

OVERVIEW ON MURCHCHHANA

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INTRODUCTION

Rasa Shastra is a specialized branch of Ayurveda that deals with pharmaceutical procedures for drugs of metallic and mineral origin etc.^[1] Every Substance for therapeutic purposes. Several processes are mentioned in Rasa Shastra to remove its harmful effects and increase potency and efficacy, such as Shodhana (purification), Marana (incineration), and Jarana (polling), etc., of various drugs or substances. Similarly, many methods are described to transform Parada (mercury) into a stable form for therapeutic uses as medicine and Murchchhana is one of them. Murchchhana is the process in which Parada, when mixed with Gandhaka or various other drugs, becomes lusterless, achieves the Vyadhi Nashaka stage, and is converted into a suitable compound form used for therapeutic purposes.

Definition

Murchchhana is a process in which mercurial compounds develop the 'Avyabhicharita Vyadhighatakatva' property or potency.^[3,4] In this Parada (mercury) with or without Gandhaka (Sulphur) is converted into a suitable compound form, which can be used internally for curing diseases. Through this process, mercury and mercurial compounds develop definite disease-curing capacity, and even after Murchchhana mercury cannot return to its original form (Purvaavastha).

Ayurvedic literatures were reviewed to obtain information about the references for the ingredients, proportions, and preparation methods of Ghrita and Taila Murchchhana. The published research articles and dissertations pertaining to the quality control parameters of Sneha Murchchhana have also been screened.

MATERIAL AND METHODS

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Classification of Murchchhana

Murchchhana can be classified into various types as follow.

- • One type of Murchchhana i.e., Vishadi bheda

• Two types of Murchchhana i.e.

(1) Sagandha and Nirgandha (2) Saagni and Niraagni.

- Three types of Murchchhana i.e., (1) Antardhuma (2) Bhirduma (3) Nirduma
- Five types of Murchchhana i.e., Gandhbaddh (2) Gandhijirana (3) Rasagandhaka Kajjali (4) Gandhapishti (5) Dhatupishti, Dhatupishti again divided into the following types, viz. (a) Kanaka Pishti (b) Rajata Pishti (c) Sulva Pishti (d) Abhra Pishti and (e) Krishna Lohapishti.
- Various types of Murchchhana

1. On the basis of material used^[3]

– a) Sagandha Murchchhana- In Sagandha Murchchhana, Parada (mercury) is made into Murchchhita form by adding Gandhaka (Sulphur) in different amounts. It is more common and popular in day-to-day practice as it is very safe to use. When used internally it does not produce any toxic effects on the body. e.g., Kajjali.

b) Nirgandha Murchchhana- In which no Gandhaka (Sulphur) is used with Parada (mercury). In this Parada (mercury) is made Murchchhita with other drugs like - Tuttha, Kasisa, Sphatika and Lavana, etc. This type of Murchchhana is not common and is generally toxic hence should be used with care. e.g., Rasapushpa.

2. On the basis of the process i.e., whether cooked with or without Agni.

a) Saagni Murchchhana (With Agni)- The method in which Parada (mercury) mixed with Gandhaka (sulphur) or other drugs is cooked with fire e.g., Rasa Sindura, Rasapushpa, etc.

b) Niraagni Murchchhana (Without Agni) – The method in which Parada (mercury) is mixed with Gandhaka

(sulphur) or other drugs and mixed and triturated in kharala without using Agni e.g., Kajjali, Mugdharasa, etc.

Based on the above factors these can be grouped as follow

- Saagni Sagandha Murchchhana - The process in which Parada (mercury) is mixed with Gandhaka (sulphur) and medicine is prepared using Agni i.e., using the Kupipakva method. ex. Rasa Sindura, Makardhwaja etc. It can be further divided into two types i.e., Antardhuma and Bhirduma.

- Niraagni Sagandha Murchchhana- The process in which medicine is prepared by mixing Gandhaka (sulphur) with Parada (mercury) without using Agni. Example - Kajjali, in which only trituration is done properly till good quality Kajjali is made.

- Saagni Nirgandha Murchchhana - The process in which Parada (mercury) is mixed with rock salt or other drugs other than Gandhaka (sulphur) and medicine is prepared using Agni. Example Rasapushpa, Rasakarpura.

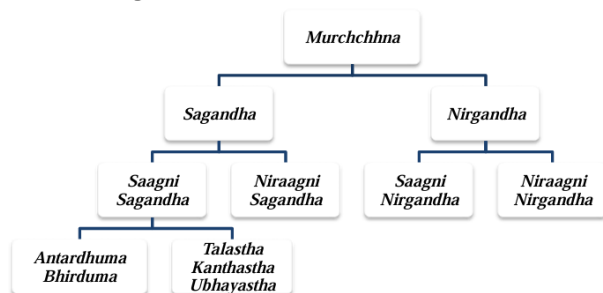
- Niraagni Nirgandha Murchchhana - The process in which medicine is made by adding rock salt or other drugs other than Gandhaka (sulphur) along with Parada (mercury) and without using Agni. Example- Mugdha Rasa.

3. On the basis of manufacturing method - Presence or absence of Dhuma (fumes) during their preparation a) Antardhuma Murchchhana – In this process Kajjali is made after triturating Parada (mercury) with Gandhaka (sulphur) and is kept inside a kupi (glass bottle). Then the mouth of the kupi is closed by applying cork before exposing it to heat (Agni), so that vapours formed from Gandhaka will not be allowed to escape and remain inside the bottle only. As Dhuma (vapours) remains inside (Antar) Kupi only, that's why it is known as Antardhuma Sagandha Murchchhana. e.g., Rasa Sindura. This method requires good skills and should be done with all safety precautions as in this Parada (mercury) is made thermostable and it is collected on the neck of Kupi along with fumes of Sulphur and can break the kupi (glass bottle) due to blockage of Gandhaka fumes.

b) Bahirdhuma Murchchhana - In this process Kajjali made after mixing Parada (mercury) and Gandhaka (sulphur) is kept inside a kupi (glass bottle). Then the mouth of the kupi is closed by applying cork after the burning of Gandhaka (sulphur) so that vapours formed from Gandhaka will be allowed to escape and don't remain inside the bottle. As Dhuma means vapours come outside (Bahir) Kupi so-called Bahirdhuma Sagandha Murchchhana. e.g., Hinguliya Manikya Rasa, Silasindura etc.

c) Nirdhuma Murchchhana – In this process, Parada (mercury) is mixed with Gandhaka (sulphur) or other drugs and triturated in kharala without using Agni e.g., Kajjali, Mugdharasa, etc. 4. On the basis of place/location of finished products^{3,5} - Medicine prepared from Murchchhana can be further divided into three types on the basis of its location in kupi or Vessels in which they are prepared i.e., Talastha Murchchhana,

Kanthastha Murchchhana, and Ubhayastha Murchchhana.



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b) Niraagni Murchchhana (Without Agni) – The method in which Parada (mercury) is mixed with Gandhaka (sulphur) or other drugs and mixed and triturated in kharala without using Agni e.g., Kajjali, Mugdharasa, etc.

Importance of Murchchhana

1. Rasa Sindura

It is identical to the red sulphide of mercury and has the same composition as that of the mineral cinnabar i.e., HgS. During trituration and when heated to about 500C, the black mass of mercuric sulphide (metacinnabar) is formed. On heating, it gradually turns red and crystalline and sublimates within the long-necked glass bottle.^[15,16,17] $\text{Hg} + \text{S} = \text{HgS}$ The black sulphide becomes red on sublimation; the unstable black form is converted into a stable red form on heating. It can be used in various diseases like fever, diarrhoea, gonorrhoea, tuberculosis, ulcers, jaundice, obesity, and leprosy, etc.^[18]

2. Rasakarpura

Mercury when boiled with one and a half times its weight of concentrated sulphuric acid, mercuric sulphate (HgSO₄) is formed. $\text{Hg} + 2\text{H}_2\text{SO}_4 = \text{HgSO}_4 + 2\text{H}_2\text{O} + \text{SO}_2$ On heating the dry mixture of equal weights of

mercuric sulphate and common salt, mercuric chloride is prepared. It separates by sublimation on the cooler higher part of the bottle. It forms colourless needle-shaped crystals having melting points of 2770C and boiling points of 3200C.^[16] Rasakarpura, Nirgandha Kalpana of Parada when prepared by the Kupipakva method generally requires Manda Agni (low temperature) as compared to the Tivra Agni (High-temperature upto 600-8000C) in different Sindura Kalpana. It is a greyish-white crystalline structure and therefore the compound thus formed is HgCl₂ or Mercuric chloride.^[19,20] $\text{HgSO}_4 + 2\text{NaCl} = \text{Na}_2\text{SO}_4 + \text{HgCl}_2$ It is commonly used in Raktaj and Twachasthita Roga like kushta.

Rasapushpa

During the trituration of mercury and ferrous sulphate, mercuric sulphate is formed, and some part of mercury remains free. The intimate mixture of converted mercuric sulphate, mercury, and rock salt is when heated mercurous chloride is formed. It sublimes to the cooler upper part of the bottle and therefore the crust of the sublimate is collected. It sublimes at 3800C.^[22,23] $\text{Hg}_2\text{SO}_4 + 2\text{NaCl} + \text{Hg} = \text{Na}_2\text{SO}_4 + \text{Hg}_2\text{Cl}_2$ It is often used as a diuretic (Mutral), Pittahara, Varana Doshaharata, and can also be used for Jalodara. On heating the dry mixture of equal weights of mercuric sulphate and common salt, mercuric chloride is prepared. It separates by sublimation on the cooler higher part of the bottle. It forms colourless needle-shaped crystals having melting points of 2770C and boiling points of 3200C.^[16] Rasakarpura, Nirgandha Kalpana of Parada when prepared by the Kupipakva method generally requires Manda Agni (low temperature) as compared to the Tivra Agni (High-temperature upto 600-8000C) in different Sindura Kalpana. It is a greyish-white crystalline structure and therefore the compound thus formed is HgCl₂ or Mercuric chloride. $\text{HgSO}_4 + 2\text{NaCl} = \text{Na}_2\text{SO}_4 + \text{HgCl}_2$ It is commonly used in Raktaj and Twachasthita Roga like kushta. Swarna Vanga is obtained as golden yellow scales of crystalline SnS₂, better known as mosaic gold. By heating, a combination of tin, Sulphur, and ammonium chloride in a glass bottle, stannate, and thiostannate are formed 25. It is used as Rasayana, Premehahara, Balaya, Kaphahara.^[26] $\text{Sn} + 4\text{NH}_4\text{Cl} = (\text{NH}_4)_2\text{SnCl}_4 + \text{H}_2 + 2\text{NH}_3$ $2(\text{NH}_4)_2\text{SnCl}_4 + 2\text{S} = \text{SnS}_2 + (\text{NH}_4)_2\text{SnCl}_6 + 2\text{NH}_4\text{Cl}$ 5. Makaradhwaja – It's identical to the red sulphide of mercury and has an equivalent composition as that of the naturally occurring cinnabar i.e., HgS. It also contains a very minute amount of gold together with mercuric sulphide. It can be used as Vrishya, Vayastambhaka, Bruhana, Ayushya, Medha-kantivardhak, etc.

CONCLUSION AND DISCUSSION

Every science develops when it achieves an understanding of its basic phenomena. Murchchhana is a process by which substances especially Parada (mercury) is converted into a stable form for therapeutic uses, so it is defined as producing of Vyadhi Nashaka Guna in

Parada. So, it's important to study Murchchhana in detail starting from various chemical and physical changes occurring in Parada due to it along with their therapeutic applications.

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