

A CRITICAL REVIEW OF MODE OF ACTION OF DHATRYARISHTA IN PANDU ROGA  
WSR TO CHARAKA SAMHITA: PHARMACEUTICS AND PHARMACOLOGICAL  
INSIGHTSDr. Mugdha Phadke\*<sup>1</sup>, Dr. Kavita Deshmukh<sup>2</sup>, Dr. Kalyani Jadhav<sup>3</sup><sup>1</sup>MD (Scholar), Department of Rasashastra and Bhaishajya Kalpana, MAM's Sumatibhai Shah Ayurved Mahavidyalaya, Hadapsar.<sup>2</sup>Asso. Prof., Department of Rasashastra and Bhaishajya kalpana, MAM's Sumatibhai Shah Ayurved Mahavidyalaya, Hadapsar.<sup>3</sup>Prof. & H.O.D., Department of Rasashastra and Bhaishajya kalpana, MAM's Sumatibhai Shah Ayurved Mahavidyalaya, Hadapsar.**\*Corresponding Author: Dr. Mugdha Phadke**MD (Scholar), Department of Rasashastra and Bhaishajya Kalpana, MAM's Sumatibhai Shah Ayurved Mahavidyalaya, Hadapsar. DOI: <https://doi.org/10.5281/zenodo.18480414>**How to cite this Article:** Dr. Mugdha Phadke\*<sup>1</sup>, Dr. Kavita Deshmukh<sup>2</sup>, Dr. Kalyani Jadhav<sup>3</sup>. (2026). A Critical Review Of Mode Of Action Of Dhatriarishta In Pandu Roga Wsr To Charaka Samhita: Pharmaceutics And Pharmacological Insights. World Journal of Pharmaceutical and Medical Research, 12(2), 446–450.

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**ABSTRACT**

Pandu Roga (~anaemia disorder)<sup>[1]</sup> is described in Charaka Samhita as a Pitta-predominant disorder, where aggravated Pitta subsequently disturbs Vata and Kapha, leading to systemic imbalance. The primary pathological involvement is of Rakta dhatu, which becomes depleted and functionally impaired. The clinical features of Pandu roga closely resemble the pathophysiological and clinical profile of anaemia as understood in modern medicine, providing a conceptual bridge for integrative interpretation. The line of treatment includes Shodhana and Shamana procedures, with the Shamana modalities comprising of use of medicated Ghrita, various herbal combinations in the form of Kwatha, Churna or Guti-Vati, Avalehas, Loha or Mandoora kalpas and Sandhana kalpanas. Dhatriarishta is one such Sandhana mentioned in the treatment of Panduroga in Charaka Samhita. The present review aims to elucidate mode of action of Dhatriarishta in Pandu with special reference to its pharmaceutical preparation and pharmacological mechanisms according to classical Ayurveda texts and contemporary science references. Available experimental and pharmacological studies indicate that Dhatriarishta and its constituent drugs enhance iron bioavailability, improve erythropoiesis, exert antioxidant and hepatoprotective effects, and correct inflammatory dysregulation of iron metabolism, collectively supporting its therapeutic role in Pandu Roga.

**KEYWORDS:** Pandu roga, Anaemia, Dhatriarishta, Sandhana kalpana.**INTRODUCTION**

*Pandu Roga* is a well-described disease entity in *Charaka Samhita*, characterized by pallor, weakness, fatigue, and diminished functional capacity, primarily arising from derangement of *Rakta dhatu* and impaired metabolic activity. Classical texts identify *Pitta dosha* as the principal pathogenic factor in *Pandu*, which subsequently vitiates *Vata* and *Kapha*. These pathological events culminate in loss of *Dhatu Sarata*, *Dhatu Shithilata* and *Gaurava*, *Indriya shaithilya*, and progressive depletion of *Varna*, *Bala*, *Sneha* and *Ojas* manifesting clinically as pallor, fatigue and reduced vitality. It is also accompanied by *Srotasa avarodha* and *Agni-hanana*. It is a *Santarpanjanya vikara* manifesting

through *Apatarpanjanya* symptoms.

From a contemporary biomedical perspective, the clinical features and underlying mechanisms of *Pandu Roga* closely resemble those of anaemia, particularly iron-deficiency anaemia and anaemia of chronic inflammation, where impaired iron absorption, altered iron mobilization, oxidative stress, and inflammation play central roles. Increasing evidence suggests that hepatic dysfunction, inflammatory mediators, and oxidative injury to erythrocytes contribute significantly to disease progression, indicating the need for therapies that act beyond simple iron supplementation.

*Dhatryarishta*, a classical fermented formulation (*Sandhana kalpana*) advocated in *Charaka Samhita* for the management of *Pandu*, is pharmaceutically designed to act upon all the components participating in the etiopathogenesis and exert sustained therapeutic action.

Despite its extensive traditional use, a comprehensive understanding of the mode of action of *Dhatryarishta*, integrating classical Ayurvedic principles with modern pharmaceutical and pharmacological evidences, remains limited. Therefore, the present review aims to elucidate the mechanistic basis of *Dhatryarishta* in *Pandu Roga* with special reference to its pharmaceutical preparation and pharmacological actions.

## MATERIALS AND METHODS

### 1. Literature review

- a. Relevant references from classical Ayurvedic texts.
- b. Relevant articles from online portals like Google scholar, SCOPUS, PubMed, etc.

### 2. Analysis and interpretation of the data.

#### • Etiopathogenesis of *Pandu*<sup>[2]</sup>

##### 1. *Hetu Sevana*

Continuous indulgence in etiological factors initiates the pathological process.

##### 2. *Dosha Prakopa*

Predominant vitiation of *Pitta dosha*, along with associated *Vata* and *Kapha* involvement, occurs due to the above *hetus*.

##### 3. *Dhatu Vaigunya*

Vitiated *doshas* lead to *dhatu shaithilya* (*kriya asamarthya*), resulting in impaired metabolic and functional capacity of *Dhatu*s, accompanied by *gaurava* (heaviness).

#### 4. *Guna Kshaya*

Progressive depletion of essential qualities such as *varna* (complexion), *bala* (strength), *sneha* (unctuousness) which indicate loss of essence of *Rakta dhatu* and *oja guna kshaya*, indicating declining tissue vitality and immunity.

#### 5. *Dhatu Kshaya and Sarata Hani*

This culminates in *alpa raktata* (quantitative and qualitative depletion of blood), *alpa medaskata, nisarata* (loss of *dhatu* essence), and *shithilendriyata* (reduced efficiency of the *Indriyas*).

#### • *Pandu roga and Anaemia*<sup>[3]</sup>

1. Nutritional deficiencies or poor metabolism may be the causative factor in cases of iron deficiency anaemia.
2. Metabolic dysregulation and inflammation along with increased oxidative stress, impaired iron absorption and utilization and altered hepcidin (controls iron levels by blocking iron release from cells and regulating absorption from gut) regulation affects the iron homeostasis.
3. This leads to ineffective erythropoiesis.
4. It manifests a pallor, fatigue, dry skin and hair, reduced oxygen delivery and immune competence along with lowered haemoglobin and red blood cell count.
5. Weight loss, energy deficit, impaired concentration and cognitive ability, muscle weakness, hypoxia are also present.

This mirrors the etiopathogenesis and symptoms seen in *Pandu roga* as explained by *Charaka*.

#### • *Dhatryarishta*<sup>[4]</sup> – Method of preparation

1. **Reference** – Charaka Chikitsasthana 16/111-113
2. **Ingredients.**

**Table No. 1: Ingredients used in the preparation of *Dhatryarishta* along with their quantity.**

Sr.No.	Name of the ingredient	Quantity
1.	<i>Dhatri</i> fruits (Amla)	2000 fruits, <i>swarasa</i> is to be extracted.
2.	<i>Krushna</i> (Pippali)	½ kudava (96 gm)
3.	<i>Kshoudra</i> (Honey)	1/8 <sup>th</sup> parts of the quantity of <i>dhatri swarasa</i>
4.	<i>Sharkara</i> (Sugar)	½ tula (2400 gm)

### 3. Procedure

#### a. *Dhatri Swarasa Nirmana*

Two thousand fresh fruits of *Dhatri* (*Emblica officinalis*) are thoroughly washed to remove extraneous matter. The fruits are then crushed and ground into a fine paste.

This paste is subsequently squeezed and filtered to obtain fresh *Dhatri swarasa* (juice).

#### b. Preparation of *Sandhana Patra*

A clean china clay pot is selected as the fermentation vessel (*sandhana patra*). The inner surface of the pot is smeared with *ghrita* to prevent microbial contamination

and adhesion. The pot is then subjected to *dhupana* (fumigation) using appropriate medicinal herbs to ensure sterilization and complete removal of residual moisture.

#### c. Addition of other ingredients

The prepared *Dhatri swarasa* is transferred into the sandhana patra. *Pippali* (*Piper longum*) is added. *Madhu* (honey) and *Sharkara* (sugar) are then incorporated in prescribed quantities, acting as *madhura dravyas* that support and enhance fermentation.

#### d. *Sandhana* (Fermentation Process)<sup>[5]</sup>

After thorough mixing, the pot is sealed properly and

kept undisturbed at a suitable place for 15 days, allowing the fermentation process to occur naturally.

#### e. *Siddhi Lakshana and Filtration*

Upon completion of the fermentation process, the formulation is examined for *siddhi lakshanas*. Once these are observed, the fermented liquid (*arishta*) is filtered carefully to remove solid residues and is then stored in clean, airtight glass bottles.

#### f. *Siddhi Lakshanas of Arishta*<sup>[6]</sup>

The attainment of *siddhi* is confirmed by the following characteristics.

- Appearance of a clear supernatant liquid
- Development of a characteristic alcoholic odour
- Absence of excessive frothing, checked by absence of hissing sound
- Formation of a mildly sour and astringent taste
- Cessation of gas formation, which is checked by a burning candle test, indicating completion of fermentation

**Table No. 2: Properties of the ingredients used in the preparation of *Dhatryarishta*.**

Sr.No.	Name of the drug	Latin name/ common name	Part used	Rasa	Veerya	Vipaka	Guna	Karma
1.	<i>Dhatri</i> (Amla) <sup>[7]</sup>	<i>Emblica officinalis</i>	Fruits	All 5 Rasas except Lavana	Sheeta	Madhura	Laghu	Tridosha shamana, Rasayana, Rakta-pittahara, Vrushya
2.	<i>Krushna</i> (Pippali) <sup>[8]</sup>	<i>Piper longum</i>	Fruits	Katu	Anushna	Madhura	Snigdha, Laghu	Deepana, Pachana, Rasayana, Vaat-kapha shamana
3.	<i>Kshoudra</i> (Madhu) <sup>[9]</sup>	Honey	-	Kashaya, Madhura	Sheeta	Madhura	Ruksha, Laghu	Lekhana, Deepana, Srotovishodhana, Vaat-kapha shamana
4.	<i>Sharkara</i> <sup>[10]</sup>	Sugar	-	Madhura	Sheeta	Madhura	Snigdha, Guru	Vrushya, Brumhana, Vaat-pitta shamana

4. *Sevana kala* – *Pratahkala* (in the morning, empty stomach)
5. *Anupana* – Lukewarm water
6. *Matra* – upto 40 ml.<sup>[11]</sup>
7. *Phalashruti* – The formulation is also useful in *Kamala, Pandu, Hrudroga, Vaatrakta, Vishamajwara, Kaas, Hikka, Aruchi, Shwasa*.

## DISCUSSION

**1. Role of the Individual Drugs Used in the Preparation of *Dhatryarishta*** – *Dhatryarishta* is a *Pandu-hara* formulation in which *Dhatri* is the principal drug, described as *tridoshashamaka* with marked *Pitta-prashamana*. It possesses *rasayana* and *raktaprasadana* properties, thereby nourishing *rasa* and *rakta dhatu*, and restoring *varna* and *bala*. *Pippali* acts as *agnideepaka, pachana*, preventing *Ama* formation and rectifying *Srotasavarodh*, while also facilitating deeper tissue penetration. The *madhura dravyas* used for fermentation, improve palatability and aid in sustained therapeutic action. All the *dravyas* undergo *Madhura vipaka* which is useful in *Pitta-prashamana*.

From a modern standpoint, *Dhatri* provides high levels of ascorbic acid, polyphenols, tannins, gallic acid and resveratrol which enhance non-heme iron absorption, protect erythrocytes from oxidative damage, and modulate inflammatory pathways affecting iron metabolism.<sup>[12],[13]</sup> The vit C in *Dhatri* reduces insoluble ferric iron into a form that is more soluble and

bioavailable – ferrous iron.<sup>[14]</sup> *Pippali*, rich in piperine, improves intestinal permeability and inhibits metabolic degradation of co-administered phytoconstituents, thereby increasing bioavailability of iron and antioxidants. Piperine acts as a bioenhancer and aids in enhanced absorption of nutraceuticals like vit C and iron. The combination of piperine + gallic acid provides a more pronounced therapeutic potential in reducing hepatorenal dysfunction and oxidative stress consequences. It also improves the oral bioavailability of resveratrol.

The combination of *Dhatri+Pippali* has free radical scavenging ability, reduction capability, ability to reduce lipid peroxidation and hepatoprotective role.<sup>[15],[16],[17]</sup> The fermentable sugars from honey and sugar not only facilitate alcohol production but also contribute to improved stability and extraction of active compounds, creating a synergistic phytochemical profile beneficial in anaemia.<sup>[18]</sup>

## 2. Pharmaceutical Importance of *Sandhana Dosage Form*

*Sandhana kalpana* is a unique Ayurvedic pharmaceutical that enhances *deepana-pachana, srotoshodhana*, and *vyavayi* properties of the formulation correcting *Agnihanana* and *Srotasavarodh*. The naturally fermented *arishta* becomes *laghu* and *sukshma*, enabling faster absorption and deeper tissue action, which is particularly important in chronic disorders like *Pandu* associated with

*agnisada* and *dhatu kshaya*. Since the form used is that of *Arishta* and not *Asava*<sup>[19]</sup>, the highly heat sensitive vit. C can be extracted in its full potential in the formulation. The self-generated alcohol acts as a preservative and ensures prolonged shelf life without loss of potency. The hepatoprotective activity of *Dhatri* and *Pippali* is enhanced by a formulation which also acts as a rejuvenator to the hepatic cells, this is a key point as liver is the *Moolasthan* of *Raktavaha srotas*<sup>[20]</sup> which is the primary affected in *Pandu* and liver is the regulator of iron homeostasis through hepcidin and erythropoietin production.<sup>[21],[22]</sup>

Modern pharmaceuticals recognizes fermentation as a bioprocess that increases extraction efficiency, stability, and bioavailability of phytoconstituents. The low concentration of ethanol acts as a solvent and permeation enhancer, improving gastrointestinal absorption and systemic distribution of active compounds. Organic acids produced during fermentation stimulate gastric secretion and correct functional malabsorption, while microbial biotransformation may generate bioactive metabolites that enhance therapeutic efficacy in anaemia.<sup>[23]</sup> The hydrolysis reaction that takes place during the process leads to conversion of emblicanin A – another phytoconstituent present in *Dhatri* into gallic acid, thus increasing the amount of gallic acid to work in synergy with other alkaloids.<sup>[24]</sup> The process also modulates lipid peroxidation through microbial activity thus enhancing the effect of *Dhatri* and *Pippali* on reducing the same.<sup>[25]</sup>

### 3. Pharmacology of *Dhatryarishta* with Reference to *Pandu roga*

The pharmacological action of *Dhatryarishta* in *Pandu Roga* is directed towards correcting *Pitta-pradhana dosha dushti*, restoring *Agni*, and replenishing *Rakta dhatu*. By alleviating *Agnimandya* and digesting *Ama*, it removes *Srotorodha* thereby improving *dhatu poshana*. Its *rasayana* and *raktaprasadana* actions prevent *dhatu shaithilya*, restore *indriya bala*, and replenish *ojas* and *sneha*, leading to improvement in classical symptoms such as *panduta* (pallor), *shrama* (fatigue), *daurbalya*, etc.

Pharmacologically, *Dhatryarishta* exhibits antioxidant, anti-inflammatory, hepatoprotective, and iron-bioenhancing activities that directly address the etiopathogenesis of anaemia. Reduction of oxidative stress protects erythrocyte membranes and haemoglobin from damage, while anti-inflammatory effects reduce cytokine-mediated hepcidin elevation, improving iron mobilization and utilization. Enhanced iron absorption and improved erythropoiesis lead to increased haemoglobin levels, improved tissue oxygenation, and reversal of clinical features such as pallor, fatigue, and reduced endurance. Thus, the formulation provides a comprehensive therapeutic approach by correcting metabolic dysfunction, improving iron handling, and restoring systemic vitality.

## CONCLUSION

*Dhatryarishta*, through its rational combination of drugs, unique fermented dosage form, and multifaceted pharmacological actions, exemplifies an integrative therapeutic strategy for *Pandu Roga*. Its classical Ayurvedic design and modern scientific correlates together justify its effectiveness in addressing anaemia at metabolic, cellular, and systemic levels.

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