Tankana (Borax): It’s Therapeutic Value in Gynecology

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Abstract

**Tankana** has been used in ayurveda since very long time and has been kept under *kshara*(alkali) *varga*. Chemically it is composed of boric acid and sodium and is also named as sodium tetra borate decahydrate. It occurs as a natural deposit in the form of crystalline tough masses formed by evaporation of water, on shores of dried up lakes in India, Tibet and Nepal. It is then purified to get **Tankana Bhashma**. Borax is only ingredient of **tankana Bhasma**. Borax contains 11.3% boron. Boron is always chemically bound to oxygen forming borates (borax or boric acid). Boron is a naturally occurring element widespread in nature. Fruits and vegetables are the primary sources of boron. It is an essential element for dietary intake for human and animals. **Shuddha tankana** has great therapeutic/medicinal value as a potent expectorant, anti-inflammatory, digestive, diuretic, antimicrobial and is considered as an antidote for Aconite. The present study focuses on the therapeutic value of **tankana** in stree roga.

**Keywords:** Tankana, Borax, Gynecological use, Ayurveda.

Introduction

Female health is of prime concern nowadays. The common gynecological issues of occurrence are those related to abnormal menstruation (scanty, excessive and painful menstruation), abnormal vaginal discharges, vaginitis, ovarian cysts and carcinomas of cervix, uterus. Ayurveda is a rich ancient science having a number of herbs and minerals for preventive and curative aspect in stree rogas.

The one commonly available mineral compound of gynecological importance is **Tankana**.

It is categorized among *kshar dravyas* and one finds reference of its use in Charak Samhita, Sushruta Samhita, Ashtang Sangraha and in various texts of Rasa Shastra. Besides for its medicinal uses it has been used in various detoxification/purification and calcination processes for metals and minerals and various alchemical procedures related with mercury. **Tankana** is a very popularly used ingredient of various *kaasa shwasahara* herbo/mineral preparations and also those which contain *vatsanabha* (**tankana** is considered antidote of *vatsanabha*).

**Tankana** should be purified by certain methods enumerated in ayurvedic classics before bringing it into medicinal use. Consumption in impure form can result in toxic reactions. **Tankana bhasma** is an ayurvedic calcined formulation prepared from borax powder.

**Aims and Objectives**

- To review the available literature of **tankana**(borax); both ayurvedic and modern aspect.
- To focus on the therapeutic use of **tankana bhasma** in stree roga.
Materials and Methods
Classical texts of Ayurveda especially *rasa shastra*, research journals and internet were taken as the source of present study.

Literary Review
*Tanaka* (borax) has been in use since the *Samhita kaal*. It is one among *ksharatyra* and is also known by other names e.g. *tankana*, *shweta kshara*, *kshara raj*, *suhaga*, *saubhagy*[1].

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

For external use: *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].

For internal use: 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*.


Dose: 125-250 mg [5]

Uses: After purification it is used in the form of *tankana bhasma* (borax powder), *tankanamla* (boric acid) or *tankanamla drava* (diluted boric acid) either internally or externally.

Use in *Stree Roga*:

- **In *Aartava dosha*** (Menstrual Disorders): In *stree roga* it is used in *anaartava* (pathological amennorrhoea), *alpa artava* (oligo/hypomennorhoea), *kashta aartava* (dysmenorrhoea) as *tankana* is *stree pushpa janana*. *Rajapravartini vati* is one preparation of *tankana* commonly used drug in *rajo rotha*(amennorrhoea), *kashta raja* (Dysmenorrhoea) and associated pains[6].

- **In *Yoni gata roga***: It is also an ingredient of *Nashtpushpantaka rasa* which is used for various gynecological disorders like *nashta pushpa*, *nashtra shukra*, *yoni shoola*, *ritu shoola*, *kleda yoni*[7]

- **Garbha nirodhaka**: *Tankana* is one of the main ingredients of *Pippalyadi yoga*; prescribed for contraception and is given during menstrual phase with milk[8]

- **Mudhagarbha pravartaka** (relieves obstruction in obstructed labour): In prolonged and tedious labors due to weak uterine contractions 30 grains (1.94gm) of borax with 10 grains of powdered cinnamon in a little warm *conjee* may be given every 1-2 hrs upto 3-4 doses [9].

External use (*bahya prayog*)

- Haemostatic: Fine powder of *tankana* when sprinkled over *vrana*(wound), immediately causes haemostasis[10].

- In *Yoni pidka* (small eruptions in genital tract) and *ruja* (pain); *tankana* water is used in the form of *yoni basti* (vaginal douche) [11]. In distressing irritation of the genital organs in both male and females, tampon/gauze saturated with a strong solution of borax (1:16) kept to the parts affords much relief [12].

- In *aupsargika mehauth vrana*(ulcers of genitourinary area in Sexually transmitted diseases) *tankanamla*(boric acid) is used for *vrana prakshalana* [13].

- In chronic *shweta pradara*, *tankana amla drava*(diluted boric acid) is commonly used in the form of *yoni bastii*(vaginal douche) for seven days[14]. For preparing *tankana amla drava* 10 *ratti*(1.25gm) *tankana amla*(boric acid powder) is dissolved in 5 *tola* *parisruta jala* (60ml distilled water)[15].
In case of women a solution of 1:5 in the form of vaginal injection proves useful in cystitis, leucorrhrea, gonorrhea and lithic acid deposits[16].

- **Vrana ropaka**: Tankana is used in the process of repair of *vividha vrana* (various types of wounds) [17] either in diluted form to wash the wounds or in the form of *malhar*. In *stree roga* it is popularly used for *yoni prakshalana* to treat *garbhashya greevamukha gata vrana* (cervical erosion).

- In lactating mothers having sore nipples and other forms of skin eruptions a solution of borax (1:8) is applied locally before and after breast feed[18].

- In chloasma and freckles acne, a dilute solution of borax 1:10 is used to wash the face[19]

**Contraindications**: As tankana is ushna, *teekshna*, it is used judiciously and in low doses in *bala* (children) and *vridhha* (old age). Its use in contraindicated in *garbhini*.

**Modern View**: The term borax is used for a number of closely related chemical compounds that differ in their crystal water content, but usually refers to the decahydrate. It is an important boron compound. Borax contains 11.34% boron. Boron is a naturally occurring element widespread in nature.

The average concentration in the earth’s crust has been estimated to be 10 ppm and in seawater, 4.6 ppm. Fruits and vegetables are known to be primary sources of boron. Among vegetables, leafy greens have the highest boron levels. Boron is always chemically bound to oxygen forming borates (e.g borax or boric acid).

When administered to humans inorganic borates are bio transformed to boric acid and are absorbed from mucosal surfaces. Boric acid shows affinity for cis-hydroxyl groups, and such affinity may account for the mechanism by which boric acid produces some of its biological effects [20].

Recent studies on biological significance of boron in various metabolic, nutritional, hormonal and physiological processes indicate that Boron is essential for humans and animals [21].

**Therapeutic Value of Boron and its Compounds**

**Bone Growth and Maintenance**: Boron plays an important role in osteogenesis and its deficiency has been shown to adversely impact bone development and regeneration [22].

**Wound healing**: boron has been shown to significantly improve wound healing. Application of 3% boric acid solution to deep wounds reduced the time required in intensive care by two third [23].

**Hormonal action**: studies have proved that dietary intake of boron produces effects similar to estrogen supplementation in women who suffer from postmenopausal osteoporosis. In human males, an orally administered daily dose of 10mg/day of boron as sodium tetra borate for seven days produced a significant decrease in sex hormone binding globulin and increases the mean free testosterone level in blood plasma [24].

**Anti-inflammatory effects**: A number of studies have indicated that boron reduces levels of inflammatory biomarkers [25].

**Antimicrobial Action**: Various research studies have proved antibacterial and antifungal action of borax and boric acid, specifically against bacterial strains *E.coli, P.aeruginosa, S.aureus, S.pyogenes* and fungal strains *C.albicans, A. niger* [26].

**Anticancer effects**: Certain studies have indicated that boron possesses anticarcinogenic properties. Boron rich diets and regions where soil and water are rich in boron present with lower risk of several types of cancer like breast, cervical and lung cancers. HPV-16 and HPV-18 cause approximately 95% of all cervical cancers and boron interferes in the life cycle of HPV.

Serine protease inhibitors reduce the immortalizing and transforming capacity of the HPV E7 oncogene [27]. Boron exists in the human body mostly in the form of boric acid, a serine protease inhibitor [28].

**Toxic effects**: Micronutrient elements may be toxic at some dose, duration of exposure time and application method.
Laboratory and animal studies have been extensively conducted to determine the toxicity of borate compounds. It was reported that 17.5 mg boron/kg per day affected fertility in rats. In humans acute toxicity symptoms of excessive boron exposure are nausea, vomiting diarrhea and lethargy [29].

Discussion

Tankana is a kshara. Kshara has the property of ksharan (cutting). It is Katu in rasa and katu rasa is kleda naashaka, kandu naashaka (pacifies pruritis), vrana avsaadaka (depresses wound), krimi naashaka (kills microorganism), maansa vilekhana (scrapes muscle tissue), shonita sanghata bhedaka (brings lysis of clotted blood)[30]. Because of these properties and actions it is used in yonigata vrana chikitsa (wound management) either for vrana prakshalana or applied as malahara .It is ushna in veerya and vipaka, pitta krita(increases pitta dosha). Because of these properties it is stri pushpajanana as aartava is aagnya [31].

It is kaphaghna vata shamaka, teekshna and thus cures anaartava (amenorrhoea) as aggravated kapha and vata obstruct the aartava vaha srotas and destroy aartava[32]. It is ushna and thus relieves pain in kashtaartava. It also has balya property thus strengthens body. In higher doses it stimulates uterine contractions and thus is used in prolonged labour to increase uterine contractions.

Boric acid is a weak acidic hydrate of boric oxide with antiseptic, antifungal properties. This property makes it a good agent for vaginal douche in chronic leucorrhoea, cervical erosion and for wound wash. Almost all the properties and actions described in ayurveda; prove very well when tested through different research studies and through the parameters of modern science. Role of boron and its compounds (borax, boric acid) for humans is well established.

Conclusion

Going through the ayurvedic literature of tankana and various research studies conducted in ayurveda as well as modern science we can easily conclude that tankana (boron and its compounds) has great medicinal value (internal and external use) for humans specially in stree roga (gynecology) when used judiciously in appropriate doses and in combination with other herb mineral drugs.

It conducts various biological actions smoothly in body. It is a potent antimicrobial agent and has vital role in vrana (wound) healing. It acts as a hormone regulator in females. But one should always keep in mind its contraindications and long term use side effects.

References

24. Naghii et al. the effect of boron on plasma testosterone and plasma lipids in rat, nutr research17:523-531
32. Tripathi, Dutt Ravi, Astanga Samgraha of Srimad Vridhha Vaghbha, Sharir Sthana, 1/13, Chaukamba Sanskrit Pratishtthan Delhi, 2006