

A CLINICAL APPRAISEMENT OF TANKANA ON ITS THERAPEUTIC EFFICACY IN AYURVEDA

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ABSTRACT

Tankana has been used in Ayurveda since ancient times. In Rasa shastra which is known as Indian Alchemy, it has been categorised under Kshara varga i.e Alkali. Borax is naturally occurring mineral found in evaporite deposits which are produced by the recurrent evaporation of seasonal lakes. The Chemical Formula of borax is Sodium tetraborate decahydrate and Chemical Formula is $\text{Na}_2\text{B}_4\text{O}_7 \cdot 10\text{H}_2\text{O}$. Borax is a toxic substance and poses an unacceptable risk to human health when used directly. So it is purified in various methods in Ayurveda to obtain Shuddha Tankana. Shuddha Tankana has great medicinal value as Muco-Expectorant, Anti-Microbial, Anti-Fungal, Diuretic and is also used as an antidote for Aconite. It has a wide range of therapeutic applications including diseases like vrana (ulcers), Shwasa (Asthma), Kasa (Cough), and Hridya (Heart diseases). The present study focuses on Therapeutic value of Tankana in Ayurveda.

KEYWORDS: Tankana, Borax, Therapeutic use, Ayurveda.

INTRODUCTION

Ayurveda literally means Knowledge of Life. In Sanskrit, Ayurveda consists of two words Ayu meaning Life and Veda meaning knowledge or science. In Rasashastra drugs are classified into various groups such as Maharasa, Uparasa, Sadharan Rasa, Dhatu Varga, Upadhatu Varga, Lavana Varga, Kshara Varga. Tankana has been described under Uparasa. Rasagranthas have included Tankana under the group of Kshara varga, Kshara panchaka, Dravaka Gana, Mitra panchaka etc. In the procedure of Apunarbhava test for Bhasma, Parada

Vedasamskara, Vidahi Mukhakara Dravyas, Tankana is also used to cleanse gold and silver. There are various references of Tankana in Charaka Samhita, Ashtanga Hridaya, Sushruta Samhita, Gadanigraha, Kalyanakaraka. It is best Antidote for Vatsanabha and also found in most of the formulations of Vatsanabha.

DISCUSSION

It is Available on the bank of the river Malathi and also available in Kashmir, Tibet. A kind of mud containing Tankana is found in the beds of dried lakes in upper part of india and Tibet. This mud is called as TANKAL. It is to be dissolved with water filtered in usual way and dried up by heat leaving crystals of borax.

Tankana is also named as Tankana kshara due to its Ushna, Tikshna, Sara Guna and Katu rasa. It is used as Kshara. Borax is alkaline in nature. There are various methods of Shodhana mentioned in Rasa Granthas. Intention of Shodhana procedure is to make Tankana light and puffy one so that moisture content should evaporate. Most of the Granthakaras has described the method with the help of Agni samskara in hot pan. Some others has described the use of sun light for drying purpose.

Ayurveda is a Rich Ancient science which is having number of herbs and minerals that are used in various preventive and curative aspects. Tankana should be purified by certain methods which are enumerated in Ayurvedic classics before bringing into medicinal use. Tankana Bhasma is one of the Ayurvedic calcined formulation prepared from borax powder. Hence Consumption of Tankana in impure form can result in toxic reactions.

MATERIALS AND METHODS

Classical texts of Ayurveda especially rasa shastra, research journals and internet were taken as the source of present study.

Literary Review

Tankana (borax) has been in use since the Samhita kaal. It is one among ksharatrya and is also known by other names e.g. tanka, shweta kshara, kshara raj, suhaga, saubhagya.^[1]

Purification of Tankana: Tankana is recommended for internal as well as external use. Depending on usage, it is purified in different ways.

Nirmalikaarana: Tankan is dissolved in 24 parts of water, filtered and subject to intense heat till little water is left and then dried completely. This is used for preparation of tankanamla and in external applications.^[2]

Nirjalikaarana: There are few methods of purification but in the commonly used one, raw tankana is first powdered, heated over a low flame in an iron vessel and stirred till it loses water and tankana particles swell up in the form of kheel. It is then allowed to cool, made into a fine powder to obtain shuddha tankana.^[3] The same is called Tankana bhasma.

Ashuddha Tankana Sevana Doshas: If Tankana is consumed without purification it causes Vanti(vomiting) and Bhranti(giddiness). Hence it should be purified to avoid those symptoms.

Guna Karmas

- **Rasa** - Katu
- **Guna** - Tikshna, Laghu, Sara, Ruksha
- **Virya** - Ushna
- **Vipaka** - Amla
- **Karma** - Kapha, Vatahara, Pittakrut, Sthavara vishahara, vividh vana nashaka, Streepushpa janana, Agnideepaka, Kapha vishleshaka[Mucolytic], Mudhagarbha pravartaka^[4]

Matra: 1-2 Ratti (125-250 mg approximately)^[5]

Anupana: Madhu, Ghrita.^[6]

Amayika Prayoga of Tankana Bhasma^[7]

Kapha Vilayanartha	–	Tankana, Trikatu, Vasakshara, Katphal.
▪ Udara Roga	-	Tankana, Trikatu, Jayapala churana.
▪ Ashuddha Parada Sevana Vikarajanya lalasrava	-	Gargling with Tankana mixed with jala.
▪ Swaravarodha	-	Tankana is made into pieces and the juice is to be swallowed
▪ Udaradhamana	-	Tankana, Trikatu, Madhu.
▪ Stomatitis, Sore gums	-	Tankana, Bola churana.
▪ Snayuka Roga(Worm infestations)	-	Tankana, Shuddha Hingu, Yava Kshara.
▪ Vrana ropana	-	Tankana as Dusting Powder.
Tankana with Purana guda.		
▪ Yoni Paka	-	Washed with Tankana Jala.
▪ Sidhma Roga	-	Tankana, Sweta Chandana as lepa.
▪ Chardi Roga	-	Tankana, Kakamachi Swarasa

S.No.	Rogagnata	R.T	A.P	R.A	R.J.N	R.N	B.R.R.S	Y.R
1.	Kasa	+	+	+	-	-	-	-
2.	Shwasa	+	+	-	+	+	-	-
3.	Adhmana	+	+	+	-	-	-	-
4.	Vrana	+	-	-	-	-	-	-
5.	Gulma	-	-	+	-	-	-	-
6.	Shoola	-	-	+	+	+	-	-
7.	Jwara	-	-	-	+	-	-	-
8.	Visha	-	+	-	-	-	-	-
9.	Rajorodha	-	-	-	-	-	-	-
10.	Kshaya	-	-	-	+	-	-	-

Therapeutic Uses^[8]: It is believed that it improves the natural ability of the human body to absorb calcium and magnesium. Borax, commonly used as a natural cleaning agent, is an increasingly popular natural remedy for a whole host of health issues. Fruits like apples, oranges, red grapes, pears, plums, kiwis, sultanas, dates, as well as certain vegetables, avocado, soyabeans, and nuts are rich sources of boron. Other notable sources of Boron are chickpeas, hazelnuts, currants, peanut butter, red kidney beans, tomato, lentils, olive, onion, potato, wine and beer.

1. Heals swollen Throat, Mouth and Tongue Sores: Borax is a remedy to be used as a topical treatment for certain health problems like sores on the tongue or mouth, as well as swelling of the throat. The remedy includes application of a paste made by combining borax with Cinnabaris, Borneolum, and Natrii Sulfas Exsiccates.

2. Prevents Arthritis: Research suggests that those with arthritis have lower boron concentrations in their bones along with synovial fluid, and femur heads. Thus use of Boron can stem this. Boron ensures that calcium levels are maximized and used effectively, thus preventing arthritis.

3. Relief from Painful Swollen Red Eye: Borax is paired with Calamina, Borneolum and Natrii Sulfas Exsiccates to create eye drops. These are used to soothe the eye when it is red and swollen. Boron protects the eye from a host of parasitic attacks and other nasty fungal infections.

4. Solves Menstrual Problems: Studies have evaluated its use along with other herbs to help treat Poly Cystic Ovarian Syndrome or PCOS and found it to be effective. Boron can also cure the symptoms such as hot flashes and night sweats that are typically associated with menopause, clotted menstruation, painful menstruation and it ensures that the mineral level

remains at appropriate levels since post-menopausal women often suffer from hormonal imbalances that can skew many of the body's most important systems.

5. Enhances Testosterone Levels: Boron is able to enhance the testosterone level in males; this quality is increasingly taken advantage of by male bodybuilders and athletes.

6. Enhancement of female libido: Borax stabilizes calcium and magnesium in the blood. It stimulates hormone production. Toxic states of hyper fluoride accumulation, internal fungal growth and dangerous microbe production are normalized by borax consumption. Finally, borax has been attributed to female libido enhancement.

7. Cures Urinary Infections: Its antimicrobial benefits can therefore be tapped to cure urinary infections. Chinese herbal medicine has a similar application in treating urinary dysfunction that involves stone formation in the urine and is often painful.

8. Cures Womb Inflammation: Women suffering from womb inflammation are recommended to soak in lukewarm bathwater with borax twice a day. If women displayed profuse, egg-white-like discharge or leucorrhoea, they were told to douche with borax and lukewarm water solution three to four times per day. Other symptoms that can be alleviated by borax and water exposure include painful sexual intercourse, blood-streaked vaginal discharge, abdominal distension and false signs of pregnancy.

9. Helps in cancer Therapy: Boron neutron capture agents are used for cancer therapy and in the development of strong enzyme inhibitors. Its compounds are also used as antibody mimics that can easily identify biologically important saccharides. It is used in the treatment of Cough, Bronchitis.

10. Anti-Microbial Effects^[9]: Many research studies have proved Anti fungal and Anti bacterial action of borax against bacterial strains like *S.Aureus*, *S.Pyogenes*, *P.aeruginosa* and fungal strains like *A.niger* and *C.albicans*.

11. Anti-Inflammatory Action^[10]: Boron reduces the levels of inflammatory biomarkers as per number of studies have indicated.

12. Wound Healing^[11]: Boron has shown most significant improvement in the healing of wound. Deep wounds can be treated by applying 3% boric acid solution.

Other Therapeutic Uses in Ayurveda

- Tankana is one of the commonly available mineral compound of Gynaecological therapeutic importance.
- It is also used in treating Food poisoning.^[12]
- It improves digestion power, relieves bloating.
- It is also used in Stree Pushpa Janana and Arthava dosha (Menstrual disorders).
- Rajah Pravartini Vati is one of the preparation of tankana which has been commonly used in Ksharthava (Dysmenorrhoea) and other associated pains.^[13]
- It induces Menstruation in women suffering with Amenorrhea or Oligomenorrhea (Scanty menstrual flow).
- It is useful in dandruff, Tankana is applied on hair and kept for 5 to 10 min and then washed out.^[14]
- It is useful in ulceration of mouth and cracks and fissures of tongue.
- Dose varying from 10-30 grams are given in prolonged labour.^[15]
- Useful in other uterine infection.
- Useful in chronic tonsillitis. Gargling with Tankana Bhasma dissolved water gives significant result in relieving Tonsillitis.^[16]
- Acts as Hridya.
- It is also used in vata imbalanced diseases.
- It is also used as an antidote and minimize the toxic effects of vatsanabha.
- Tankana is used in the process of repairing the injury to the skin and other soft tissues.
- It acts as Haemostatic. When a fine powder of tankana is sprinkled over wounds i.e. *vrana* then immediately it causes haemostasis.^[17]
- *Tankanamla* (Boric acid) is used for *vrana prakshalana* in *Aupasargika meha vrana* i.e. ulcers of genito urinary area in Sexually Transmitted Diseases.^[18]
- Tankana is one of the main ingredient of Pippalyadi Yoga which is prescribed for *Garbha nirodhaka* (Contraception). It is administered along with milk during menstrual phase.^[18]
- Tankana is also an ingredient of *Nashtapushpantaka rasa* which is useful in various gynaecological disorders like *nashta shukra*, *nashta pushpa*, *yonishola*, *kleda yoni*, etc.^[19]
- It helps in relieving the obstruction in *Mudha Garbha* (Obstructed labour).^[20]

Non-Therapeutic Uses: Borax has a wide variety of uses.

- It is a component of many Detergents, Cosmetics and Enamel glazes.

- It is also used to make Buffer solutions in Bio-Chemistry.
- Used as a Fire Retardant,
- As an Anti-Fungal Compound for fibreglass.
- As a flux in Metallurgy.
- As a Neutron Capture shields for radio active sources.
- As a Texturing Agent in cooking.
- Also as a Precursor for other Boron compounds.

Side Effects and Allergies of Borax

Internal use of Borax is generally not suggested. Due to its high alkaline nature, it might cause skin irritation. There are also reports of adverse reproductive and developmental impact on the foetus. Its use in the long term is not recommended as there is a possibility of causing renal dysfunction as the borax accumulates in the body. It can also cause fatigue or vomiting due to toxicity. Some research suggests it could also cause genetic damage and be toxic to lymphocytes, the building block of the body's immune system.

Yogas of Tankana Bhasma^[21]

Shankha Drava, Nimbu Drava, Tankanadi Churna, Amrutarnava Rasa, Tankanadyanjana Ardhanarishwar Rasa, Tankanadi Vati, Aanandabhairava Rasa, Dadruhar Lepa, Udakamanjiri Ras, Amrutmanjiri Rasa, Kanakasundara Ras, Gaganasundara Rasa, Chintamani Rasa, Jwaranagamayur Rasa, Trailokya Chintamani Ras, Navajwarebhankush Ras, Nasyabhairava Rasa, Panchavakra Rasa, Pratapamartanda Ras, Pratapalankeshwara Ras, Mrutyunjaya rasa, Sannipata Bhairava Ras, Sarvanga sundara Ras, Siddha praneshwara Ras.

CONCLUSION

Tankana shows characteristic of Kshara and hence used in Shwasa, Kasa, Mukhapaka, Danta Roga. It acts as Kaphavidravaka in all the diseases. It is also used in cancer recently. Tankana make the action faster if Madhu and Ghrita used as Anupana along Tankana. For Shodhana of Tankana, use of external heat method is more easy and economically cheaper. The use of Tankana on menstrual disorder and prolonged labour is more significant.

It performs various biological actions in the body in a smooth manner. It also acts as a Hormone regulator in females. It is considered as a potent antimicrobial agent and plays a vital role in vrana i.e wound healing. So going through the ayurvedic literature and various

research studies of tankana in ayurveda and also in modern science, we can easily conclude that tankana(Borax and its compounds) has great therapeutic value for humans.

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