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## Review Article

### TRIVANGA BHASMA IN AYURVEDIC CLASSICS

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#### ABSTRACT

Trivanga bhasma is one of the traditional Ayurvedic medicine used since long, having therapeutic importance. Since the Mediaeval Period till the modern era of science and technology Trivanga bhasma has occupied an important position in Ayurvedic system of healing. Trivanga bhasma is a compound bhasma preparation of Naga, Vanga and Yashad described in various Ayurvedic literatures. The literatures reveals on various indigenous processing techniques i.e. shodhana, jarana and marana. In this review article efforts have been made to highlight the Trivanga Bhasma in Ayurvedic literature and current researches, which will help the research workers in great extent.

**Keywords:** Trivanga bhasma, Naga, Vanga, Yashad, Shodhana, Jarana and Marana.

#### INTRODUCTION

Trivanga bhasma has great importance, both in alchemical and therapeutic point of view. Ayurveda is one of the oldest systems of medicine in India, its antiquity going back to the ancient Vedas. In Rasa literature Naga, Vanga and Yashad (Trivanga) are included in the group of Putiloha. Metals and minerals comprise major parts of Ayurvedic therapeutics and bhasmas are often given in combination with one or more drugs for various disorders both for potentiation of action and reduction of toxic properties. Trivanga bhasma is a compound bhasma preparation of Naga, Vanga and Yashad and hence the preparation made of these has been termed as Trivanga bhasma. However, the Indians know the two components of Trivanga bhasma i.e. Naga and Vanga since Vedic period but Yashad, known by the Indians in the later period of 14<sup>th</sup> century A.D. Nevertheless, in prehistoric period its minerals i.e. Kharpar were known and may be the source of Riti or Pittala. Therefore, the history of Trivanga bhasma is not very old. In 16<sup>th</sup> century A.D., it was first introduced in Rasa Kaumudi by the name of Triloha. However, in 20<sup>th</sup> century it became more popular by the name of Trivanga bhasma in to a large extent of Ayurvedic literature.

#### Trivanga in Ayurvedic Rasa Literatures

##### Rasa Kaumudi

Pharmaceutical procedure of Trivanga bhasma is described as Triloha bhasma and also mentioned the jarana of Naga, Vanga and Rasaka with Rajavriksha twaka churna<sup>1</sup>.

##### Rasayansara

Here is the description of pharmaceutical preparation of Trivanga bhasma by amalgamation with Parad, followed by grinding with Nimbu rasa along with Hartala and Gandhaka by kupipakwa method. It is indicated in kasa, swasa, kshaya, raktapitta, kustha, prameha, agnimandya and daurbalya. Beside

its therapeutic indication also mentioned the replacement of Yashad by Tara (Rajata) and the preparation is known as Trivanga bhasma and to be much effective.<sup>2</sup>

##### Rasa Tantra Sara

Three different pharmaceutical preparations of Trivanga bhasma is mentioned through suddha Naga, Vanga and Yashad along with jarana and marana with some herbal drugs like Haridra churna, Pippala twaka churna, Bhanga churna, Chinchwa twaka churna, Kumari swarasa. Along with this therapeutic dose, indications and anupana are also mentioned.<sup>3</sup>

##### Siddha Yoga Sangraha

Pharmaceutical processing of Trivanga bhasma is described along with dose, indication and anupana.<sup>4</sup>

##### Bhasma Vigyana

Here author assembled different pharmaceutical processes described in some Hindi and Urdu literatures like Siddha Yoga Sangraha, Charu Chikitsa, Al Tabiba, Sanata Akabar, Makhajan etc. The pharmaceutical processing of Trivanga bhasma described in this text almost alike but using different jarana and marana drugs.<sup>5</sup>

##### Rasa Raj Mahodadhi

Here first time advised to use of copper utensil for jarana process and completed by bilwa patra swarasa<sup>6</sup>.

##### Shodhana of Trivanga

Shodhana of Trivanga (Naga, Vanga and Yashad) is done by dhalana method in "Pithar Yantra" with the use of various liquid media in Table 1.

**Marana of Trivanga**

Marana is the final process of Trivanga for its intended use, while Jarana is the intermediary process between shodhana and marana. These processes are described in different texts with use of different associated materials of plant and mineral origin in Table 2A and 2B.

**Therapeutic Uses**

The therapeutic uses of Trivanga bhasma is indicated in kasa, swasa, kshaya, raktapitta, kustha, prameha, agnimandya and daurbalya<sup>7</sup>.

**Dose**

In different Rasa texts dose of Trivanga bhasma described in Table 3.

**Table 1: Drugs used for Shodhana of Trivanga (Naga, Vanga and Yashad)**

S. No.	Drugs used for Shodhana	Process/ Times	Textual reference		
			Naga	Vanga	Yashad
1.	Arka dugdha	Dhalana/3*-7	*R.P.-16/6	R.T.-18/10	R.T.-19/103
2.	Churnodaka	Dhalana/7	R.T.-19/10	R.T.-18/8	R.T.-19/98-99
3.	Nirgundi swarasa	Dhalana/7	R.T.-19/7-9, R.R.S.-5/158	R.R.S.-5/158	R.T.-19/100-101
4.	Nirgundi swarasa and Haridra churna	Dhalana/3	R.R.S.-5/172	R.T.-18/11, R.R.S.-5/156	A.P.-3/182

\*Dhalana 3 times

**Table 2A: Herbal and Mineral Drugs Used for Jarana/Marana of Trivanga (Naga, Vanga and Yashad)**

S. No.	Herbal and Mineral Drugs	Process	Textual reference		
			Naga	Vanga	Yashad
1.	Apamarga Panchanga	Heating and Pouring	R.T.-19/24-28	R.P.-14/14, R.T.-18/20, A.P.-3/156	R.T.-19/112-115
2.	Ashwath Twak churna	Heating and Pouring	R.T.-19/11-14	R.T.-18/29-33, R.P.- 14/11-13	A.P.-3/182
3.	Parad and Gandhak	Putapaka	R.T.-19/29-33	-----	R.T.-19/104
4.	Parad and Haratal Churna	Heating and Pouring	-----	R.T.-18/15-18, R.T.- 18/26-28,	-----
5.	Hartala	Putapaka	R.T.-19/34-36	R.P.-14/17-18	R.T.-19/108-111

**Table 2B: Jarana/Marana of Trivanga in Rasa Literatures**

S. No.	Drugs	Bhavana drugs	Process	Textual reference
1.	Bhanga churna and Posta churna	Ghrithkumari swarasa	Ardha Gaja Puta	R.T.S.-II <sup>nd</sup> /25, S.Y.S.-p.-159, B.Vi-4/p.-96
2.	Bilwa patra swarasa			R.R.M.-65
3.	Chincha twaka			R.T.S.-II <sup>nd</sup> /25,126
4.	Haridra churna	-----	Heating and Pouring	R.T.S.-I <sup>st</sup> /24, R.T.S.-II <sup>nd</sup> /25,126, B.Vi-4/p.-96
5.	Rajavriksha twaka churna			R.Kd.-3/21-22
6.	Sarkara	-----	Heating and Pouring	B.Vi-4/p.-97
7.	Parad, Gandhak and Hartala	-----	Kupipakwa	R.S.- 77-79/p.-366

**Table 3: Dose of Trivanga Bhasma**

S. No.	Dose	Textual reference
1.	1 ratti	S.Y.S.-p.-159
2.	1-2 ratti	R.T.S.-II <sup>nd</sup> vol./p.-25
3.	1-4 ratti	R.S.-79/p.-366

**Anupana used for various Diseases**

Kasa, Swasa, Kshaya, Raktapitta, Kustha, Prameha, Agnimandya and Daurbalya - Vasa<sup>8</sup> Madhumeha, Jirna Puyameha - Honey and fresh butter<sup>9</sup>.

**Trivanga Bhasma in Current Researches**

Trivanga bhasma is a compound bhasma which mainly contains bhasma of Naga (Lead), Vanga (Tin) and Yashad (Zinc). Chiefly contains oxides of Lead, Tin, Zinc and some other metallic compounds are also found.

**Chemical Analysis****Trivanga (Naga, Vanga and Yashad) Raw Material**

- The XRD results of raw materials (Naga, Vanga and Yashad) reveal that the strongest peaks of respective metals like Lead, Tin, and Zinc. Other than this many low intensity peaks are observed, may be trace element.
- The raw materials are identified as Lead (94.28 %), Tin (95.92 %) and Zinc (98.20) from X-Ray Fluorescence spectroscopy study.
- Few various elements like Fe, Al, Cu, Ca etc. are also found in trace amount.
- In FTIR report of the raw materials (Naga, Vanga and Yashad) reveals the peaks of water molecules, CO<sub>3</sub><sup>2-</sup>, HO<sub>3</sub><sup>-</sup> and (BO<sub>3</sub>)<sub>n</sub> etc.

- Particle size of raw material of Trivanga analyzed through Field Emission Scanning Electron Microscopy is approximately 5-10 micron.

#### Trivanga Bhasma

- The XRD result of Trivanga Bhasma reveals that the high intensity peaks are identified as a mixture of Lead Oxide (PbO), Lead Dioxide (PbO<sub>2</sub>), Stannous Oxide (SnO<sub>2</sub>) and Zinc Oxide (ZnO).
- The bhasma obtained through various indigenous processes is identified as a mixture of oxides of PbO (29 %), SnO<sub>2</sub> (35.9 %) and ZnO (28.9 %) from X-Ray Fluorescence spectroscopy study.
- Few various elements are also found in trace amount in their oxide form like Si, Fe, Al, Cu, Ca, K, Mg etc.
- FTIR study of Trivanga Bhasma also reveals the presence of Lead, Zinc and Tin in the form of their oxides.
- Particle size of Trivanga bhasma analyzed through Field Emission Scanning Electron Microscopy is approximately 100-200 n microns.<sup>10</sup>

#### DISCUSSION

Trivanga bhasma is a compound bhasma which mainly contains bhasma of Naga, Vanga and Yashad used by Ayurvedic physicians since long time. Specific description about its therapeutic use has not been made available up to Samhita Period. Since the medieval period till the modern era literatures are enriched with different manufacturing processes of Trivanga. With time and need of the society its alchemical uses are gradually caves in and therapeutic use became dominated. In contemporary era literatures are describe its components under Putiloha Varga. Too many synonyms, features of their acceptable variety and anupanas of their bhasmas during therapeutic use are described clearly which indicate their wide use in therapeutic. In today's era of science and technology scholars have identified its physical and chemical nature in terms of scientific parameters. It contains oxides of Lead, Tin and Zinc as major elements and some other minor elements oxides like Si, Fe, Al, Cu, Ca, K, Mg etc. It also contains some other compounds like metallic phosphate, sulphate etc. In different clinical researches the effect of Trivanga bhasma is evaluated for Sukrajanana effect, Madhumeha etc. Except these finding many other areas regarding Trivanga bhasma are still disclosed for the benefit of society.

#### CONCLUSION

Trivanga bhasma is an important bhasma used for therapeutic purposes since later phase of medieval period. It is a compound bhasma preparation of Naga, Vanga and Yashad having a wide range of therapeutic efficacy. Shodhana, jarana and marana indicate the enriched ancient technology of metal processing by applying different types of procedure of different associated drugs.

#### Abbreviations

**A.P.-** Ayurveda Prakash, **B.Vi.-** Bhasma Vigyan, **R.Kd.-** Rasa Kamdhenu, **R.P.-** Rasendra Puran, **R.R.M.-**Rasa Raj Mahodadhi, **R.R.S.-** Rasa Ratna Samucchaya, **R.T.-** Rasa Tarangani, **R.T.S.-** Rasa Tantra Sara, **R.S.-**Rasayan Sara, **S.Y.S.-** Siddha Yoga Sangraha.

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