

Makshika in Ancient Literature

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ABSTRACT : Makshika is one of the materials used since long, having therapeutic importance. Since the samhita period till the modern era of science and technology Makshika has occupied an important position in Ayurvedic system of healing. It's a mineral of Copper, Iron and Sulphur. Therapeutic description of makshika is found in the literatures of samhita period but its detailed pharmaceutical description is found in the literatures of 7th Cent. AD and onwards. Bearing in mind, its high therapeutic ability many research works are going on in different leading academic institutions and reputed pharmaceutical sectors. In this current review article it is tried to highlight the Makshika in ancient literatures and current researches, which will help the research workers in great extent.

Key words : Makshika, Shodhana, Marana, Putapaka.

INTRODUCTION

Makshika has great importance, both in alchemical and therapeutic point of view. Makshika is included in different groups like Maharasa, Uparasa, Upadhatu etc. by different authors. According to its available features, different types of makshika are also described in different texts. Chemically it is the composition of copper, iron and sulphur in different proportions which varies according to the geographical condition. It is also known as pyrite ore of copper and iron depending on the percentage of copper and iron in the material.

Makshika in Ancient Literatures :

During Samhita Period :

Literatures of samhita period are mainly augmented with the therapeutic importance of Makshika. Inclusion of Makshika in different groups, source of origin, different synonyms, and different types are found described in details. But regarding pharmaceutical processing very little description is found in disperse manner.

In Samhita many synonyms of Makshika like Makshika dhatu, Tapyia, Tapyia dhatu, Tapeeja, some therapeutic indication for the diseases like Pandu, Kushtha and netra roga, Jara, Kustha Meha, Visha, Jwara, Shotha, Yakshma, Kantha, Karna, Vikaras are found¹. Also two types of Makshika i.e Swarna makshika, having golden luster madhura in taste and Rajata makshika, having silver luster and amla in taste². Samhita literatures are also described about the pharmacological properties of Makshika³ i.e. Rasa- kinchita kasaya, Guna- laghu,

Veerya-sheeta, Vipaka- katu. Dietary contradiction is also found in different Samhitas⁴

Makshika in Nighantu :

Bhava Prakasha⁵ : Synonyms of Makshika are described as Swarna makshika, Tapeeja, and Makshika dhatu. It is also described as Upadhatu of Gold. Two types are described i.e. Swarna Makshika having Golden luster 2. Raupyia Makshika having Silvery luster. It is used as, Vrishya, Rasayana, Chakshushya and in Vasti Ruja, Pandu, Visha, Meha, Arsha and Kandu.

Raj Nighantu⁶ : Here the descriptions of Pharmacological properties are found like *Rasa-Madhura*, *Tikta*, and *Amla*; *Vipaka- Katu*. Two types of makshika are found viz. 1. Hema Makshika 2. Tara Makshika. It is used in Bhrama, Hrillasa, and Murcha.

Makshika in Rasa Literatures :

Makshika is described in all Rasa literature in details. Makshika is known since samhita period but the process of *Shodhana*, *Marana* and *Satwapatana*, and other alchemical processing of the mineral are found developed in Rasa literatures only. Besides its importance in mercurial processing, Makshika is considered as the most important and powerful therapeutic agent.

Makshika is found mentioned in different Groups by different Rasa texts like Maha Rasa⁷, Rasa⁸, Upa Rasa⁹ and Upa Dhatu¹⁰. Two types of Makshika are described in literatures¹¹ but some experts have the opinion that it may be of three types¹², i.e. Hema Makshika & Tara Makshika and third one is Kamsya Makshika.

There are too many synonyms described in different literatures, some of these are given below with its possible explanation.

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Synonyms	Explanation	
1. Tapee, Tapeeja, and Tapy.	Indicates place of origin and formation.	2. Like Gold, having no angular projection, Heavy, Snigdha, Syamalakanti, Black line while rubbing with hand (on white paper) and Golden line while rubbing with touching stone.
2. Madhu, Kshoudra and Kshoudra dhatu.	Similarity in characteristics with honey.	3. Twinkles like Gold on breaking, and outwardly looks like <i>matmail</i> (soily).
3. Swarnadhatu, Suvarna, pitaka, pita, Shweta, Hema, Tara, Roupya.	Indicates the luster and colour.	
4. Dhatu kshaya	Denotes therapeutic efficacy.	

There are different materials available in earth crust with the name of Makshika in different geographical areas. Our ancient Acharyas have described the features of the best available quality of raw Makshika as follows.

Acceptable Quality¹³ :

1. Golden in colour and luster, and/or like Navavarna/ Panchavarna Suvarnavat (09 parts or 05 parts ratio in comparison to 16 parts of gold.)

Distribution and Collection¹⁴ :

According to Rasa literatures Swarna Makshika is found at bank of river Taptee, *Kanyakubja*, land of *kirat*, *china* and *Yavan*. It is mainly found at Japan, Spain, U.S.A, Portugal, Italy and Norway. Makshika collected from *Kanyakubja* is having golden colour or yellowish colour and makshika collected from the bank of the river Taptee is *Pashanbahula* (stony) and inferior in quality. At present in India Khetri mines of Rajasthan and Ghatasila in Jharkhanda are the big source of Swarna Makshika (Copper Pyrite/ Chelco Pyrite) from which copper metal is obtained.

TABLE NO. 1 : METHODS OF SHODHANA OF SWARNA MAKSHIKA¹⁵ :

Sl. No.	Principle Adopted	Drugs required	References
1.	Swedana	Eranda tail, Suranakanda, Kanji, Takra, Gomutra, Kodrava, Kadalikanda, Nimbu, Karkotikanda (swarasa), Kulattha, Kalamarisa (kwatha) etc.	Rn-7/6-7, R.T.-21/12-14, A.P.-4/32-33, R.P.-Verse/79, R.S.S-Verse/208
2.	Bharjana	Nimbu, Kadalikanda (swarasa), Saindhava lavana	R.T.-21/7-11, R.T.-21/18 R.S.S. - Verse/209-210, A.P.-4/12-13,
3.	Nirvapa	Triphala, Sigrumula (kwatha), Nimbu, Agastyapatra (swarasa), Amla dravya	R.T.-21/15-17, R.R.S.-2/83, R.Ch.-7/61
4.	Putapaka	Amla, Lavana, Eranda taila, Ghrita, Agastyapatra kalka	Rn-7/7, R.Ch.-7/103
5.	Mardana	Meshashringi, Karkatashringi (Rasa)	Y.T.-PP/142

TABLE NO. 2 : MARANA OF SWARNA MAKSHIKA IN RASA LITERATURES¹⁶ :

Sl. No.	Marana drugs	Bhavana drugs	Principle	Type of Puta	References
1.	---	Nimbu swarasa, Kulatha kwatha, Eranda taila, Ajamutra, Takra, Devadali, Bala, Hanspadi, Arka, Snuhi	Putapaka	Varaha, Gaja	R.T.-21/19-20, S.S.M.K.-11/56, Br.Y.T-41/66, R.S.-Verse/284, Y.R.-PP/146, Br. R.R.S-PP/104-105
2.	---	Eranda taila, Goghrita, Matulunga swarasa	Heating	---	R.R.S.-2/84, R.R.S.-2/85, Br. R.R.S-PP/104-05
3.	Gandhak	Nimbu swarasa, Eranda taila, Kumari swarasa	Putapaka	Varaha, Gaja	R.P.S.-5/124, R.Ch.-7/106-107, R.R.S.-2/84, R.S.S.-1/211-212, Br.Y.T-41/64-65, Y.T.-PP/145, Br.R.R.S.-PP/104-105 R.T.-21/21-22, Rmt-3/70-71
4.	Kajjali	Nimbu swarasa	Kupipakwa yantra Putapaka	Valuka yantra & Gaja	R.S.-Verse / 282-283
5.	Hingula	Nimbu swarasa	Putapaka	Varaha	R.T.-21/23-25

TABLE NO. 3 : SATTVAPATANA OF SWARNA MAKSHIKA :

Drugs Required	Principles	Reference
1. Tankana, Nimbu swarasa.	Trituration and subjected to Intense fire , keeping into <i>musa</i>	R.T. 21/46
2. Erandataila, Gunja Honey, and Tankana	All drugs are mixed and Prativapa is given to Swarna makshika	A. P.4/17
3A. Swarna Makshika	Subjected to Intense- heat	R.H.T. 10/8-9
3B. Snuhi ksheera, Women milk Eranda taila	Trituration for 100 times and subjected for intense fire for 3 times	R.H.T. 10/12
4A. Naga, Amla and Kshara varga drugs	Trituration and subjected to intense fire, keeping into <i>musa</i>	R.R.S. Ch 2
4B. Honey, Eranda taila, Gomutra, Ghrita and Kadalikanda swarasa	Trituration and subjected to intense- fire, keeping into <i>musa</i>	R.R.S. Ch 2

Abbreviations : R.T.-Rasa Taranginee, R.H.T.-Rasa Hridaya Tantra, R. Chd- Rasendra Chudamani, R. Ch-Rasendra Chintamani, Rmt. - Rasamritam, R.P.S.-Rasa Prakasha Sudhakara, R.R.S-Rasa Ratna Samucchaya, A.P.-Ayurveda Prakasha, Y.R.-Yoga Ratnakar, Br. Y.T.-Brihat Yoga Tarnaginee, Br. R.R.S.-Brihat Rasa Raj Sunder, R.P.-Rasa Padhati, R.S.S-Rasendra Sara Sangraha, S.S.M.K.-Sharangadhara Samhita Madhyam Khanda, Ch. Chi - Charaka Samhita Chikistha Sthaan, Su. Chi - Sushruta Samhita Chikitsa Sthana, R.M.- Rasa Manjari, A.K.-Anandakanda, R.K.-Rasa kamdhenu, Y.T.-Yoga Taranginee, Ast. Sm. -Ashtanga Samgraha, Ast. Hr.-Ashtanga Hridaya, G.S.-Gorakshya Samhita, R.S.-Rasayana Sara, Rn -Rasarnava.

Marana in different Contemporary Researches : In today's scientific era instead of using certain no.of Cowdung cakes and a particular type of puta, researchers have tried to fire in Cow dung cake of particular weight which may be a step forward to the standardization. (Sridurga et al, S. Mohapatra et al)

Guna Karma of Swarna Makshika¹⁷:

Rasa -Tikta, Madhura, Guna - Sheeta and Laghu, Veerya - Sheeta, Vipaka- Katu.

Action on Various Body Systems¹⁸ :

- 1 On Reproductive System -Vrishya, Vajeekarana
- 2 On Digestive System - Deepana
- 3 On C.N.S. - Medhya, Anidra, Apasmar
- 4 On Eye - Chakshushya or Netrya
- 5 On Skin - Kushtha, Kandu, Pama
6. Miscellaneous Action - Balya, Pranavardhak, Sakalamayaghna, Yogabahi, Dehavardhak

Anupan Used For Various Diseases¹⁹ :

Yakshma - Shilajit
Mutrakrichha - Yavakshara
Shotha - Punarnava, Amrita, Shunthi, Darvi kwatha
Masurika - Kanchanara twak kashaya
Visham jwara - Ativisha and Karanja Kashaya
Kassa - Pippali and Honey
Raktapitta - Parada, Gandhaka Madhu
Garbha jwara - Rasasindura, Abhraka and Vyosha

Bala, Veerya, Vriddhi-Rasasindura and Honey
Rakta srava - Pindakharjura
Bhagandar, Arsha, Jwara, Pandu - Vidanga, Trikatu, Triphala, Ghrita
Jwaratisara and shula - Ativisha, Bilva, Bala, Shunthi

Alchemical use of Makshika²⁰ :

1. Make the body and lauha potent or higher quality. It is an essential element for Abhraka sattva jarana in Parada and before the jarana of all other sattva, Makshika sattva is given to parada during mercurial processing.
2. Makshika sattva with Tamra is grasped by Parada, followed by mixing with Naga for Swarna karma.
3. Used for the preparation of veeja for lohavada and for vadha and ranjana of Parada.
4. It acts as soul of Parada in mercurial processing.

Makshika in Current Researches :

Swarna Makshika is a mineral which mainly contains copper, iron and sulphur, can be compared to Chelcopyrite (S. Mohapatra et al & Sridurga et al)

Physical Analysis²¹ :

Color is brassy yellow, Streak is dark green, Crystals are opaque, and luster is metallic.

Crystal system : Tetragonal, Cleavage is rather poor. Fracture : Conchoidal and brittle.

Hardness : 3.5-4

Specific Gravity : Approximately 4.2 (average for metallic minerals).

Chemical Analysis :

Makshika Raw Material ²²

1. The material is identified as compound form of chelcopyrite from the X-Ray diffraction study.
2. Chiefly contains Copper, Iron and Sulphur.
3. Particle size of raw Makshika after making it powder for bhavana procedure analyzed through Scanning Electron Microscope is approximately 6-8 micron.

Makshika Bhasma ²³ :

1. The material is identified as a mixture of chemical compounds from the X-Ray diffraction study.
2. Chiefly contains Copper, Iron and Sulphur and some compounds of silica were also found.
3. Particle size of Makshika bhasma analyzed through Scanning electron microscope is approximately 1-2 micron.

There are many researches on Makshika bhasma done at different levels like literary, pharmaceutical analytical, experimental and clinical all across the country. Maximum of these are tried to be incorporated here for reference as follows .

Different Research works on Swarna Makshika across the Country²⁴ :

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Pharmaceutical Research :

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Analytical Research :

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DISCUSSION

Swarna Makshika has a wide range of therapeutic application and has been used since Samhita period. Since the medieval period till the modern era literatures are enriched with the different manufacturing techniques of Swarna Makshika. With time and need of the society its alchemical uses are gradually caves in and therapeutic use became dominated.

In contemporary era mostly it is used for medicinal purposes. There is no universal opinion found in ancient literatures regarding its classification and inclusion in different groups. But literatures of modern era mostly describe it under the Maharasa group and divided it into two types. Features of its acceptable variety are mentioned clearly in different texts. Too many synonyms of swarna makshika and *anupanas* of its bhasma during therapeutic use are found in all most all texts, which indicate its wide use in therapeutics.

In today's era researchers have identified its physical and chemical nature in terms of modern language in a great extent. The mineral chelcopyrite is very much simulates with Swarna Makshika. It contains copper, Iron Sulphur as major elements and some minor elements like Si, K, Na etc. Swarna Makshika bhasma contains Iron, Copper in both oxide form and sulphide form. Where as major peak depends on the marana procedure. Also some silica compounds are observed by some researchers.

In different experimental model the effects of Swarna Makshika is evaluated for different diseases like anemia, Anxiety, lowering the cholesterol level etc. clinical researches also shows its effect in so many diseases significantly like Pandu, Madhumeha, Vicharchika etc. Except above finding many other areas are there regarding this mineral material which needs more research to be disclosed for the benefit of society.

CONCLUSION

1. Makshika is a very important material having medicinal as well as alchemical excellence described in all most all literatures since the period of Charaka till date.
2. Chemically it very much simulates with Chelcopyrite and mainly contains Cu, Fe and S.
3. Most of the researches prove its hematinic effect very successfully. While some researches shows it's anti anxiety property in experimental level.

4. With different anupana it is used in different diseases.
5. Its description under different groups shows its special physicochemical property which might be recognized by different scholars during different due course of time.
6. Its alchemical uses are also described in different literatures which are not found in regular practice of alchemy in to day's era.
7. From the alchemical point of view it is called as pranorasendrasya (soul of mercury).
8. The size of raw material chalcopyrite is 6-8 micron and bhasma is 1-2 micron.

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हिन्दी सारांश

माक्षिक का आयुर्वेदिक अध्ययन

सुधलदेव महापात्रा, रमेश कुमार गुप्ता एवं सी. बी. झा

संहिता काल से लेकर विज्ञान व प्रौद्योगिकी के इस आधुनिक काल तक माक्षिक का आयुर्वेदिक चिकित्सा पद्धति में प्रमुख स्थान रहा है। यह ताम्र, लौह व गंधक का एक खनिज है। यद्यपि इसके चिकित्सकीय प्रयोग का वर्णन संहिता काल से ही मिलता है परन्तु इसके भस्म निर्माण का वर्णन ७-८ वीं शताब्दी के रस ग्रंथों में ही मिलता है। ग्रंथों में वर्णित इसके औषधिय महत्त्व को ध्यान में रखकर आयुर्वेद के विभिन्न शैक्षणिक संस्थानों व भेषज निर्माण शालाओं में अनेक शोध कार्य किये गये हैं और जारी हैं। इस लेख में प्राचीन व अर्वाचीन ग्रंथों में वर्णित माक्षिक के गुणों पर प्रकाश डाला गया है। अतः यह शोधार्थियों के लिए सहायक सिद्ध होगा।



गुजरात आयुर्वेद युनिवर्सिटी