

## A REVIEW ON SWARNA MAKSHIKA

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\*Dr. Devanathan.R, M.D. (Rasa Shastra) E mail: [deva.ayur@gmail.com](mailto:deva.ayur@gmail.com)**ABSTRACT**

Swarna Makshika (Chalcopyrite) is one such drug, which has been used since olden days. The references about Swarna Makshika are found in ancient Ayurvedic texts like Charaka Samhita, Sushruta Samhita, Ashtanga Sangraha etc. It is evident from the Ayurvedic classics that, the therapeutic use of Swarna Makshika has been in practice since Samhita kala itself. Swarna Makshika had a unique place in the treatment of diseases.

Swarna Makshika is the most abundant Copper bearing mineral. It is also known as Copper pyrite. It mainly contains Copper, Iron and Sulphur. But unfortunately due to lack of genuine sample, now-a-days Roupya Makshika or Vimala is being used as Swarna Makshika. The present study aims at comprehensive literary review on Swarna Makshika.

**Key words** – Swarna Makshika, Sodhana, Marana

**INTRODUCTION**

Rasa Shastra can be described as Ayurvedic Pharmaceutics, which deals with the drugs of mineral origin, their varieties, characteristics, processing techniques, properties and their therapeutic uses. It is clear from the literature that the metals and minerals were used in the form of Ayaskriti.

After the development of Rasa Shastra metals like Swarna (Gold), Rajata (Silver), Tamra (Copper), Loha (Iron) etc were found therapeutically useful after processing them by various pharmaceutical processes such as Sodhana, Marana, Amritikarana etc. Rasaushadies gained importance because of their smaller doses and quick relief as compared to herbal drugs in various ailments.

Swarna Makshika is one of the Maharasa groups of drugs according to Rasa Ratna Samuchaya<sup>1</sup>. The importance of Swarna Makshika is well explained in Rasa Rathna Samuchaya, that it is said as Prana of Parada (Mercury), it is a Rasayana (rejuvenator), a best Vrishya (aphrodisiac) and it cures all the diseases<sup>2</sup>.

**Synonyms Of Swarna Makshika**

It has got synonyms like Swarna Makshika, Dhatu Swarna Makshika, Tapyā, Tapija etc. The various synonyms of Swarna Makshika as explained in different Rasa Shastra texts are given in Table - 1.

**Mythological Origin**

There are two mythological origins of Swarna Makshika are explained in almost all Rasa Shastra texts.

- Lord Krishna went in to Yoganidra after the completion of his role in Mahabharatha. A hunter mistaking him as a deer pierced the sole of his foot by an arrow. Because of the injury, blood drops fell down from this wound and they were looking like Niimba fruits. They gave rise to the stones of Swarna Makshika<sup>3</sup>.
- According to Rasa Ratna Samuchaya, Lord Vishnu created Swarna Makshika, which was originated in Sumeru Mountain, at the banks of river Tapee, Cheena desha and Yavana desha. During Madhava masa due to sunrays Swarna Makshika shines like gold and identified in these places<sup>4</sup>.

**HISTORICAL REVIEW****Kautilya Artha Shastra**

In Kautilya Artha Shastra<sup>5</sup> he says about the Copper mines and explains about 4 types of Copper ores, Pingala, Harita, Patala and Lohita. Later in Upanishad kala also we can trace lot of discussions on Tamra. In Yajnyavalkya smriti, he says when Tamra is melted over fire we can see loss of weight of about 5 tolas. Slowly the knowledge about metals developed in later periods and they occupied unique place in the treatment aspect.

**Samhita Kala****Charaka Samhita**

Charaka has administered Swarna Makshika successfully in the treatment of Kushta (skin diseases) and Pandu (Anemia)<sup>6</sup>.

**Sushruta Samhita**

Sushruta has advised to use Swarna Makshika in the treatment of Madhumeha (Diabetes Mellitus). And it is also successfully used in the treatment of Prameha and Pandu<sup>7</sup>.

**Ashtanga Sangraha**

The detailed description of Swarna Makshika utpatti and its use as Rasayana is found in Uttarantra 49<sup>th</sup> Chapter<sup>8</sup>.

**SWARNA MAKSHIKA VARGIKARANA**

Different authors have given their individual opinions in the classification of Swarna Makshika under Maharasa, Uparasa or Upadhatu. Some of them considered Swarna Makshika as Prana of Parada hence it was put under Maharasa. Some thought it as less significant in parada prayoga and hence put under Uparasa and Upadhatu. Swarna Makshika Vargeekarana according to different Rasa Shastra texts is given in Table –2.

**SWARNA MAKSHIKA BHEDA**

Swarna Makshika is of two varieties viz. – Swarna Makshika and Rajata Makshika<sup>9</sup>. Swarna Makshika bearing golden tints was found in Kanyakubja, the other variety called as Roupya Makshika, which resembles Panchavarna Swarna contains much of stone was found in the banks of river Tapti. It was of inferior quality.

**Depending On The Shape**

According to Rasa Jala Nidhi<sup>10</sup>,

1. Kadamba
2. Karavellakhya
3. Tanduliyaka

They are also subdivided in to four classes according to their shape due to the difference in the location of soil in which they were found.

1. Round like Kadamba
2. Like shells of Shuktika
3. Having the shape of fingers (elongated and round)
4. Like flakes of ash

Of these varieties, one which is yellowish is called Swarna Makshika and it is superior.

**Based On Colour**

According to Rasa Jala Nidhi<sup>11</sup>,

1. Yellow
2. White
3. Red

Ananda Kanda<sup>12</sup> mentions two varieties,

1. Peeta (Yellow)

## 2. Shukla.(White)

**Prapti Sthana (Occurance Of Chalcopyrite)**

Swarna Makshika which was obtained from Kanyakubja, was just like gold and was called as Swarna Makshika. The one which was obtained from the banks of river Tapee was called as Rajata Makshika. It was inferior in quality with pashanabahulata and it was just like Pancha Varna Swarna<sup>13</sup>.

Chalcopyrite is the most abundant Copper bearing mineral containing nearly equal parts of Copper (34.5%), Iron (30.5%) and Sulphur (35%). Chalcopyrite is mined and used as an ore of copper. In fact chalcopyrite is the most widely occurring copper mineral. Chalcopyrite is found together with other sulphides.

Major deposits of Chalcopyrite occur in Canada, Japan, England, Spain and United States. In India it is found in Bihar, Rajasthan and Andhra Pradesh. In Ayurvedic texts it is mentioned to be found in Sumeru Mountains, across the Tapi River in Kanouja, Bhutan and China.

**MODERN REVIEW**

The name chalcopyrite is derived from the Greek word Chalkos that means Copper i.e. chalcopyrite is the copper containing mineral. Pyrite is derived from the Greek word pyros which means fire in reference to the fact that pyrite ignites when heated in air.

Although chalcopyrite is usually written as  $CuFeS_2$ , a better representation would be  $Cu_2S Fe_2S_3$  reflecting the fact that copper in this mineral is mainly present in the cuprous state while iron is mainly in the ferric state. Chalcopyrite or copper pyrite looks like and is easily confused with pyrite,  $FeS_2$ . Chalcopyrite is referred to as fool's gold because of its bright golden colour. But real gold is more buttery yellow and is malleable and ductile.

As an ore of copper, the yield of chalcopyrite is rather low in terms of atoms per molecule. It has only 25% when compared to other copper minerals such as chalcocite,  $Cu_2S$  – 67%,  $Cu_2O$  – 67%, covelite  $CuS$  – 50%. However, the large quantities and widespread distribution of chalcopyrite is a common mineral and is found in almost all sulphide deposits. Fine crystals of chalcopyrite have a unique character and can add to anyone's collection.

**Structure And Physical Properties**

Chalcopyrite is brittle and can be easily powdered. The cut surface has golden yellow dots or lines. When Chalcopyrite is rubbed, the hands get blackish stains. It burns on fire with white fumes and emits smell like Sulphur. It is insoluble in water.

- Colour – Brassy yellow, tarnishes to iridescent blues, greens yellows and purples.
- Lusture – Metallic
- Transparency – Crystals are opaque.
- Crystal Structure – Tetragonal bar 42 m
- Crystal habits – are predominantly disphenoid, which is like two opposing wedges and resembles a tetrahedron crystal sometimes twinned. Also commonly massive and some times botryoidal cleavage is rather poor in one direction.
- Fracture – Conchoidal, brittle
- Hardness – 3.5 – 4
- Specific Gravity – 4.2
- Streak – Dark green
- Bonding – Covalent
- Melting point – 880°C

**Grahya Swarna Makshika Lakshana (Acceptable Variety)**

- Swarna Makshika, which on being broken to pieces presents a surface with bright golden tints, with a rather black interior, is superior to the common variety. This variety of Swarna Makshika is called "Brihad Varna" or having a superior colour<sup>14</sup>.
- Swarna Makshika has the appearance of gold, devoid of angles, heavy and leaves a black impression when rubbed on the palm<sup>15</sup>.
- The Swarna Makshika which is superior in quality should have the following characteristics: gold like complexion, heaviness,

softness a little blue tint and causing gold like impression when rubbed on a piece of touch stone (Kasha)<sup>16</sup>.

**Heya Swarna Makshika Lakshana**

Khara, Alpabhara with kona and which shines like loha should not be used for the preparation of medicine<sup>17</sup>.

**Asuddha Swarna Makshika Dosh**

If Sodhana of Swarna Makshika was not carried out properly or bhasma was not prepared properly or if it possesses chandrika it produces various disorders. Asuddha Swarna Makshika doshas explained in various texts are given in Table – 3.

**Treatment**

Kulatha kwatha (Horse gram decoction) or Dadima kwatha (Pomogranite decoction)<sup>18</sup>

**SWARNA MAKSHIKA SODHANA (METHOD OF PURIFICATION)**

Different methods have been adopted for Sodhana of Swarna Makshika like, Swedana, Pachana, Nirvapana and Putapaka method.

**Sodhana By Swedana**

1. Swarna Makshika is powdered and tied in a cloth. It is subjected to swedana with kashaya or swarasa of vanya meghanada and shali (shaka visesha) by dolayantra vidhi. The Swarna Makshika which is collected at the bottom is said as suddha<sup>19</sup>.
2. Swarna Makshika is kept in sooranakanda and swedana should be done in kulatha kwatha, kodrava kwatha, naramootra, amlavetasa and katutrika. Again pachana is done in rambhadrava<sup>20</sup>.
3. Swedana in Naramootra, kulatha kwatha, vetasa, amlavarga with Tankana and Trikatu by Dolayantra vidhi for one day<sup>21</sup>.
4. According to Rasendra Purana, it is subjected to swedana for two hours in a mixture of Matulunga and Eranda Taila
5. It is subjected to swedana in Dola yantra or Swedani yantra with kadali kanda swarasa or karkoti kanda swarasa<sup>22</sup>.
6. Swedana is done in Dolayantra with beejapooraa rasa and saindhava lavana for one day<sup>23</sup>.
7. Swarna Makshika is powdered and placed in the kalka of jalini and meghanada, swedana is carried out by dola yantra vidhi in kulatha kwatha<sup>24</sup>.

**Sodhana By Pachana**

1. Swarna Swarna Makshika churna 3 parts, Saindhava lavana 1 part and Nimbu swarasa is taken in an iron vessel covered with sarava, it is subjected to teevragni till it attains sindhuravarna and then allowed to cool by it-self. It should be stirred well with the help a lohadarvi in the middle of the heating process<sup>25</sup>.
2. Kadali kanda swarasa is added to fine powder of Swarna Swarna Makshika and heated in teevragni for one hour. Nimbu swarasa is added to the fine powder of Swarna Makshika and heated in an iron vessel in teevragni till it attains red colour like lotus. The procedure can be repeated for 2 – 3 days<sup>26</sup>.
3. Swarna Makshika is taken in a vessel and Eranda taila and nimbu swarasa is added together and heat till the taila gets dried or up to 48 minutes and again heated in kadali kanda swarasa<sup>27</sup>.

**Sodhana By Nirvapana**

1. Swarna Makshika is heated and dipped in nimbu swarasa and this procedure is repeated for 21 times<sup>28</sup>.
2. Swarna Makshika is heated and dipped in Triphala kashaya for 7 times<sup>29</sup>.
3. Swarna Makshika becomes purified, if it is heated and immersed in each of the following taila (gingely oil), takra (buttermilk), kulatha kwatha (Horsegram decoction) and triphala kwatha<sup>30</sup>.

**Sodhana By Putapaka**

The root of shigru is rubbed with the juice of agasti flower followed by pashana bheda. Then Swarna Makshika is triturated with the above paste and made in to ball and dried. It is subjected to heat in an andha musha with the help of 20 upalas (cow dung cakes). The process is repeated for six times<sup>31</sup>.

**SWARNA MAKSHIKA MARANA (METHOD OF INCINERATION)****Marana With Parada**

1. Suddha Swarna Makshika is taken and 1/8<sup>th</sup> part of Suddha Hingula is added and nimbu swarasa bhavana is given. Chakrikas prepared, dried and subjected to puta. Sadananda Sharma advises to give 8 putas by adding same quantity of suddha hingula in each puta<sup>32</sup>.
2. According to Rasayana Sara, Kajjali is prepared first with equal quantity of Hingulotha Parada and Suddha Gandhaka. This Kajjali is mixed with Suddha Swarna Makshika. Here the paka is done by Kupipakavidhi. Sindura is obtained from Kanta pradesha and Bhasma from tala. Nimbu swarasa (lemon juice) is the bhavana dravya used here.

**Marana With Mooliika**

1. Swarna Makshika which is purified by nimbu swarasa (Lemon juice) is subjected to 10 Gajaputas by giving bhavana with Nimbu Swarasa. A red coloured Swarna Makshika bhasma is obtained<sup>33</sup>.
2. Suddha Swarna Makshika is given bhavana with Kumari swarasa (Aloe vera juice), chakrikas prepared and dried. This is subjected to Kukkuta puta for 27 times<sup>34</sup>.
3. Suddha Swarna Swarna Makshika is given bhavana with kulatha kashaya or takra or ajamootra and heated in a vessel and turned all the while by means of a ladle<sup>35</sup>.

**Marana With Gandhaka**

1. Swarna Makshika becomes bhasma when it is given bhavana with matulunga swarasa. Equal quantity of Suddha Gandhaka is added to it and sealed in a musha. This is then subjected to Varahaputa for 10 times<sup>36</sup>.
2. Suddha Swarna Makshika is added with 1/4<sup>th</sup> quantity of Suddha Gandhaka (purified Sulphur), given bhavana with eranda taila and subjected to 8 Gajaputas<sup>37</sup>.
3. Suddha Swarna Makshika is added with 1/4<sup>th</sup> quantity of Suddha Gandhaka, given bhavana with eranda taila and subjected to Gajaputa by keeping paddy husk above and below<sup>38</sup>.
4. Suddha Gandhaka 1/4<sup>th</sup> quantity is added to Suddha Swarna Makshika, given bhavana with matulunga swarasa and subjected to 3 Gajaputas<sup>39</sup>.

**AMRITIKARANA OF SWARNA MAKSHIKA**

The drug processed in this method turns to amruthatulya and produces same effect in the body. It also removes the remaining doshas in the bhasmas. By subjecting to puta, bhasma becomes teekshna, ushna, ruksha etc. To nullify these and produce snigdha, soumya and sheeta gunas in the bhasma, amritikarana is carried out. Amritikarana is essential for Swarna Swarna Makshika because it contains tamra.

According to Rasendra Chinthamani, The Bhasma is taken in an iron pan and heated. Panchamrita drugs are added to it and closed with a lid. Heat it till it becomes nirdhooma. It is then removed on the next day. The colour becomes black. It is again ground with triphala kashaya and subjected to varahaputa. The process is repeated for 5 times and it attains red colour.

**Guna And Karma Of Swarna Makshika Bhasma**

The guna and karma of Swarna Swarna Makshika Bhasma according to various Rasa Shastra texts are given in Table – 4.

**Matra**

Most of the Rasa texts the dose of Swarna Swarna Makshika Bhasma is not mentioned. According to Rasa Tarangini<sup>40</sup>, by considering the Bala and Kala, the dose is 1/2 to 2 Gunja i.e. 60mg – 250mg.

**DISCUSSION**

Swarna Makshika is used in the treatment of diseases since Samhita Kala. People had the knowledge of Tamradhatu from Vedic period. Though it is an important mineral of Copper, the name of Swarna

Makshika is no where found in Vedas. Koutilya Arthashastra also says about pingala coloured tamra dhatu. By these we can infer that people had knowledge of Swarna Makshika 3000 years back.

Various authors have different opinions of classifying it under, Maharasa, Uparasa, Rasa and Upadhatu. It may be because of their experience with kriyas of parada.

In almost all the texts, saindhava lavana has been recommended to be added with Swarna Makshika during sodhana. But in practice Swarna Makshika is purified with nimbu swarasa only without adding saindhava lavana.

According to the text at the time of marana 1/4<sup>th</sup> part of suddha gandhaka has been recommended to be mixed with Swarna Makshika. But in practice it is not used, as the purified compound itself contains some part of sulphur which is sufficient for its marana.

It is recommended to give Gajaputa for the preparation of Swarna Makshika Bhasma. But in this case gajaputa heat is much more than required. As on giving gajaputa the chakrikas become very hard. If Sodhana or Marana is not carried out properly, it may lead to many complications like kushta (skin diseases), aandhya (loss of vision), vanti (vomiting) and even marana (death). The treatment of which is said as kulatha kwatha or dadima kwatha.

**CONCLUSION**

Swarna Makshika has got a unique place in both Dehavada and Lohavada. But Vimala is generally being used in place of Swarna Makshika now, as real Swarna Makshika is not available frequently. The main difference between Vimala and Swarna Makshika is presence of angles edges and facets in Vimala i.e. Vimala is cubic in shape while Swarna Makshika is free from these characters and has no specific shape. According to modern metallurgy, Chalcopyrite looks like and is easily confused with iron pyrite. It is referred to as fool's gold because of its golden colour.

The Indian Government has banned Swarna Swarna Makshika because of the presence of little amount of Gold in it. This Gold is extracted and mixed with pure gold which is sold in the market. But from Ayurvedic point of view this is not good, as good quality Swarna Makshika is unavailable for the preparation of genuine medicine which can cure many diseases. Hence it is the duty of the government to remove the ban on Swarna Makshika.

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Table – 1 Synonyms of Swarna Makshika

S. No	Synonym	A.K	A.P	R.T	R.J.N	R.S.S
1.	Swarna Makshikam	+	+	-	+	-
2.	Dhatu Makshikam	-	-	+	+	+
3.	Taptam	-	-	-	+	+
4.	Tapee samudbhavam	-	-	-	+	+
5.	Garudah	-	-	-	+	+
6.	Pakshee	-	-	-	+	+
7.	Madhudhatu	+	-	+	+	-
8.	Brihadvarna	-	-	-	-	+
9.	Maksheekam	+	-	-	-	-
10.	Hema Makshikam	+	-	+	-	-
11.	Tapyam	+	+	-	+	-
12.	Tapeejam	+	+	-	+	-
13.	Tarkshyam	+	-	-	-	-
14.	Tapeedeshasamudbhavam	+	-	-	-	-
15.	Madhu Makshikam	-	+	-	+	-
16.	Swarna Maksika	-	+	-	-	-
17.	Maksika	-	-	+	-	-
18.	Tapya	-	-	+	-	-
19.	Maksheekadhatu	-	+	+	-	-
20.	Suvarna Makshikam	-	-	+	-	-

Table – 2 Swarna Makshika Vargeekarana

S. No	Grantha Nama	Maharasa	Rasa	Uparasa	Upadhatu
1.	R. N	+	-	-	-
2.	R. Ch	+	-	-	-
3.	R. P. S	+	-	-	-
4.	R. R. S	+	-	-	-
5.	A. K	-	-	+	-
6.	Ra. Ch	+	-	-	-
7.	R. M	-	-	+	-
8.	R. S. S	-	-	-	+
9.	A. P	-	-	-	+
10.	R. T	-	-	-	+
11.	R. J. N	+	-	-	-
12.	P. S	-	-	-	+



Table – 3 Asuddha Swarna Swarna Makshika Dosha

S. No	Dosha	A.K	A.P	B.R.R.S	R.S.S	R.T	R.J.N
1.	Agnimandya	+	+	-	+	+	+
2.	Balanasha	-	+	-	+	-	+
3.	Vrana	-	-	-	+	-	+
4.	Vibandha	-	-	-	-	-	+
5.	Gatraruk	-	-	-	+	-	-
6.	Marana	+	-	-	+	-	+
7.	Vishtambha	+	+	-	+	-	+
8.	Dourbalya	+	-	-	-	-	-
9.	Aksiroga	+	+	-	-	-	+
10.	Kusta	-	+	+	-	+	+
11.	Gandamala	-	+	-	-	-	+
12.	Halimaka	-	-	-	-	+	-
13.	Vayu prakopa in koshta	-	-	-	-	+	-
14.	Aandhya	-	-	+	-	-	-
15.	Kshaya	-	-	+	-	-	-
16.	Krimi	-	-	+	-	-	-

Table – 4 Guna and Karma of Swarna Makshika Bhasma

S. No	Name of the text	Rasa	Guna	Karma	Virya	Vipaka	Dosha karma
1.	R. N	Tikta, Madhura	-	Meha, Arsa, Kshaya, Kushta, Balya, Yogavahi, Rasayana, Jwara	-	-	Kapha Pitta
2.	R.R.S	Madhura	Laghu	Jara vyadhi visha nashaka	Sheeta	Katu	-
3.	R.S.S	Tikta Madhura	-	Kshaya, Meha, Arsa, Krimi, Kushta, Rasayana, Yogavahi	-	-	Kapha Pitta
4.	R.P.S	-	-	Jwara, Pandu, Prameha, Grahani, Kamala, Shoola	-	-	-
5.	A.K	Kashaya, Tikta, Madhura, Katu	Ushna	Kushta, Shoola, Hikka, Vrana			
6.	R. T	Madhura, Tikta	Vrishya, Chaksushya, Rasayana	-	-	-	Tridosha

**ABBREVIATIONS**

- **A.K** – Ananda Kanda
- **A.P** – Ayurveda Prakasha
- **B.R.R.S** – Brihat Rasa Raja Sundara
- **P.S** – Parada Samhita
- **Ra. Ch** – Rasendra Chintamani
- **R.Ch** – Rasendra Chudamani
- **R.J.N** – Rasa Jala Nidhi
- **R.M** – Rasa Manjari
- **R.N** – Rasarnava
- **R.P.S** – Rasa Prakasha Sudhakara
- **R.R.S** – Rasa Ratna Samuchaya
- **R.S.S** – Rasendra Sara Sangraha
- **R. T** – Rasa Tarangini