Review Article
A critical study of Rasamritam and its applied aspects

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Abstract
Historical studies of Rasa shastra reveal the use of metals and minerals, both for alchemical and therapeutic purposes in ancient past. But, gradually the alchemical use of the subject, declines and the therapeutic use takes over. Rasamritam is the latest doctrine in the field of Rasa shastra which compiles the extract of the older books and adopted some new and contemporary concepts. The practical aspects of this text influence both the academicians as well as physicians in large extent. Keeping the wealthier, timely concept of this text in mind, we are trying to review and analyze it critically for the benefit of researchers and practitioners and hope the idea will be fruitful.

Key words: Amritakarana, Dhatu, Dwigandhaayasa, Marana, Shodhana

Introduction
Rasa Shastra deals with the knowledge of Parada and other matters pertinent to it, along with the manufacturing of medicines from metal/mineral, animal and some poisonous herbal sources. From the period of Nagarjuna (7th AD), both the alchemical and therapeutic use of the Rasa Dravyas were carried out by the Rasa Siddhas and Rasa Vaidyas. Due to the increase of diseases, advancement of science and decreasing of classical knowledge and sufficient practical textual references for alchemical methodologies and techniques, the therapeutic use of Rasa Dravyas dominates over it. The text Rasamritam is full of practical therapeutic use of different Rasa Dravyas and their processing techniques. In Rasamritam the classification of the drugs their descriptions, are presented in a very systematic way, instead of following the traditional method. The division of chapters are very much ideal. Description of indices with practical applicability at the end of the book is the magnitude of this text.

Author’s recognition
Vd. Yadavji Trikamji Acharya was born on 1881 at Porbandar in Gujarat, has contributed to Ayurveda in general and Rasa Shastra in particular by writing and editing many books and manuscripts like Rasamritam. Simultaneously he was a well known physician, academician and administrator. He authored the text Rasamritam, on 1951 which was published by Motilal Banarasi Das in Nimaya Sagar Press, Kolbhat Street, Bombay. After a very fruitful and far-fetched life he met the super soul Banarasi Das in Nirnaya Sagar Press, Kolbhat Street, Bombay.

Vd. Yadavji Trikamji was one of the pioneers of Ayurveda. He was one of the most helping hands to Dr. P. N. Mehta who founded Gujarat Ayurveda University. Acharya Yadavji served Gulabakunwarba Ayurveda Mahavidyalaya as teacher, consultant and principal. He helped Vd. Hari Rapania Sharma for compiling Rasa Yoga Sagara. He also edited and published Madhukoshya Vyasika of Acharya Madhava, and Ayurveda Deepika of Acharya Chakrapani. In the series of Ayurvediya Granthamahal he has edited and republished many books like Ayurveda Prakash, Rasa Prakash Suhdakar, Rasa Kamidhenu, Rasa Sanketa Kalika, etc. As an organizer, administrator, he chaired the Nikhila Ayurveda Mahasamhelana at Haridwar (1925), Gwalior (1932), Delhi (1950) and again in Haridwar (1953), He authored Dravyaguna Vigyana, Ayurvediya Vyadhi Vigyana.[2,3]

Subject matter of Rasamritam at a glance
- This book consists of total 09 chapters and 09 indices. As Parada is a central element of whole Rasa Shastra, it is described as first chapter followed by Gandhaka in a separate chapter.
- All the Dhattus (metals) like Swarna, Rajata, etc. are described along with Khanija (minerals) of the corresponding Dhatu like Maksikha for Tamra, Abhraka for Loha etc. and Mishtra Dhattus like Pitala, Kansya, etc. in a same chapter under the name Loha Vigyanjya.
- Drugs of Malla, Sudha, Sikta, Lavana, Kshara, Ratna are discussed in individual chapters. The last chapter consists of some compound formulations of therapeutic interest.
- At the end precious information and instructions are given

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regarding different pharmaceutical and clinical aspects in 09 indices.

- Information regarding Puta and preparation of Bhasma is given in 1st index. 2nd and 3rd indices consist of description of Chapala and Shilajatu.
- In 4th index special discussion on Makshika and Vimala is described. Authors own view on Rasaanjan is given in 5th index.
- 6th and 7th indices are the collection of adverse and toxic effects of Rasa Dravyas and mineral materials from which Satva can be extracted.
- Shodhana method of some plant materials frequently used in preparation of different compound formulations are given in 8th index. 9th index consists of the list of references from Charaka and Sushruta Samhita, where Rasa Dravyas are described.[6,7]

Analysis of Dehavada and Dhatuvada on Rasamrita

Rasamrita is massively enriched with the descriptions of Dehavada (transforming the sick body to healthier one through Rasaoshadhadies).

- In the first chapter only 08 Sanskaras of Parada are given which indicates its use for Dehavada.[6,7]
- Description of Gandhaka in a separate chapter, after Parada possibly facilitates the Dehavada motto of the author.
- No description of Abhraka, chief material for Dhatuvada[8] as a separate chapter shows the less importance of Abhraka in comparison to Gandhaka in this particular text.
- Other materials like Makshika, Rasaka, Chapala, etc. are described in the line of Dehavada.
- Description of pharmaceutical processing’s like Shodhana and Marana (no any alchemical processing’s like Charana, Ranjana, etc.) in different chapters for specific materials followed by their therapeutic use strengthens the Dehavada idea of the book.
- Special discussion on Puta and Bhasma in the indices indicates the dominance of Dehavada over Dhatuvada.
- In the last chapter description of 66 Rasaoshadhadies and no description of any method regarding Dhatuvada (alchemical processings) anywhere in the book, clears the concept that the book is a dominating book of Dehavada.

Chapter Discussion

1st chapter (Parada Vigyaniya)

- Description of Naisargika and Yatogika Dosas, name, definition and procedures for 08 Sanskaras and strict indication for use of Parada in Rasayogas only after 08 Sanskara.
- Serial description of Kajjali, Rasa Parpati, Rasasindura, Mukaradhvaja, Mallasindura, Rasa Karpura shows the systematic way of presentation of the Rasayogas according to the Agni Mana, difficulty in processing’s and safety in preparations.
- Claim for Nischandratva of Kajjali is found in this text.
- Shodhana process of Parada (in Jayanti Bhringaraja, Eranda, Kakamachi Swarasa) and Gandhaka (in Bhringaraja, Swarasa, both Bhavana and Dhalana) are described in the context of Rasa Parpati.
- Hingula and Girisindura are described as minerals of Parada.
- Properties of Hingula, its Shodhana (through Bhavana in sheep milk and lemon juice) and Darada Vati are described.

2nd chapter (GandhakaVigyaniya)

- Shodhana (in milk and Bhringaraja Swarasa) and properties of Gandhaka are described along with Gandhaka Rasayana Chaturjataka, Triphala, Bhringaraja, Guduchi, Adraka (10 drugs) 08 Bhavana of each separately).

3rd chapter (Loha Vigyaniya)

- Swarna, Rajata, Tamra, Pitakala, Kansya, Makshika, Tultha, Jangara, Vanga, Naga, Mridarasringa, Souvranjana, Yasada, Puspanjana, Rasaka, Loha, Mandura, Vimala, Kasra, Gairika, Abhraka, Ayaskanta are described with respect to their synonyms, properties, Shodhana and Marana where ever necessary. Corresponding alloys and minerals are described immediately after the main metal.
- This book is influenced by the modern chemistry as HCL, H2SO4, HNO3, Oxalic acid are used for different pharmaceutical processings e.g Shodhana and Marana of Swarna.
- In the context of Tamra Visehsa Shodhana (Arka Kshira + Saindhava (Lepeana), Nirgundi Swarasa (Nirvapa) or cow’s urine (Swedana), Amritikarana (with Surana Kanada), and Dosh are described.
- For the preparation of Tamra Bhasma at first Puta’s technique is used, to get partially prepared Bhasma, and then Puta’s system of heating is followed to get the final Bhasma.
- Nilakantha Rasa, Tuthadrava and Tutha Malahara are described in context of Tutha.
- Jangara is a unique preparation, which is prepared from Tamra. When the curd is kept in a copper vessel for certain duration till all the moisture content evaporate, the greenish material thus obtained is known as Jangara and is used for Dashra Vrana Shodhana and Vrana Ropana.
- Vishesa Shodhana (Haridra and Nirgundi) of Vanga, preparation of Surana Vanga is described in context of Vanga.
- Swayamagni Loha Bhasma and Ayaskriti are described in context of Loha. (heating and quenching in Triphala and Salasaradi Gana for 16 times).
- 03 types of Loha are described like Manda, Tikshna and Kant, these are superior in quality succeedingly.
- The specific feature for Kasra Bhasma i.e. Niramla is found in this text.
- Gill Armani and Gill Makhtum like Unani medicines are also described in continuation of Gairika and are considered as types of Gairika.

4th chapter (MallaVigyaniya)

- Shodhana procedure and properties of Gourijsana, Haritata and Manadshila are described.
- In the context of Gourijsana Mallavati (Rasa sindura (01), Guduchi Satva (100)) and Phemesas Drava, in context of Haritata Talasindura and Rasa Manikya and in context of Manasila, Silasindura are described.

5th and 6th chapter (Sudha and Sikata Vigyaniya)

- Churnodaka, Khatikadi Churn, Godanti Bhasma and Kasisa Godanti Bhasma (Shudha Kasisa and Shudha
Godanti + Kumari- (Gajaputa) are described in Sudha Varaga where as Dugdha Pashana, Naga Pashana and Hajral Yahud, are described in Sikata Varga with their use.

7th chapter (Lavana and Kshara Vigyaniya)
- Properties and therapeutic indications of Saindhava, Samudra, Romaka, Vida, Savarachala, Oudhbdha are described.
- In context of Kshara Varga Yava Kshara, Saaji Kshara, and Tankana Kshara are described along with Sphatika and Karpura Shilajatu.
- Ela Hima is used for Shodhana of Karpura Shilajatu.

8th chapter (Ratna Vigyaniya)
- About 07 Ratnas i.e Manikya, Neelam, Pusparaga, Comeda, Vaidurya, Tarksha, Vajra are described by their Shodhana procedure and properties. Marana procedures of Ratnas are described in general.
- 09 Uparatnas i.e Rajavarta, Sangayesava, Akika, Sphatika, Suryakanta, Chandrakanta, Piroja, Vaikranta and Khararuva are described. Parada is used to make the Vajra powder.

9th chapter
- In this chapter the author has described 66 Rasa Yogas which include Kharaliya, Parpati Rasa and Pottali Rasa. Only one Asava i.e Lohaasava is included.

Indices
1st index. (Information regarding Bhasma and Puta)
Regarding the Bhasmakarana the author has the following views:
- At first the material to be incinerated should be subjected for Shodhana and specific Shodhana procedures where applicable, then powdered. Associated minerals (Haritada, Manahshila, Hingula, etc.) are added and pounded followed by addition of liquid media prescribed for particular material then subjected for bhavana at least 10-12 h.
- Pellets should be flat rather than rounded, it should be completely dry before keeping into Sharara, one pellet should be in between 1-2 Tola.
- He emphasized on sealing of the joint of samputa to facilitate more time of contact of main material with associated materials like Gandhaka, Parada Manshila, as these are volatile in nature. Also due to toxic nature of these vapours.
- He suggested not scaling of the joint where the associated materials like Parada and Gandhaka are not added, particularly, in last 2-3 puta, to facilitate direct contact of fire and oxygen to the material to be incinerated.
- He suggested that during the arrangement of pellets in the casserole not more than two layers should be kept, to facilitate equal distribution of temp to all pellets.
- The casserole used for Samputa should not have more depth to allow less space in between the Samputa.
- In case of Abhraka, Loha, Mandura, Tantra and Makshika initial Putas should be given in more fire and later on fire should be lowered.
- For Suvarana, Rajata, and Naga the initial putas should be given in less fire and later on fire should be increased.

2nd and 3rd indices
- 4 types of Chapala i.e whitish, blackish, greenish, and reddish are described and said that it melts like Vanga hence called Chapala. It causes Rasa Bandha.
- Properties of Shilajatu along with its formation and Grahya Lakshana, Shodhana procedure of Shilajatu in the technique of Agnita and Surya Tapri and features of Shudha Shilajatu are described (in parameters of smell, taste and solubility). Different Anupana of Shilajatu are also indicated like Dugdha, Takra, Mamsa Rasa, Salasaradi Gana Kshaya etc.

4th index
- Historical approach of Makshika from Samhitas.
- Two types i.e Kanchanabhasa - Madhura and Rajatasanmbha – Amla are described
- The author identified that the material having one iron and two sulphur molecule and having features like- with angles, six surfaces, and brassy in color is Vimala. Its yellow variety is not-reacted with air and white variety reacts with air to form Kasisa and sulphuric acid. He called it Dwigandhayasa.
- According two author Makshika is the conversion of Vimala. Two types of Makshika are described 1st one is bronzey yellow, having same composition as Vimala but presents with different shape and features (neither specified nor named). 2nd type contains 02 molecule of copper and Iron and 01 molecule of sulphur, an extra element and is known as Savarna Makshika.

5th index
- Author differentiates Rasaanjana and Rasauta and claimed that Rasaanjana described in Rasa text should never be the Rasakriya of Daruvarhita it may be Rasauta.
- As the synonyms of Rasaanjana are Rasagarrha, Rasotbbhava which indicates its formation from Parada and it may be yellow oxide of mercury. He quoted comments of Dr. Yamana ganesh Desai and Dr. D.A Kulkarni.

6th index
Adverse effects caused by the intake of Ashudha Loha and Dhatu Bhasma [Table 1].

7th index
- Satvapatana of different Dhatus like Abhraka, Rajavarta, Makshika, Vimula, Shilajatu, Tala, Manahshila, Sasyaka, Chapala, Gouripashana, Hingula, Tavari, Kasisa, Kharpara, Anjana, Bhunaga, Vaikranta are described.
- Associated materials used for Satvapatana are Tankana, Chrita, Pancha Gavya, Gunja, Madhu, Kshara and Amla, Guda, Guggulu, Saaji Kshara, Yava Kshara, etc. and Bhavana drugs used are Nimbu Swarasa, Kanji, Kulathu Kwatha, Dugdha, Surana Swarasa.

8th index
- Shodhana procedure of some herbal poisonous drugs i.e Vatsanabh, Anipha, Dhatura Beeja, Jayapala, Gunja, Kapila, Bhallalataka, Bhanga.

9th index
- Descriptions of about 90 materials refereed from different Samhitas, which are frequently used in different context of Rasa Shastr.

[185]
The author has not classified the raw material as like Gandhaka Santapa, Kushtha, Bhrama, Loha Ama, loss of appetite, Gulma, diarrhoea, Shotha Naga Prameha, Kshya, Kamala, Gulama, Shula, Yasada Vanga, Raja Santapa, constipation, loss of strength and vigour Metal Dosa

**Table 1: The adverse effect caused by the intake of Ashudha Loha and Dhatu Bhasma**

| Metal     | Dosa                  |
|-----------|-----------------------|
| Rajata    | Santapa, constipation, loss of strength and vigour |
| Vanga,   | Prameha, Gulama, Hridaya Roga, Shula, Arsha, Kasa, Shvasa, vanama |
| Yasada   |                                      |
| Naga     | Prameha, Kshya, Kamala, Gulama, Shula, Bhagandar |
| Loha     | Ama, loss of appetite, Gulma, diarrhoea, Shotha |
| Gandhaka | Santapa, Kushtha, Bhrama, and loss of strength |
| Hingula  | blindness, Bhrama, Murcha, Prameha, malease |
| Abhraka  | Kushtha, Kshya, Shotha, Parshva Shula |
| Tala     | Prameha, Santapa, stiffness, increases Vata and Pita |
| Kharpura | Vamana, Bhrama |
| Manashila| Ashman, Mutrakrichra, constipation, |
| Tankana  | Vamana, Bhrama |
| Tutha    |                                      |
| Shilajatu| Daha, Murcha, Bhrama, blood Diseases, constipation |
| Vajra    | Parshva Shula, nausea, Daha |

**Practical aspects of Rasamritam**

- The book is compiled with the aim to overcome the controversies regarding both in academics and pharmaceutical point of view.
- Author has not classified the raw material as like Maharasa, Uparasa, Sadharana Rasa, etc. He started with Parada the most important material followed by Gandhaka second most so far as Dehavada is concerned. Then metal and followed by the minerals and compounds of that particular metal. This rather looks systemic.
- Too many pharmaceutical techniques for the processing’s of metals and minerals are described by the use of many associated materials (like Bhavana Dravya, Marana Dravya, etc.) in available literatures. But the author tried to describe only those methods which are easier and could be performed practically with available associated materials.
- The author has clear view regarding the sanskara i.e only 08 Sanskara is described with a single procedure for each which could be performed practically. For therapeutic purposes.
- Regarding Puta and Bhasma very practical approach is described in 1st index i.e about pellets, sealing of joint firing technique for different materials etc.
- Description of Shodhana of some herbal poisons drugs are very much practical and expressed in simplest way.
- Description of adverse effect of the materials which are either taken in Ashudha condition or in improper Marita (Bhismikarana) condition in one place makes the clinicians easy to access the patient who take a compound formulation.

- Description of around 66 important formulations helps the clinicians practically as these are less easy to manufacture and administer.

**Demerits of the text**

No description of Puribhasha is available, which is a lacuna of this book.

Description of Dhanyabhakra and Amritikarana are not found in context of Abhraka.

**Conclusion**

- Very systematic classifications of materials are found in this text.
- The book is mainly based on Dehavada and hardly any description of Dhatuvada is found.
- The description of 09 indices at the end, are most valuable part of this book which describes the practical utility of manufacturing processes of Rasa Dravyas.
- It is a literature of modern era where amalgamation of modern chemistry and Rasa Shastra occurs. Also incorporation of some Unani drugs are found.
- List of references of materials from Charaka and Sushruta are found in one place.
- All most all materials are described in very brief manner and unnecessary, practically unusable methods are not discussed.
- The book could prove beneficial for an academician as well as the practitioners who are preparing medicine for their own patients particularly for Rasa Vaidyas.

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हिन्दी सारांश

रसामूल का प्रायोगिक एवं विवेचनात्मक अध्ययन

सुधलदेव महापात्र, रमेश के. गुप्ता, के.आर.सी. रेड्डी, चन्द्रभूषण झा

आयुर्वेद जीवन का विज्ञान है जिसका बहुत प्राचीन एवं समृद्ध इतिहास रहा है। वैदिक काल से लेकर आज तक यह विज्ञान अपने ज्ञान से समस्त समाज को सिखित करता रहा है। आयुर्वेदिक चिकित्सा पद्धति में वानस्पतिक, खनिज व जान्तव द्रव्यों द्वारा विभिन्न जटिल व्याप्तियों की चिकित्सा सफलतापूर्वक की जाती है। रसामूल चिकित्सा इतिहास से यह प्रतीत होता है कि इसका विकास देहावेय और धातुवाय दोनों के लिए हुआ था। धीरे-धीरे धातुवाय का धार्मिक मत माना गया जबकि देह वायु ऊर्जा अवस्था में पशु रहा गया। रसामूल रसामूल का नवीनतम ग्रंथ है जिसमें लेखक ने सभी प्राचीन ग्रंथों के विषयों का वर्णन करते हुए अत्याधुनिक विषयों का भी वर्णन किया है। यह ग्रंथ शोधार्थियों व चिकित्सकों को समान रूप से अपनी ओर आकर्षित करता है। इस लेख में रसामूल समस्त विषयों का विवेचनात्मक वर्णन किया गया है, जो आयुर्वेदिक चिकित्सकों को चिकित्सकीय ज्ञान प्रदान करने तथा शोधार्थियों को गवेषणात्मक अनुसंधान करने में सहायक सिद्ध होगा।