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# A CRITICAL REVIEW ON MUKTAPANCHAMRITA RASA

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## ABSTRACT

India's traditional medicinal system is called *Ayurveda*. The area of *Ayurveda* known as *Rasa Shastra* deals with formulations that incorporate metals and minerals. There are number of *Rasaushadhi* maintained in classical text, but many of them lack the data to current modern standards. *Muktapanchamrita Rasa* is one such special *Rasaushadhi*. Most of the *Rasaushadhi* required homogenous mixing of herbal and metal-mineral ingredients. Hence nearly 80% of *Rasaushadhis* can be categorized under *Kharaliya Rasayana* and *Muktapanchamrita Rasa* too comes under the same category. *Muktapanchamrita Rasa* is mentioned in *Bhaishajya Ratnawali, Yogratnakar, Ras Tarangini* and *Rasaamritam* under *Rajayakshma, Jwara Chikitsa, Taranga* twenty-three and *Rasayoga Vijnaniyam Adhyaya* respectively. This formulation is a combination of five *Bhasma's* i.e *Mukta Bhasma, Praval Bhasma, Vanga Bhasma, Sankh Bhasma* and *Sukti Bhasma* triturated in *Ikshu Rasa, Go Dugdha, Vidarikanda* (*Pueraria tuberosa DC.*) *Svarasa, Ghritkumari* (*Aloe barbadensis* Mill.) *Svarasa, Shatavari* (*Asparagus racemosus* Willd.) *Svarasa, Tulsi* (*Ocimum sanctum* Linn.) *Patra Svarasa* and *Hamsapadi* (*Adiantum lanulatum* Burm.) *Svarasa* for 6 hours each and then subjected to *Mridu Puta* sealed in *Shawa Samputa*.[1] The *Bhavana Dravya* plays crucial role as a reducing and capping agent resulting in the green synthesis of nanoparticles. *Muktapanchamrita Rasa* is indicated in *Kasa, Rajyakshma, Kshaya Roga,* and *Jirna Jwara*.

**KEYWORDS:** Muktapanchamrita Rasa, Rasashastra, Rajyakshma, Mukta, Kharaliya Rasaushadhi.

## INTRODUCTION

The traditional Indian system of medicine *Ayurveda* is considered to be the most comprehensive and effective of all the systems that are used around the globe. There are various herbal, mineral and metallic formulations described in the classical text of *Ayurveda*, which play a significant role in the present health care system. *Rasa Shastra* is a pharmaceutical science of *Ayurveda* which deals with conversion of the drugs irrespective of their nature i.e. metal, animal or mineral in an absorbable form which are capable in curing and preventing the body from diseases without rendering any toxic effects. These drugs are transformed into the palatable form known as *Bhasma's* through a variety of processes like purification (*Sodhana*), followed by the reaction phase (*Bhavana*), which involves incorporation of some other mineral and herbal extracts and then incineration (*Marana)* outlined in *Rasa Shastra*. It is stated that *Bhasma's* are organically formed nanoparticles that are administered singly, in combination, or with herbal formulations.

*Muktapanchamrita Rasa* is a unique *Ayurvedic* medicine with herbo-metallic mineral ingredients. This formulation consists of *Mukta Bhasma, Praval Bhasma, Vanga Bhasma, Sankh Bhasma* and *Mukta Sukti Bhasma*. It is a prepared by using ingredients of marine origin such as *Mukta, Pravala, Shankha and Mukta Shukti* in combination with metal such as *Vanga* and various herbal extracts. In ancient literature *Mukta* and *Pravala* are included in *Navaratna* (precious stone). *Shankha* and *Mukta Shukti* are included in *Sudha Varga*. *Vanga* is classified as *Putiloha* in *Loha Varga*. *Muktapanchamrita Rasa* is indicated in various diseases such as *Kasa, Rajyakshma, Kshaya Roga,* and *Jirna Jwara*.[2]

## MUKTA PANCHAMRITA RASA IN CLASSICS

**Table 1: Compilation of reference of *Muktapanchamrita Rasa***

| S. No. | Name of text | Reference |
|---|---|---|
| 1. | *Bhaishajya Ratnavali*[1] | *Rajyakshma Chikitsa* |
| 2. | *Rasamrita*[2] | *Rasayoga Vijayan* |
| 3. | *Rasa Tarangini*[3] | *Taranga 23* |
| 4. | *Yogratnakar*[4] | *Vishama Jwara Chikitsa* |
| 5. | *Ras Yoga Sagar*[5] | Volume 2 |
| 6. | *Rasa Tantra Sara Evam Siddha Prah yoga Sangraha*[6] | *Rajyakshma Urakshata* |
| 7. | AFI[7] | Part -1, 20:29 |

## INGREDIENTS AND PREPARATION

**Table 2: Ingredients of *Muktapanchamrita Rasa***

| Ingredients | Latin name[8] | Common name | *Varga*[9] | Constituents | Quantity[1] |
|---|---|---|---|---|---|
| *Mukta* | Mytilus Margaritiferus | Pearl | *Ratna* | Calcium Carbonate, Pearline, Keratin | 8 parts |
| *Praval* | Corallium Rubrum | Coral | *Ratna* | Calcium Carbonate, Iron Oxide, Magnesium Carbonate | 4 parts |
| *Vanga* | Stannous | Tin | *Luha* | - | 2 parts |
| *Sankh* | Turbinella Rapa | Conch shell | *Sudha* | Calcium Carbonate, Phosphorus, Iron, Magnesium | 1 part |
| *Mukta Sukti* | O. gryphoides, Schl. | Pearl oyster shell | *Sudha* | Calcium Carbonate, Iron, Magnesium | 1 part |

**Table 3: *Rasa Panchaka* (Ayurvedic Pharmacology) of Ingredients.**

| Ingredients | *Rasa* | *Guna* | *Virya* | *Vipaka* | *Karma* | *Dose* |
|---|---|---|---|---|---|---|
| *Mukta Bhasma* | *Madhur* (Sweet) | *Laghu* (Light), *Sheeta* (Cold) | *Sheeta* (Cold) | *Madhura* (Sweet) | *Dristi Roga, Visha, Rajyakshma, Jwara, Daha, Raktapitta, Braham, Murcha Etc*[10] | 125 Mg |
| *Praval Bhasma* | *Madhur* (Sweet) | *Laghu* (Light) | *Sheeta* (Cold) | - | *Kapha Pitta Doshahara, Virya Vardhak.*[11] | 250 mg |
| *Vanga Bhasma* | *Tikta* (Bitter), *Alma* (Sour), *Katu* (Pungent), *Kasaya* (Astringent) | *Ruksha, Laghu, Sara, Ushna, Tikshna* | *Ushna* | - | *Kapha Pittahara, Ishat Vata Prakopaka, Balya, Deepan, Pachan, Medohara, Vrishya* etc.[12] | 125-250 mg |
| *Sankha Bhasma* | *Kasaya* (Astringent), *Katu* (Pungent), *Kshariya* | *Laghu* (Light), *Sheeta* (Cold) | *Sheeta* (Cold) | - | *Grahani, Shula, Vranya, Almapitta* etc[13] | 250-300 mg |
| *Mukta Shukti Bhasma* | *Katu* (Pungent) | *Snigdha* (Unctuous) | *Ushna* (Hot) | *Madhur* (Sweet) | *Shula, Swasa Roga, Hridya Roga, Dipana* etc.[14] | 250-500 mg |

**Table 4: Sodhana, Marana and previous analytical study results of ingredients.**

| Ingredients | Sodhana | Marana | Analytical study |
|---|---|---|---|
| *Mukta* | *Swedana* in *Jayanti* Swarasa for 3 hours in Dola yantra[15] | It is triturated in Gulab Jal and subjected to 3 gajaputa[16] | The X-ray diffraction (XRD) analysis revealed that the powdered pearl was Aragonite CaCO3, while the Mukta Bhasma was Calcite CaCO3.[17] |
| *Praval* | Swedana in Swarjika kshara yukta Jala in Dola yantra for 3 hours.[18] | It is triturated in kumari Swarasa and subjected to 3 gajaputa[19] | XRD showed that the raw material included CaCO3, however CaO was discovered in the Bhasma end product.[20] |
| *Vanga* | Melted vanga is poured in Nirgundi Swarasa + Haridra. Repeat for 3 times.[21] | Jarita vanga is triturated in aleovera juice and subjected to 7 Gaja puta.[22] | The XRD of Vanga Bhasma showed its crystalline structure. The major component (over 95%) was Tin Oxide, possibly Cassiterite. The predominant peaks in the sample (Vanga Bhasma) corresponded to major phase comprising SnO2.[23] |
| *Sankh* | Swedana in Jayanti Swarasa for 3 hours in Dola yantra.[24] | It is put in Shrava Samputa, Sandhi Lepa is finished, and Gaja Puta is applied twice.[25] | It was evident that the conch's natural state is aragonite, but that this aragonite structure was reorganized into calcite following combustion.[26] |
| *Mukta Sukti* | Swedana in amla Dravya for 3 hours in Dola yantra.[27] | It is ground with Kumari Swarasa, and two Gaja Puta are provided.[28] | Raw material Mukta Shukti contains calcium carbonate in aragonite form. The aragonite form of calcium carbonate transforms into a stable calcite form during the process of Bhasma formation and forms the main crystalline component of Mukta Shukti Bhasma. The heat treatment does result in the partial conversion of calcite to calcium oxide, which appears as calcium hydroxide (not more than 2% w/w) in the final product.[29] |

## RESEARCH STUDIES ON INGREDIENTS

### MUKTA

1. Standardization, formulation development and characterization of antiulcer drug of Mukta bhasma was done. The aim of the present work is to develop and evaluate Mukta Bhasma tablets using starch and acacia as a binder. The prepared tablets were evaluated for different parameters, acute toxicity of Mukta bhasma was conducted on albino rats. Acute toxicity study shows that there is no adverse effect of bhasma on albino rats even at a

single dose of 2000 mg/kg body weight that reveals that Mukta bhasma is safe in albino rats. The results suggest that this ayurvedic preparation cannot show any signs and symptoms of toxicity.[30]

2. Studies were carried out with ayurvedic preparations derived from pearl, which include preparations bhasma and pishti. The synergistic effect to reduce the dose of antibiotic was tested against E.coli the test bacterium with ampicillin antibiotic by bore well and disks diffusion methods. It was observed that pearl preparations do not show any antibacterial activity but when used at 200 µg/ml concentration with antibiotics, then even at sub-lethal dose, the antibiotic has effectively shown the results with reduced contact time. The protocol was also tested with the other bacteria like, Pseudomonas aeruginosa, Vibrio cholerae, Salmonella typhi, and Staphylococcus aureus and has shown similar results. The pearl bhasma synergistic effect was also tested with other antibiotics such as erythromycin, kanamycin, and ampicillin. It shows bhasma dependent lowering of antibiotics dose.[31]
3. Mukta bhasma produces significant anti-ulcer activity in rats. The results suggest that it may act as gastric cytoprotective agent by modulating scavenging of free radicals as Mukta bhasma exhibits a potent anti peroxidative effect. Its anti-ulcer activity was not dose dependent. The results suggest that Mukta bhasma possess significant gastroprotective activity in lower doses of therapeutic range.[32]

**PRAVAL**

1. Histological examination of decalcified femurs showed narrowed and disappearance of trabeculae and widened medullary spaces and decreased impact strength as measured by impact test in CD-OVX animals compared to sham and PB-treated group. The present study concludes that *Praval bhasma* is effective in the prevention of calcium and oestrogen deficient bone loss and justify the continuing use of this ayurvedic preparation in traditional system of Indian medicine for management of bone metabolic disorders such as osteoporosis.[33]

**SANKHA**

1. Shankha bhasma was analysed for its organoleptic character and physico chemical characters and then it was filled in Gallatin capsules. To assess the efficacy of Shankha Bhasma in the management of Grahani, open group method with single group of 30 patient was taken. Shankha Bhasma filled in capsule in dose of 250mg twice a day with

Luke warm water was given for one month. As a result, Improvement in daurgandhya, atikshudha, utsahahani, daurbalya was statistically significant with $p<0.05$. Improvement in nidradhikya, angagauravta and atipipasa was highly significant statistically with $p<0.01$.[34]

**MUKTA SUKTI**

1. In aspirin induced model, the Mukta Shukti Bhasma and standard group (Sucralfate) showed highly significant Anti-ulcer activity than control group (food water). The Mukta Shukti Bhasma showed highly significant Anti-ulcer activity than standard group (Sucralfate) when compared. This experimental study has given scientific evidence for the claim in the ancient text regarding the Anti-ulcer property of Mukta Shukti Bhasma which gives scope for conducting clinical study.[35]
2. MuktaShukti bhasma (MSB), an Ayurvedic compound, consisting of pearl, Aloe vera and vinegar, inhibited acute and subacute inflammation in albino rats as induced by planter injection of carrageenan, histamine, 5-HT, nystatin and subcutaneous implant of cotton pellets. In all the test procedures the anti-inflammatory response of 1000 mg/kg MSB was comparable to the response observed with 300 mg/kg acetylsalicylic acid (ASA). Oral premedication with MSB delayed castor oil-induced diarrhoea in rats, indicating its prostaglandin inhibitory activity. The anti-inflammatory activity of the compound is attributed to its ability to cause inhibition of prostaglandins, histamine and 5-HT and also by stabilization of the lysosomal membranes. The anti-inflammatory activity of MSB seems one third to half as potent as ASA.[36]

**VANGA**

1. According to this study, the synthetic Bhasma was transformed into its harmless oxide form and had significantly smaller particles than what was shown in SEM pictures. To make the pale, ivory Vanga Bhasma, an average of thirteen puta is needed. At a dosage of 100 mg/ml, Vanga Bhasma demonstrated antibacterial action by preventing the growth of Escherichia coli, Bacillus subtilis, Staphylococcus aureus, and Candida albicans.[37]

**Method of Preparation of *Muktapanchamrita Rasa*[1]**

1. Raw material will be collected from authentic sources.
2. Sodhana and Marana of the ingredients are done as mentioned in the classical text.
3. Then *Mukta Bhasma*– 8 parts, *Pravala Bhasma* – 4 parts, *Vanga Bhasma* –2 parts, *Shankha Bhasma* –1 part, *Mukta Shukti Bhasma* –1 part will be mixed in *Khalva Yantra*.

4. *Bhavana* of below mentioned 7 *Drava* each for about 6 hours separately will be given.
   - *Ikshu Rasa*
   - *Go Dugdha*
   - *Vidarikanda* (*Pueraria tuberosa DC.*) *Svarasa*
   - *Ghritkumari* (*Aloe barbadensis* Mill.) *Svarasa*
   - *Shatavari* (*Asparagus racemosus* Willd.) *Svarasa*
   - *Tulsi* (*Ocimum sanctum* Linn.) *Patra Svarasa*
   - *Hamsapadi* (*Adiantum lanulatum* Burm.) *Svarasa*
5. Following Bhavana's completion, Chakrikas are made and sealed in Sarava Samputa.
6. Then *Sarava Samputa* will be subjected to *Laghuputa Paka.*
7. This process will be done 5 times.
8. Then it will be made into powder and stored in air tight glass container.

**Table 5: Difference in methods of preparation in various classics.**

| ***Samhita*** | **Difference** |
|---|---|
| *Yogratnakar, Bhaishajya Ratnavali, Rasatrangini* | Must provide 5 Mridu putas. |
| *Rasamrita, AFI* | Give a single Mridu puta. |
| *Rasatrangini* | Named it as Muktapanchamrita rasayana and have excluded Tulsi Swarasa in Bhawana Dravya. |

**INDICATION**

- *Rajyakshma*
- *Jara Vyadhi*
- *Jirna Jwara*
- *Sarva Roga*
- *Kasa Roga*

According to yogratnakar it is indicated in *Vishama Jwara*. In Ras Tantra va Sidhaprayoga Sangraha it is prescribed *In Jirna Jwara, Rajyakshma, Asthi Kshaya, Masa Kshaya, Balashosha Asthimardva, Sirashoola, Prinama Shola* and *Sangrahani* etc. in *Bhaishajya Ratnavali* and *Rasaamritam* in is prescribed in *Rajyakshma*.

**DOSE**

A specific dose of 2 gunja (250 mg) according to Rasatrangini.

2 Ratti (250 mg) – 4 Ratti (500 mg) according to Rasamritam is mentioned.

Dose is 4 gunja (500mg) according to Bhaishajya Ratnawali.

## ANUPANA

**पञ्चामृतं रस विभुं भिषजा गुञ्जाचतुष्टयमितं चपलारजश्च ।**

**पात्रे निधाय चिरसूत पयस्विनीनां दुग्धेन च प्रपिबतः खलु पथ्यभोक्तु ।** (je. 9/139)

It should be mixed with *Pippali Churna* and taken with 3-4 months *Prasuta* cow's Dugdha twice a day.

According to *Rasatrangini*, it should be taken with Go Dugdha.

## CONCLUSION

It is clear form to literature that Muktapanchamrita Rasa is a great medicine with potential to cure *Rajyakshma* like diseases easily. Of its five constituents, four are marine origin mineral and one metal. All of these substances have shown excellent outcomes in testing for a variety of medicinal effects. Each Ingredient in the formulation demonstrates diverse effecting in curing the disease and providing nourishment to the person fighting each ailment. Each piece of information has a strong antibacterial effect on its own, as demonstrated by earlier research. When these wonderful ingredients are combined and triturated with svarasa of different herbs, their potential is increased several times over. In combination with appropriate *Anupana*, *Muktapanchamrita Rasa* will exhibits a broad spectrum of multifaceted therapeutic effects, including antipyretic, analgesic, anti-inflammatory, antimicrobial, immunostimulatory and many more. The information base for Muktapanchamrita Rasa and its constituent medications has been compiled in this review, covering its therapeutic, pharmacological, and medical uses. This review will also make it easier to learn about the extensive pharmacological activities of these medications and the pertinent historical scientific research, which will inspire and lead to more research into the pharmacological activities of these ingredients to protect people from various diseases, particularly *Rajyakshma*, and perhaps serve as an invaluable tool for the improvement of health.

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