

# Examining the Many Varieties of Gold-Containing Mercury Concoctions, or Makaradhwaja

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## ABSTRACT

**BACKGROUND:** *Makaradhwaja* is a mercurial concoction that contains gold. Most Ayurvedic doctors recommend this drug for its stimulating and revitalizing effects. *Kupipakwa* is the preferred method of preparation (the medicine is prepared in a special glass made container called *Kupi* layered seven times over with Fuller's earth, by administering high temperature), while *Kharaliya* is the second most common method (the medicine is prepared by triturating all the compounds using a mortar and pestle). Different sources provide varying references for the preparation, which in turn produces variations in its chemical makeup, most notably the ppm of gold, and hence its effectiveness. The purpose of this research is to examine these variations in treatment and their clinical relevance. **CONTENT & APPROACH:** The study was finished by reviewing data from a number of research publications, Ayurvedic literature, and postgraduate theses. Because of the inclusion of heavy metals like mercury and gold, several questions have been raised about the safety and toxicity of *Makaradhwaja*. Since then, several toxicity studies have shown the drug is generally safe for consumption within recommended dosage ranges. Ayurvedic doctors continue to choose this treatment above all others because of how well it works. When taken correctly, the research indicates that *Makaradhwaja* prepared in any of the many ways is generally safe to use. Many people now self-medicate since the pharmaceutical is so widely available, even at drugstores that don't need a doctor's prescription. Because of this, the drug is now being used irrationally, diminishing its usefulness.

**Keywords:** The Three M's: *Makaradhwaja*, Preparation, and Security

## Introduction

The preparation of medicine from *Parad* (Mercury), in *Rasashatra* has been described by many methods. These different dosage forms thus made are *Kharaliya Rasayana*, *Parpati Rasayana* (Medicine prepared by direct heat method in the form of flakes), *Kupipakwa Rasayana*. *Makaradhwaja* can be prepared by two of these methods – *Kharaliya* (*Chandroday Rasa*) and *Kupipakwa* (*Makaradhwaja*). *Kupipakwa Makaradhwaja* is made using elements like *Swarna* (gold) and *Gandhak* (sulphur). It also contains heavy metals like *Parad*. The three elements i.e. *Swarna*, *Gandhak* and *Parad* are taken in different ratios for eg: 1:8:16, 1:8:24 or 1:2:4 in *Valukayantra* (sand bath) <sup>[1,2]</sup> and subjected to heat for obtaining the *Kupipakwa Makaradhwaja*. While in *Kharaliya* method, trituration of the following compounds is done to obtain *Kharaliya Makaradhwaja* - Powder of *Jatiphala* (*Myristica fragrans*), *Lavang* (*Syzygium aromaticum*), *Karpur* (Camphor), *Marich* (*Piper nigrum*), *Kasturi* (*Abelmoschus moschatus*), *Swarnabhasma* (Gold ash) and *Rasasindoor* (A *kupipakwa* preparation consisting of mercury and sulphur).

Many formulations have been mentioned under the name of *Makaradhwaja* and *Chandroday Rasa*, though named differently in different texts (Table.no.1) the preparation of *Makaradhwaja* remains the same. The first reference for the preparation of *Makaradhwaja* by *Kupipakwa* method is mentioned in *Rasendra Chintamani*.

The word *Makaradhwaja* was first coined by *Rasratnakar*. In some texts *Chandroday Rasa* has been prepared, having the same therapeutic action as *Makaradhwaja* by *Kharaliya* method. *Makaradhwaja* is used as a *Rasayana* (rejuvenator), *Vrishya* (aphrodisiac) and *Shukral* (Spermatogenic) drug. It is the drug of choice in various diseases like *Sannipatajwara* (fever originating from the aggravation of *Tridoshas*), *Twakroga* (Skin diseases), *Raktadosha* (blood related disorders), *Vranastrava* (oozing from wounds), *Aruchi* (anorexia), *Atisara* (diarrhoea), *Pravahika* (dysentery), *Spotha* (boils) etc. <sup>[3]</sup>

In the *Kupipakwa* method the the *Makaradhwaja* is obtained at the neck of the *Kupi* while the particles of *Swarna* are found at the bottom, whereas in *Kharaliya* method *Swarnabhasma* is triturated along with all other contents. This apparent separation of *Swarna* particles in the former method and blending in the latter creates difference in the chemical composition of the final product obtained. There is need to evaluate the therapeutic action as well as the safety of *Makaradhwaja* prepared by both methods. Hence an attempt has been made to review it's properties as per the available literature.

## Materials and method

All available textual references of *Makaradhwaja* were reviewed. Scientific studies conducted on *Makaradhwaja* and digitalised information available from various reliable sources were collected and analysed.

## Observations

*Makaradhwaja* is prepared by two different methods as follows:

**Kupipakwa method:** Amalgam of *Swarna* and *Shuddha Parad* is taken in a *Khalvayantra* (mortar and pestle) and triturated for 4 - 6 hrs, subsequently *Shuddha Gandhak* is added to it in the following ratio of 1:8:16. *Mardan* (trituration) is continued for 24 hrs until a fine *Nischandra Kajjali* - A stage attained during trituration of *Kajjali* (a dry powder like preparation of mercury and usually sulphur) wherein the preparation becomes completely black and lustre free is obtained. Then it is subjected to *Bhavana* with *Ghrutkumari Swaras* (the juice of *Aloe Vera*), this is done by adding sufficient quantity of the *Ghrutkumari Swaras* to *Kajjali* and trituration is done for 3 hrs followed by drying it in the sun.

This *Bhavit Kajjali* (the mercurial preparation which has undergone *Bhavana*) is then filled in a *Kachkupi* (a glass bottle specifically prepared to endure long duration of heat). This *Kupi* is then placed in a *Valukayantra* (sand bath) and heat is supplied was in *Kramagni* pattern i.e. 3 hrs of *Mandagni* (120 -250 C), 6 hrs of *Madhayamagni* (250 -450 C) and 3 hrs of *Tivragni* (450 - 650 C). During the course of heating, a hot *Shalaka* (thin rod) is repeatedly inserted in the mouth of the *Kupi* to disperse the accumulation of sulphur fumes, which may create blockage. After which the mouth of the *Kupi* is corked and it is subjected to heat for another 2 hours. After this, the *Kupi* is kept aside for cooling. A fine thread is tied over the *Kupi*, 1 inch below the collected final product, and water is sprinkled over it to break it. *Makaradhwaja* is then collected from the neck of the *Kupi*.<sup>[4]</sup>

While in an another reference 6 hours (*Dviyama*) of *Mandagni*, followed by 6 hours of *Madhyamagni* and 6 hours of *Tivragni* is said to be administered for the preparation of *Makaradhwaja*.<sup>[5]</sup>

**Kharaliya method:** In this method first the following contents are mixed and subjected to trituration - *Rasasindoor*, *Jatiphala Churna*, *Lavang Churna*, *Karpur Churna* and *Marich Churna*. Then *Swarna Bhasm* and *Kasturi* are added to this mixture, trituration is continued for 3 hrs further. Tablets of *Dvigunja* size (250 mg) are prepared. <sup>[6]</sup>

Presently the *Bahirdhoom Vidhi* (heat applied in open medium) mentioned by Rasatarangini is the one being followed, with changes in the procedure of heating and use of gold in three different forms – *Varkha* (sheets of gold), foils and *Bhasmas*. In which the maximum particles of gold was found to be in the *Makaradhwaja* prepared using gold *Varkha*<sup>[7]</sup>. The procedure of *Gandhak Jarana* (the Addition and engulfing of Sulphur by Prad or mercury) for *Triguna*, *Shadguna Balijarit Makaradhwaja* (three times, six times mercury infused *Kajjali* respectively) has shown to increase the efficacy of the preparation and also the ppm of gold. The increasing level of *Gandhak* is linked with proportional rise in the level of gold in the final product obtained.<sup>[8]</sup> Additionally, the efficacy of *Makaradhwaja* made from *Ashtasanskarit Parad* (mercury which has undergone the eight stepwise procedures of purification) is shown to be better than only *Shodhit Parad* (purified mercury) when used in preparation of the medicine. <sup>[9]</sup>

## Discussion

There are many references found in different *Rasa* texts by the name of *Makaradhwaja* and *Chandroday Rasa* based on the method of preparation. Few are as follows as mentioned in table 1:

**Table no.1: Formulation and its references**

Sr.No	Formulation	Classical Text Reference
1	<i>Chandroday Rasa</i>	Rasa Chandashu Rasendra Sar Sangrah Yog Chintamani Yog Ratnakar Bhaishajya Ratnavali
2	<i>Makaradhwaja</i>	Rasa Ratnakar Rasendra Sar Sangrah Bhaishajya Ratnavali Rasamritam Rasratnamanimala Rasatarangini

The therapeutic activity of *Makaradhwaja* & *Chandroday Ras* are compiled in table 2.

**Table no.2: Therapeutic Considerations**

Sr.no	Formulation	Therapeutic Activity
1	<i>Makaradhwaja</i>	Removes signs of ageing like wrinkles and greying of hair, Brain booster, Improves skin glow, Rejuvenation medicine, Aphrodisiac, Improves Longevity and abates oldage <sup>[4]</sup>
2	<i>Chandroday Ras</i>	Aprodisiac and Improves Strength, agility and metabolism. <sup>[6]</sup>

*Kupipakwa Makaradhwaja* is found at the neck of the *Kupi*, while *Swarna* or gold particles are found at the bottom of the same. The data of research studies of Sanjay Khedkar et al in the article - Standard manufacturing process of *Makaradhwaja* prepared by *Swarna Patra*, *Varkh* and *Bhasma* wherein gold content was found to be 131pp, 268 ppm and 19 ppm respectively. This variation found in the gold content may be due to the difference in particle size. [12]

In another article, the metallographic study of gold containing herbo-mineral preparation *Makaradhwaja* the nature of growth of columnar crystal Mercuric sulphide was shown to be devoid of gold while in ICP spectrophotometry, gold content found was 130 ppm. [8] Another study by Prasanta Kumar et al in their study "Chemistry of *Kupipakwa Rasayana*" have mentioned the presence of very minute quantity of gold in combination with mercuric sulphide at the neck of the *Kupi*. [13] The present market scenario offers *Kupipakwa Makaradhwaja* in two different forms – *Makaradhwaja* and *Siddha Makaradhwaja*. There are five different pharmacies offering the product in various format namely Dhootpapeshwar, Zandu, Dabur, Baidyanath, Uma Ayurvedic Pvt. Ltd. The product is sold as *Makaradhwaja*, *Siddha Makaradhwaja*, *Swarna Makaradhwaja* etc. The *Kupipakwa* method is preferred by almost all manufacturers. *Kharaliya Vidhi* and *Antardhoom Vidhi* (Administering heat to the medicinal preparation, keeping it in a closed environment) mentioned in Rasatarangini remains to be explored for its full potential. The safety evaluation of the preparation reveals that it is safe for usage and does not produce untoward effect on the body when given in the correct dosage. The easy availability of the product teamed with its popularity in enhancing vigour and vitality has caused it to be used indiscriminately by the masses.

## Conclusion

There has been no analytical study conducted on *Makaradhwaja* by *Kharaliya* Method & the benefits or harm of mixing *Swarna* found at the bottom of the *Kupi* with the product at the neck to produce *Makaradhwaja*. Further studies must be conducted to evaluate the therapeutic and safety concerns of *Makaradhwaja* made from both the methods.

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