# An Ethereal Study of Drakshavaleha and Punarnavadi Mandura in Managing *Pandu Roga* with Special Reference to Iron Deficiency Anemia

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# **ABSTRACT**

**Introduction:** Anemia is a public health problem affecting both developing and developed countries with major consequences for human health as well as social and economic development. We can find the references for numerous medications indicated for the treatment of *Pandu* in various treatises of *Ayurveda*. The formulations *Punarnavadi Mandura* and *Drakshavaleha* when administered in combination are supposed to act as iron and nutrition supplement, which will improve the overall health of the patients especially females of reproductive age group. **Aim:** The aim of the study was to evaluate the probable mode of action of *Drakshavaleha* and *P. Mandura* in *Pandu Roga* w.s.r to iron deficiency anemia. **Materials and Methods:** The information in this article is centered on various articles published in indexed and non-indexed journals of *Ayurveda* and Contemporary medical sciences, *Ayurveda Samhitas*, and their respective commentaries and textbooks of concerned subjects of both *Ayurveda* and Modern Medicine. **Results:** The ingredients of *Drakshavaleha* and *P. Mandura* mainly possess activities such as immunomodulatory, anti-oxidant, and bio-availability enhancers which can act collectively against the symptomatology of *P. roga*. Ingredients such as *ManduraBhasma*, *Gomutra*, *Punarnava*, *Haridra*, and *Guda* are proven to enhance the process of erythropoiesis. **Conclusion:** Based on the review, it can be considered that *P. Mandura*, a poly herb-mineral formulation and *Drakshavaleha*, a *Naimittika Rasayana* which can act as nutritional supplement, can counteract most of the pathological manifestations related to *Pandu*.

Keywords: Drakshavaleha, Iron deficiency anaemia, Pandu roga, Punarnavadi Mandura

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#### Introduction

Pandu roga is an illness related to Raktalpata and Panduta of the body in which the luster of the body is diminished and the color of the skin becomes pale, which is discussed in our ancient texts as Vaivarna, Ketaki Dhuli Sannibha, and so on. Pandura Varna is the key diagnostic sign of P. roga, which is a change in color that can be observed by assessing Twak, Netra, Nakha, and Jihwa. Hence, based on the clinical symptoms of P. roga, it can be linked to the symptoms of iron deficiency anemia (IDA).

According to the data of NFHS-III undertaken in 2005–2006, India has among the highest number of cases of anemia in the world. [2] IDA is the most common cause of anemia in India.

*P. roga* is more common among women particularly from rural areas of the country because of poor quality of life, lack of balanced diet, and lack of awareness about the need of a balanced diet for health and stress. The concept of *Naimittika Rasayana* holds importance in such situations particularly. *Drakshavaleha* and *Punarnavadi Mandura* are two formulations which can provide direct enrichment to the nutritional quality of *Poshaka rasa* and aid in digestion and metabolism.

# **Aims and Objectives**

 The aim of the study was to evaluate the probable mode of action of *Drakshavaleha* and *P. Mandura* in *P. roga* w.s.r to iron deficiency anemia.

# MATERIALS AND METHODS

A review of published studies in databases such as PubMed on the role of ingredients in *Drakshavaleha* and *P. Mandura* in the management of *Panduroga* w.s.r to Iron deficiency anemia has been attempted. <sup>1</sup>Department of Shalya Tantra, Institute of Teaching and Research in Ayurveda, Jamnagar, Gujarat, India.

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### Inclusion and Exclusion Criteria

Articles published in English language only were included in the review. Furthermore, original researches were only recruited for the purpose of review which precludes review articles and theoretical research.

# Method of Preparation of P. Mandura[1]

- Step I: Prepared Mandura Bhasma is taken to which Gomutra is added and boiled till it attains consistency of paste
- Step II: The fine powder of ingredients mentioned in the Yoga is added and stirred well

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| S. No | Drug         | Rasa  | Guna                        | Sapancnaka<br>Virya | a-punarnav<br><i>Vipaka</i> | adi mandura<br>Doshaghnata         | Karma   |
|-------|--------------|---|-----------------------------|---------------------|-----------------------------|------------------------------------|---|
| 1     | Punarnava    | Madhura , Tikta,                              | Laghu, Ruksha               | Ushna               | Madhura                     |                                    | Deepana, Vrishya, Lekhana, Anulomana,   |
| '     | rullalliava  | Kashaya                                       | Lagiiu, Kuksiia             | USIIIIa             | Mauriura                    | muosnanara                         | Rechana, Mutrajanana, Swedajanana,<br>Rasayana, and Vishaghna   |
| 2     | Trivrit      | Tikta, Katu                                   | Laghu, Ruksha,<br>Teekshna  | Ushna               | Katu                        | Kaphapittahara                     | Sukhavirechana, Bhedana, Rechana  |
| 3     | Shunti       | Katu  | Laghu, Snigdha              | Ushna               | Madhura                     | Vata Kaphahara                     | Svarya, Rochana, Hrdya, Vrshya,<br>Deepana, Ruchya, and Pachana   |
| 4     | Maricha      | Katu  | Laghu, Teekshna             | Ushna               | Katu                        | Vatakaphahara                      | Deepana, Pachana, Vatanulomana,<br>Krimighna, and Uttejaka.   |
| 5     | Pippali      | Katu  | Laghu, Teekshna,<br>Snigdha | Anushna<br>sheeta   | Madhura                     | Kaphavatahara                      | Deepana, Vrishya, and Rasayana  |
| 6     | Vidanga      | Katu, Tikta                                   | Ruksha, Laghu,<br>teekshna  | Ushna               | Katu                        | Kaphavatashamaka                   | Balya, Deepana, Pachana,<br>Anulomana, Varnya Shirovirechana,<br>and Rasayana                                     |
| 7     | Devadaru     | Tikta   | Laghu, snigdha              | Ushna               | Katu                        | Kaphavatasamaka                    | Vatanulomana, Amahara,<br>Vranashodaka, and Deepana   |
| 8     | Chitraka     | Katu  | Laghu, Rooksha,<br>Teekshna | Ushna               | Katu                        | Kaphavatashamaka,<br>Pittavardhaka | Lekhana, Uttejaka (alpamatra), Madaka<br>(atimatra), Deepana, Pachana, Grahi,<br>Kantya, Rasayana, and Vajikarana |
| 9     | Kushta       | Katu, Madhura,<br>Tikta                       | Laghu                       | Ushna               | Katu                        | Kaphavatashamaka                   | Varnya, Deepana, Pachana,<br>Sugandhi, Uttejaka, Mutrala,<br>Vajikara, and Rasayana                               |
| 10    | Haridra      | Tikta, Katu                                   | Rooksha, Laghu              | Ushna               | Katu                        | Kaphavatashamaka                   | Varnya, Uttejaka, Sugandhi, Dipana,<br>Grahi, and Vishaghna   |
| 11    | Daruharidra  | Tikta, kashaya                                | Laghu, ruksha               | Ushna               | Katu                        | Kaphapittashamaka                  | Dipana, Pachana, Grahi, Varnya, and<br>Rasayana   |
| 12    | Haritaki     | Kashaya<br>pradhana lavana<br>varjita sadrasa | Laghu, Rooksha              | Ushna               | Madhura                     | Tridoshasamaka                     | Rasayana, Cakshushya, Ayuvardhaka,<br>Brhmana, Anulomana, Balya,<br>Medhya, Deepana Pachana, and<br>Mridurechana. |
| 13    | Vibhitaki    | Kashaya                                       | Laghu Ruksha                | Ushna               | Madhura                     | Tridoshahara                       | Bhedana, Madakaraka, Vajikarana<br>Svarya, Vedanasthapana, Deepana,<br>Pachana, Anulomana, and<br>Dhatuvardhaka.  |
| 14    | Amalakki     | Amlapradhana<br>lavanavarjita<br>rasa         | Rooksha, Laghu              | Sheeta              | Madhura                     | Tridoshasamaka                     | Vrshya, Rasayani, Mriduvirechaka,<br>Deepana, Stambhana, Medhya,<br>Anulomana, and Hrdya.                         |
| 15    | Danti        | Katu  | Guru, Teekshna              | Ushna               | Katu                        | Kaphapittahara                     | Vedanasthapana, Deepana, Virechaka, and Vikasi.   |
| 16    | Chavya       | Katu  | Laghu, Rooksha              | Ushna               | Katu                        | Kaphavatashamaka,<br>Pittavardhaka | Deepana, Pachana, and<br>Vatanulomana   |
| 17    | Kutaja       | Tikta Kashaya                                 | Laghu Rooksha               | Sheeta              | Katu                        | Kaphapittasamaka                   | Deepana, Samgrahika, Vamaka, and<br>Sthambaka   |
| 18    | Pippalimoola | Katu  | Laghu, Rooksha              | Ushna               | Katu                        | Kaphavatahara,<br>Pittakara        | Agnideepana, Pachana, and<br>Bhedana  |
| 19    | Musta        | Tikta, Katu,<br>Kashaya                       | Laghu Ruksha                | Sheeta              | Katu                        | KaphaPitta shamaka                 | Lekhana, Medhya, Nadibalya,<br>Deepana, Pachana, Grahi, Balya, and<br>Vishaghna                                   |
| 20    | Gomutra      | Katu Tikta<br>Kashaya<br>Anurasa-Lavana       | Laghu Rooksha<br>Tikshna    | Ushna               | Katu                        | Kaphavatashamaka<br>Pittavardhaka  | Krimighna, Medhya, and<br>Agnideepana Lekhana   |
| 21    | Mandura      | Madhura,                                      | Guru Rooksha                | Sheeta              | Madhura                     | Pittasamaka (R.T)                  | Vrshya, Ruchikaraka, Deepana,   |

• Step III: It is then converted into granules and tablets are prepared.

# Method of Preparation of Drakshavaleha<sup>[3]</sup>

- Step I: Preparation of decoction of dried fruits of *Amla* (*Emblica officinale*) or *Swarasa* of fresh *Amalakki*.
- Step II: Preparation of sugar syrup from the decoction.

Kashaya Tikta

• Step III: Addition of fine powder of Pippali (Piper longum),

Draksha (Vitis vinifera). Yashtimadhu (Glycyrrhiza glabra), Shunti (Zingiber officinale), and Vamshalochana (Bambusa arundinacea).

Raktavriddhirikara, and Dardyakara

• Step IV: Addition of honey after cooling of preparation.

# **OBSERVATIONS AND RESULTS**

The Rasa Panchaka of ingredients of P. Mandura and Drakshavaleha is mentioned in Tables 1 and 2 and pharmacological action of various

| Table 2: | Rasanano | haka-dra | kshavaleha |
|----------|----------|----------|------------|
|----------|----------|----------|------------|

|       | Table 2: Nasapanchaka arakshavalcha |               |                |         |         |               |  |  |
|-------|-------------------------------------|---------------|----------------|---------|---------|---------------|--|--|
| S. No | Drug                                | Rasa          | Guna           | Virya   | Vipaka  | Doshaghnata   | Karma  |  |
| 1.    | Amalakki                            | Lavanavarjita | Guru, Rooksha, | Sheeta  | Madhura | Tridoshaghna  | Vrshya, Rasayani, Mrduvirechaka, Mutrala,      |  |
|       |                                     | Pancharasa    | Sheeta         |         |         |               | Yakrutejaka, Deepana, Stambhana,               |  |
|       |                                     |               |                |         |         |               | Dahaprashamana, Cakshushya, Medhya,            |  |
|       |                                     |               |                |         |         |               | Anulomana, Hrdya, and Garbhasthapana           |  |
| 2.    | Yashtimadhu                         | Madhura       | Guru Snigdha   | Sheeta  | Madhura | Vatapittahara | Shonittasthapana, Rasayana, Balya, Jeevaneeya, |  |
|       |                                     |               |                |         |         |               | Chaksushya, Vajikarana, and Varnya.            |  |
| 3.    | Pippali                             | Katu          | Laghu Snigdha  | Anushna | Madhura | Kaphavataghna | Deepana, Hrdya, Ruchya, Vajikarana,            |  |
|       |                                     |               | Tikshna        | sheeta  |         |               | Rechana, Rasayana, and Balya                   |  |
| 4.    | Shunti                              | Katu          | Laghu Snigdha  | Ushna   | Madhura | Vatakaphahara | Svarya, Rochana, Hrdya, Vrshya, Deepana,       |  |
|       |                                     |               |                |         |         |               | Ruchya, and Pachana                            |  |
| 5.    | Draksha                             | Madhura       | Guru Snigdha   | Sheeta  | Madhura | Vatapittahara | Balya, Vajikarana, Brmhana, Cakshushya,        |  |
|       |                                     |               | Mridu          |         |         |               | Virechanopaga, and Kanthya                     |  |
| 6.    | Vamshalochana                       | Madhura       | Ruksha Laghu   | Sheeta  | Madhura | Vatapittahara | Brumhana, Vrushya, Balya, and Vranahara        |  |
|       |                                     | kashaya       | Teekshna       |         |         |               |  |  |
| 7.    | Sharkara                            | Madhura       | Guru Snigdha   | Sheeta  | Madhura | Pittahara     | Snehana, Tarpana, Mardavkara, Hrdya,           |  |
|       |                                     |               |                |         |         |               | Sleshmanisaraka, and Indriya prasadana,        |  |
|       |                                     |               |                |         |         |               | Anulomana, Sarvadhatu vardhaka, Ayushya,       |  |
|       |                                     |               |                |         |         |               | Balya, Jeevana, Stanyajanana, Vrshya,          |  |
|       |                                     |               |                |         |         |               | Mutrala, and Brimhana                          |  |
| 8.    | Madhu                               | Madhura       | Ruksha Laghu   | Ushna   | Katu    | Tridoshaghna  | Agnivardhaka, Shrotoshodaka, and Yogavahi      |  |
|       |                                     | kashaya       | Sookshma       |         |         |               |  |  |

**Table 3:** Ingredients of drakshavaleha and its pharmacological actions

| Drug name | Latin name                     | Parts used | Quantity  | Pharmacological action  |
|-----------|--------------------------------|------------|-----------|---|
| Draksha   | Vitis vinifera Linn.           | Fruit      | 16 part   | Anti-oxidant, anti-inflammatory, hepatoprotective,  |
| Pippali   | Piper longum Linn.             | Fruit      | 16 part   | cardio protective, and enhances iron absorption. <sup>[4]</sup><br>Anti-inflammatory, <sup>[5]</sup> Anthelminthic, |
|           |                                |            |           | immunomodulator,[6] Analgesic, hepatoprotective,  |
|           |                                |            |           | Increases permeability across barriers,[7] and  |
|           |                                |            |           | bioavailability enhancer.[8]  |
| Sharkara  | Sugar                          |            | 50 part   | Anti-oxidant, anti-inflammatory, contains iron, and its   |
|           |                                |            |           | absorption enhancers <sup>[9]</sup> .   |
| Madhuka   | <i>Glycyrhiza glabra</i> Linn. | Root       | 1 part    | Anti-inflammatory, anti-oxidant, anti-ulcerative, and   |
|           |                                |            |           | immunity enhancer.[10]  |
| Tvakshiri | Curcuma angustifolia.          | Resin      | 1 part    | Immunostimulatory and anti-ulcer activity <sup>[11]</sup>   |
| Dhatri    | Emblica officinalis Gaertn.    | Fruit      | 1024 part | anti-inflammatory, anti-microbial, anti-oxidant,  |
|           |                                |            |           | hepatoprotective, growth promoting, improves  |
|           |                                |            |           | homeostasis, and cytoprotective <sup>[12]</sup>   |
| Madhu     | Honey                          |            | 16 part   | Anti-oxidant, antimicrobial, anti-inflammatory, and   |
|           |                                |            |           | immunopotentiating. <sup>[13]</sup>   |

ingredients of *Drakshavaleha* and *P. Mandura* based on the previous research works are mentioned in Tables 3 and 4, respectively.

# Discussion

Iron is an essential element as it is essential for various metabolic processes such as oxygen transport, DNA synthesis, and electron transport. The body requires iron for the synthesis of its oxygen transport proteins, that is, hemoglobin and myoglobin and for the formation of heme enzymes and other iron-containing enzymes involved in electron transfer and oxidation reductions. Anemia, if left untreated, can affect cognitive development, immunity mechanisms, work capacity, and learning ability. In case of unresolved IDA during pregnancy, it can lead to increased risk of sepsis, maternal mortality, perinatal mortality, and low birth weight.

### Drakshavaleha

The Madhura Rasa predominance of Drakshavaleha [Figure 1] will act as Sarvadhatu Vardhaka, Balya, Brumhana, Jivana, Anulomana,

Indriya Prasadana, and Vata pitta shamaka. [36] The predominance of Guru- Snigdha Guna [Figure 2] will exhibit qualities such as Dhatuvardhaka, Balya and Vata pittashamaka. [37] Since most of the drugs are Sheeta Veerya Dravya [Figure 3], it would impart effects such as Jivana, Balya, and Pitta shamaka. [38] Most of the drugs possess mainly Madura Vipaka; hence, it will act as Vatapittaghna. Ingredients such as Amalakki and Yashtimadhu will aid in Shonitasthapana, Pippali as Raktavardhaka/Raktashodaka and Draksha as Rakta Prasadana, etc. On considering the Rasa Panchaka, that is, pharmacodynamic profile of the formulation Drakshavaleha and properties of individual drugs of Drakshavaleha, it can be inferred that the drug is bound to exhibit potential effects against Pittaprakopa, Agni Mandhya, Raktalpata, and Balavarnahani.

#### P. Mandura

Due to the predominance of *Katu-Tikta Rasa* [Figure 4] in *P. Mandura* will improve the *Agni*, exhibit germicidal action, and will aid in clearing the Srotas.<sup>[36]</sup> Due to predominance of *Laghu Rooksha Guna* [Figure 5], it will act as *Pathya*, *Ropana*, and *Sthambana*.<sup>[40]</sup>

**Table 4:** Ingredients of punarnavadi mandura and its pharmacological actions

|       | <b>Table 4:</b> Ingredients of punarnavadi mandura and its pharmacological actions |                             |           |            |   |  |  |
|-------|--|-----------------------------|-----------|------------|---|--|--|
| S. No | Sanskrit name  | Latin name                  | Part used | Proportion | Pharmacological action  |  |  |
| 1     | Punarnava  | Boerhaavia diffusa Linn.    | Root      | 1 part     | Hematinic, anti-inflammatory, digestive, cardiotonic,                   |  |  |
|       |  |                             |           |            | anti-oxidant, and hepatoprotective[14]                                  |  |  |
| 2     | Trivrit  | Operculina turpethum Linn   | Root      | 1 part     | anti-inflammatory, cathartic, hepatoprotective, and ulcer               |  |  |
|       |  |                             |           |            | protective <sup>[15]</sup>  |  |  |
| 3     | Sunthi   | Zingiber officinale Rosc.   | Rhizome   | 1 part     | anti-inflammatory, bioavailability enhancer, anti-oxidant,              |  |  |
|       |  | _                           |           |            | analgesic, anti-pyretic, and gastroprotective[16]                       |  |  |
| 4     | Maricha  | Piper nigrum Linn           | Fruit     | 1 part     | Increases the permeability of intestinal cells, analgesic, and          |  |  |
|       |  |                             |           |            | anti-bacterial.[17]   |  |  |
| 5     | Pippali  | Piper longum                | Fruit     | 2 part     | Anti-inflammatory,  |  |  |
|       |  |                             |           |            | anthelminthic, immunomodulator,   |  |  |
|       |  |                             |           |            | analgesic, hepatoprotective,  |  |  |
|       |  |                             |           |            | increases permeability across barriers,                                 |  |  |
|       |  |                             |           |            | and bioavailability enhancer.   |  |  |
| 6     | Vidanga  | Emblica ribes               | Fruit     | 1 part     | Anthelminthic and antipyretic. <sup>[18]</sup>                          |  |  |
| 7     | Devdaru  | Cedrus deodara (Roxb.)      | Bark      | 1 part     | Anti-inflammatory, anti-secretory, and anti-ulcer.[19]                  |  |  |
| 8     | Kushta   | Saussurea lappa C.B.Clarke  | Bark      | 1 part     | Anthelminthic activity,   |  |  |
|       |  |                             |           |            | anti-inflammatory, and hepatoprotective[20]                             |  |  |
| 9     | Haridra  | Curcuma longa Linn.         | Tuber     | 1 part     | anti-inflammatory, anti-pyretic, anti-oxidant, and                      |  |  |
|       |  |                             |           |            | anti-microbial <sup>[21]</sup>  |  |  |
| 10    | Daruharidra  | Berberis aristata DC.       | Tuber     | 1 part     | Anti-inflammatory, antimicrobial, anti-diarrheal, and                   |  |  |
|       |  |                             |           |            | antipyretic <sup>[22]</sup>   |  |  |
| 11    | Amalakki   | Emblica officinalis Gaertn. | Fruit     | 1 part     | Anti-inflammatory, anti-microbial, anti-oxidant,                        |  |  |
|       |  |                             |           |            | hepatoprotective, growth promoting, improves homeostasis,               |  |  |
|       |  |                             |           |            | and cytoprotective.   |  |  |
| 12    | Bibhitaka  | Terminalia bellirica Roxb.  | Fruit     | 1 part     | Hepatoprotective, anti-inflammatory, and anti-oxidant.[23]              |  |  |
| 13    | Haritaki   | Terminalia chebula Retz.    | Fruit     | 1 part     | Antispasmodic and anti-oxidant <sup>[24]</sup>                          |  |  |
| 14    | Danti  | Baliospermum montanum       | Root      | 1 part     | Hepatoprotective and anti-pyretic.[25]                                  |  |  |
|       |  | (Willd.)                    |           |            |   |  |  |
| 15    | Chavya   | Piper chaba Hunter.         | Root      | 1 part     | Muscle relaxant, carminative and anti-catarrhal.[26]                    |  |  |
| 16    | Indrayava  | Holarrhena antidysenterica  | Seed      | 1 part     | Anti-spasmodic and effective against bleeding piles.[27]                |  |  |
|       |  | (Roxb.ex Flem.) Wall        | _         |            |   |  |  |
| 17    | Pippalimula  | Root of <i>Piper longum</i> | Root      | 1 part     | tonic, diuretic, purgative, anthelmintic, , digestive, anti-bacterial,  |  |  |
|       |  |                             |           |            | anti-inflammatory, antispasmodic, and analeptic properties[28]          |  |  |
| 18    | Musta  | Cyperus rotundus Linn.      | Rhizome   | 1 part     | Anti-inflammatory, anti-oxidant, and gastroprotective activity. [29]    |  |  |
| 19    | Chitraka   | Plumbago zeylanica Linn.    | Root      | 1 part     | Anti-microbial, anthelminthic, and appetizer, digestive <sup>[30]</sup> |  |  |
| 20    | Mandura  | Incinerated red oxide of    | -         | 40 parts   | Hematinic, cytoprotective, hepatoprotective, and provides               |  |  |
| 24    | Bhasma   | Iron                        |           | 0.6        | sufficient amount of iron essential for normal erythropoiesis. [5]      |  |  |
| 21    | Gomutra  | Cow's urine                 | -         | Q.S        | Immunity enhancer, anti-oxidants, bio-enhancer, and contains            |  |  |
|       |  |                             |           |            | erythropoietin stimulating factor.[32]                                  |  |  |

Since most of the drugs possess mainly *Katu Vipaka*, it will help in subsiding the symptoms due to vitiated *Kapha*. The formulation will enhance *Pachana* due to its *Ushna Veerya* [Figure 6] which is very essential in conditions associated with *Mandagni* and *Ama*.<sup>[39]</sup>

The ingredients such as *Trikatu*, *Chitraka*, *Chavya*, and *Haridra* will act as appetizer, digestive, hepatoprotective, cholagogue, and gastro protective which will alleviate *Aruchi*. *Pippali*, *Amalakki*, *Musta*, and *Takra* (*Anupana*) is *Balya* and will act as immunomodulator which is helpful for controlling *Shrama*. *Mandura Bhasma*, *Haridra*, *Punarnava*, and *Guda* are digestive and hematinic which will help in balancing erythropoiesis and thus alleviates *Panduta*, the cardinal symptom of the disease.

The drugs such as Maricha, Pippalimula, Chavya, Shunti, and Pippali will act as analgesic and thus help in managing Pindikodweshtana. Pippali, Haridra, Musta, Chitraka, Triphala, Maricha, Danti, Shunti, Vidanga, and Daruharidra possess Dipana, Pachana, and Amahara properties along with antipyretic activity and are effective against symptoms such as Jwara, Alasya, and Gaurava. The Rasayana and Raktavardhaka action of Punarnava, Triphala, Vidanga, Haridra, and Mandura bhasma will act against Dhatu kshaya.

Few drugs such as *Pippali, Shunti, Kushta, Bibhitaki,* and *Haridra* act on *Pranavaha Srotas* and help in alleviating *Shwasa,* 

that is., shortness of breath. Drug such as *Triphala*, *Danti, Trivrit*, and *Gomutra* exhibits properties such as *Dipana*, *Pachana*, *Rechana*, and *Bhedana*.

Punarnava, Haridra, Trivrit, Danti, Gomutra, and Shunti ingredients will act as Mutrala and Shothaghna and thus alleviate Shotha.

The drugs such as *Draksha*, *Amalakki*, *Sharkara*, *Madhu*, *and Punarnava* possessing anti-oxidant property will protect cells from damage caused by free radicals and reduce oxidative stress which is a positive contributor for anemia. In cases of anemia of inflammation due to associated inflammatory diseases in which features such as low serum iron despite adequate systemic iron stores is present, drugs possessing anti-inflammatory action such as *Draksha*, *Pippali*, *Madhuka*, *and Amalakki* will come in aid.

Rakta Dhatu gets vitiated due to the intake of Nishpava, Masha, Pinyaka, Tila, Kshara, Mrit, and food substances which are Ushna, Vidahi, Teekshna, Asatmya, and Viruddha Ahara. The vitiated Rakta Dhatu will further affect the Moolasthana of Raktavaha Srotas, that is, Yakrut and Pleeha. [43] The drugs possessing hepatoprotective action will help in preventing the condition from further progression.

Anti-ulcerative drugs such as *Madhuka, Tvakshiri, Trivrit, and Devadaru* and *musta* will help in sustaining the gastric function which is very essential for absorption of Iron.<sup>[44]</sup>

Helminths that are transmitted through soil may get ingested and further infect the gastrointestinal tract leading to hampered food intake, malabsorption, and nutrient loss due to the intake of *Mrit* (pica) which is enlisted as one of the causative factors for *P. roga*. [45] Drugs such as *Vidanga, Musta, Chitraka, Kushta, Pippali,* and *Pippalimoola* possesses anti-helminthic property and can act against the progression of the disease in such conditions.

Mandura bhasma is considered as incinerated red oxide of iron, which is the main component of *P. Mandura*. It pacifies

aggravated *Pitta* and improves digestion and metabolism. The required amount of iron for normal erythropoiesis can be supplied by the ferric and ferrous forms of *Mandura*. Gomutra, the *Dravya* which is used for the *Shodana* of *Mandura*, is an antioxidant and it contains erythropoietin hormone which helps in the production of red blood cells and hemoglobin. [47]

According to *Rasatarangini*, the *Shodita Mandura* has to be subjected to intense heat to the range of *Gajaputa* for 30 times or till it attains *Bhasma Siddhi Lakshanas*. The bioavailability of

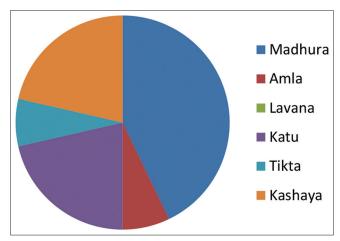


Figure 1: Rasa-drakshavaleha

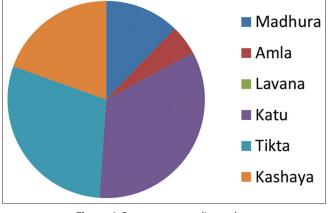


Figure 4: Rasa-punarnavadi mandura

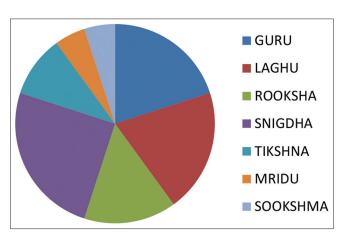


Figure 2: Guna-drakshavaleha

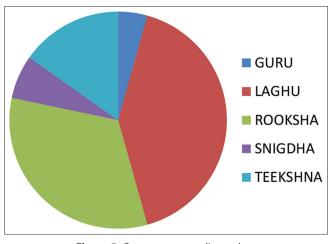


Figure 5: Guna-punarnavadi mandura

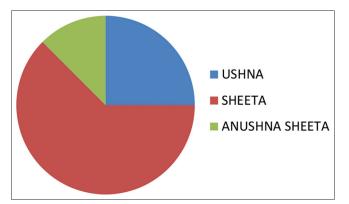


Figure 3: Veerya-drakshavaleha

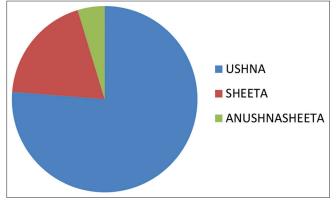


Figure 6: Veerya-punarnavadi mandura

Mandura bhasma will be enhanced with each Puta and thus the availability of absorbable form of iron will also be enhanced.

#### Conclusion

Based on the above mentioned data obtained after review, it can be concluded that *P. Mandura*, a poly herbomineral formulation and *Drakshavaleha*, a *Naimittika Rasayana* can act as nutritional supplement and counteract most of the pathological manifestations related to *P. roga*.

One of the time bound goals of 12<sup>th</sup> 5-year plan by Government of India was about reducing the prevalence of anemia among women and adolescent girls by 50%. The groups at high risk of anemia include children, adolescent girls, and women of reproductive age group particularly during pregnancy and lactation. Inadequate access to food rich in absorbable iron during various stages of development can lead to the manifestation of anemia. Most of the population in India consumes plant-based diets which supplies inadequate amount of absorbable iron to the body.

*P. Mandura* is one such drug which is included in the ASHA kit for management of anemia during pregnancy in AYUSH interventions under NRHM. Correspondingly, the distribution of *Drakhavaleha* and *P. Mandura* under National Health Programs in India can be considered for curbing anemia in adolescent girls and women of reproductive age group at community health-care level especially in rural India where the prevalence of iron deficiency anemia is rampant since it is efficacious in the form of Naimittika Rasayana in correcting the pathological manifestations of Pandu w.s.r to iron deficiency anemia.

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# **Conflicts of Interest**

The authors declare no potential conflicts of interest with respect to research, authorship, and/or publication of this article.

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