels and improving absorption. Importantly, Pippali enhances iron absorption from the colon. Its major phytochemical, Piperine, increases bioavailability of drugs and nutrients by inhibiting Cytochrome P450 enzymes, delaying gastric emptying, and thereby improving mineral absorption.

The trial drug administered here—Pippali Rasayana—is mentioned in Charaka Chikitsa Sthana, Rasayana Adhyaya (3rd Pada). Rasayana therapy is defined<sup>13</sup> as the means by which one attains excellence of Rasa Dhatu, the nourishing fluid formed immediately after digestion. Its mode of action involves nourishing Rasa, enhancing Agni, cleansing microcirculatory channels for better absorption, and providing antioxidant protection against oxidative damage to RBCs.

## CONCLUSION

Iron deficiency anemia, resembling the clinical picture of Panduroga, is recognized as the most common nutritional deficiency disorder of major public health concern, affecting psychological, developmental, behavioral, and work

performance. Although classical texts mention Pitta as the chief Dosh involved in Panduroga, the clinical presentation suggests the involvement of all three Doshas. The majority of drugs in the chosen formulations possess Katu-Tikta-Kashaya Rasa, Laghu-Ruksha Guna, Sheeta Virya, Madhura Vipaka, and properties such as Vata-Kapha Hara, Tridoshahara, and Rasayana. These qualities pacify aggravated Doshas and enhance the formation and absorption of high-quality Ahara Rasa, leading to proper nourishment of successive Dhatus.

Due to Agnimandya, Ama is produced, and most of the drugs selected have Deepana-Pachana properties that strengthen Agni, break the pathogenesis of the disease, and improve iron absorption from the gut. Both Pippali Rasayana and Dhatri Lauha demonstrated significant results in subjective and objective parameters of Pandu. Statistically, no significant difference was observed between the two groups. Group A (Pippali Rasayana) showed marked improvement in subjective parameters such as Agnimandya (75% complete relief) and Aruchi (83% complete relief). Group B (Dhatri Lauha) showed notable improvement in Panduta (44% complete relief), Pindikodweshtana, Bhrama, Agnimandya (80% complete relief), and Aruchi (76% complete relief). Although statistical differences were not significant, Group B exhibited greater improvement in objective parameters, including Hb% and red blood cell indices (PCV, MCV, MCH, MCHC).

From the outcomes of this study, it can be safely concluded that both Pippali Rasayana and Dhatri Lauha provide significant relief in the major symptoms of Pandu Roga to varying extents. This highlights that correcting metabolism is equally important as supplementation in managing nutritional deficiency disorders.

## Limitations and scope for further studies

- The sample size and time period of study was not adequate to draw a generalized conclusion.
- Shodhana therapy before the study would have yielded better results.
- More multi-centred trials should be conducted including the people in different geographical distribution.

## REFERENCES

1. Fauci S, Kasper L, Longo L, Hauser I, *et al.*, editors. Harrison's principles of medicine. 17th edition. Newyork. McGraw Hill, 2008, p 635.
2. World Health Organization. Worldwide prevalence of anaemia 1993–2005: WHO global database on anaemia. Geneva: World Health Organization; 2008. Available from: <https://www.who.int/publications/i/item/9789241596657> (who.int in Bing)
3. Stoltzfus RJ. Iron deficiency: global prevalence and consequences. Food Nutr Bull. 2003 Dec;24(4 Suppl):S99-103. Available from: <https://pubmed.ncbi.nlm.nih.gov/17016951> (pubmed.ncbi.nlm.nih.gov in Bing) [cited 2020 Mar 1].
4. Sushruta. Sushruta Samhita. Ayurved Tatvasandipika Hindi commentary by Dr. Ambika Dutta Shastri. Varanasi: Chaukhambha Sanskrit Sansthan; Sutra Sthana 15/24.
5. Acharya Y.T., editor, Agnivesha. Charaka Samhita. Vidhyotini Hindi commentary by Kashinath Shastri and Goraknath Chaturvedi. 16th ed. Varanasi: Chaukhamba Bharati Academy; 1998. Chikitsasthana, Rasayanapada 1/3/32-35. p. 36.
6. Govinda Das Sen. Bhaishajya Ratnavali. Commentary by Sidhinandan Mishra. Varanasi: Chaukhamba Surbharati Prakashan; 2007. Pandurogadhikara 12/3. p. 378.

7. Vagbhata. Ashtanga Hridaya. Nirmala Hindi commentary by Dr. Brahmanand Tripathi. Varanasi: Chaukhamba Sanskrit Pratishthan; Sutra Sthana 14/6.
8. Acharya Y.T., editor, Agnivesha. Charaka Samhita. Vidhyotini Hindi commentary by Kashinath Shastri and Goraknath Chaturvedi. 16th ed. Varanasi: Chaukhamba Bharati Academy; 1998. Sutrasthana 24/18.
9. Arundutta. Ashtanga Hridaya. Varanasi: Chaukhamba Orientalia; 2000. Uttara Sthana 4/41.
10. Hallberg L, Brune M, Rossander L. The role of vitamin C in iron absorption. *Int J Vitam Nutr Res Suppl.* 1989;30:103-8.
11. Acharya Y.T., editor, Charaka Samhita by Agnivesha with Ayurveda dipika commentary, Vimanasthana; Rasavimana, Chapter 1, Verse 16, New Delhi: Chaukhamba Publications, 2016; p. 234
12. Acharya Y.T., editor, Charaka Samhita by Agnivesha with Ayurveda dipika commentary, Chikitsasthana; Abhayaamalakiyam rasayana pada, Chapter 1.1, Verse 7-8, New Delhi: Chaukhamba Publications, 2016; p. 376
13. Ambikadutta Shastri, editor; Rajeshwaradutta Shastri, editor. Bhaishajya Ratnavali. Jwarachikitsa Prakaranam, sloka 1285. Varanasi: Chaukhamba Sanskrit Sansthan; 2008. 2nd ed. p. 130

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