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A Review Study on *Girisindhura*

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ABSTRACT

Rasa Shastra - Indian Alchemy is the branches related to mineral medicine. *Rasa Shastra* covers the field of inorganic, herbo-mineral and metallic preparations. *Girisindhura* is one of the mineral mentioned under *Sadharana Rasa*, chemically it is mercuric oxide. Red or Orange coloured dry mercuric powder obtained naturally on selected mountain peaks, they are also prepared artificially. Naturally obtained is considered as *Girisindhura* and artifically prepared as *Nagasindhura.* Both the *Sindhuras* are *Bedhi, Dehalohakara* and used for *Rasa Bandhana*. Though there are confusions as to what *Girisindhura* is, here an attempt is made to review the drug from different *Rasa* texts.

Key words: *Indian alchemy, Girisindhura, Mercuric oxide.*

INTRODUCTION

Rasa Shastra is the science of Indian alchemy developed for achieving therapeutic benefits from metals and minerals. These drugs are classified into different groups by different *Acharya* like *Maharasa, Uparasa, Sadharanarasa, Dhatu, Upadhatu, Ratna, Uparatna, Sikata Varga, Sudhavarga*.

Girisindhura is 6th mineral of *Sadharana Rasa* according to *Rasa Ratna Samucchaya.*[1] Chemically it is identified as mercuric oxide has a formula HgO. It is red or orange coloured dry powder and it is toxic. It is solid at room temperature and pressure. *Suddha Girisindhura* is not found used for internal administration. It is used only for external application along with other drugs in the form of *Malahara* and *Taila.*[2] In olden days it is said be available in the form of *Pista* from China and hence called as *chinapista.*[3]

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CLASSICAL DESCRIPTION

Origin: The Mercury which is present in between the fissures of the rocks,situated in the high mountains, which is dry in nature and red in colour. This itself is *Girisindhura*(4).

Synonyms[5-9]

Sindhura, Girisindura, Mahila-bhala-bhusana, Srngara-bhusana, Nagaja, Nagagarbha, Nagarenuka, Rakta churnam,Rakta Ranuka, Seemanthakam, virarajah, Mangalya, Ganapathi Bhushana, Suranga, Aruna Raja, Veerapamshu, Mangalya,Soubhagya, Sisaka and *Bhalasoubhagya.*

Grahya Lakshana of *Girisindhura*

The *Girisindura*, which possesses very fine (red or orange coloured coloured dry mercuric powder) particles that are *Snigdha, Guru* (heavy), Shiny, Soft and clean; such a sample is considered fit and selected for pharmaceutical purposes.[10]

The *Girisindhura*, which is well coloured, *Agnisaha* (able to stand the heat of the fire), *Snigdha, Sukshma, Swaccha, Guru, Mrudu* and obtained from Gold mines (*Swarnakaraja*) are considered as *Mangalapradha.*[11-13]

ISSN: 2456-3110 REVIEW ARTICLE July-Aug 2020

Types of *Girisindhura* : 2 types according to *Rasa Jala Nidhi*[13]

- ***Girisindhura* (Natural):** Red or orange coloured dry powder obtained naturally in smaller quantity on selected mountain peaks. Chemically it is identified as Mercuric Oxide (HgO).
- ***Nagasindoora* (Artificial):** It is a compound of leaf found in india. Chemically Identified as Lead Oxide (PbO).

Confusions related to *Girisindhura*:[14,15]

According to *Rasaratnasamucchya, Girisindhura* is a *Rasa* obtained in small amount from inside the rocks of big mountain and it is dry red powder. It is difficult to point out what is the red coloured powder obtained actually is. Perhaps because of this limited description, the drug has become debatable and *Rasa Vaidyas* have suggested different ideas regarding this.

Dharmanand Sharma commentator of *Rasaratnasamucchya* opines, it as lead peroxide. He also stated that modern researchers amongst the *Rasa Vaidyas* address *Girisindhura* as *Hingula* and it is mercuric oxide. *Hingula* if equated with cinnabar, it is not mercuric oxide but mercuric suphide. Since *Hingula* forms another drug of *Sadharana Rasa*, it could not have been the drug *Girisindhura* as per *Vagbhata's* view,otherwise he would not have given an independent status for *Hingula* as a *Sadharanarasa*. Hence there is confusion as to what is *Girisindhura*.

Dattareya Anantha Kulkarni commentator of *Rasa Ratna Samuchaya* opines that, *Girisnidhura* is obtained naturally from the mountains containing Mercury ores. The obtained *Girisindhura* is dry and red coloured which is similar to that of Montroydite ore of Mercury, it also contains few particle of mercury. Hence the mercuric oxide (HgO) which is naturally obtained from mercury ores are considered as *Girisindhura.* Those prepared artificially prepared in industries using lead in presences of oxygen is considered as *Nagasindhura* (PbO).

The others suggest that, red lead may be examined as the substance of *Girisindhura.* But according to the reference in *Rasa Ratna Samucchya, Girisindhura* is capable of curing tridoshas, purgative and an effective *Rasabandhaka.* It also renders the body as strong as metals and is good for eyes. Whereas red lead doesn't have *Tridosha Shamaka* property, not useful in treating eye diseases and has no capacity to render the body metallic strength, hence red lead may not be *Girisindhura.* In this context, it is most probable that *Vagbhata* meant red lead as *Nagasindhura* i.e., it might be lead oxide-minium.

Though mercuric oxide and lead oxide have been described as a probable item of *Girisindhura* and *Nagasindhura* respectively, it is by no means the final identification. Thus this *Rasa* drug also stands for detailed scrutiny and correct identification by way of research through mineralogy and therapeutical studies.

***Krutrima Sindhura Nirmana*:[15]**

Seesa (lead) is taken in *Musha* and heated in the presence of oxygen (*Musha* is not covered by lid). Lead and oxygen reacts together and a red colour powder of *Sindhura* is formed over lead. The first formed *Sindhura* is impure and hence discarded. The red colour powder formed thereafter is collected and said to contain *Tamra* and *Rajata* in very small quantity. Even the lastly formed powder is said to be discarded. The obtained *Sindhura* is pounded and washed with water and used.

Adultration

Market available sample are adultrated with *Ishtika Churna* (brick powder) or sometimes with *Mandura Churna.*[15]

Girisindhura Shodhana

- **According to *RRS:*** *Samanya Sadharana Rasa Shodhana-Bhavana* with *Nimbu* or *Adraka Rasa* for 3 times.[16]
- **According to *Yogaratnakara:*** *Bhavana* with *Nimbu Rasa* and kept in iron vessel, given *Mandagni* until liquid portion evoparates. Then given one more *Bhavana* with *Tandulodaka*, kept on fire to evoparate liquid portion.[17]

ISSN: 2456-3110 REVIEW ARTICLE July-Aug 2020

- **According to *Ayurveda Prakasha*[18], *Rasajalanidhi*[19] and *Bhruhat Rasa Raja Sundhara*[20]**

a) *Bhavana* with *Kshira* and *Amla Dravya Rasa* once.

b) *Bhavana* with *Nimbu Rasa*, Dried in the sun, and then subjected to *Bhavana* with *Tandula Thoya* (Rice Water).

The procedures like *Marana, Satvapatana* and Internal admistration of *Girisindhura* are not mentioned in any *Rasa* classics.

Properties of *Girisindhura*[21-23]

- ***Rasa*** : *Katu, Tikta*
- ***Guna*** : *Ushna*
- ***Veerya*** : *Ushna*
- ***Vipaka*** : *Katu*
- ***Doshaghnata*** : *Tridoshahara*
- ***Karma*** : *Lekhana, Chakshushya, Krimighna, Kandughna and Twakdoshahara.*
- ***Rogaghnata :*** *Kandu, Pama, Vicharchika, Sidma, Visarpa, Visha, Vrana Shodhana Ropana, Netraroga* and *Bhagnasandhanajanana*
- Both variety of *Sindhura* are *Bedhi*, *Dehalohakara* and used for *Rasa Bandhana*.

Amayika Prayoga[24]

- *Shuddha Girisindhura* is added with required quantity of ghee and applied daily over the eyelids to cure itching of the eye and the *Anjanamika*.
- *Shuddha Girisindhura*, Honey, Ghee, *Guggulu* and *Guda* mixed together and applied over cracked heels by using this remedy the sole becomes as soft as *Kamala Pushpa*.

Formulation of *Girisindhura*[25]

1. *Sindhuradhya Malahara*
2. *Sindhurdhya Taila*
3. *Gandhakadya Malahara*

Modern Discription

Mercuric Oxide[26]

Occurrence

Red or Orange coloured dry mercuric powder obtained naturally on selected mountain peaks is *Girisindura*.

The red form of HgO can be made by heating Hg on Oxygen at roughly 350˚c or by Pyrolysis of $Hg(NO_3)_2$. The yellow form can be obtained by precipitation of aqueous Hg^{2+} with alkali. The difference in colour is due to particle size.

Table 1: Showing Minerological details of Mercuric oxide

Identifies as	Red oxide of Mercury
Chemical Name	Mercuric oxide
Chemical composition	HgO
Colour	Vivid red, mixed with yellow
Mohs Scale Hardness	2.3
Streak	Orange yellow streak
Specific gravity	4.6
Optical property	Optically Negativity, Optic angle= 56˚, alpha=1.516, beta=1.539 and gamma=1.546
Solubility	It is Insoluble in water, Alcohol, ethers,Acetone
Decomposes	On exposure to light or heat above 500˚c

Toxic effects

Mercuric oxide is a toxic substance, which can be absorbed into the body by inhalation of its aerosol, through the skin and by ingestion. The substance is an

ISSN: 2456-3110 REVIEW ARTICLE July-Aug 2020

irritant to the eyes, skin and the respiratory tract and may have effects on the kidneys resulting in the impairment. In the food chain important to humans, bioaccumulation takes place, specification in aquatic organisms.[27]

Chemical properties

HgO decomposes on exposure to light or on heating above 500˚c. Heating produces highly toxic mercury fumes and oxygen, which increases the fire hazard. Mercuric oxide reacts violently with reducing agents, chlorine, hydrogen peroxide, magnesium (when heated), disulfur dichloride and hydrogen trisulfide. Shock–sensitive compounds are formed with metals and elements such as sulphur and phosphorus.[28]

Discussion

Girisindhura chemically identified as Mercuric oxide (HgO). Mercuric oxide is naturally available in mountains containing mercury ores, whereas lead oxide (PbO) may be considered as *Nagasindhura* is prepared artificially. *Girisindhura* is mainly used externally in the form of *Malahara* and *Taila*. Even though used externally, for safety purpose *Shodhana* procedures are explained. *Girisindura*, which possesses very fine (red or orange coloured coloured dry mercuric powder) particles that are *Snigdha, Guru* (heavy), Shiny, Soft and clean; such a sample is considered fit and selected for pharmaceutical purposes. Market available sample may be adultrated with *Ishtika Churna* (brick powder) or sometimes with *Mandura Churna* in order to increase the weight of the sample. *Girisindhura* is *Tridosha Shamaka* and indicated *Kandu, Pama, Vicharchika, Sidma, Visarpa, Visha, Vrana Shodhana Ropana, Netraroga* and *Bhagnasandhanajanana.*

Conclusion

Girisindhura is included in the *Sadharana Rasa* group. It is of 2 types *Girisindhura* (Natural, HgO) and *Nagasindhura* (Artificial, PbO). It is poisonous in nature, for safety and therapeutic administration it has to be purified and used for external administration. *Marana, Satvapatana* and internal administration of *Girisindhura* are not mentioned in any of the *Rasa* classics. It has properties such as *Lekhana, Chakshushya, Krimighna, Kandughna* and *Twakdoshahara. Girisindhura* and *Nagasindhura* are *Bedhi, Dehalohakara* and used for *Rasa Bandhana*.

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