

# Identity of certain species of plants of unknown source from Rasendramangala

## Review Article

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### Abstract

Combination of plant and mineral products were derived in the process of exploring safe and effective remedies which can cure severe and deadly diseases. Some plants are used for processing, purification and calcination of minerals, metals and gems. Mainly the purpose of plants in *Rasa shastra* is to obtain absorbable metallic molecules in the maximum possible minute form. But some plants mentioned in textbook of *Rasa-shastra* are not identified properly, because *Rasa siddhas* like *Nagarjuna* and *Rasa Vagbhata* have used some rare synonyms of plants, to conceal them from the knowledge of unknown and mischievous personalities, to avoid misuse. But at present, it is necessary to identify them properly, to use the plants for exact calcination and purification for the benefit of mankind. In the present study, nearly ten plants out of 47 unidentified plants are selected from *Rasendra Mangala* written by *Acharya Nagarjuna* in the period of 7<sup>th</sup> and 8<sup>th</sup> Century A.D. and a trial has been made to work out on such unidentified plants depending upon their synonyms, utility and combination with other drugs. To quote some, *Kanchuki*, *Chandali*, *Choraka*, *Chandravalli* and *Sarpakshi*.

**Keywords:** *Nagarjuna*, *Rasa-Vagbhata*, *Rasendra Mangala*, Plants of unknown source, *Kanchuki*, *Choraka*.

### Introduction

*Rasa-shastra* is a specialized branch of *Ayurveda* which mainly deals with the pharmaceuticals of unique and potent preparations. Metals and minerals are the integral part of *Ayurvedic* therapeutics along with herbal preparations. Use of metals in medicine is often associated with toxicity, but *Ayurveda* made them into biocompatible form by the use of certain plants for processing, colouring (coating) and certain detoxification processes like *Shodana* (Purification), *Marana* (Incineration), *Bhavana* (Trituration) etc. which removes the toxic effects and calcination of minerals, metals and gems. Mainly the purpose of plants in *Rasa-shastra* is to obtain absorbable metallic molecules in their maximum possible nano form. Recent studies reveal the synthesis of silver nanoparticles using leaf broth of medicinal herb, *Tulasi* (*Ocimum sanctum* Linn).(1) But some plants mentioned in lexicons of *Rasa-shastra* have not been identified properly, because *Rasa siddhas* like *Nagarjuna* and *Rasa-Vagbhata* have used some rare synonyms of plants to conceal them from the knowledge of mischievous personalities to avoid misuse.

*Acharya Nagarjuna* was pioneer and contributed a lot in this field and he is recognized as the Father of *Rasa-shastra*. Among many of his works *Rasaratnakara*, *Rasendra Mangala*, *Kaksha Puta*, *Kubjika Tantra*, *Ascharya Yogamala*, *Loha shastra* etc. are claimed to be contributed by *Acharya Nagarjuna*.

In the present study the famous text book *Rasendra Mangala*, written by *Acharya Nagarjuna* in

the period of 7<sup>th</sup> to 8<sup>th</sup> Century A.D is considered for studying medicinal plants used in *Rasa-shastra*. The original manuscript has eight chapters. The published book of *Rasendra Mangala* with *Gurjari* commentary by Professor *Mishra B.D* and *Mishra D.K* containing first 4 chapters are considered for the present study as the original manuscript was not published. According to Prof. *P.V. Sharma*, the remaining part (last four chapters) of this book is available in Asiatic society library, London.(2) In this treatise, nearly 400 plants are used. Out of them, maximum number of plants are commonly found all around the country. But to our dismay, there are many plants which are of doubtful identity. They are botanically not identified well and the synonyms used are leading us to a state of confusion, which is a real handicap to the workers and students of *Rasa-shastra*.

Keeping this fact in mind, a trial has been made to work out on unidentified plants in the full length, depending upon synonyms, utility and combination to bring them into the streamline which definitely helps the enthusiastic workers in processing metals and minerals.

### Aims and Objectives

- To work out on some unidentified plants of *Rasendra Mangala*.
- To rule out the controversy of the synonyms leading to confusion based on the context of their utility and combination with other drugs in the processing of metals and minerals, depending upon other *Ayurvedic* literature and modern day work on the subject.
- To finally propose the botanical identity of some of the drugs with more probable species.

### Materials and Methods

The study was done on *Acharya Nagarjuna's Rasendra Mangala* which is one of the great works on

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*Rasa-shastra*. Plant drugs which are of unknown identity are leading to a state of uncertainty as these procedures are meant actually to cure the ailing patients using them therapeutically. So, the plant drugs mentioned in *Rasendra Mangala* are enumerated and their identity is established by comparing them with the known literature.

*Samhitas* and their respective Commentaries, *Nighantus* (*Bhavaprakasha Nighantu*, *Dhanvantari Nighantu*, *Raja Nighantu*, *Kaiyadeva Nighantu*) and also books on *Rasa-shastra* (*Rasa-Ratna-Samucchaya*, *Rasa Paddhati*) have been referred for the study of this topic and discussion is based upon its conceptual part to bring out final conclusion. The study has been limited to the available literature at our purview. The unidentified plants list is tabulated and tried to resolve the most probable source for the maximum possible drugs which will be discussed further.

### Observations

This text contains nearly 400 plant drugs along with *rasoushadhas* (mineral drugs), among which 47 plants are of unknown identity. The List of the 47 plants which are unidentified are *Amari*, *Bhulatha*, **Chandali**, **Chandravalli**, **Choraka**, *Damayanti*, *Dinari*, *Dvipadi*, *Ghanaka*, *Ghanira*, *Ghatodbhava*, *Gopalika*, *Gouriphala*, *Gopendra*, *Halottamakhyia*, *Hasthikarni*, *Javichi*, *Kalashi*, **Kanchuki**, *Kanjira bija*, *Kharasika*, *Kiratundi*, *Kitarani*, *Koyala*, *Krutamada*, **Kutheraka**, *Madamudita*, *Mahakali*, *Mahanilika*, *Matruvahaka*, *Meenakshi*, **Meghanada**, *Moksha*, *Mrugadurva*, *Rakshasi*, *Sadaladala*, **Sarpakshi**, *Trayanti*, *Uchhata*, *Urna*, **Vajrakanda**, *Vajri*, *Vandhya kanda*, **Vayasi**, **Vira**, *Vruntavari*.

From the above list of plants with doubtful identity, 10 plant names which are frequently mentioned in the formulations and purification procedures have been considered for this study. Therefore, in this work those synonyms will be discussed one after the other as by available literature, taking help of the commentators of other works on *Rasa-shastra*. Wherever necessary the opinions of ancient commentators like *Dalhana*, *Hemadri*, *Chakrapanidutta* and modern commentators like *Chunekar K.C.*, *Kamat S.D.*, *Bapalal Vaidya*, *Thakur Bahwant Singh* and *Sharma P.V.* are also considered.

Some other *Nighantus* have also given some plant names as given by *Rasendra Mangala* but in different context. Clarification is sought after duly regarding the opinions of the contemporary works.

### Results and Discussion

The 10 drugs which are chosen for evaluation are discussed below:

#### Kanchuki:

In the context of *Parada Murchana*,(3) trituration of juice of *Rajika*, *Kaipaya*, *Kakamaci*, *Mesashrunji*, *Krisna Dattura* and *Aranala* is done with *Kanchuki*, *Garudi*, *Varahika*, etc, to attain *Panchatva* (Death). In *Abhraka Satvapatana*,(4) *Abhraka Dhruiti*(5) and *Loha Dhruiti*(6) also *Kanchuki* plant was mentioned.

*Pandit Narahari* opines that *Yava* – *Hordeum vulgare* Linn. which is one of the principle grains of India as ‘*Kanchuki*’.(7) *Acharya Kulkarni* the author of *Rasa Ratna Samucchaya* quotes *Dhanya* in the process of *Abhraka Satvapatana*.(8)

This (*Kanchuki*) is a synonym applied for any cereal which is not yet husked. That is the reason many commentators from the Northern part of India equated it with *Yava* or Barley i.e. *Hordeum vulgare* Linn. If barley is not available, paddy or intact wheat can be used in its place. As the author *Nagarjuna* resided for most of his life and experimented with minerals and metals only in the southern part of India, it will be ideal in our opinion to consider *Sali dhanya* as *Kanchuki*.

#### Chandali

Flower juice of *Chandali* is used for the trituration of *Parada*, *Swarna* and *Vaikranta bhasmas* in the preparation of *Vaikranta Garbha Rasa* (9) which is indicated in the treatment of *Mutrakricchra*.

In *Raja deepika* commentary of *Raja Nighantu* it quotes *Chandali* as unidentified plant.(10) Though *P.V. Sharma* suggests in favour of some variety of *Surana*, in view of its anti – poisonous and *rasayana* properties, as one of the *Dioscorea* species should also not be ruled out.

As per *Bhavamisra*, a variety of *Varahi kanda* which is known as ‘*Ghrusti*’ in Western part of India is also known as ‘*Charmakara aluka*’. (11) The Sanskrit equivalent of *Chandala* is *charmakara*. The outer layer of the bulbiferous roots of *Dioscorea bulbifera* Linn. look like a freshly taken out animal hive with hair follicles. That is the reason this plant can be better equated with *Dioscorea bulbifera* Linn. only, which contains large number of Phenolic compounds, Steroids and Calcium oxalates.(12) Also *Dioscorea bulbifera* is well indicated in Urinary tract infections (13) and hence must have been used in the preparation of *Vaikranta Garbha Rasa*.

#### Coraka

In the preparation of *Pratapa lankeshwara ras*,(14) *Coraka* along with some other drugs is triturated with buttermilk and this paste is rubbed over afflicted skin to cure all skin disorders is mentioned.

In the context of *Candanadi Varga*(15) of *Raja Nighantu*, *Coraka* is being mentioned as *Pitta hara* and having strong aroma.

The commentators of *Charaka* mention it with synonyms like *Corapuspika*, *Corahuli* (16) etc. This is identified as *Angelica glauca* Edgw. By *Bapalal, Sharma P.V* and *Chunekar K.C* (17) which belongs to Umbelliferae. It is called as ‘*Chora*’ in and around Punjab region which is now called as *Choraka*. (18)

*Charaka* mentions it in *Sanjna sthapanam* (19) and considers the same.

This flowering of *Angelica glauca* is during late midnight, and colour of the flower is glowy, which is the exact period when dacoits / thieves start their functioning. Hence the name *Coraka* is implied to *Angelica glauca* Edgw. based on the nature of its flowering.

Also it can be confirmed *Angelica glauca* as *Coraka* for it being *Pittahara* and indicated in Skin disorders (20) which applies the same for the indication of *Pratapa lankeshwara ras*.

#### Chandravalli

In the preparation of *Rasa bhasma*,(21) *Chandravalli* along with some other drugs are triturated with *Parada* and *Gandhaka* to attain *pisthika*.

This name is quite controversial. *Chandravalli* is the synonym of *Prasarini*(22) (*Parpatadi Varga* of *Raja Nighantu*) and *Madhavi*(23) (*Karaveeradi Varga* of *Raja Nighantu*) as mentioned by *Pandit Narahari*.

It is suggested to use *Madhavi lata* i.e., *Hiptage benghalensis* (L.)Kurz., as *Chandravalli* basing on its property of climbing in half moon shape (*Chandrakara*) as it is a woody climber and support from *Raja Nighantu*, where it is mentioned along with other varieties of flowers.

### Vayasi

In the context of *Deepana samskara* of *Parada*, (24) *Vayasi* and some other drugs have been mentioned.

Two varieties of this drug are recognised. One is North-west Himalayan plant (*Solanum dulcamara* Linn.) and the next is Himalayan extended southwards (*Solanum nigrum* Linn). (25) *Acharya Bhavamisra* considers *Kakamachi* – *Solanum nigrum* Linn. as *Vayasi*. (26)

In the Text *Amarakosa* it is quoted that '*Kakamachi tu vayasi ityamarah*'. (27)

*Thakur Balwantji* also opines that *Kakamachi* is *Solanum nigrum* Linn. (28)

*Kakamaci* is one of the plants belonging to '*Kakarastaka*' which is the group of drugs prohibited from consumption while consuming metallic compounds after processing, (29) even then *Kakamaci* is used frequently in the preparation and processing of metallic compounds during their incineration (*Marana*).

### Meghanada

Juice of *Meghanada* is used along with other plants in the preparation of *Pundarika Kusthahara Rasa*. (30)

Three kinds of *Tandula* recorded by *Nighantus* are *Tanduliyaka*, *Tanduli bija*, *Meghanada* where first variety is self-sown and other two varieties are cultivated. *Kamat S.D* equated *Amaranthus tristis* Willd. as *Meghanada*. *Amaranthus tristis* is also called as *Meghanada* in the regions of Maharashtra.(31) According to *Ambikadutta Sastry* commentator on *Rasa Ratna Samucchaya*, mentioned *Meghanada rasa* under *Jvara Chikitsa* as '*Kantedar caulai*' which is the Hindi name of *Amaranthus spinosus* Linn. (32)

Prof. *K.C. Chuneekar* mentions it under *Shaka Varga* as *Amaranthus spinosus* Linn. (33) He also quotes that *Tanduliyaka* or *Caulai* has so many varieties, according to number of spines and the colour of leaves i.e. green, red or mixed with blue.

Comparing its properties with the formulation of *Pundarika kusthahara rasa*, *Amaranthus* species is quoted to be *Sita Virya* and *Pitta hara*.(34)

When the rainy clouds start thundering, this tuberous grass appears to grow. Hence, it is known by the name of *Meghanada*. Correlating with its nature of occurrence *Amaranthus spinosus* Linn. is considered as *Meghanada* in this context.

### Vajrakanda

While describing the process of *Satvapata* of *Vaikranta*(35) and *Sarvaloha kramana* of *Parada*,(36) *Vajrakanda* is used along with some other plants.

Two species of plants are utilized by the workers for this purpose. Commentators like *Kulkarni* have suggested '*Vanasurana*' which is a wild variety of

*Corm (Kanda)*.(37) But *Dalhana* in his commentary on *Sushruta* equated it with '*Snuhi*'. But in southern part of India '*Vanapalandu*' is used in place of *Vanasurana*. *P.V. Sharma* also suggests *Vajrakanda* as *Vanapalandu* i.e. *Urginia indica* Kunth. belonging to family *Liliaceae*. (38) This plant is known as '*Vajjurkanda*' in *Madhya Pradesh*.

Hence, our suggestion is that basing on the local synonym this plant can be considered as *Urginia* only; apart from the high content of Sulphur salts which are useful for purification of metals. Therefore in this context for processing, bulbs of *Urginia* Species is suggested.

### Sarpakshi

Another plant drug named *Sarpakshi* is included as one among the plants in the preparation of *Jaramrutiyuhara Rasa*(39) and *Pundarika Kusthahara Ras*.(40)

Many of the commentators like *Dalhana*, *Arunadatta* could not clarify the plant and opined conflictingly. Depending upon commentators and traditions prevalent in some parts of India, modern scholars like *Thakur Balwant Singh* have equated this plant with *Ophiorrhiza mungos* Linn. or some *Rauwolfia* species. (41) Morphologically some parts of this plant should resemble snake or snake with projecting eyes and tongue. *Chuneekarji* in his work on *Bhavaprakasha Nighantu* mentions *Sarpakshi* as *Ophiorrhiza mungos* Linn. and quotes as '*Sarpakshiva puspamasyah*'(42) which means its flowers resembles the eyes of snake. But neither of the two above species is fulfilling the said features. Hence there is a need to go on for another plant which is also used in *Rasa-shastra*.

In another context of same work *Arisaema murrayi* is equated with *Nagini kanda*.(43) Similarly it is ideal to consider another plant of same genera whose projecting spathe appears like snake's hood with a scaly appearance and two prominently growing red or white coloured oil glands on both sides looking like eyes. *Arisaema candidissimum* var. *alba* grows in Western Himalayas and is preferred here. It is known for its anti-poisonous actions in local areas.

### Vira

This plant name is mentioned under the process of *Abhraka Satvapata*.(44)

*Dalhana* in his commentary quotes '*Kakoli vira sva namna prasiddah*' under *Kakolyadi gana* of *Susruta*.(45)

*Acharya P.V. Sharma* considers *Roscoea procera* as *Vira*. Later *Ashvagandha* is advised to be substituted instead of *Kakoli* and *Ksira kakoli* due to unavailability of the drugs.(46) But, traditionally in *Andhra Pradesh* (northern parts) stem juice of *Satavari* is used to purify and calcinate metallic compounds like *Abhraka*. *Vira* is a synonym for *Satavari* also. Hence, in our opinion, *Satavari* (*Asparagus racemosus* Willd.) leaves can also be considered, wherever the word *Vira* is used.

### Kutheraka

In the preparation of *Pratapa lankeshwara ras* (47) *Kutheraka* along with 16 other drugs are used for curing various skin disorders.



Acharya P.V. Sharma mentions it as *Vanatulasi* variety (*Ocimum* sp.)(48) *Bhavamisra* considers that *Kutheraka* is the Sanskrit name of *Vana tulasi / Barbari*.(49) But later clarifies by differentiating three types of *Barbari* (*Kutheraka*, *Arjaka* and *Vatapatra*) where *Kutheraka* is *Vana tulasi* variety with black coloured flowers and *Arjaka* is with white flowers.

*Dalhana* in his commentary quotes '*Arjakah barbarikakaro laghu manjarikah sukshma patro nirgandha Svetakutherakah*' clarifying that *Arjaka* is the white variety of *Kutheraka*.(50)

As per the opinion of *Thakur Balwanth Singh* he equated this plant with *Orthosiphon grandiflorus* Boldingh, *Arjaka* is called as '*Ajagura*' in the nearby places of Banaras.(51)

*Kutheraka* is indicated in *Dusta raktavikara* (52) and the same is with *Pratapa lankeshwara rasa* which establishes its similarity in action wise between both.

Finally, due to its presence in many of the ancient texts along with the other Lamiaceae members and action wise similarity with the preparation in which it is used, this plant can be concluded as belonging to *Orthosiphon* species only.

## Conclusion

*Rasendra Mangala* is one among the standard works accepted in the field of *Rasa-shastra*. It is both a work on processing of metals and also their utilization in treatment. Some plants mentioned in this work are not perfectly identified and posing a problem in the field of *Rasa-shastra*. Therefore, a trial work has been taken up, to rule out the existing confusion among some names of unknown origin. Nearly ten plants are discussed in this paper and their identity is proved. Further research work has to be carried out in order to find more unidentified plants of unknown origin.

The Identified plants with their possible botanical source and family is tabulated below

S. No	Name	Possible botanical source	Family
1.	<i>Kanchuki</i>	<i>Hordeum vulgare</i> Linn.	Poaceae
2.	<i>Chandali</i>	<i>Dioscorea bulbifera</i> Linn.	Dioscoreaceae
3.	<i>Coraka</i>	<i>Angelica glauca</i> Edgw.	Apiaceae
4.	<i>Chandravalli</i>	<i>Hiptage benghalensis</i> Kurz.	Malpighiaceae
5.	<i>Vayasi</i>	<i>Solanum nigrum</i> Linn.	Solanaceae
6.	<i>Meghanada</i>	<i>Amaranthus spinosus</i> Linn.	Amaranthaceae
7.	<i>Vajrakanda</i>	<i>Urginia</i> species	Liliaceae
8.	<i>Sarpakshi</i>	<i>Arisaema candidissimus</i> var.	Araceae
9.	<i>Vira</i>	<i>Asparagus racemosus</i> Willd.	Liliaceae
10.	<i>Kutheraka</i>	<i>Orthosiphon</i> species	Lamiaceae

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