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An approach to Panduhara Rasa Dravyas as per Rasa Ratna Samucchaya- A review

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ABSTRACT

Background: Mineral dosage forms (*Rasoushadhis*) with minute dose and quick activity has more bio-availability. Various single *bhasmas* or formulations are indicated in various disorders. Pandu is one among the *rasa pradoshaja vikara*. As the causes severalises the treatment modality also varies. Iron supplement alone is not sufficient to treat *pandu roga*, there are many other factors which influences in the treatment of *pandu*. Method: After the review of *Rasaratnasamucchaya* (RRS) the drugs like *Shilajatu* (*Asphaltum punjabinum*), *Tamra* (Cuprum), *Loha* (Ferrum), *Mandura* (Iron oxide), *Yashada* (Zinc) is also useful in the treatment of pandu roga. Along with this, the formulations indicated in *Pandu roga* mentioned in RRS contains other ingredients like *abhraka, Swarna, rajata, rasa sindura, haratala, manashila, vaikranta, Swarna makshika, kansya* with other herbal drugs may have synergetic activity. The present study was undertaken to review the single *Bhasma* indicated in *Pandu* as per the textbook of *Rasaratnasamucchaya*. Result: So in general, *mandura bhasma* is more effective in children comparing to *lohabhasma*, both acts as a hepatoprotective and improves the level of haemoglobin. *Shilajatu* acts a chelator when combined with the *lohabhasma, tamrabhasma* helps in the absorption of iron in the form of ferritin. Zinc is known to improve enzymatic action and thus helps in the better absorption of iron.

Keywords: *Pandu*, Anemia, Iron, *Rasoushadhis*.

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INTRODUCTION

Pandu is described under *rasa pradoshaja vikara*, globally effects 1.62 billion people which corresponds to 24.8% of the population. It involves *pitta pradhana vatadi dosha* and *raktadhatu* in the body. The simple diagnostic parameter of *Pandu* as per the classical text is *"Ketaki dulisannibehi"* indicating the skin of *pandu rogi* looks like the mixture of white and yellow colour. The *twak* (skin) is considered as *vyaktastana* (place of exhibiting) of *rasa* and *raktha dhatu*.As the main sign of *Pandu* is *Pandutwa*, the disease is named as *Pandu roga*.

Here *pandu roga* can be compared with anemia. The pale skin in an anemia persons is caused by the lack of haemoglobin in red blood cells and lack of red blood cells in general. Anemia refers to a state in which the level of haemoglobin in the blood is below the normal range appropriate for age and sex. Among various types of anemia, iron deficiency anemia (nutritional) is most prevalent in India. The presence of hypochromia and microcytosis of the circulating red cells is mainly seen. The symptoms include general debility, tinnitus, loss of appetite, palor, palpitation etc depending on the cause of anaemia. The treatment aims not only supplementation of iron alone but also the need to take precautionary measures in the proper absorption of iron to improve the synergistic action of the drug and to decrease the side effects like constipation, diarrhoea, nausea, vomiting, epigastric discomfort etc. So the proper understanding of the metabolism of iron, as well as the minerals involved in improving the condition of anemia has to be studied in detail.

The metals and minerals indicated in *panduroga* in *Rasa Ratna Samucchaya* are as follows [1]

Shilajatu (*Asphaltum punjabinum*), *Tamra* (Cuprum), *Loha* (Ferrum), *Mandura* (Iron oxide), *Yashada* (Zinc).

Pandu Samprapti [2]

Due to etiological factors (*Aharaja, viharaja, manasika*), *Pitta prakopa* occurs. The *Hrdayasta pitta* is expelled via *Dashadhamani* by *vata* leads to *rasavahasroto dushti* vitiated by *vata, rakta, kapha, twak* and *mamsa* causes *pandu varnata.*

Pitta pradhana tridosha prakopa leads to *mandagni* causing less production of *posaka* from *rasadhatu* causing depletion of *rakta* producing *pandu roga*.

The minerals indicated in *Pandu roga* with the chemical composition, *rasa panchaka* is mentioned in Table 1 and indication has been mentioned in Table 2.

Physiology of iron absorption

The absorption of most of the dietary iron occurs in the duodenum and proximal jejunum and depends on the physical state of the iron atom. At physiological pH, iron exists in the oxidised form , ferric state. To be absorbed, iron must be in the ferrous state or bound by a protein such as heme. The duodenal pH dependent process of iron absorption is inhibited or enhanced by certain dietary compounds. Inhibitors include phytate, polyphenols which prevent non heme absorption. Calcium inhibits both heme and non heme iron even the animal protein such as casein, egg white, soy protein, oxalic acid.

Enhancers include ascorbic acid which forms a chelate with ferric iron in low pH of stomach which persists and remains soluble in the alkaline environment of the duodenum[12].

The modern view of the drugs indicated in Pandu roga is given in Table 3.

With better understanding and analysing the ayurvedic tool of diagnostics, the *nidana panchaka* as a prime tool along with the contemporary diagnostic tools, proper diagnosis of the cause has to be done and the treatment protocol has to be planned accordingly. Being an essential element in the human body, metals and minerals have high chemical reaction with enzymes and absorbed more rapidly than kashtoushadhi due to its colloidal form. The analytical study of Ayurvedic *bhasma* preparations contains metal in its various forms along with other organic compounds depending on the media used in *shodhana* and *marana* procedures.[5] A single Bhasma indicated in many disease depends on the anupana used and the media as well. This has a unique contribution which can be assessed clinically, experimentally rather than by mere analytical parameters. The loha bhasma is mainly incorporated with *triphala* rich in Vitamin C, has shown wide range of therapeutic benefits not only in terms of haematological parameters but improvement in co morbidities and other organ systems as well unlike modern iron supplements which causes constipation, abdominal discomfort.[7] Copper is a micronutrient needed for proper organ function and metabolic processes such as haemoglobin synthesis as a neurotransmitter, for oxidation, cellular respiration.[5]

Zinc is a catalyst for many enzymes that are needed for red blood cell production; as a result, zinc deficiency may be associated with anemia.

Table 1: Minerals indicated in Pandu

Drug name	Scientific name	Chemical Composition	Action
Shilajatu	Asphaltum punjabinum	-Humic acids- humins, humic acids, fulvic acids -Selenium and minerals -dibenzo-α-proteins[3]	*Rasa – tikta,lavana* *Guna-sneha,sara,teekshana*[4]
Tamra	Cuprum	Sulphide or oxide of copper, others (based on media used in *shodhana* and *marana*)[5]	*Rasa-tikta, kashaya,samla* *Guna-lekhana* *Veerya-ushna* *Vipaka-madhura* *Pittakaphapaham*[6]
Loha	Ferrum	Ferrous or oxide(αFe203)[7]	*Rasa-tiktoshna* *Guna-snigdha* *Veerya-sheeta* *Tridosha shaman*[8]
Mandura	Iron oxide	Fe2O3 , FeO[9]	*Mundakittasam,* *Mrudulakam, kaphavataharа*[10]
Yashada	Zinc	ZnO	*Rasa-kashaya, tikta* *Veerya-sheeta* *Kapha pitta shamaka*[11]

Table 2: Ayurvedic view of properties as per Rasatantra saaara va siddha prayoga sangraha

Drug name	Properties
Shilajatu	*Vatagna- sneha, lavana* *Pittagna- sara* *Kaphagna, krimigna, deepana- teekshna* *Raktavikara- tikta* *Poushtika,balya, vrishya, rasayana, satvavardhaka- snigdha*
Tamra	Indicated in *Yakrit pleeha vriddhi,* *Nistejata , mukhashotha, Shweta varna* In *Pitta ksheena, kapha vriddhi*
Loha	*Pittajapandu, haleemaka* *Krimijanya pandu*- with other *krimignaoushadhi*
Mandura	*Raktanu vriddhi* , in *pittaja pandu* *Kashaya guna* ->controls *gati* of *naadi* *Purana pandu ->kumbha kaamala* *Haleemaka avastha of pandu*

	Teevra avsastha of pandu with *jwara* Acts on *ranjaka pitta dosha, rakta, mamsa, majja,yakrit , pleeha*
Yashada	*rasavahini , rasavaha pinda vikriti, pittadosha pradhanata*

Table 3: Modern view

Shilajatu	Increase in Hb, HCT and RBC when assessed using bleeding model and low diet deficiency Fulvic acid with metal complexing capacity, prevents iron precipitation, iron concentration increased with inclusion of fulvic acid[10].
Tamra	Copper may interfere with iron absorption by binding to mucosal transferrin.Mobilization of iron from mucosal, reticulo endothelial and hepatic parenchymal cells may be effected through the action of ceruloplasmin. Copper may also participate in heme synthesis[13]
Loha	Increased body weight, reversal of the toxicant induced degenerative changes, increase in Hb, RBC,Haemotocrit value, restores cellularity to mild level of spleen[14]
Mandura	Increased body weight, reversal of the toxicant induced degenerative changes, increase in Hb, RBC,Haemotocrit value, restores cellularity to moderate level of spleen [15]
Zinc	Along with iron, zinc plays an important role in haem synthesis as it is a constituent of many enzymes present in erythrocytes such as carbonic anhydrase and superoxide dismutase[10]

CONCLUSION

So in general, *mandura bhasma* is more effective in children comparing to *lohabhasma* both acts as a hepatoprotective and improves the level of haemoglobin. *Shilajatu* acts achelator when combined with the *lohabhasma*, *tamrabhasma* helps in the absorption of iron in the form of ferritin. Zinc is known to improve enzymatic action and thus helps in the better absorption of iron.

Conflict of Interest

None declared.

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