



Review Article

LITERATURE REVIEW ON THERAPEUTIC POTENTIALS OF VANGA

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ABSTRACT

The classical literature review is the most important backbone of any research work in Ayurveda. Metals like gold, silver, copper, lead, tin are being used by human beings since the ancient times. The metal Vanga mentioned in Ayurveda with a wide range of therapeutic utilities. That's why one should be cautious while using Vanga Bhasma. A number of classical texts have been reviewed. Each and every one work related to synonyms, different pharmaceutical process, and safety profile has been outlined. These literature review work has assembled strong basis for the pharmaceutical process of Vanga Bhasma, its safety profile along with its chemical nature, quality control, quality assessment and safety data.

Keywords: Vanga Bhasma, backbone, literature review, quality assessment

INTRODUCTION

The medicinal use of metal and mineral for healing purposes has been in trend for centuries in the Ayurveda system. The perception of using metal and mineral as medicines was enlarged by ancient Acharyas during different periods¹. Rasa Shastra (Ayurvedic Pharmaceutics) although basically means the "Science of Mercury" it also refers to the science of making metals and minerals suitable for the body so that they can be used as medicines². Traditional organo-metallic & mineral formulations have been commonly used for thousands of years in several countries. Metals and minerals have been used in disease treatment since time immemorial. Ayurveda is the science made up of knowledge (Veda) and life (Ayush) means knowledge of existence³. An Ayurvedic system takes up a holistic approach in the direction of healthcare by corresponding the spiritual, physical and mental roles of the human body. Rasa Shastra although basically means the "science of mercury" it also refers to the science of making metals and minerals suitable for the body so that they can be used as medicines. Bhasma is an organo-metallic/mineral preparation, treated with herbal juices or decoction and exposed for the definite quantum of heat as per Puta system of Ayurveda. Bhasma is well known in the Indian subcontinent as 7th century A.D. and usually recommended for the treatment of various disease conditions. Bhasma is stated to be biologically produced nano-particles, which are prescribed with several vehicles like honey, butter, milk⁴. The use of metals traditional Ayurvedic system of medicine include Swarna (gold), Rajat (silver), Tamra (copper), Lauha (iron), Vanga (tin), Naga (lead), Yasada (zinc), etc. Vanga Bhasma is organo-metallic preparations, prescribed by the ancient Acharyas for treatment of a number of ailments. Vanga Bhasma is prepared from metallic raw material & herbal ingredients, by processing them through a series of Shodhana, Marana, & Jarana. History has its significance in exploring the information's of an earlier period and to smooth the progress of the way running in future⁵. The need of the hour is to alleviate such fears, by generating greater awareness

and placing in appropriate perspective, the perspective in which these drugs are proposed for use and the methods by which they were used as medicines. The present review article is a simple collection focusing on the uses of metals revealed in classical Ayurvedic texts. This review is expected to give the insight to presume the frequency of practice of metals during the ancient times.

Vanga in different Vedas

Vanga is the most accepted and valuable metal and was known from the Vedic era. The definite description of Vanga was found in Atharvaveda and Yajurveda. In Yajurveda and Atharvaveda^[8,11], Vanga has been kept in the group of metals that is gold, silver, iron, copper, and lead etc. In Yajurveda and Atharvaveda^{6,7} the word Trapu has been used for Vanga for the reason that of its quality of being simply melted. The etymology of the word Trapu is consequent from the root Trapu means to be embarrassed.

Vanga in Ayurvedic texts

In the Ayurvedic classical text, Brihatrayee takes up an essential place. Charaka Samhita⁸, Sushruta Samhita⁹, Astanga Samgraha¹⁰, and Astanga Hridaya¹¹ are incorporated in Brihatrayee. Charaka and Sushruta Samhita is the exit to Samhita period specifically 1000 B.C. to 300 B.C. Astanga Samgraha and Astanga Hridaya is the exit to Samgraha period specifically 5th to 7th century A.D. In Charaka Samhita, Sushruta Samhita, Astanga Samgraha, and Astanga Hridaya, description of Vanga is available. In this period the remedial use of Vanga is immensely incomplete.

In Charaka Samhita

In Charaka Samhita, the description concerning metal is found. Whereas in the categorization of metal, Charaka has comprised Vanga in the Panchaloha (five-metal alloys). In the description of

Parthiva drugs, Charaka included Sikata (silica), Manahshila (realgar), Gairika (hematite), Anjana (collyrium), Panchaloha, etc. In Sidhisthan, Vanga has been revealed for using in making different parts of Vashti Yantra⁸.

In Sushruta Samhita

Sushruta Samhita has been written around during 500 BC to 300 BC. Although describing Bhauma group of drugs Acharya Sushruta has been listed metals and minerals. In additional classification, Vanga has been kept in Trapwadigana. In this classic, the metals are explained under the chapter Shasraavidhi and Yantravidhi for construction the surgical instruments. In the 26th chapter of Pranashtha Shalya Vigyaniya, Swarna, Rajat, Tamra, Naga, and Vanga have been illustrated to be dissolved by the power of Pitta Dosha. At the same time as describing the types of Shilajit (Asphaltum punjabianum), some Vaidyas are revealed 4 kinds according to Yoni Bheda i.e. gold, silver, copper, and iron. The characteristics of Vanga have been stated in Sutra Sthan 46th chapter⁹.

In Astanga Samgraha

In Astanga Samgraha, the concise explanation regarding minerals and metals is found. In Sutra 12th chapter whereas expalining Anausadhi Vanga, Ashtanga Samgraha revealed the Characteristics of metals and minerals¹⁰.

In Ashtanga Hridaya

In Ashtanga Hridaya detail explanations regarding the different therapeutic uses of metals like Swarna, Rajat are available. However, no such type of description concerning Vanga is found in the literature¹¹.

In Nighantu

In Raj Nighantu¹², Dhanwantari Nighantu¹³, Madanpala Nighantu¹⁴, Saligram Nighantu¹⁵ and Bhava Prakash Nighantu¹⁶ the detailed explanation of the metals are available. But merely Bhavaprakash Nighantu revealed the therapeutic values and properties of Vanga.

Table 1: Name in different Languages¹⁷

Different language	Name
Hindi	Kalai, Ranga, Vanga
English	Tin
Sanskrita	Trapu, Vanga, Ranga
Oriya	Vanga
Marathi	Kathir, Kathil, Vanga
Latin	Stannum
Gujarati	Kathir, Kalai, Thavarapari
Tamil	Tagaram
Kannada	Tavar
Bengali	Ranga, Ranga
Telegu	Vendi, Sisam, Takaramu
Malayalam	Veluteeyam, Takaram
Arabi	Arbuz, Rasas
Percian	Urziz

Table 2: Synonyms & Meaning of Vanga¹⁷

Synonyms	Meaning
Nagaja	Mix with lead ores.
Ghana	Solid state
Banga	Occurrence in Bangladesh
Kasteera	radiating Metal
Abheer	Which provide confidence
Pichchata	Easily melt
Kurupya	In atmosphere, Vanga loses its shining.
Nagabhava	It looks like Naga
Pushpa	When melted Vanga is quinch in liquid is look like flower
Roupya Shasra	It changes the property of silver
Simhala	Occur in Srilanka
Pootiganda	Bad smell during heating
Ranga	Use in colouring
Swarnabhava	It is use in the conversion of gold
Swarnaja	Find with gold in mines
Trapu	Easily melts
Vanga	Occurrence in Bangladesh
Swetaroupya	Appear like Silver.
Shukraloha	Symbolize for Venus Planets
Shweta	White in color

Table 3: Synonyms of Vanga as per different classical texts^{18, 20, 21, 22, 17, 19, 14, 13, 12}

Name	R.R.S.	A.P.	R.J.N.	R.K.	R.T.	R.A.	M.N.	D.N.	R.N.
Shukraloha			+		+				
Kurupya			+		+				+
Vangaka	+		+		+		+		
Trapush			+		+				+
Vanga	+	+	+		+	+	+	+	+
Ranga	+	+			+	+	+	+	+
Trapu	+	+	+	+	+	+	+	+	+
Pichchata		+	+	+		+		+	+
Aleemaka			+						
Hima			+	+					+
Gurupatraka			+	+					
Mrudu Vanga			+	+					
Pushpa			+						
Nagaja			+						
Simhala			+						
Mukhabhushana				+					
Abheera				+					
Tiraka							+		
Karati							+		
Ganam							+	+	
Aneela								+	
Surati								+	
Pootigandha			+						
Lavana								+	
Dashaahyam									+
Trapuka								+	
Kharati									
Trapuka									
Gurashresta								+	
Neelaka								+	
Manduka									+
Shwetaroupya				+					
Madhura									+
Kasteera			+	+					
Sheeta									

R.R.S. (Rasa Ratna Samuchhaya), A.P. (Ayurveda Prakash), R.J.N. (Rasa Jala Nidhi), R.K. (Rasa Kamdhenu), R.T. (Rasatarangini), R.A. (Rasamrita), M.N. (Madanpal Nighantu), D.N. (Dhanwantari Nighantu), R.N. (Raja Nighantu)

Occurrence

Generally, Vanga is not found in native form. It is found only in the form of oxide known as tinstone. In India, it is found only in Bihar. In Myanmar and Bangladesh, it is found in very much large quantity. In ancient times, Vanga was imported from Vangadesh (Bangladesh) that's why called Vanga. Vanga was also found in Srilanka (Simhala region), that's why called Simhala. Vanga is available in nature in compound form^{17,18}.

Types of Vanga

In Ayurvedic texts 2 types of Vanga has been explained.

- (1) Khuraka
- (2) Mishraka

In the context of therapeutic purpose, Khuraka Vanga is best one. In Rasakamdhenu, on the basis of colour, Vanga is classified in Shweta and Krishna. In which Shweta Vanga is best for the medicinal purpose.

Properties of Vanga

(1) **Khuraka Vanga**- Khuraka Vanga is white in color, soft in touch, easily melts, heavy in weight.

(2) **Mishraka Vanga**- Mishraka Vanga did not melted easily, rough in touch and when mixed with other metals it becomes dull black in color and hard in nature^{17,18}.

Suitable Property of Vanga

Khuraka Vanga having the properties likes Shweta, Swachha, Mridu, Snigdha and Sheetala.

Shodhana (Purification)

Shodhana is technique in which rasa drugs become detoxified, free from impurities and suitable for internal use as well as for further process like Marana.

Table 4: List of drugs used in Shodhana

Name of drugs	Name of the Shodhana Procedure	Reference
Choomodaka (lime water)	Nirvapa/7, Swedana/3	R.T. 18/8, R.S.S. 79/290
Kanjika (Sour gruel)	Nirvapa 7/3	AY.P. 3/48
Amla Takra	Nirvapa/7	R.T.18/13, R.Pu.14/6
Chincha Kasaya (<i>Tamarindus indica</i>)	Nirvapa /7	R.Sara 326/1-2
Kulatha Kasaya (Horse gram)	Nirvapa /3/7	Ay.P. 3/48
Bramha Briksha Kwatha	Nirvapa /21	R.K.D. S464, R.Sara.326/1-2
Katphala Kasaya (<i>Myrica esculenta</i>)	Nirvapa /3/7	Ay.P. 3/48
Snuhiksheera (<i>Euphorbia nerifolia</i>)	Nirvapa /21	R.K.D. S464, R.Sara.326/1-2
Amla Takra & Punarnava	Nirvapa /3/7	R.R.S. 5/157
Taila Varga	Nirvapa /7	R.Sara
Mootra Varga	Nirvapa/7	R. Purana 274, R.R. Sundar 70
Nimbu Neera (lemon water)	Nirvapa /7	R. Purana 274, R.R. Sundar 70
Ksharambu	Nirvapa /7	R.Purana 274, R.R.Sundar 70
Kadalimoola Rasa (<i>Musa paradisiaca</i>)	Nirvapa /3/7	AY.P. 3/54
Kumari Swarasa (<i>Aloe vera</i> juice)	Nirvapa 7, Nirvapa 21	R.T.18/14, R.K.D.463
Bhringaraj Swarasa (<i>Eclipta alba</i>)	Nirvapa /7, Nirvapa/21	R.T.18/14, R.K.D. S.465
Nirgundi Swarasa (<i>Vitex nirgundo</i>)	Nirvapa /21	R.K.D. S465, R.Pu.14/7

Jaran of Vanga

Due to the low melting point of Vanga melts easily and does not convert to Bhasma form by PutaPaka. Jarana of Vanga performs by Avapa procedure. In this procedure adding any other metal or any other substances like Apamarga, Ashwathatwaka,

Kukkutanda Twaka Churna in the melted metal is known as Avapa. This whole process is known as Jaran. The Jarita Vanga is subjected to the Bhasmikaran process for the preparation of Vanga Bhasma^{17,18}. The listing of such drugs used in Jarana process is revealed below [Table 5].

Table 5: List of drugs used in Jarana of Vanga

Herbal drugs	Minerals	Animals
Ashwatha (<i>Ficus religiosa</i> bark)	Parada (Mercury)	Mukta Shukti
Apamarga (<i>Achyranthes aspera</i>)	Makshika (pyrite)	Kukkutanda twaka
Arka (<i>Calotropis gigantea</i>)	Karpura	Shankha (Conch)
Babbula (<i>Vachellia nilotica</i>)	Abhraka (Mica)	Varatika
Chincha (<i>Tamarindus indica</i>)	Haratal (Orpiment)	
Bhallataka (<i>Semecarpus anacardium</i>)	Manahshila (Realgar)	
Palasha (<i>Butea monosperma</i>)	Suryakshara	
Punarnava (<i>Boerhavia diffusa</i>)	Shilajatu (Butamen)	
Haridra (<i>Curcuma longa</i>)	Saindhava	
Jeeraka (<i>Cuminum cyminum</i>)	Tankana	
Snuhikshira (latex of <i>Euphorbia neriifolia</i>)		
Pippali (<i>Piper longum</i>)		
Vatatwaka (<i>Ficus bengalensis</i>)		
Karpas (<i>Gossypium herbaceum</i>)		
Tila (<i>Sesamum indicum</i>)		
Yavanika (<i>Trachyspermum ammi</i>)		

List of drugs used in Vanga Marana

In Ayurvedic classical texts, several methods of Vanga Maran described that is by some plant drugs, minerals, and animal origin drugs.

Table 6: List of Rasa Drugs used in Vanga Marana ^{18, 20, 21, 22, 17, 19,}

Name of the Drugs	Classical Texts
Parada (Mercury)	R.R.S. 5/160, R.T. 18/16
Shilajita	R.K.D. S.483, Ay.P. 3/160.
Makshika (Pyrites)	R.J.N. Vol.III.
Suvarchika	R. Pu. 14/8, Ay.P. 3/171
Saindhava (rock salt)	R.J.N.
Haritala (Orpiment)	R.R.S. 5/159, R.T. 8/26, AY. P.3/162 & 170, R.K.D.S.466, R.Pu. 14/11-13.

Table 7: List of plant drugs used in Vanga Marana ^{18, 20, 21, 22, 17, 19}

Name of the Drug	Classical Texts
Apamarga (<i>Achyranthes aspera</i>)	R.T.18/20, Ay. P. 3/156, R.K.D. S.439, R.J.N. Vol. III, R.Mr.3/89, R.Pu.14/14.
Ajwain (<i>Trachyspermum ammi</i>)	Ay.P.3/161, R.K.D. S.483, R.J.N., R.Pu.14/24.
Haridra (<i>Curcuma longa</i>)	Ay.P.3/171, R.S. Sam., R.J.N.
Jeeraka (<i>Cuminum cyminum</i>)	Ay.P.3/171, R.S. Sam., R.J.N.
Ashwatha Twaka (<i>Ficus religiosa</i> bark)	Ay.P.3/174, R.R.S.5/159, R.J.N., R.K.D. S.467, R.Pu.14/11.
Tila (<i>Sesamum indicum</i>)	Ay. P. 3/176.
Bhallataka (<i>Semecarpus anacardium</i>)	R.J.N. Vol.III 2.
Pippali (<i>Piper longum</i>)	Ay.P.3/167, R.R.S. 5/159.
Babool Twaka (<i>Vachellia nilotica</i>)	R.Pu. 14/32.
Vata Twaka (<i>Ficus bengalensis</i>)	R.Mr. 3/93.
Arka (<i>Calotropis gigantea</i>)	R.T.18/27,36 Ay.P.3/170, R.J.N. Vol.III 2, R.R.S. 5/159, R.Pu.14/17.
Palasha (<i>Butea monosperma</i>)	R.Mr.3/93, R.J.N., R.Pu.14/32.

Table No. 8: List of Animal drugs used in Vanga Marana

Name of the Drugs	Different Textual References
Karkatasthi	R.K.D., S.481, R.Chi., R.J.N.Vol.III.
Shankha	R.J.N. Vol.III.
Varatika	R.J.N. Vol.III
Kukkutanda Kapala	R.Mr. 3/92
Muktashukti	R.J.N., R.Mr. 3/92

Table 9: Method of Vanga Marana

Name of the Method	Type of Puta	Textual References
Sharava Samputa	Laghu	R.R.S. 5/159, R.Pu. 14/17-18, R.K.D., S 466
Jarana	Roasting in frying pan (Karahi)	R.R.S. 5/160, R.T. 18/15-18 & 19-20, R.Pu. 14/8-10
Jarana & Sharava-Samputa	Roasting in frying pan (Karahi)	R.T. 18/25-28, R.Pu. 14/14, R.K.D, S.467.
Jarana & Sharava-Samputa	Ardhagaj Puta	R.Mrt. 3/94

Table 10: Ayurvedic properties of Vanga^{18, 20, 21, 22, 17, 19, 14, 13, 12}

Name of Classics	Katu	Tikta	Kasaya	Lavana	Laghu	Sheeta	Ushna	Ruksha	Sara
R.T.	+	+	+	+	+	+	+	+	+
R.J.N.	+	+	-	-	-	+	-	+	-
R.R.S.	-	+	-	-	+	-	+	+	-
R.P.S.	-	+	-	-	-	-	-	+	-
R.A.	-	-	-	-	-	-	-	-	-
R.S.S.	-	+	-	-	+	-	+	+	-
K.N.	-	+	-	-	+	-	+	+	-
R.K.	+	+	-	+	-	+	-	+	-
A.P.	-	-	-	-	-	-	-	+	+
R.Ch.	-	+	-	-	-	-	-	+	-
M.N.	-	-	-	-	-	-	-	-	+
R.N.	-	+	-	+	-	-	-	-	+
D.N.	-	+	-	+	-	-	-	+	-

Table 11: Vanga Bhasma used for the treatment of different diseases^{18, 20, 21, 22, 17, 19, 14, 13, 12}

Diseases	R.R.S	A.P	R.J.N	R.K	R.A	R.T.	M.N	D.N	R.N	K.N
Adhmana	-	+	-	-	-	+	-	-	-	-
Agnimandya	-	+	-	+	+	+	-	-	-	-
Garbhashaya chyuti	-	+	-	-	-	+	-	-	-	-
Kasa	-	+	-	-	-	+	+	-	-	+
Krimi	+	+	+	+	-	+	+	+	+	-
Kshaya	-	+	-	-	-	+	-	-	-	-
Kushta	-	+	-	-	-	+	-	-	-	-
Manovikara	-	+	-	-	-	+	-	-	-	-
Medhvikara	+	+	+	+	-	+	-	-	-	-
Netravikara	-	+	+	-	+	+	-	-	-	-
Pandu	+	+	+	+	-	+	+	-	+	+
Prameha	+	+	+	+	+	+	+	-	+	+
Raktapitta	-	+	+	-	-	+	+	+	-	-
Shotha	-	+	-	-	-	+	-	-	+	-
Shukrakshaya	+	+	+	+	+	+	-	-	-	-
Shwetapradara	+	+	+	+	+	+	-	-	-	+
Swapnameha	-	+	-	-	+	+	-	-	-	-
Swasa	-	+	+	-	-	+	+	-	-	+
Vrana	-	+	-	+	+	+	-	-	-	-

CONCLUSION

The classical literature review is a most important backbone of any research work in Ayurveda. Critical review facilitates in thoughtful and framing plan about the subject to be a deal. It compacts with the whole thing right from the earlier period to the current, related to the subject and a clear representation of the subject issue. Therefore, for the whole knowledge of the subject, it is required to trace out its chronological background, which gives a substantial firm in the advance of stages from time to time.

ABBREVIATIONS

R.R.S (Rasa Ratna Samuchhaya)
A.P (Ayurveda Prakash)
R.J.N (Rasa Jala Nidhi)
R.K (Rasa Kamdhenu)
R.T (Rasatarangini)
R.A (Rasamrita)
M.N (Madanpal Nighantu)
D.N (Dhanwantari Nighantu)
R.N (Raja Nighantu)
K.N (Kaidev Nighantu)

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