



## ***Rasapushpa*: A Comprehensive Review of Ayurvedic Mercurial Preparation**

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### **ABSTRACT:**

**Background:** *Rasapushpa* is a type of *Kupipakwa Rasayana*, a key mercurial preparation in *Rasashastra*, which is an important branch of Ayurveda focusing on alchemical processes using mercury (*Rasa*). *Kupipakwa Rasayana* is known for its rapid action and minimal dosage, prepared by applying a graded heating pattern in a glass bottle. *Rasapushpa* specifically falls under the *Nirgandha Murchchhana* category and is valued for its quick therapeutic effects.

**Material and Methods:** This review examines *Rasapushpa*, a *Nirgandha* type of *Kupipakwa Rasayana*, chemically identified as  $Hg_2Cl_2$  (Mercurous chloride). It was studied by reviewing 32 Ayurvedic texts, with the earliest reference found in *Rasatarangini*. The review explores the preparation methods, pharmacological properties, clinical uses and dosage guidelines of *Rasapushpa*.

**Results:** *Rasapushpa* is known for its anti-inflammatory properties, ability to remove excess water from the body, promote wound healing and combat parasitic infections. It demonstrates significant therapeutic potential with minimal dosage due to its quick action. **Conclusion:** Despite limited documentation, *Rasapushpa* holds a vital place in Ayurvedic treatment, combining ancient knowledge with modern applications. This review aims to shed light on its historical evolution, preparation techniques and clinical relevance, providing a better understanding of its contemporary significance in Ayurvedic medicine.

**Keyword:** *Kupipakwa Rasayana*, Mercurial preparation,  $Hg_2Cl_2$ , Mercurous chloride, calomel

### **INTRODUCTION**

*Rasashastra*, a specialized branch of Ayurveda, integrates alchemical processes with traditional healing practices, particularly through the use of mercury ("*Rasa*") in medicinal formulations. Mercurial preparations in *Rasashastra* are primarily categorized into four types: *Kharaliya Kalpana*, *Kupipakwa Rasayana*, *Parpati Kalpana* and *Pottali Kalpana*, with *Kupipakwa Rasayana* standing out due to its unique preparation method involving the heating of substances in a sealed container, resulting in potent medicines that act quickly and require minimal doses.<sup>1</sup> *Kupipakwa Rasayana* is divided into two forms: *Sagandha Murchchhana* and *Nirgandha Murchchhana*. The *Nirgandha* variety gained recognition in Ayurvedic texts around the 13th century, with significant examples such as *Rasakarpura*, *Rasapushpa* and *Mugdharasa*. *Rasapushpa*, a *Nirgandha*, *Saagni* and *Kanthastha* form of *Kupipakwa Rasayana*, is a sublimated mercurial preparation made from Mercurous chloride ( $Hg_2Cl_2$ ). The name "*Rasapushpa*," derived from "*Rasa*" (mercury) and "*Pushpa*" (flower), symbolizes its distinctive nature and origin.<sup>2</sup> First mentioned in

Rasatarangini, *Rasapushpa* became documented in Ayurvedic literature during the medieval period, a time when alchemy was at its peak, signaling the blending of alchemical advancements with traditional medicinal knowledge to create safe and effective mineral-based treatments.<sup>3</sup> This review aims to explore the historical evolution, preparation techniques, pharmacological properties, clinical applications of *Rasapushpa* and its relevance in modern Ayurvedic practice, providing a comprehensive understanding of its role in both traditional and contemporary healthcare.

### Historical Evolution

The historical evolution of *Rasapushpa* within Ayurvedic literature provides insights into its development and integration into traditional pharmacology. Earlier Ayurvedic texts such as Charaka Samhita and Sushruta Samhita primarily focus on herbal medicines and surgical techniques. Prior to Rasatarangini, there are no explicit references to *Rasapushpa* in earlier Vedic, Samhita, Samgraha or Nighantu texts, indicating its emergence as a specialized *Rasayana* formulation relatively late in Ayurvedic history.

Acharya Sadananda Sharma first described it in his text Rasatarangini (20<sup>th</sup> Century).<sup>4</sup> This text elaborates on the preparation methods, therapeutic properties and clinical applications of *Rasapushpa* marking a significant milestone in its documentation. Then, Rasamitra mentioned the preparation method, properties and indications of *Rasapushpa*.<sup>5</sup> Lastly in Rasendra Sambhava, no method of preparation has been mentioned but a description regarding types, properties and indications of *Rasapushpa* has been found.<sup>6</sup> The development of *Rasapushpa* reflects broader advancements in alchemical sciences and the systematic exploration of mineral-based medicines in medieval India. Alchemists and Ayurvedic physicians sought to refine and standardize preparation techniques to enhance therapeutic efficacy while ensuring safety, laying the foundation.

### Synonyms<sup>7</sup>

Synonyms of *Rasapushpa* are only mentioned in Rasatarangini as *Rasasuma*, *Rasakusuma* and *Sudhanidhirasa*.

### Types<sup>8</sup>

According to Rasendra Sambhava text, there are two types of *Rasapushpa* which are, 1. *Khanija* – best in quality and 2. *Krutrima*- having less quality.

### Methods of Preparation<sup>9</sup>

The preparation of *Rasapushpa* involves intricate processes aimed at enhancing its medicinal properties, as outlined in *Rasatarangini* in which total 3 methods have been described. These methods emphasize precise measurements, meticulous trituration, controlled heating and sublimation techniques to transform raw materials into a potent therapeutic agent. In the first method, equal quantities (5 *Tola* each) of *Shuddha Parada* (purified mercury), *Shuddha Kasisa* (purified green vitriol), and *Saindhava* (rock salt) are triturated in a *Khalwa Yantra* until it turns into lustreless fine powder (*Kajjali*) is obtained. This powder is then placed into *Handi* and covered with another *Handi* which has wide mouth and a hole at the bottom. The joint is sealed with cloth and the mixture is dried under the sun. After drying, *Handi* is heated gently over low heat, allowing vapours to emerge from the hole. Once these vapours cease, the hole is sealed with a chalk-earthen stopper, and the heating continues for six hours (two *Yama*). Upon cooling, the *Rasapushpa*, which resembles the moon, is carefully collected from the bottom of the upper *Handi*. In the second method, the ingredients are triturated into a fine lustreless powder and placed into a glass bottle (*Kachakupi*). The bottle is then heated for two *Yama* in a *Valukayantra* (an apparatus for controlled heating). As the heating proceeds and watery vapours are expelled, the bottle's neck is corked to collect the *Rasapushpa*, which forms a flower-like structure at the neck of the bottle. The third method involves the ingredients *Shuddha Parada*, *Pushpa Kasisa*, *Saindhava* and *Sphatika*, which are processed by first evaporating the watery portion of *Pushpa Kasisa* and

*Sphatika*. These ingredients are triturated into a fine powder (*Kajjali*) and gently heated in a *Damruyantra* for two *Yama*. After the process is complete, the white, shiny *Rasapushpa* is collected from the upper pot of the *Damruyantra*. These methods demonstrate the precision and expertise required in preparation, ensuring the preservation of its therapeutic properties while minimizing potential risks associated with mercury-based formulations.

### Pharmacological Properties

*Rasapushpa* exhibits a diverse range of pharmacological properties attributed to its constituent ingredients and the alchemical processes employed during its preparation such as it has cooling and anti-inflammatory effects, pacifying *Pitta Dosha* (*Pittahara*). It exhibits diuretic properties and promotes the elimination of toxins through urine (*Mutrala*). *Rasapushpa* also supports wound healing by cleansing and disinfecting wounds (*Vranadoshahara*) and acts as a potent purgative, facilitating detoxification and cleansing of the gastrointestinal tract (*Param Virechanakara*). It enhances overall health and vitality, promotes longevity and robustness (*Swasthikaranamatyanta*), counteracts the harmful effects of poisons and negative influences (*Bhutavishapaha*). Additionally, it helps reduce excess fluid in the body (*Jaliyansha-vishoshanam*). These properties are central to its therapeutic efficacy in addressing various health conditions as outlined in classical Ayurvedic texts:

**Table No. 1: Properties of *Rasapushpa***

Sr. No.	Properties	R.T. <sup>10</sup>	R.M. <sup>11</sup>	R.Sam. <sup>12</sup>
1.	<i>Pittahara</i>	√	-	√
2.	<i>Mutrala</i>	√	√	√
3.	<i>Vranadoshahara</i>	√	-	√
4.	<i>Param Virechanakaram</i>	√	√	√
5.	<i>Swasthikaranamatyantam</i>	√	-	√
6.	<i>Bhutavishapaham</i>	√	-	√
7.	<i>Jaliyansha-vishoshanam</i>	√	-	√
8.	<i>Malapittapasarakam</i>	√	-	√

### Indications

The clinical indications for *Rasapushpa* are delineated based on its pharmacological profile and therapeutic benefits as documented in classical Ayurvedic texts. Rasatarangini, Rasamitra and Rasendra Sambhava provide comprehensive insights into its application for various health conditions.

**Table No. 2: Indications of *Rasapushpa***

Sr. No.	Indications	R.T. <sup>13</sup>	R.M. <sup>14</sup>	R.Sam. <sup>15</sup>
1.	<i>Krimi</i>	√	√	√
2.	<i>Visuchika</i>	√	-	√
3.	<i>Hikka</i>	√	√	√
4.	<i>Phiranga</i>	√	√	√
5.	<i>Jalodara</i>	√	√	√

1. *Krimi*: Effective against parasitic infestations, reflecting its anthelmintic properties that expel intestinal worms.

2. *Visuchika*: Recommended for the management of gastroenteritis, characterized by symptoms such as diarrhoea, abdominal cramps and nausea.
3. *Hikka*: Utilized in the treatment of hiccups, indicating its probable antispasmodic and respiratory relaxant effects.
4. *Phiranga*: Prescribed for conditions like Syphilis, *Rasapushpa* possesses wound healing and anti-microbial properties.
5. *Jalodara*: Beneficial in ascites, due to its *Jaliyansha-vishoshana* and *Virechana* properties.

### Dose

Dose recommendations for *Rasapushpa* are based on specific indications and patient characteristics, aiming to optimize therapeutic efficacy while minimizing potential adverse effects:

#### 1. According to Rasatarangini<sup>16</sup>

1. General Indication: Recommended dosage ranges from ½ to 2½ *Gunja* (approximately 62.5-312.5 mg), administered orally with an appropriate *Anupana*.
2. *Hikka*: A lower dosage of 1/8<sup>th</sup> *Gunja* (approximately 15.62 mg), highlighting its potent effects in managing respiratory spasms.
3. *Phiranga*: Moderate dosage of 1/4<sup>th</sup> *Gunja* (approximately 31.25 mg), tailored for treating infectious disorders and related conditions.
4. *Virechana* in *Shishu* (Pediatric dose): A lower dosage of 1/4<sup>th</sup> *Gunja* (approximately 31.25 mg), ensuring safety and efficacy in paediatrics.

#### According to Rasamitra<sup>17</sup>

- General dose- ½ to 2 *Gunja*

**Rasendra Sambhava** – no dose has been mentioned.

These dosage guidelines exemplify the Ayurvedic principle of '*Yukti*' (appropriate use) in prescribing *Rasapushpa*, considering factors such as age, *Dosha* involvement, severity of the condition and concurrent medications. Individualized dosing strategies underscore the importance of holistic assessment and personalized treatment plans in Ayurvedic clinical practice.

### Formulations (*Yoga*)

*Rasapushpa* serves as a pivotal ingredient in several formulations (*Yoga*) designed to enhance its therapeutic efficacy and application in clinical settings. Only Rasatarangini has mentioned *Yoga* of *Rasapushpa*. These formulations are meticulously crafted to synergize *Rasapushpa*'s pharmacological properties with other compatible herbs and minerals, augmenting its therapeutic scope:

1. *Chandanadi Vatika*<sup>18</sup>: Formulated for the treatment of *Phiranga* (skin diseases), combining *Rasapushpa* with herbs renowned for their dermatological benefits and cooling properties.
2. *Rasapushpa Malhara*<sup>19</sup>: Prescribed for *Phiranga Vrana* (ulcers) and related conditions, utilises wound-healing and antimicrobial effects to promote tissue regeneration.
3. *Rasapushpadya Malhara*<sup>20</sup>: Indicated for *Phiranga Vrana*, *Payu* and *Upasthagata Vicharchika*, addressing diverse health concerns through comprehensive therapeutic interventions.

### Modern correlation

*Rasapushpa* is chemically proven as Hg<sub>2</sub>Cl<sub>2</sub> which is also known as calomel or mercurous chloride.<sup>21</sup> Calomel is a mercurous chloride mineral with the formula Hg<sub>2</sub>Cl<sub>2</sub> (mercury(I) chloride). The name derives from the Greek words *kalos* (beautiful) and *melas* (black) because it turns black on reaction with ammonia. Calomel was marketed as a purgative agent to relieve congestion and constipation; however, physicians at the time had no idea what the medication's mechanism of action was. They learned how calomel worked through

trial and error. It was observed that small doses of calomel acted as a stimulant, often leading to bowel movements, while larger doses caused sedation.

During the 19th century, calomel was used to treat numerous illnesses and diseases like mumps, typhoid fever and others—especially those that impact the gastrointestinal tract, such as constipation, dysentery and vomiting. High doses of calomel would often lead to extreme cramping, vomiting and bloody diarrhoea; however, at the time, this was taken as a sign that the calomel was working to purge the system and rid the disease. Calomel was often administered as a treatment for dysentery; the effects of calomel would often worsen the severe diarrhoea associated with dysentery and acted as a catalyst in speeding up the effects of dehydration.

Eventually, it was determined that calomel was causing more harm than good, as the side effects were often worse than the illness it was being used to treat; because of this, calomel was removed from medical supply shelves.<sup>22</sup>

### Contemporary Relevance and Challenges

In contemporary Ayurvedic practice, *Rasapushpa* fails to garner attention for its therapeutic potential due to the fear of mercurial toxicity as it is *Nirgandha* preparation. Challenges persist, concerning standardization of preparation techniques, quality control measures and regulatory frameworks governing mercury-based medicines. The need for robust scientific validation, pharmacokinetic studies and toxicity assessments remains crucial to mitigate concerns and ensure responsible use in clinical practice.

*Rasapushpa*'s acceptance and integration into global healthcare systems require collaborative efforts among Ayurvedic practitioners, researchers, regulatory authorities and healthcare providers. By fostering interdisciplinary dialogue and evidence-based practices, *Rasapushpa* can emerge as a viable therapeutic option aligned with contemporary healthcare paradigms.

### CONCLUSION

*Rasapushpa* stands as a testament to Ayurveda's enduring legacy of integrating alchemical sciences with traditional medicinal knowledge to promote health and wellness. Its historical evolution, intricate preparation methods, diverse pharmacological properties, clinical indications, dosage guidelines and formulations underscore its significance within Ayurvedic pharmacology.

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