



A Review Study on Ancient Drug - Mukta

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For thousands of years, Rasa Shastra, also known as Ancient Indian alchemy, has been a part of the medical field that has benefited humanity. In Rasa Shastra, the Ancient Alchemists were particularly interested in Rasa, which means Mercury. Rasa Shastra also studies and prepares different herbo-mineral compounds. And the safe use of Mercurial preparations as medicines from many years, Rasa Shastra also deals with study and the preparation of other herbo-mineral chemicals using various plant drugs and animal origin. One of the drugs, the most widely used in Rasa Shastra is Mukta or Pearl. There are various categories or groups of drugs (Varga) used in Rasa Shastra viz. Maharasas, Uparasas etc. and Mukta is divided under the Ratna (precious treasures) Varga. Mukta, also known as Pearl, is one of the medications that is most frequently utilized in Rasa Shastra. Mukta is a spherical, solid black, dazzling white fish that lives in the water. Its advantageous appearance makes it a common ingredient in apparel, cosmetics, and jewellery. It is created by encircling the center nucleus with many layers of conchiolin and calcium carbonate. Classics of Rasa Shastra state that Madhura, Sheeta, and Laghu belong to Mukta. Additionally, it is frequently used as a potent Pitta Shamaka. Procedures for purification and Pishti are also mentioned in the classics of Rasa Shastra, which makes pearls extremely effective for curing illnesses. In Amlapitta, Jwara and Daha, Mukta is widely used in various forms. The aim of the study is to have a critical review on the conceptual study of Mukta.

Keywords: Rasa, Shastra, Ratna, Mukta, Pearl

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Introduction

Rasa Shastra means "Science of Mercury." This specific section of *Ayurveda* focuses on elements that are known as "*Rasa Dravya's*". These medications have three key characteristics: immediate effectiveness, low dose requirements, and broad therapeutic applications regardless of constitution. Along with *Parad* drugs from plant origin, metals, oceanic products and gems are also used to prepare potent medicine. To study these drugs the *Rasa Acharyas* have classified them in various groups like *Maharasa*, *Uprasa*, *Sadharana Rasa*, *Dhatu*, *Updhatu*, *Sudha Dravya*, *Ratna*, *Upratna*. *Ratna Varga* is one such group of elements which consists of all precious gems. All those elements which are precious among its category appreciated and loved by the people and supposed to be best quality are called *Ratna*. The one who expects wealth is obsessive and deeply attached with these precious gems so the scientists of those days called these drugs as *Ratna*.

One of the raw drugs that was particularly used from animal origin is *Mukta* or Pearl. According to *Atharvaveda*, *Mukta* is the substance that provides the body freedom from diseases and difficulties. *Garuda-Purana* says that when Sun moves into *Swati Nakshatra*, the water drops that fall from the clouds gets into *Shukti* (Oyster shell) and transforms into *Mukta* (Pearl).[1] It belongs to the class Mollusca, with *Latin* name *Pinctada Margaritifera*. Pearl is an organic gem. It is obtained from the pearl shell or oyster found in the sea, river or different water sources. In several European languages the word pearl is synonymous with bead. In simple terms, pearl is a whitish, hard and round object found within the soft tissue (specifically the mantle) of a living shelled mollusk, usually an oyster shell. It is made up of concentric layers of calcium carbonate in minute crystalline form. Almost all species of shelled mollusks are capable of producing pearls of lesser shine or less spherical shape. *Mukta* is related to *Chandra Graha*.

Aims and Objectives

Aim: To study in detail the concept of *Mukta*.

Objectives:

1. To take various references related to *Mukta* in various *Ayurvedic Samhita*.

2. To understand concept of *Mukta* in *Rasa Shastra*.

Materials and Methods

A Literature review is conducted using all the accessible *Ayurvedic Samhitas*, texts, research papers, in journals and online data sources.

Review of Literature

Synonyms[2]

Mukta, *Mauktika*, *Shuktija*, *Muktaphala*, *Sauktikeya*, *Shashiratna*, *Shashipriya*, *Chandraratna*, *Chandrapriya*, *Shaktimani*, *Binduphala*, *Ambhasara*, *Saumyakara*.

Vernacular Names

- Sanskrit - *Mukta*
- Bengali - *Mukta*
- Hindi - *Moti*
- Marathi - *Moti*
- Gujarati - *Moti*
- Arabi - *Lulu*
- English - Pearl

Types of *Mukta*

1. *Shuktija*
2. *Shankaja*
3. *Hastija*
4. *Varahaja*
5. *Sarpaja*
6. *Masyaja*
7. *Darduraja*
8. *Vanuja*

Grahya Lakshana (Desired *Mukta* Characteristics)[3]

Desired *Mukta* has a moon-like shine, greater size, gentle touch, circular shape, no symbols, and a decent mass.

It retains its lustre and colour even after being rubbed with salt and *Gomutra*.

Agrahya Lakshana (Undesired *Mukta* Characteristics)[4]

Agrahya Mukta has an undeveloped body at one end, an elongated, overall dry, triangular shape, is black in colour, and has diminished lustre.

Identification[5]

- Chemical formula: CaCO_3
- Colour: White, Pink, Silver, Cream, Golden, Green, Blue, Black, Yellow
- Cleavage: None
- Mohs scale hardness: 2.5-4.5
- Streak: White

Sources of Origin

On the basis of *Ayurveda Prakasha*, *Mukta* has eight sources including.

1. *Sukti* (Oyster shell)
2. *Shakha* (Conch-shell)
3. *Gaja* (Elephant)
4. *Varaha* (Pig)
5. *Sarpa* (Snake)
6. *Matrsya* (Fish)
7. *Dardura* (Frog)
8. *Venu* (Bamboo)[6]

Shodhana (Purification) of Mukta

Mukta is cleansed prior to usage as a medication; all potential negative effects or adverse outcomes should be eliminated. Because *Mukta* doesn't exhibit any active toxic alkaloids.

Following protocols are always preferable. The *Shodhana* procedure is described in various *Rasa Shastra* classics. *Shodhana* is done in *Churnodaka* (Lime-water),[7] *Agastya Patra Swarasa*[8] and *Jayanti Patra Swarasa*. [9] For the *Shodhana* treatment, *Mukta* undergoes three hours of *Swedana* by *Dola Yantra Vidhi*.

Marana (Incineration) of Mukta[10]

The whole method is to be completed in the following steps-

A) Bhavana (Trituration): Purified *Mukta* is finely powdered and taken into mortar. Then some cow milk or rose water is added to it and it is then subjected to trituration. Then this mixture is triturated into fine paste.

B) Preparation of Chakrikas (Pelletization): Small *Chakrikas* are prepared and dried. These *Chakrikas* are then kept in earthen plates, sealed and subjected to *puta*.

C) Sharava Samputa formation: These *Chakrikas* are then kept in earthen plates, sealed and subjected to *Putra*.

D) Laghuputa: These *Chakrikas* are subjected to incineration in *Laghu Puta*. Within three such *Putas*, *Bhasma* of *Mukta* is being prepared.

Pharmacological actions of Mukta[11]

- *Rasa* - *Madhura*
- *Virya* - *Sita*
- *Guna* - *Laghu*
- *Dosha* - Pacifies *Kapha* and *Pitta*.

Characteristic of Mukta[12]

- **Lusture:** According to *Rasa Paddhati*, *Mukta* has three types of lusture, viz, *Madhuchaayae.*, just like honey, *Sitachaaya* i.e., just like sugar and *Shrikhandachaaya* i.e., just like a preparation made up of sugar and curd.
- **Colour:** Colour for freshwater can be peach, black, lavender, white or pink.
- **Shape:** Round is the most favoured and valuable. Baroque or irregular or potato shaped are some of the names given to odd shaped pearls. Oval shaped pearls are sort of like an egg. Button shaped are round but a little flat. Some are round on the top and flat on one side. Tear drop shapes lend themselves.

Physical Properties

- **Hardness:** 2.5-4
- **Texture:** Slightly rough.
- **Toughness:** Fair, soft and easily damaged by acid and skin oil.
- **Specific Gravity:** Varies with source and with the type of nucleus; the Naturally occurring range from 2.66-2.78, whereas Cultured pearl ranges from 2.72-2.78.

Advantages of Mukta[13-15]

Mukta Bhasma is a calcium component derived from traditional Indian *Ayurvedic* medicine. It contains herbs and minerals. It is commonly used as antipyretics, for GI tract problems, ulcer prevention and as an antacid also. It is used to treat bone diseases caused by calcium insufficiency. *Mukta Bhasma* has been studied for antiulcer activity in experimental animals.

Formation of Mukta

Mukta, or pearl, can be formed in two ways: First naturally and other through Culture method.

There is no human's disruption in the natural process. Whereas for Cultured method, on the other hand, are made artificially.

A) Natural Method: The inner layer of an oyster or other mollusc shell becomes irritated when a little particle becomes lodged in it. The oyster then starts to diminish the material by concealing its excretion surrounding the item. Layers of calcium carbonate (CaCO₃), either as the mineral aragonite or as a combination of calcite and aragonite, are laid down by the mollusk covering and stored with a biological horn resembling conchiolin. Nacre, which is the mother of pearls, is a mixture of aragonite and conchiolin. In actuality, the widely held notion that a grain of sand is an annoyance is not necessarily true. Organic materials, parasites, or even harm that eliminates clothing from another area of the body are examples of common stimulants.

B) Artificial Method: A pearl farm uses both natural processes and human intervention to cultivate pearls. The shells reaction is a tissue implant of cultured pearls. A small portion of the mantle tissue of the donor shell is put within a recipient shell. This graft will form a pearl sac, and the tissue will precipitate calcium carbonate into the pocket. There are numerous options. Use freshwater or seawater shells, place the graft into the gonad or mantle, add a spherical bead, or leave it unbeaded when processing cultured pearls.

Purity of the Mukta

X-ray testing distinguishes between cultured pearls (beadless or beaded) and fake pearls. Nucleated cultured pearls are commonly pre-formed means they confirm to the shape of the implanted shell bead nucleus. After inserting the pre-formed beads, the oyster secretes a coating of nacre around the exterior surface before removing them after six months or more. X-raying cultivated pearls with beads reveals a distinct structure compared to natural pearls. Beaded cultured pearls have a solid centre and no concentric growth rings, while natural pearls have a sequence of concentric rings. A beadless cultured pearl of freshwater or saltwater origin may exhibit growth.

Formulations (Yoga) of Mukta

- *Muktapanchamruta Rasa*[16]
- *Vasantakusumkara Rasa*[17]
- *Pravalapanchamruta Rasa*[18]

- *Kamdudha Rasa*[19]
- *Vasantatilaka Rasa*[20]
- *Bruhatvatachintamani Rasa*[21]
- *Varishoshana Rasa*[22]
- *Hiranya-garbhapottali Rasa*[23]
- *Navaratnarajmruganka Rasa*[24]
- *Mukta Bhasma*[25,26]
- *Mukta Shukti Bhasma*[27]

Conclusion

Rasa Shastra successfully uses a number of plant, mineral, and animal-derived medications, including *Mukta* or pearl. Although it is not harmful, *Shodhana* is recommended to avoid any negative effects. *Mukta* and *Pishti* are commonly utilized in *Rasa Shastra* formulations, especially for *Pittaj* and *Kaphaj* diseases. It exists in both natural and cultural forms. *Mukta* is a *Sheeta* in property utilized in *Daaha*, *Amlapitta*, *Jwara*, and *Trishna*. *Mukta*'s chemical composition mostly consists of calcium carbonate, with trace components contributing to its diverse applications. *Mukta* stands out as a reliable source of sea calcium.

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