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Review on Abhrasindoora: A Sublimated Mercurial Formulation as a Herbo-Bio-Mineral Metallic Compound for Respiratory Ailments

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Authors' contributions

This review article was written in collaboration with all authors. Author RB designed the study and wrote the study protocol. Author NM drafted the manuscript. Author JA managed the literature searches. Authors AKM, SD and RH made necessary correction along with addition of important points. All authors read and approved the final manuscript.

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Review Article

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ABSTRACT

Abhrasindoora is a unique mercurial formulation as a herbo-bio-mineral metallic compound which is mentioned under *Kupipakwa Rasayana Prakarana* in *Rasendra Sambhava*. There are four formulations are mentioned with the name of *Abhrasindoora*, amongst them one in *Rasendra*

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Shambhava and three in *Rasayogasagara*. In this review article we have focused on the specific method mentioned in *Rasendra Sambhava*, which is a combination of *Dhanyabhraka*, *Shodhita Parada (*Mercury), *Shodhita Gandhaka* (Sulphur) in equal proportion (1:1:1). Its method of preparation initiates with the *Kajjali* formation followed by impregnation of Latex of *Calotropis procera* (QS) and freshly expressed arial root juice of *Ficus bengalensis* (QS) and cooking into mud smeared seven layered glass bottle using sand bath heating system. Specific heating pattern consisting of mild (120^0C-250^0C) moderate (250^0C-450^0C) and intense (450^0C-650^0C) heat should be maintained for preparation of *Abhrasindoora.* Previous pharmaceutical study done by Dr. Jyoti B. (2018) had yielded approximately 28% bright red color *Abhrasindoora*. In *Rasayogasagara, bhasmikarana* process is mentioned for preparation of Abhrasindoora which is not appropriate as per current trend. Hence, *Rasendra Sambhava* method is appropriate to prepare *Abhrasindoora*. This formulation has broad spectrum activity along with suitable adjuvants. The therapeutic indications are Cough, Bronchial Asthma, Fever etc. This herbo-bio-mineral metallic compound is quick acting, low dose, highly stable, good palatability and helps to treats chronic ailments.

Keywords: Abhrasindoora; Rasendra Sambhava; Herbo-bio-mineral metallic compound.

1. INTRODUCTION

Ayurveda orates that each substance found on the earth has medicinal properties including metals, minerals as well as toxic plants [1]. The synthesis of medicine could be done from metal, mineral, animal, and poisonous plants, by conducting various pharmaceutical processes like *Shodhana, Marana, Jarana, Amritikarana* etc which comes under *Rasashastra* as a *Ayurvedic* Pharmacal processing techniques [2]. Mercury (*Parada*) is considered as a highly potent and superior drug amongst all *Rasadravya* [3]. Mercury is commonly combined with various *Rasadravya* for imbibing the specific disease curing capacity, technically termed as *Murcchana* (Mercurial formulations) [4]. *Kupipakwa Rasayana* is a *Murchita Parada/Jarana*, which is more potent form of rasaushadhies as compare to *Khalvi Rasayana* and *Parapati kalpa*. The pharmaceutical process of *Kupipakwa Rasayana* is a unique method, where specially designed glass bottle, *valuka yantra* are used. Previously *Sindoora kalpas* were prepared by using different types of containers. With developing world, ancient methods changed into newer one which follows the standard manufacturing process with great practical exposure of *Rasacharyas*. First method linked with the preparation of *Parada Bhasma* by *Kupipakwa Rasayana* is mentioned in *Rasa Hridaya Tantra*, where it is prepared in *Loha samputa* and *Valuka yantra* [5]. Red color mercurial compound as an *Udayabhaskara Rasa* in the context of *Rasabhasma* and *Rasakarpoora* as *Ghanarasa* are mentioned in *Rasaprakash Sudhakara*. [6]. *Rasavagbhata* have mentioned eight types of *Parada Bahsma* and it has unspecified colours of final compound [7]. *Ayurved Prakash* have mentioned *Sinduranama rasa* instead of the word *Rasa Sindoora [8]. Rasendra Chintamani* has emphasized on *Gandhaka Jarana* and its importance, where it is prepared by two methods viz. *Antardhuma* and *Bahirdhuma.* The term *Rasasindoora* is mentioned for the first time in this text [9]. In *Rasatarangini,* pharmaceutical processing of *Kupipakwa Rasayana* is given in systematic manner. It mainly emphasized on therapeutic uses along with the safety profile of *Parada Murcchana*, where it is prepared with *Gandhaka* or without *Gandhaka*. It also mentions the duration and intensity of heat to be applied for that process [10]. They have mentioned the therapeutic properties of *Sindoora kalpa* with specific dose, specific *anupana/sahapana* (Adjuvant) which are useful to cure particular disease. *Abhrasindoora* is a herbo-mineral compound. Its method of preparation is common as that of *Kupipakwa Rasayana*. Purified mercury and sulphur combines with *dhanyabhraka*, so it has special property to treat respiratory ailments as comparative to *Rasasindoora*. Different methods of preparation and combined ingredients has mentioned to prepare *Abhrasindoora*. Amongst them, *Rasendra Sambhava* have given proper method of preparation of *Abhrasindoora* [11]. This method of preparation should be followed as a standard operative procedure. *Rasayogasagara,* depicted the three combinations in the name of *Abhrasidndoora*, which can be prepared in many steps [12]. These (Tables no: 2, 3 and 4) methods of preparations are not same as standard operative procedure of *Sindoora Kalpa*, therefore *Rasendra Sambhava* method is to be preferred, fulfil the therapeutic properties of *Kupipakwa kalpa*.

Classical analytical parameters such as *Rekhapurnata* (Fineness), *Varitara* (Lightness), *Niswadu* (Tasteless), *Nirdhuma* (Smokeless), *Unam* (Very lightness), *Nischandra* (Absence of shiny particles), *Laghu* (Light) and *Sindoora varna* (Bright red colour) are mentioned to check the prepared *Sindoora kalpa* [13]. At present, new instrumental and technical parameters are developed to know the elemental percentage, crystal structure, particle size and chemical compounding of *Sindoora kalpa* [14].

2. METHODOLOGY

An extensive literary search of different classical texts along with commentaries has been conducted to collect classical references of Abhrasindoora. Multiple databases (Science Direct, PubMed, Google Scholar, DHARA online) were also searched for the related published articles. An attempt has been made rationally to explain pharmaceutics of Abhrasindoora.

Tables showing pharmaceutical information of *Abhrasindoora* mentioned in various rasa text.

3. INGREDIENTS FOR THE PREPARATION OF *Abhrasindoora (Grahya lakshanas)*

***Abhraka* (Biotite mica):** The physical properties of *Abhraka* (Fig. 1) are unctuous, heavy weighted, big pieces, black color like collyrium, hard and easily separable layers. The *abhraka* which is found in north east region of India under earth crust deep in *Rajahasta pramana*. (30 *Angulas* = 57 cm) [15]. It has four varieties on the basis of color and viz. White, Red, Yellow and Black. Also have four types depending upon heating response viz. *Naga, Pinaka, Manduka and Vajra*. *Krishna vajrabhraka* with above said properties is said to be perfect *Abhraka* for preparation of *bhasma* [16]. On the basis of mineralogical parameters, Biotite-Ferromagnesium mica is best amongst 5 varieties.

Table 1. Ingredients of *Abhrasindoora*: (Ref. *Rasendra Sambhava*) [11]

S.N.	Name of ingredients	Scientific/English Name	Quantity
1	*Shodhita Parada*	Purified Mercury	1 part
2	*Shodhita Gandhaka*	Purified Sulphur	1 part
3	*Dhanyabhraka*	Powder of purified Mica	1 part
4	*Arkaksheera*	Fresh latex of *Calotropis procera*	Q.S.
5	*Vatashunga swarasa*	Freshly collected arial root juice of *Ficus bengalansis*	Q.S.
Indication: *Kasa, Shwasa, Tridoshaj Vikara*			

Table 2. Ingredients of *Abhrasindoora:* (Ref. *Rasayoga Sagara*) [12]

S.N.	Name of ingredients	Scientific/English Name	Quantity
1	*Dhanyabhraka*	Powder of purified Mica	1 part
2	*Gandhaka Taila*	Purified Sulphur	1 part
3	*Godugdha*	Cow milk	1 part
4	*Vanga bhasma*	Tin calx	Q.S.
5	*Ghrita*	Clarified butter	Q.S.
6	*Eranda Taila*	Castor oil	Q.S.
Indication: *Rajayakshma, Kshaya, Vajikarana.*			

Table 3. Ingredients of *Abhrasindoora*: (Ref. *Rasayoga Sagara*) [12]

S.N.	Name of ingredients	Quantity
1	*Abhraka* (Black mica)	1 part
2	*Stenraj, Suryabhakta, Ashwagandha, Rudanti, Vijaya, Shatavari, Vasa, Bala, Atibala, Shalmali, Kushmanda, Musta, Vidarikanda, Tulasi, Madanphala, Bhallataka, Kantakari, Kapittha, Drakshaphala, Nyagrodha, Arkaksheera, Usheera, Kustha, Raktarohita, Dadima, Kapikascchu, Amalaki, Punarnava, Brahmi, Chitraka, Gorakhmundi, Shiras, Guduchi*	Q.S.
Indication: Sarvarogahara (All types of diseases)		

Table 4. Ingredients of *Abhrasindoora*: (Ref. *Rasayoga Sagara*) [12]

S.N.	Name of ingredients	Scientific/English Name	Quantity
1	*Yavakshara*	Alkalis of *Hordeum vulgare*	1 part
2	*Sarjikshara*	Alkalis of *Sarjika*	1 part
3	*Tankan kshara*	Borax	1 part
4	*Krishna vajrabhraka*	Biotite/black mica	1 part
5	*Tamra*	Copper foil	1 part
6	*Parada*	Mercury (Hg)	1 part
7	*Changeri*	*Oxalis corniculata* L.	Q.S.
Indication: *Sarvarogahara, Vataroga, Shoola, Parswashoola, Parinamshoola, Amlapitta, Pittaroga.*			

***Parada* (Mercury):** Parada (Fig. 2) is a bright, metallic, silvery liquid metal with blue tinge after exposing to the sunlight and looks like sunrise [17]. This physical appearance of mercury is considered as acceptable quality to prepare medicine. *Parada* showing different color than natural color of mercury should be avoided. All these properties are found in mercury extracted from *Hingula* by classical method. It is highly acceptable to prepare medicament from *Hingulottha Parada* as it is free from all blemishes like *naga-vanga-bhujanga-kanchuka dosha* (impure with lead, arsenic like toxic elements) [18].

***Gandhaka* (Sulphur) (Fig. 3):** The yellow colored, shiny, smooth, resembling ripen Indian gooseberry (*Amalaki*) colour are considered as good quality of *Gandhaka* for preparation of *Rasaushadhies* [19]. There are two varieties are explained viz. *Amalasara Gandhaka* and *Khatika gandhaka* which are used internally and externally respectively. Clean, bright, and lustrous like root tuber of curcuma and shiny, soft like butter are acceptable quality of *Amalsara gandhaka* [20].

***Arka ksheera* (Latex of *Calotropis procera*):** The *Ayurvedic* pharmacopoeia of India mentioned *Calotropis procera* as an Arka (Fig. 5). The botanical variety of *Calotropis acia* Buch-ham. was found in addition to the two most well-known varieties taken as *Arka*. With reference to this, the preparation of *Kupipakwa Rasayana*, some latex containing herb used to prepare *Abhraka bhasma* and *Abhrasindoora* [21]. The latex of *Calatropis procera* contains about 88-93% water and it is water soluble. The chemical screening of its latex revealed that this plant contain cardinolides such as calotropin, calotoxin, uscharin, uscharidin, voruscharin [22]. Pharmaceutical processing of *Abhrasindoora* involves treating metallic mercury with sulfur, *Dhanyabhraka* and the latex of the Indian madar (*Calotropis procera*).

***Vatashunga swarasa* (Leaf bud of Ficus benghalensis Linn.):** *Vatashunga* (Fig. 6) is a very large evergreen tree, 23-34 m tall, with huge spreading limbs supported by aerial roots which later form accessory trunks extending to a large area and stout, softly pubescent branchlets [23]. The aerial roots possesses flavonoids, bengalensinone, benganoic acid, lupanylacetate, 3-acetoxy-9 [11] ,12-ursandiene, stigmasterol, 4-hydroxyacetophenone, 4-hydroxybenzoic acid, 4-hydroxymellein and p-coumeric acid12,13. [24. Pharmaceutical processing of *Abhrasindoora* involves treating metallic mercury with sulfur, *Dhanyabhraka* and the juice of the aerial root of Banyan tree (*Ficus benghalensis* Linn.) Juice of arial roots of *Ficus bengalensis* Linn serve as an acidic medium which helps in the formation of Mercury sulphide.

Pharmaceutical process: To prepare *Kupipakwa Rasayana*, there is a particular method of preparation in sequential manner. Before preparing *Kupipakwa Rasayana* three steps must be followed viz. pre-preparation (*Purvakarma*), main preparation (*Pradhana karma*) and post preparation (*Paschata karma*).

Figures: Showing raw materials and instruments to be taken for preparation of *Abbhrasindoora.*

a) Pre-preparation (*Purva karma*)

i) Instruments: *Khalva yantra* (Mortar & pestle) **(Fig. 7)**, elongated amber colored 7 times mud smeared cloth wrapped bottle, Sand bath (*Valuka yantra*), Hearth, Iron rod, Hot iron rod, Copper coin, Corking material, Cotton cloth.

***ii)* Purification of ingredients:** *Abhrasindoora* contains inorganic and some toxic metals, minerals that must be purified before preparing *Kupipakwa Rasayana*.

Fig. 1. Raw *Abhraka*

Fig. 2. Raw *Parada*

Fig. 3. Raw *Gandhaka*

Fig. 4. *Arka* (Calotropis procera)

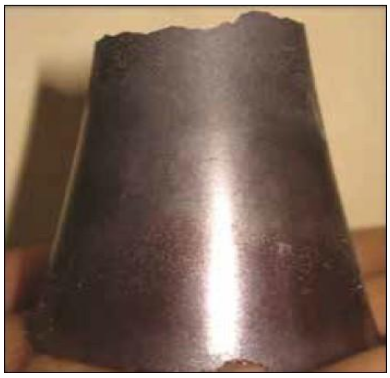

Fig. 5. *Abhrasindoora*

Fig. 6. *Vatashunga* (Ficus benghalensis)

Fig. 7. *Khalva Yantra*

Fig. 8. *Valuka Yantra*

Fig. 9. *Kachakupi*

a) ***Abhraka* (Biotite mica) *Shodhana*:** *Nirvapa* (Heating of metal/mineral till red hot and quenching in specified liquid *shodhana* media) method to be adopted for *shodhana* of *Abhraka*. Various purification media such as *Triphala kwatha, Kanji, Gomutra, Godugdha* are used. This process is generally recommended for 7 times by using anyone *shodhana* media but *godugdha* is highly recommended [25].

b) ***Parada* (Mercury) *Shodhana*:** There are mainly two methods mentioned to purify *Parada* viz. *Samanya shodhana* and *Vishesha shodhana*. Commonly, *Mardana* (Trituration) process is adopted along with group of various herbs followed by washing with warm water or sour fermented liquid. For *vishesha shodhana* (Special purification method), *Mardana*, *Swedana* (Boiling), *Sthapana* (Soaking) and *ashtasamskara* processes should be adopted. *Samanya shodhana* process mentioned in *Rasatarangini* is commonly done by trituration of

Parada with lime stone powder, *Rasona kalka* and *Saindhava lavana* followed by washing process in two steps [26].

c) ***Gandhaka Shodhana*:** *Dhalana* (Molten state of Metal/Mineral pour into liquid *shodhana* media) process is commonly adopted to purify *Gandhaka*. Molten state of *gandhaka* in *ghrita* smeared *Darvika yantra* poured into *godugdha* containing vessel through cotton cloth tied over vessel [27]. The *dhalita gandhaka* collected back and washed with warm water to remove viscous ghee. After drying, it is pounded to fine powder. The *dhalana* process should be repeated for seven times to get *shodhita gandhaka* [28].

iii) **Preparation of *Dhanyabhraka*:** *Dhanyabharaka* is process of preparation of purified mica into uniform particle size and fine powder. The *shodhita Abhraka* and husk rice form a *pottali* in jute bag and soaking into *kanji* (Sour fermented liquid) for three days. Then rubbing process to be carried out and fine particle of mica should be collected after proper washing in lukewarm water. The fine particles of mica obtained through above said process is known as *Dhanyabhraka [29].*

iv) **Method of *Kajjali* preparation:** *Shodhita* mercury and Sulphur are to be taken in *khalva yantra* and triturated to obtained collyrium like consistency with jet black color. After that *Dhanyabhraka* should be added and trituration process to be done till appearance of the test of perfectness [30].

v) ***Bhavana* Process of *Abhrasindoora Kajjali*:** Levigation process with *Arka ksheera* and *Vatashunga swarasa* should be continued on the prepared *Abhrasindoora kajjali* sequentially [31].

vi) **Preparation of *Kachakupi* (Fig. 9):** Amber colored elongated glass bottle, narrowing at the neck is generally used to prepare *kupipkwa rasayana*. It is prepared by wrapping seven mud smeared cloth layer followed by drying, which is resistant to high temperature and helps to collect final product at the neck or bottom of *kachakupi* [32].

vii) **Arrangement of *Valuka Yantra*:** *Valuka yantra* **(Fig. 8)** is an instrument where sand is filled in a container. The *kachakupi* should be occupied properly in that container, which is placed over to hearth for heating process [33].

viii) **Vertical electric muffle furnace:** It is an electrical muffle furnace, where controlled temperature can be given from mild to intense heat. It is more convenient than *valuka yantra* but *Rasacharya* advised to use *valuka yantra*. So, it is a research topic to prove the efficacy amongst two *yantra* [34].

ix) **Corking material (*Mukha mudrana*):** *Sudha churna*, *Jaggary*, and soil are advised for preparing crocking to close *Kachakupi* in *Atardhooma* and *Bahirdhooma vidhi* [35].

x) **Iron rod (*Sheeta shalaka & Tapta Shalaka*):** There is need of iron rod to clear the neck of *kachakupi* to prevent the blockage of mouth with the help of red hot iron rod. The state of *kajjjali* in *kachakupi* while preparing *kupipakwa rasayana* should be checked with the help of *sheeta shalaka* inserted till bottom of the *kachakupi* [36].

xi) **Copper coin test:** The red color metal coin is used to check whether the sublimation of mercury is started or not. It is observed by keeping copper coin over the mouth of *kachakupi,* where one can observe the adherence of mercury over the coin when it sublimates [36].

b) Main preparation (*Pradhana Karma*)

i) **Heating pattern:** The controlled heating process in *kupipakwa rasayana* is important in *Mridu* (Mild 150^0C - 250^0C), *Madhyama* (250^0C-450^0C) and *Teevra agni* (Intense- 450^0C and above). Gradual increase in pattern of heat and duration of cooking is depends on symptoms appearing while preparation [37].

ii) **Use of *sheeta shalaka* and *Tapta shalaka*:** *Sheeta shalaka* is used to know the consistency of *kajjali* while cooking in *kachakupi* and *tapta shalaka* is needed to insert in *kachakupi* where blockage is seen due to the deposition of sulphur [38].

iii) **Corking of *kachakupi* (*Mukha mudrana*):** Kupi mudrana is to be done when complete disappearance of flame

fumes and red bottom of kachakupi is seen [39].

iv) ***Swangasheeta*** **(Shelf cooling):** After corking and cooking, one should wait till cooling of *kachakupi* upto room temperature. After that, remove the kupi and product should be collected [39].

c) Post preparation

i) **Collection of finished product:** The final product which is obtained in *kachakupi* is removed from *valuka yantra* (Sand bath) and after self-cooling product should be collected from neck of kachakupi. For collection of *sindoora kalpa*, it should be braked by igniting kerosene-soaked thread wrapped in upper middle part of glass bottle, and allowed to burn it. After complete burning of thread, glass bottle is horizontally rolled in wet cloth to facilitate its breaking due to change in temperature [40].

ii) **Storage:** Crystals of *Sindoora* should be pounded and triturated in *khalava yantra* to obtain superfine powder (More than 120-200 mesh size) in bright red color, which is called as *sindoora* [41].

3.1 Analytical test of *Sindoora Kalpa*:

a) Classical analytical parameters

Various organoleptic and physicochemical tests such as color, odor, consistency, and appearance etc are to be done to test the perfectness of *kupipakwa rasayana*. The final product should be smooth, glazy, crystalline (Finished product) amorphous and bright red color (After trituration) [42]

Instrumental parameters: Various analytical tests are developed and should be done by using several instruments, where particle size by scanning electron microscope/energy dispersive x-ray sprectroscopy, elemental percentage by WD-XRF, concentration of ingredients by Inductively coupled plasma atomic emission sprectoscopy and structure with the help of XRD etc can be identified [42].

4. DISCUSSION

Abhrasindoora is a Herbo-Bio-Mineral metallic compound which is prepared by using various methods [11]. On the name of *Abhrasindoora*, there are four pharmaceutical processes are mentioned in *Rasashastra*. Amongst them, one method is explained in *Rasendra Sambhava* and three methods in *Rasayogasagara*. Methods of preparation and the ingredients mentioned in each method are not uniform to prepare *Abhrasindoora*. Use of *Kachakupi* is must in preparation of *Sindoora kalpa* and obtained product can be collected either from neck or bottom of the *Kachakupi*. In *Rasendra Sambhava*, *Abhrasindoora* is prepared in proper sequence from bio-purification of Mercury, Sulphur and Black mica followed by preparation of jet-black colored (*Kajjali*) powder, impregnation (Bhavana) process and cooking process in *Kachakupi*. *Rasayoga Sagara* mentioned that incineration (Marana) process for preparation of *Abhrasindoora* and it is indicated in *Rajayakshma* (Tuberculosis), *Vajikarana* (Aphrodisiac) etc. There was not followed preparation method of *Sindoora kalpa*; therefore, these methods cannot use to standardize the manufacturing process of *Abhrasindoora*. (12)

In previous pharmaceutical study of Abhrasindoora shows that, *Hingulotha parada*, *Sodhita gandhaka* and *Shodhita Abhraka* which is taken in *dhanyabhraka* form for preparation of *Abhrasindoora kajjali*. *Bhavana* was given with latex of Calotropis procera and Arial root juice of Ficus bengalensis. It was prepared in *kachakupi*, the heating pattern ranging from mild (120^0C-250^0C), moderate (250^0C-450^0C), and intense (450^0C-650^0C). The total yield of *Abhrasindoora* was 28 % obtained. The particle size of *Abhrasindoora* was 14.87 nm which will be facilitates the absorption in GIT. Presence of Ce, OO, Si, S, Al and HgM by SEM EDX test. FTIR confirms the presence of organic compound form, *shodhana* media and *bhavana* media was used. In XRD analytical test hexagonal crystal system was observed. XRF-ED test shows that presence of S, Br, Hg and trace elements like K, Ca, Ti, Mn, and Fe in ABS [37].

Purification of metal and minerals using organic *shodhana* media is primary and important samskara to remove the physical and chemical impurities. It makes *Rasadravya* brittle and in certain extent help to convert it into small particles. *Shodhana* process helps to make it in organo mineral-Metallic form. *Dhanyabharakikarana* helps to provide very fine particles of *shodhita Abhraka* which can be directly used to prepare *Abhrasindoora kajjali*. Preparation of *kajjali* is important intermediate stage of *Abhrasindoora* where *shodhita* material gets converted into very fine powder which will be devoid from any lustrous free particles and

obtained in jet black color. Very smooth and black colored powder of *Abhrasindoora* impregnated with organic latex of *Arka* and *Vatankura* juice. The presence of organic matter on the surface of the drug suggest that these organic matter as the coating material on the surface of metallic compound present in the drug and metal compound acts a carrier of the organic matter derived from herbs used while preparation [43]. Then black sulphide of mercury-Abhraka is converted into sublimated product with the help of very high temperature in particular duration it sublimated at neck of kachakupi and forms into new compound which will be red suphide of mercury -with trace elements of mica [38].

Analysis of *Abhrasindopora* will be done by taking reference of *Rasasindoora*.
Following analytical test will be carried out to evaluate its purity, quality and strength.

***Nischandra*:** The final formulation should be lusterless.
Rekhapurnata: When fine powder of *sindoora* rub between thumb and index finger it should enter into the furrows of the finger, and should not easily removed from the cleavage of the lines.
Varitara: When small amount of *Abhrasindoora* placed over the stable water in a beaker, it should float over the surface of the water [44].

Following Analytical tests should be done to assess quality of finished product:

1) Different physicochemical parameters such as pH, Ash Value, Acid Insoluble Ash, Water Soluble Ash, Loss on Drying (API 2) etc. as per standard guidelines [44].
2) Percentage of various ingredients like total mercury, free Mercury, total Sulphur, free Sulphur [45].
3) Different standard method should be adopted for analytical study such as X-ray diffraction (Cullity, 1978), scanning electron microscope with EDAX (Goldstein et al., 2003) zeta potential (Anonymous, 2008) [46].

This compound is potent form of combination of *Abhraka*, Parada and *Gandhaka* which is indicated in respiratory system diseases. *Kajjali* and *Abhraka bhasma* is act on respiratory system ailments mentioned in text. In this combination it provides quick action with synergistic effect of *Abhraka bhasma*, useful in acute and chronic ailments of body along with various adjuvants. The following significance are depicted over various dosage forms of mercury.

Significance of *Kupipakwa Rasayana*:

1) Therapeutic dose is small.
2) It has quick action.
3) Potency of these drugs remains for longer period.
4) Broad spectrum therapeutic action along with suitable *anupana* (Adjuvants).
5) Palatable and non-nauseant.
6) Stronger chemical bond (*Kajjali*<*Parpati* <*Kupipakva Rasayana*<*Pottali*).
7) Increase potency of combined drugs.
8) Easy administration.

5. CONCLUSION

Abhrasindoora is a *sagandha murchita kupipakva rasayana* of mercurial preparation. Method of preparation explained in *Rasendra sambhava* is more appropriate, so it can be followed to prepare Kupipakwa rasayana. The temperature pattern followed by *Rasa tarangini* is suitable pattern of *kramagni paka*. The final product is obtained at neck of *kachakupi* with appreciating colour of *Abhrasindoora*. *Abhraka* as an ingredient of *Abhrasindura*, a specially acts on respiratory system and act synergistically, where *Rasasindoora* act on respiratory system is proved. While preparation of *Abhrasindoora*, there is no need to prepare *Abhraka Bhasma* separately. Hence, it is beneficial pharmaceutically as well as therapeutically. *Dhanyabharaka* sublimation at neck of *kachakupi* is a topic for further pharmaceutical research.

CONSENT

It is not applicable.

ETHICAL APPROVAL

As per international standard or university standard written ethical approval has been collected and preserved by the author(s).

NOTE:

The study highlights the efficacy of Ayurveda which is an ancient tradition, used in some parts of India. This ancient concept should be carefully evaluated in the light of modern medical science and can be utilized partially if found suitable.

DISCLAIMER

The products used for this research are commonly and predominantly use products in our area of research and country. There is absolutely no conflict of interest between the authors and producers of the products because we do not intend to use these products as an avenue for any litigation but for the advancement of knowledge. Also, the research was not funded by the producing company rather it was funded by personal efforts of the authors.

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COMPETING INTERESTS

Authors have declared that no competing interests exist.

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