

A PHYSICO-CHEMICAL ANALYSIS OF DALCHIKANA; AN INDIGENOUS PREPARATION

¹Dr Prakash R. Deshapande ²Laxmikant K. Dwivedi

¹Professor, Department of PG Studies in Rasashastra & Bhaishajya Kalpana, BVVS Ayurved Medical College & Hospital, Bagalkot. Karnataka

²Former Professor, Head, Dept. of RS & BK, National Institute of Ayurved, Jaipur

ABSTRACT

Rasashastra is a branch of Ayurveda which transforms metals and minerals into bodily assailable form. Rasoushadhis have been appreciated for their smaller dosages, agreeable taste and efficacy in curing even supposed to be incurable diseases. Kupipakwa Rasayanas are the most popular and therapeutically highly effective mineral preparation. Rasakarpur and Rasapushpa are two Nir gandha Kupipakwa Rasakalpa mentioned in Ayurveda classics. Dalachikna also known as Shavirum in Siddha system medicine is also Nir gandha Murchhana of Parad and found explained in Siddha Bsheshaja Manimala. It forms useful remedies in Secondary Syphilis, Cutaneous eruptions, Epilepsy, Ophthalmia, Cynachae and Rheumatism. It may safely be prescribed in Hydrocephalus, Dropsial affections, Glandular enlargements, Hemiplegia and Hepatic affections. Physico-chemical analysis revealed that Dalchikna is an odorless, whitish translucent crystalline flake and chemically is mercuric chloride.

KEYWORDS: Rasashastra, Dalachikna, Kupipakwa Rasayana, Mercuric Chloride.

INTRODUCTION

In Rasashastra, Kupipakwa Rasayanas are the most popular and therapeutically highly effective mineral preparations as through this “Avyabhicharita Vyadhighatakatvam¹” can be induced in Parad to treat diseases and maintain the healthy process of life.

Rasakarpur and Rasapushpa are two Nir gandha Kupipakwa Rasakalpa of Parad mentioned in Ayurveda classics. Rasakarpura² is a mercurial salt considered as poisonous. In spite of this, it is widely used to treat many skin disorders and sexually transmitted disorders. Rasapushpa³ (Calomel-Sub-chloride of Mercury) is

possessing Pittahara and Mutrala property. It is used for Virechana and is efficacious in curing Visuchika, Hikka, Jalodara, Phiranga etc. Dalachikna⁴ i.e. Souvveer is another Nir gandha Kupipakwa Rasayana found explained first in Rasashastra by Acharya Ramakrishna Bhatta in Siddha Bsheshaja Manimala.

It is an alternative, stimulating the urinary, Cutaneous and salivary secretions. It forms useful remedies in Secondary Syphilis, Cutaneous eruptions, Epilepsy, Ophthalmia, Cynachae and Rheumatism. It may safely be prescribed in Hydrocephalus, Dropsial

affections, Glandular enlargements, Hemiplegia and Hepatic affections.

Controversies exist between Dalachikana, Rasa Karpoor and Rasapushpa regarding their chemical formula. Some opine that dalachikna is Mercuric chloride; some authors are of opinion that it is Mercurous chloride, some as mixture of mercuric and mercurous chloride etc. Hence present study was chosen for procurement of Dalachikna from reliable market, authenticating and analyzing it physico-chemically.

AIMS & OBJECTIVES

1. Procurement of Dalachikna from well renowned market.
2. Authentication and Physico-chemical analysis of Dalachikna.

MATERIALS & METHODS

Materials:

1. Dalachikna was procured from reliable source M/S Dorle & Sons, Kolhapur.
2. Dalachikna was authenticated and analysed for physico-chemical parameters at Centre for Advanced Research in Indian System of Medicine, SASTRA University, Tanjavur.

Methods:

1. Dalachikna was authenticated from Geochemical Lab by using Petrological Microscope.
2. Physico-chemical analysis and XRD study of Dalachikna.

RESULTS

Dalachikna was procured from reliable source from M/S Dorle & Sons, Kolhapur. This was authenticated, analysed physico-chemically⁵ and subjected for XRD analysis at Centre for Advanced Research in Indian System of Medicine, SASTRA University, Tanjavur-613402, Tamilnadu.

Geochemical Analysis of Dalachikana.

Petrological studies revealed that the market sample of Dalachikna is an odorless, whitish translucent crystalline flake form mass. It is brittle in nature with white streaks and vitreous luster. It has a distinct cleavage with uneven fracture. Its hardness is 1.5 and specific Gravity is 5.4.

S.N	Properties	Sample
1	Nature	Crystalline
2	Color	White
3	Luster	Vitreous
4	Streak	White
5	Cleavage	Distinct
6	Fracture	Uneven
7	Tenacity	Brittle
8	Odor	Odorless
9	Hardness	1.5
10	Specific Gravity	5.4
11	Diaphaneity	Translucent
12	Probable mineral	---

Elemental Analysis of Dalachikana:

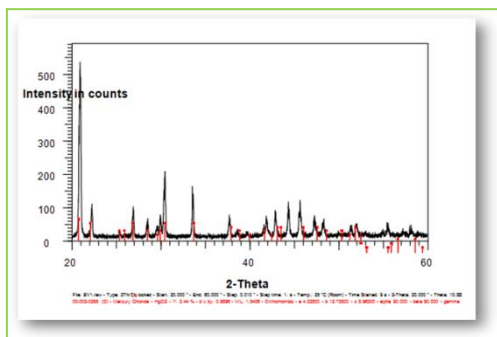
Elemental Analysis Report revealed that Dalachikna contains Mercury 74.00 %, Chlorine 45.36 ppm, Lead 0.08 ppm, Arsenic 0.03 ppm, Chromium 0.06 ppm and Cadmium 0.08 ppm. These proportions indicate that dalachikna is compound mixture of mercury and chloride.

S.N	Element	Sample
1	Mercury	74
2	Chlorine	45.36
3	Lead	0.08
4	Arsenic	0.03
5	Chromium	0.06
6	Cadmium	0.08

X-ray diffraction pattern of Dalachikana:

X-ray diffraction study was carried out at Centre for Advanced Research in Indian System of Medicine, SASTRA

University, Tanjavur. Based on the data of 2-theta and hkl values it was concluded that Dalachikana is chemically mercuric chloride.



DISCUSSION

Dalachikna also known as Shavirum in Siddha system of medicine is a nirgandha murchhana of Parad and is widely used. Dalachikna is found explained first in Rasashastra by Acharya Ramakrishna Bhatta in Siddha Bhesaja Manimala⁶. Later on, references of Dalachikana can be seen in Rasa Tantra Sara va Siddha Prayoga Samgraha⁷, Parad Vignanium⁸, Bhasma Vignanam⁹, Rasa Yoga Sagar, Siddha Yoga Samgraha¹⁰ and Kupipakwa Rasayana Nirmana Vignanam¹¹.

Controversies exist between Dalachikana, Rasa Karpoor and Rasapushpa regarding their chemical formula. Some opine that dalachikna is Mercuric chloride; some authors are of opinion that it is Mercurous chloride, some as mixture of mercuric and mercurous chloride, Arseno-Mercurous chloride and Hydrargyrum ammoniatum etc. This depends upon the method followed. Dalachikna if it is prepared with reference of Parad Vignanium and Bhasma Vignanam, the end product will be mercuric chloride. If it is prepared with reference of Siddha Yoga

Samgraha and Kupipakwa Rasayana Nirmana Vignanam, the end product will be Arseno-Mercurous chloride. This is because these two methods contain somal i.e. peeta Shankhiya as an ingredient.

If dalachikna is prepared with reference of Agastya Poorna Sootram¹², the end product will be mixture of mercuric and mercurous chloride. The reason for this is, ingredients like Rasapushpa, sphatika, navasagara, kaseesa, roasted salt, copper sulphate, ksharamrittika and Pottle Ooppoo (nitre) are themselves possessing complex compounds, some being alkaline and some saline. If all these are employed for the preparation, naturally the Parad imbibes all the qualities of these individual ingredients and processes both qualities of Mercuric Chloride and Mercurous chloride. Dalachikna prepared with reference of R.T.S. Va S.P.S, by adding Rasakarpura, Liquor ammonia, Nitric acid (dil), AgNO₃ and water, the end product may result in compound of Hydrargyrum ammoniatum. This is the reason for the different opinion about the chemically end product of the dalachikna.

Geochemical Analysis revealed that market sample of Dalachikna is an odorless, whitish translucent crystalline flake form mass. It is brittle in nature with white streaks and vitreous luster. It has a distinct cleavage with uneven fracture. Its hardness is 1.5 and specific Gravity is 5.4. Elemental Analysis Report revealed that Dalachikna contains Mercury 74.00 %, Chlorine 45.36 ppm, Lead 0.08 ppm, Arsenic 0.03 ppm, Chromium 0.06 ppm and Cadmium 0.08 ppm. These proportions indicate that dalachikna is compound mixture of mercury and chloride. X-ray diffraction study was

carried out at Centre for Advanced Research in Indian System of Medicine, SASTRA University, Tanjavur. Based on the data of 2-theta and hkl values it was concluded that Dalachikana is chemically mercuric chloride. This indicates that Dalachikna (present sample) has been prepared with the reference of Parad Vignanium or Bhasma Vignanam.

CONCLUSION

Dalachikna also known as Shavirum in Siddha system of medicine is a nirgandha murchhana of Parad too found explained in Rasa Shastra. This has been used for preparation of various formulations indicated in diseases like- Phiranga, Vata Roga, Chitta Vibhrama, Vishama Jwara, Jeerna Jwara, Kushtha etc. Dalachikna may be mercuric chloride or mercurous chloride or mixture of mercuric and mercurous chloride. This depends upon the method followed. Elemental Analysis revealed that Dalachikna contains Mercury, Chlorine, traces of Lead, Arsenic, Chromium and Cadmium. X-ray diffraction study revealed that Dalachikana is chemically mercuric chloride.

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DALACHIKNA

CORRESPONDING AUTHOR

Dr Prakash R. Deshapande

Reader, Dept. of PG Studies in Rasashastra & Bhaishajya Kalpana,

B.V.V.S. Ayurvedic Medical College & Hospital, Bagalakote (Karnataka), India.

E-mail: drprakashdeshpande76@gmail.com

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