

TANKAN: A REVIEW OF CLASSICAL AYURVEDIC LITERATURE

¹Dr. Loveleen Kour, ^{2*}Dr. Nilima Dharkar, ³Dr. Neha Hiralal Patil, ⁴Dr. Omkar Devgir
Giri

^{1,3,4}PG Scholar, Dr. D.Y Patil College of Ayurved and Research, Pimpri, Pune.

²HOD and Professor, Dr. D.Y Patil College of Ayurved and Research, Pimpri, Pune.

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***Corresponding Author**

Dr. Nilima Dharkar

HOD and Professor, Dr. D.Y Patil
College of Ayurved and Research,
Pimpri, Pune.



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ABSTRACT

Background: *Tankan* (Borax), an important mineral drug in Ayurveda, occupies a significant place in Rasashastra due to its wide therapeutic utility and extensive description in classical Ayurvedic literature. It is included under *Kshar Dravyas* and has been employed in numerous formulations after proper *Shodhana* (purification). Classical texts describe its pharmacological attributes, methods of purification, dosage, indications, and therapeutic applications in a variety of diseases. **Objective:** To critically review the classical Ayurvedic literature on *Tankan* with emphasis on its nomenclature, classification, therapeutic properties, formulations, indications, contraindications, and traditional significance. **Methods:** A comprehensive literature review was conducted using major Ayurvedic classics, including *Rasa*

Tarangini, *Ayurveda Prakasha*, *Rasa Ratna Samucchaya*, *Rasendra Sara Sangraha*, and *Rasa Jala Nidhi*. Relevant information was systematically compiled, compared, and critically analyzed. **Results:** The review revealed that *Tankan* is predominantly classified as a *Kshar Dravya* possessing *Katu* and *Lavana Rasa*, *Ushna Veerya*, *Katu Vipaka*, *Laghu*, *Tikshna*, and *Ruksha Guna*, with *Kapha-Vata Shamaka* action. Classical texts consistently emphasize the necessity of *Shodhana* before therapeutic use, commonly achieved by heating until the crystalline mass swells and loses its water content. *Tankan* exhibits *Deepana*, *Pachana*, *Lekhana*, *Bhedana*, *Krimighna*, *Vishaghna*, and *Vrana Shodhana* properties and is indicated in disorders such as *Kasa*, *Shwasa*, *Ajirna*, *Gulma*, *Arsha*, *Mutrakrichra*, skin diseases, gynecological disorders, and wound management. It is also incorporated into numerous

herbo-mineral formulations owing to its catalytic, preservative, and bioavailability-enhancing properties. Classical references further describe its external applications in oral diseases, ulcers, and wound care, highlighting its multifaceted therapeutic importance. **Conclusion:** Classical Ayurvedic literature provides comprehensive evidence supporting the therapeutic significance of *Tankan* as a versatile mineral drug. Its well-defined purification procedures and broad spectrum of pharmacological actions justify its continued use in Ayurvedic therapeutics. Systematic documentation and critical appraisal of these classical references provide a valuable foundation for contemporary pharmacological, toxicological, and clinical investigations aimed at validating its traditional applications.

KEYWORDS: Tankan, Borax, Rasashastra, Tankan Kshar, Shodhana, Tankan Ayurvedic Literature, Mineral Drug.

1. INTRODUCTION

Ayurveda, the traditional system of medicine practiced for thousands of years, utilizes a wide spectrum of therapeutic substances derived from plant, animal, and mineral sources. Among these, mineral-based drugs occupy a distinctive position due to their potent therapeutic properties, rapid pharmacological action, prolonged shelf life, and suitability for administration in comparatively smaller doses. The science of processing and therapeutic application of minerals and metals is comprehensively described under Rasashastra, one of the specialized branches of Ayurveda. Rasashastra not only emphasizes the medicinal use of metallic and mineral substances but also highlights the importance of appropriate purification (Shodhana), incineration (Marana), and pharmaceutical processing to enhance their efficacy while minimizing potential toxicity. Over centuries, these principles have contributed significantly to the development of safe and effective herbo-mineral formulations used in diverse clinical conditions.

Within *Rasashastra*, *Kshara Dravyas* constitute an important class of alkaline substances possessing distinctive pharmaceutical and therapeutic attributes. Classical Ayurvedic texts describe *Kshara* as a substance capable of performing, *Chedana* (excision), *Bhedana* (penetration), *Lekhana* (scraping), *Shodhana* (purification), and *Ksharana* (corrosion or dissolution). Apart from plant-derived Ksharas, several naturally occurring mineral alkalis are also extensively employed in Ayurvedic pharmaceuticals.^[1] Their alkaline nature, catalytic properties, and ability to facilitate pharmaceutical transformations have established them as indispensable components of numerous classical formulations.

Among these mineral alkalis, *Tankan* (Borax) occupies a prominent position owing to its multifaceted pharmaceutical and therapeutic applications. *Tankan*, chemically identified as sodium tetraborate decahydrate ($\text{Na}_2\text{B}_4\text{O}_7 \cdot 10\text{H}_2\text{O}$), is a naturally occurring borate mineral. In Ayurvedic literature, it is known by several synonyms including *Tankana*, *Saubhagya*, *Sitakshara*, *Kshararaja*, *Dravaka*, and *Lohashodhana*, each reflecting its characteristic properties and pharmaceutical significance. Classical texts such as *Rasa Tarangini*, *Ayurveda Prakasha*, *Rasa Ratna Samucchaya*, *Rasendra Sara Sangraha*, and *Rasa Jala Nidhi* describe its natural sources, purification procedures, physicochemical characteristics, therapeutic actions, dosage, formulations, and clinical indications. Traditionally, *Tankan* has been indicated in disorders such as *Kasa* (cough), *Shwasa* (dyspnoea), *Adhmana* (abdominal distension), *Kapha-Vata* disorders, *Visha* (poisoning), *Vrana* (wounds), and various gynecological conditions. Furthermore, its role in pharmaceutical operations, particularly in facilitating the purification and processing of metals and minerals, underscores its significance beyond therapeutic administration.

Although several review articles and experimental studies addressing *Tankan* have been published, the available literature remains fragmented. Analyses of descriptions across major Rasashastra treatises, systematic evaluation of different purification methods, interpretation of Ayurvedic pharmacodynamics in the context of modern science, and critical appraisal of available pharmacological evidence are relatively limited.

Therefore, the present review aims to provide an integrative and comprehensive account of *Tankan* (Borax) by critically compiling information from authoritative Ayurvedic texts and contemporary scientific literature.

2. MATERIALS AND METHODS

This study is a systematic and comprehensive literature review. The data was collected from the following primary sources: *Rasa Tarangini*, *Ayurveda Prakasha*, *Rasa Ratna Samucchaya*, *Rasendra Sara Sangraha*, and *Rasa Jala Nidhi*.

3. LITERATURE REVIEW

3.1 Natural Sources as per *Rasa Jala Nidhi*

मृत्तिका टंकलाह्वया टंकनमिश्रिता या हि । प्राप्यते सा कदाचिद् वै शुष्कजलाशयोदरे ॥

समाहत्य मृदं तत् तु जलेन सह मेलयेत् ।

सजलं टंकनं ततः काथयेत् तीव्रवह्निना ॥

यावद् विशुष्यति सर्वं ततः क्षारं समाहरेत् ।सदाम् ।

टंकनाह्वयं सितप्रभं मनोहरम् ॥

(Rasa Jalanidhi Khand 3/ chapter 5)

According to *Rasa Jala Nidhi*, borax is obtained from a naturally occurring mud found in the beds of dried lakes, particularly in the regions of Upper India and Tibet. This borax-bearing mud is processed by dissolving it in water, followed by filtration to remove impurities. The filtered solution is then subjected to heating, which facilitates the evaporation of water and results in the deposition of borax crystals at the bottom of the vessel.

3.2 Another Sources^[2]

Table 1: Table showing different sources of Tankan.

Aspect	Details
Geological occurrence	Borax is naturally found in evaporite deposits formed through the repeated evaporation of seasonal lakes over extended periods.
Principal commercial reserves	Significant natural reserves of Borax are commercially exploited in Turkey, Boron, California, and Searles Lake. Naturally derived Borax is marketed commercially under the trade name Rasorite-46 in the United States and various other countries.
Other geographical occurrences	Also found in the Atacama Desert, as well as in Bolivia, Tibet, and Romania.
Laboratory synthesis	Also synthesized artificially using various boron-based compounds as starting materials.
Refinement process	Natural Borax is commonly purified through recrystallization to yield a refined product intended for industrial and pharmaceutical applications.

3.3 Synonyms

Rasa Taringini

टङ्कणष्टङ्कनश्चैव टङ्कष्टङ्गश्च टङ्गणः । द्रावकष्टङ्कणक्षारष्टङ्कक्षारश्च कथ्यते ॥ रंगक्षारस्तथा रंगो रंगदो लोहशोधनः । लोहशोधनकश्चापि कीर्तितः स्वर्णशोधनः ॥ सौभाग्यश्च सितक्षारः श्वेतक्षारश्च टंककः । क्षारराजश्च कथितो रसायनविशारदैः ॥ (R. T. 13/72-74)

As per *Rasa Tarangini*, synonyms include Ranga, Shwetakshara, Tanka, Rangda, Tangaka, Tankanakshara, Lohashodhana, Kshararaja, Tanga, Svarna Shodhana, Dravaka, Saubhagya, Rangakshara, and Sitakshara. The names Lohashodhana and Svarna Shodhana indicate its traditional use in the purification of metals such as iron and gold, whereas Kshararaja, Shwetakshara, and Sitakshara denote its alkaline nature and characteristic white appearance.

Rasa Jala Nidhi

टंकं च टंकनं चैव मालतीतीरसम्भवम् ।

रङ्गदं रसशोधनं पाचनकं रसाधिकम् ॥

लोहद्रावी रसत्र च सौभाग्यं वर्तुलं तथा ।

कनकक्षारनाम च मीलनं धातुवल्लभम् ॥

लोहश्लेषणकं चैव टंकनक्षार एच । द्रावणकं रङ्गक्षारः सुभगं स्वर्णपाचकम् । लोहशुद्धिकरं चैव टंगनं च तदुच्यते ॥

(Rasa jala nidhi Khand 3/ chapter 5)

Tanka, Tankana, Malti Teer, Rangada, Svaranapachaka, Rasashodhaka, Rasapachaka, Lauhadravi, Saubhagya, Lauhashuddhikara, Vartula, Kanakshara, Meelana, Dhatuvallabha, Tangana, Lauhashleshnaka, Dravanaka, Rangakshara, Rasashodhaka, Lauhashuddhikara, Lauhadravi, Svaranapachaka, Dravanaka and Meelan, Dhatuvallabha, and Subhaga) – these synonyms are mentioned in Rasa Jala Nidhi.

Ayurved Prakash

सौभाग्यं टङ्कगक्षारो धातुद्रावकमुच्यते ।.....

(Ayu.Prakash 2/243)

Saubhagya, Tankanakshara, and Dhatudravaka are synonyms of Tankana that denote its auspicious nature, alkaline characteristics, and ability to liquefy metals, respectively.

Rasendra Sara Sangraha

टङ्गणं क्रामणष्टंगः सम्यक्क्षारश्च पाचनः ।

सुभगो मालतीजातो द्रावी लौहविशुद्धिदः । ।

(RSS 1/238)

Synonyms, includes Tankan, Tank, Samyak Kshara, Maltijaat, Kramana, Pachana, Draavi, Subhaga, and Lauhavishuddhi.

3.4 Vernacular names^[2]

Table 2: Table depicts names of Tankan in different languages.

English	Borax
Hindi	Suhaga
Kannada	Tankana
Latin	Sodium Pyro borate

Malyalam	Ponkaram
Telugu	Veligaram

3.5 Vargas/ Ganas^[3-16]

Table 3: Table showing Different Ganas in which Tankan is mentioned.

Name of varga	Sushruta Samhita	Rasa Tarangini	Dhanvantri Nighantu	Rasa ratna samucchya	Rasa arnava	Yogaratanakar	Ayurved Sara Sangraha	Ayurveda Saukhya	Rasendra Sara Sangraha
Kshara Dravya (4)	+	-	-	-	-	-	-	-	-
Satapushpadi Varga (5)	-	-	+	-	-	-	-	-	-
Shodhana Traya (6-8)	-	-	-	+	+	-	-	+	-
Kshara Traya (9-11)	-	-	-	+	+	+	-	-	-
Ksharashtaka(12)	-	-	-	-	-	+	-	-	-
Dravaka Gana (13-15)	-	+	-	+	+	-	-	-	-
Mitra Panchaka(16-17)	-	-	-	-	-	-	+	-	+

3.6 Types of Tankan

Colour-Based Categorization^[17,18]

अपरो नीलकण्ठाख्यष्टङ्कणः पूर्वटङ्कणात् ।

श्रेष्ठो नीलच्छविः किञ्चिच्छोधनं तस्य पूर्ववत् । । (AP 2/246)

Table 4: Different varieties of Tankan as per Ayurved Prakash.

Tankan	The white variety which is commonly available and widely used form in the market.
Nila Tankan	A special blue-coloured variety which is traditionally recognized as the finest and most desirable form.

Another Colour-Based Categorization as per Rasa Jala Nidhi^[19]

टंकनं द्विविधं ज्ञेयं पिण्डाख्यं च सदामकम् ।

पिण्डाख्यं मलिनश्वेतं सदाम हि सितप्रभम् ॥

Table 5: Types of Tankan as per Rasa Jala Nidhi.

Pidakya	Greyish white
Sadam	Pure white

Appearance-Based Categorization as per Bruhad Rasaraj Sundar^[20]

टंकण स्त्रिविधः प्रोक्त- स्फटिकाभोगुडप्रभः ।

पर्यायःपांडुरस्यापि - नीलकंठश्चतुः ।

उत्तमोनीलकंठश्च- स्फटिकाभश्चमध्यमः ।

गुडाभश्चाधमः प्रोक्तो रसशास्त्रविशारदैः । ।

Three types are mentioned – Gudabha, Spatikabha, Neelakantabha

3.7 Adverse Effects of Consuming Impure Tankan

अशुद्धष्टङ्कणो वान्ति भ्रान्तिकारी प्रयोजितः । अतस्तं शोधयेदेव वह्नावुत्फुल्लितः शुचिः ।।

(Ay. Pra. 2/244)

अशुद्धष्टंकणोवांति- भ्रान्तिकारीप्रयोजितः ।

अतस्तंशोधयेद्वह्नौ भवेदुत्फुल्लितःशुचिः ।।

(Bruhad Rasarajsundar)

Emesis and disequilibrium are two adverse effects associated with the consumption of impure Tankan. ^[21,22]

3.8 Purificatory Methods of Tankan

1. As described in *Ayurveda Prakash*, *Rasa Jala Nidhi*, and *Rasa Tarangini*. ^[23,24,25]

अतस्तं शोधयेदेव वह्नावुत्फुल्लितः शुचिः ।

(Ay. Pra. 2/244)

टंकनं वह्नियोगेन स्फुटितं हि विशुध्यति ॥

(RJN Khand 3, Adhyaya 5)

Raw Tankana is first make into powder form then take hot iron pot and stirred till it becomes light and puffed.

Rasa Tarangini mentions two ways of purification – Nirmaleekarana and Nirjaleekarana.

Nirmaleekarana :

टङ्कणं चूर्णितं तोये तत्त्वसङ्ख्यगुणे भिषक् । सन्द्राव्य वस्त्रपूतञ्च कृत्वा चुल्लयां निधापयेत् ॥ तीव्राग्निना अचेत्कामं नीरं च परिशोषयेत् । स्वलनीरांशशेषे च टङ्कणं निर्मलं हरेत् ॥

(R.T.13/75-76)

One part of Tankana is dissolved in twenty-four parts of purified water, filtered, concentrated by heating to a semi-solid state, and dried completely to obtain purified Tankana.

Nirjaleekarana:

सुचूर्णितं टङ्कणं तु खलु पञ्चपलोन्मितम् । समुज्ज्वलोदरे क्षुद्रकटाहे विन्यसेत्ततः ॥ चुल्लिकायां निधायाथः पचेद् दर्व्या प्रचालयन् । सुपुष्पितं नष्टनीरं शुद्धिमायाति टङ्कणम् ॥

R.T.13/78

Finely powdered Tankana is roasted (*Bharjana*) in an iron vessel with continuous heating until all inherent moisture and water of crystallization are removed, producing a light, porous, expanded, and purified form of Tankana.

2. According to Brihat Rasa Raj Sunder^[26]

जंबीर जरसेनैव अहोरात्र विभावयेत् ।

टंकणःशुद्धिमायाति नात्रकार्याविचारणा ॥

Raw Tankana is taken and is given Bhavana of Jambira Rasa for one day, after that Tankana is dried under sun heat.

Another method

गोमयेनावृतः प्रिये ॥ टंकणःशुद्धचतिह्याशु

Keeping Tankan in cow dung cake is another method of purification.

2. According to Rasendra Sar Sangraha^[27]

आदौ टङ्कणमादाय काञ्जिकाम्ले विनिक्षिपेत् ।

एकरात्रात्समुद्धृत्य रौद्रयन्त्र विभावयेत् ॥

नरमूत्रगतं टंगं गवां मूत्रगतं तथा। दिनान्ते तत्समुद्धृत्य जम्बीराम्बुगतं ततः ॥

जम्बीराम्बुगतसमुद्धृत्य नारिकेलस्य पात्रके।

मरीचचूर्णसंयुक्तं क्षालयेच्छीतलाम्बुना ।

एवं टङ्क समादाय सर्वरोगेषु योजयेत् ॥ (RSS.1/239-241)

Tankana is soaked in Kanji, sequentially triturated (*Bhavana*) with cow urine, human urine, and Jambira Rasa, processed in a coconut shell with Maricha Churna, washed, and dried to obtain purified Tankana.

3.9 Properties and Actions^[28,29,30,31,32]

As per Rasa Jala Nidhi

कटूष्णरुक्षवहिकृत् कफप्रोवायुपित्तकृत् । कासश्वासरजोरोधस्थावरविषजित् तथा ।

पिण्डाख्यं टंकनं ज्ञेयं हीनं तत् सितटंकनात् ॥ कटूष्णस्निग्धतीक्ष्णं हि सितं भेदि बलप्रदम् । पाचकं श्लेष्मवातघ्न क्षयामविषदोषहृत् ॥

पिण्डाख्यात् तु सितं श्रेष्ठ शुद्धतरं हि तन्मतम् ॥

(RJN Tritya Khand, Pancham Adhyaya)

Pinda Tankana possesses Katu Rasa (pungent taste), Ushna Virya (hot potency), and Ruksha Guna (dry property). It exhibits Kapha-Vatahara and Pittakrita actions. Therapeutically, Pinda Tankana is indicated in the management of Kasa, Shwasa, Rajorodha, and Sthavara Visha.

Sita Tankana possesses Katu Rasa (pungent taste), Ushna Virya (hot potency), and Snigdha and Tikshna Guna (unctuous and sharp properties). It is attributed with Kapha-Vatahara, Pittakrita, Bhedi, Balya, and Pachaka actions. Therapeutically, Sita Tankana is indicated in conditions such as Kshaya and Vishadosha.

As per Ayurved Prakash

टङ्कणोऽग्निकरो रूक्षः कफघ्नो वातपित्तकृत् । टङ्कणो वह्निकृत्स्वर्णसूप्ययोह शोधनः परः ॥ विषदोषहरो हृद्यो वातश्लेष्मविकारनुत् ॥ (A.P 2/244-245)

According to Ayurved Prakash Tankana is characterized by Ruksha Guna (dry property). It is attributed with Kapha-Vatahara, Vata-Pittakrita, and Agnikara actions. Therapeutically, it is described as Hridya and Vishadoshahara and is indicated in the management of Vata-Shleshma Vikara, reflecting its therapeutic importance in Ayurvedic practice.

As per Rasa Tarangini

टङ्कणो कटुरुष्णा रूक्षस्तीक्ष्णा सारकः । कफविश्लेषो हृद्यो वातामयनिषूदनः ॥ कासश्वासहरः कामं
स्थावरादिविषापहः । अग्निदीप्तिकरश्चापि भृशमाध्माननाशनः ॥ स्त्रीपुष्पजननो बल्यो विविधव्रणनाशनः ।
पित्तकृच्च समाख्यातो मूढगर्भप्रवर्तकः ॥

(R.T 13/81)

According to Rasa Tarangini, Tankana possesses Katu Rasa (pungent taste), Tikshna, Laghu, Sara, and Ruksha Guna (sharp, light, mobile, and dry properties), Ushna Virya (hot potency), and Amla Vipaka (sour post-digestive effect). It exhibits Kapha-Vatahara and Pittakrit actions. Therapeutically, it is indicated in Kasa, Shwasa, Agnimandya, Visha, Adhmana, Vrana, Ashmari, Atisara, Sthavara Visha, and is also described as Streepushpanashana and Moodhagarbhapravartaka, highlighting its broad therapeutic utility in Ayurvedic medicine.

As per Bruhat Rasraj Sundar

टंकणोद्रावणीभेदी विषहारीज्वरापहः ।
गुल्मामशूलशमनो वातश्लेष्महरः परः ॥
तथैव वह्निकृत्स्वर्ण- रूप्ययोश्शोधनः परः ॥

According to Bruhat rasraj Sundar, Tankana is attributed with Kapha-Vatahara, Dravani, Bhedi, and Agnivardhaka actions. Therapeutically, it is indicated in the management of Gulma, Aamashoola, Jwara, and conditions associated with Visha. In addition to its medicinal applications, Tankana is extensively used in Rasashastra for the purification (Shodhana) of metals, particularly gold and silver, underscoring its pharmaceutical importance.

As per Rasendra Sara Sangraha

टंकणोऽग्निकरो रुक्षः कफप्रो रेचनो लघुः ॥

(RSS 1/242)

It is agnikara, ruksha, Laghu, rechaka and decreases Kapha.

Matra: 1-2 Ratti. (125 - 250 mg approximately).^[33]

Anupana: Madhu, Ghrita^[33]

4. CONCLUSION

Tankana is an important Ayurvedic mineral drug with a long history of therapeutic use and a

distinctive place in Rasashastra. Traditional literature describes it as a potent kshara with applications in cough, asthma, indigestion, abdominal discomfort, and selected external uses such as wound-related conditions. It acts as a prativisha in Vatsanabh poisoning. Studies have demonstrated that thin-layer chromatography (TLC) analysis indicates that the cardiotoxic effects of Vatsanabha are delayed following its processing with Tankana, suggesting a potential detoxifying role of Tankana (34). Its relevance in Ayurveda is further strengthened by its role in compound formulations and by its use as an antidotal agent in classical descriptions.

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