

WATER PURIFICATION THROUGH THE AYURVEDA BY THE JAL SHODHAN BHASMA

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ABSTRACT

I have introduced here water cleaning strategies for drinking reason by applying of *Dushita Jal Shodhan Bhasma*, an ancient information accessible in India from the Samhitas, the most established arrangement of clinical practices. By using this *Dushita Jal Shodhan Bhasm*, design a cost effective & protect the public from infectious disease caused by contaminated water. A straightforward technique is intended to direct an examination for discovering the viability of the said strategy.

KEYWORD: *Dushita Jal Shodhan Bhasma, Water pollution, Water purification.*

INTRODUCTION

Water is the basic need of life, 70% part of the earth has water on it and it is impossible to live without water for human. Man can make due for 5 weeks without food yet not over five days without water. Water is basic and overwhelming constituent of cell cellular material. In that manner 70% of our body weight is because of water as it were.^[1] In present time drainage of sewage water, industrial water etc. are the main cause of water

contamination. In ancient time many ways were used to clean polluted water. The water was polluted by existence of insects, excreta, ova, putrefied-dead bodies of animals, also existence of rotten grasses and leaves and whoever drinks direct rain water, will get affected by both external and internal diseases quickly.^[2] In present time many water cleaning methods are available and they are costly and also in rural areas they are far to reach these methods. Though methods are good for cleaning water but at the same time water losses its nutritional properties.

The *Acharyas* had perceived the significance of unadulterated water in the upkeep of good wellbeing. *Ayurvedic* view on safe water standard is strikingly like that of the current idea of healthy and satisfactory water portrayed in present day clinical writings. The traditional method are better cause it cleans water and at the same time the drugs used in it, keep its nutritional properties. In *Samhitas* there are many ways to clean water, among such methods *Achyara Sushruta* has mentioned ***Dushita jal sodhan bhasma*** method which is very effective and the cleaning of the water and also its sustained the nutritional properties.

Pure Water quality

Water for drinking reason must be protected and entire some water is a one which is:-

- Free from pathogens.^[3]
- Free from harmful chemical substances.^[3]
- Pleasant to taste (free from odour and colour).^[3]
- Water which is no smell, no noticeable taste, extinguishes thirst, clean, cool, light and satisfying to the brain is supposed to be best in characteristics (appropriate for drinking).^[4]

Health hazards due to polluted water

It is determined that 1.1 billion individuals out of 6 billion populaces on the earth have no admittance to clean drinking water, for example, secured springs and wells. Polluted water goes about as a vehicle for transmission of numerous communicable disease. Many people dying every year due to bacterial contamination in water causing diseases like diarrhoea & jaundice.

According to Ayureda and modern

Every one of these sorts of water is ill suited for washing or drinking. They will create, whenever utilized, thirst, expansion and extension of the abdomen, fever, cough, weak

digestive capacity, ophthalmia, itching and boils on the skin, henceforth such contaminated water ought to be dismissed.^[5]

Health hazards of water contamination are classified into two broad groups^[6]:

1. Biological Hazards (viral disease-viral hepatitis A etc., bacterial diseases-Typhoid, cholera etc., protozoal diseases etc.)
2. Chemical Hazards (ex. Fluoride, organic impurities like sulphates and chlorides, salts of lead, iron and zinc etc.)

So a significant assignment before experts in creating and immature nations is giving drinking water to their people. Pure drinkable water is the major therapy of all.

Purification

In present time a few strategies for decontamination of water are given somewhere else. House hold purification of water are three methods.^[6]

1. Physical

- (a. Boiling
- (b. Ozonation
- (c. Ultra violet irradiation

2. Chemical

- (a. Chlorine
 - Bleaching powder
 - High test hypochlorite
 - Chlorine tablets
 - Chlorine solution
- (b. Iodine
- (c. Potassium permanganate

3. Mechanical

- (a. Ceramic filters
- (b. Pasteur- chamberland filter
- (c. Berkefeld filter
- (d. Carbon and pad filter
- (e. Katadyn filter

(f. Aquagaurd and reverse osmosis

Nonetheless, the virtue of drinking water from this cycle alone isn't adequate. Perceiving a financial and effectively available framework for improving water quality stays as fundamental for a community particularly when it is isolated from terrain. In *Sushruta Samhita*, *Acharyas* had written water purification method for drinking purpose by using following *Bhasma*.

1. Dhava
2. Asvakarna
3. Asana
4. Paribhadra
5. Patala
6. Siddhaka
7. Moksaka
8. Rajadruma
9. Somvalka

Every one of these medications should be burnt and the ash spread on the water of lakes, supplies of water and a modest bunch of this ash should be placed into the pot containing drinking water to be utilized when required.^[7]

1. Dhava (*Anogeissus Latifolia* Wall.)

Chemical constituents: Glycosides alanine and phenylallanine, allagic acid, quercetin, myricetin, trimethyl ellagic acid.^[8]

Action- Dhava has property of *Rasayan*^[9] which act as to bring the sum state by bringing the visham dhatu into equilibrium. It's extracts have **Antibacterial**^[10], **Antioxidant**^[11], **Antifungal**^[11] and **Anthelmintic activity**.^[11]

2. Asvakarnaka (*Dipterocarpus turbinatus* Garten.f.)

Chemical Constituents: Wood-Dipterocarpol (triterpenoid), Oleoresin-dammarenediol II (tetracyclic triterpenoid), betulonic acid(pentacyclic lupane-type triterpene derivative) etc., Essential oil - α -cadinena(sesquiterpenoid), α -muurolene (sesquiterpene)etc.^[12]

Action- Asvakarnaka has property of *kriminashk* and **Reduces toxicity**.^[13] Its extract has Betulinic acid that shows **Antiretroviral**, Antimalarial and Anticancer properties.^[14] Also the presence of dammarenediol-II shows **Antiviral activity**.^[14]

3. Asana (*Pterocarpus Marsupium Roxb.*)

Chemical constituents: Heart wood-Pterostilbene, trihydroxy chalcone, liquiritigenin, isoliquiritigenin, isoflavone glycosides-retusin 7-glucoside, irisolidone 7-rhamnoside, 5,7-dihydroxy-6-methoxy isoflavone 7-rhamnoside, oleanolic acid (pentacyclic triterpene), phenolic compounds, marsupol isoflavonid, benzofuranone marsupin.^[15]

Action- Asana has quality of *Rasayan*, *kriminashak* and healthy for skin.^[16] Pterostilbene is structurally correlated to resveratrol, have potential **Antioxidant**^[17], Pro-apoptotic^[17], Antineoplastic^[17], Cytoprotective activities^[17] and **Antibacterial activity**.^[18]

4. Paribhadra (*Erythrina variegata Linn. Var. orientalis (Linn.) Merrill.*)

Chemical constituents: Root contains-isoflavonoids eryvaristerene, seadenone, erycristagallin, phaseollidin, Irobavachin. Stem bark- alkaloids like erycristagallin, phaseollidin, Irobavachin. Stem bark-alkaloids like erysotine, erythratidine, epi-erythratidine. hypaphorine, erythraline erysoline. Flowers-erythratine, ferulic and caffeic acids. Seeds-fixed oil.^[19]

Action: It has *kriminashk* property.^[20] Chemical Constituents of Paribhadra have highest **Antibacterial activity, Antioxidant, Cadmium removal and Zinc removal properties**, also helps to prevent dental caries.^[21]

5. Patala (*Stereospermum suaveolens DC.*)

Chemical constituents: Plant contains napthoquinone lapachol, Root bark contains β -sitosterol, n-triacontanol and Leaves contain flavone glycosides.^[22]

Action-Patala has *Trsna nashk* property.^[23] The β -sitosterol found in it shows anti-carcinogenic, anti-atherogenic and antioxidant property.^[24] The soluble parts of chemical compound hexane and carbon tetrachloride has moderate **Antimicrobial activity**.^[25]

6. Siddhak (Nirgundi) (*Vitex Negundo* Linn.)

Chemical constituents: Leaves α -pinene, camphene, caryophyllene, citrol, zalaloids-nishidine and hydrocotylene, amorphous glucoside, iridoid glucoside, phenolic acids, flavonoids casticin and luteolin.^[26]

Action- It has *kriminashk* property, **Boosts memory, cure skin disease** and its leaf shows **vermifuge**.^[27] The Phenolic acids have characteristics of **Antioxidants**, Anti-inflammatory, **Antibacterial** and **Antimicrobial activity**.^[28] The extract of *Vitex negundo*-L shows Hepatoprotective, **Antioxidant**, and **Antibacterial activity**.^[29]

7. Moksaka (*Schrebera swietenoides* roxb.)

Chemical constituents: Bark and leaves contains tannins, Mannitol, fructose and digalactoside-swietenose.^[30]

Action- The Moksaka reduces **poisons, body fats, itching, worm infestation**.^[31]

The extracts of Moksaka has a role in **Antioxidant**^[32], Anti-inflammatory^[32] and **Antibacterial activity**.^[33]

8. Rajdrum (Amaltas): (*Cassia Fistula* Linn.)

Chemical constituents: Leaves contain 7 triflavonoids and 2 biflavonoids, fruit pulp contains, rhein glucoside, lupeol, β -sitosterol, hexacosanol, proanthocyanidins and epicatechin.^[34]

Action- It improve tastes, **cures skin diseases, also very good bowel cleanser**.^[35] The extract of leaves, stem bark and fruit pulp shows **Antibacterial activity, and Antifungal activity**.^[36]

9. Somvalk (*Acacia leucophloea* (Roxb.) Wild.)

Chemical constituents: Root- anthraquinones and glycosides, leucophenol, leucopheoxal, Bark-n-hexacosanol, Heart wood-octacosanol, pinitol.^[37]

Action: It Cures the disease of **Rakta, diminishes itching, poisonous effect, worms and skin disease**.^[37] Chemical constituents of Somvalk have **Antimicrobial**, Antiviral, **Antiparasitic properties** and **Antioxidant activity**.^[38]

DISCUSSION

The action of drugs which we use in *bhasma* are *kriminashak*, *Rasayan*, *Vishaghana*, Boosts memory, *Trishna-nashak* and have many more properties as they are mentioned in *Nighantus*. The researches are done on all these drugs and the chemical constituents of the drugs also shows same properties like antibacterial, antiviral, antifungal, etc however without any side effects to human health. Hence the *Dushita jal shodhan bhasma* is an acceptable choice for water purification.

CONCLUSION

The main goal is to improve human health by drinking water thus *Dushita jal shodhan bhasma* process is easy and improve human health in every aspect.

REFERENCES

1. AH Suryakantha, Community Medicine with Recent Advances, IVth ed., New Delhi London | Philadelphia | Panama, The Health Sciences Publisher; 2017, page no. 23.
2. Prof. K. R. Srikantha Murthy, Illustrated Suśruta Samhitā Vol.I, Reprint ed. sutra sthana 45/9-10, Varanasi Chaukhambha Orientalia; 2017, page no. 326.
3. AH Suryakantha, Community Medicine with Recent Advances, IVth ed., New Delhi London | Philadelphia | Panama, The Health Sciences Publisher; 2017, page no.24
4. Prof. K. R. Srikantha Murthy, Illustrated Suśruta Samhitā Vol.I, Reprint ed. sutra sthana 45/10, Varanasi Chaukhambha Orientalia; 2017, page no. 328-329.
5. Translated By Prof. K. R. Srikantha Murth, Aṣṭanga Samgraha of Vāgbhaṭa (Text, English Translation, Notes, Indexes Etc.) Vol-I, Reprint ed. sutra sthana 6/23-24, Varanasi Chaukhambha Orientalia; 2017, Page no. 86.
6. AH Suryakantha, Community Medicine with Recent Advances, IVth ed., New Delhi London | Philadelphia | Panama, The Health Sciences Publisher; 2017, page no.26, 27.
7. Prof. K. R. Srikantha Murthy, Illustrated Suśruta Samhitā Vol.II, Reprint ed. Kalpa sthana 3/9, Varanasi Chaukhambha Orientalia; 2017, page no.430.
8. Commentary By: Dr. Bulusu Sitaram Foreword By: Prof. K. C. Chuneekar, Bhāvaprakāśa of Bhāvamiśra (Original Text Along With Commentary And Translation) (Including Nighanṭu Portion) Vol.I, Reprint ed. Vatadi varga, Varanasi Chaukhambha Orientalia; 2018, Page No. 354.
9. Bāpālāl G. Vaidya, Nighanṭu Ādarśa Vol.I, 3rd ed. Haritakyadi Varga, Varanasi Chaukhambha Bharati Academy; 2002, Page No. 569.

10. https://www.researchgate.net/publication/275350298_Antibacterial_activity_of_Anogeissus_latifolia_RoxbexDC_ex_Guill_and_Perr.
11. <https://pharmacologyonline.silae.it/files/newsletter/2010/vol2/53.Singh.pdf>.
12. Dr. J. L. N. Sastry, Foreword By Prof. K.C. Chuneekar, Dravyaguna Vijnana (Study of The Essential Medicinal Plants In Ayurveda) Vol.II, 3rd ed., Varanasi Chaukhambha Orientalia; 2008, page no. 624.
13. <https://www.easyayurveda.com/2015/05/24/ashwakarna-dipterocarpus-turbinatus/>.
14. <https://innovareacademics.in/journals/index.php/ijpps/article/view/4686/8581>.
15. Commentary By: Dr. Bulusu Sitaram Foreword By: Prof. K. C. Chuneekar, Bhāvaprakāśa of Bhāvamiśra (Original Text Along With Commentary And Translation) (Including Nighanṭu Portion) Vol.I, Reprint ed. Vatadi varga, Varanasi Chaukhambha Orientalia; 2018, Page No. 344.
16. Commentary By : Dr. Bulusu Sitaram Foreword By : Prof. K. C. Chuneekar, Bhāvaprakāśa of Bhāvamiśra (Original Text Along With Commentary And Translation) (Including Nighanṭu Portion) Vol.I, Reprint ed. Vatadi varga quotation no. -29, Varanasi Chaukhambha Orientalia; 2018, Page No. 344.
17. <https://en.wikipedia.org/wiki/Pterostilbene>
18. <https://www.easyayurveda.com/2015/10/12/vijaysar-asana-pterocarpus-marsupium-beejaka/#research>.
19. Commentary By : Dr. Bulusu Sitaram Foreword By : Prof. K. C. Chuneekar, Bhāvaprakāśa of Bhāvamiśra (Original Text Along With Commentary And Translation) (Including Nighanṭu Portion) Vol.I, Reprint ed. Guducyadi Varga, Varanasi Chaukhambha Orientalia; 2018, Page No. 253.
20. Commentary By : Dr. Bulusu Sitaram Foreword By : Prof. K. C. Chuneekar, Bhāvaprakāśa of Bhāvamiśra (Original Text Along With Commentary And Translation) (Including Nighanṭu Portion) Vol.I, Reprint ed. Guducyadi Varga quotation no. 100, Varanasi Chaukhambha Orientalia; 2018, Page No. 253.
21. <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC3249914/>.
22. Commentary By : Dr. Bulusu Sitaram Foreword By : Prof. K. C. Chuneekar, Bhāvaprakāśa of Bhāvamiśra (Original Text Along With Commentary And Translation) (Including Nighanṭu Portion) Vol.I, Reprint ed. Guducyadi Varga, Varanasi Chaukhambha Orientalia; 2018, Page No. 233.
23. Commentary By : Dr. Bulusu Sitaram Foreword By : Prof. K. C. Chuneekar, Bhāvaprakāśa of Bhāvamiśra (Original Text Along With Commentary And Translation) (Including

- Nighanṭu Portion) Vol.I, Reprint ed. Guducyadi Varga quotation no. 21-22, Varanasi Chaukhambha Orientalia; 2018, Page No.233.
24. <https://pubchem.ncbi.nlm.nih.gov/compound/beta-Sitosterol#section=Structures>.
25. https://www.researchgate.net/publication/329955390_Stereospermum_suaveolens_Roxb_DC_Shows_Potential_in_vivo_and_in_vitro_Bioactivities.
26. Commentary By : Dr. Bulusu Sitaram Foreword By : Prof. K. C. Chuneekar, Bhāvaprakāśa of Bhāvamiśra (Original Text Along With Commentary And Translation) (Including Nighanṭu Portion) Vol.I, Reprint ed. Guducyadi Varga quotation no. 21-22, Varanasi Chaukhambha Orientalia; 2018, Page No.257.
27. Commentary By : Dr. Bulusu Sitaram Foreword By : Prof. K. C. Chuneekar, Bhāvaprakāśa of Bhāvamiśra (Original Text Along With Commentary And Translation) (Including Nighanṭu Portion) Vol.I, Reprint ed. Guducyadi Varga quotation no. 113-114, Varanasi Chaukhambha Orientalia; 2018, Page No.257.
28. <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC6734135/#:~:text=Phenolic%20acids%2C%20readily%20absorbed%20through,inflammation%20capacity%20of%20human%20beings>.
29. https://www.researchgate.net/publication/291777741_Vitex_negundo_L_Phytochemical_constituents_traditional_uses_and_pharmacological_properties_Comprehensive_review.
30. Commentary By : Dr. Bulusu Sitaram Foreword By : Prof. K. C. Chuneekar, Bhāvaprakāśa of Bhāvamiśra (Original Text Along With Commentary And Translation) (Including Nighanṭu Portion) Vol.I, Reprint ed. Vatadi Varga, Varanasi Chaukhambha Orientalia; 2018, Page No.358.
31. Commentary By : Dr. Bulusu Sitaram Foreword By : Prof. K. C. Chuneekar, Bhāvaprakāśa of Bhāvamiśra (Original Text Along With Commentary And Translation) (Including Nighanṭu Portion) Vol.I, Reprint ed. Vatadi Varga quotation no.70, Varanasi Chaukhambha Orientalia; 2018, Page No.358.
32. https://www.researchgate.net/publication/230921779_Antioxidant_AntiInflammatory_and_Antipyretic_Activities_of_Ethyl_Acetate_Fraction_of_Ethanollic_Extract_of_Schrebera_swietenoides_Roxb_Root.
33. <http://connection.ebscohost.com/c/articles/74080062/antibacterial-activity-schrebera-swietenoides-roxb-against-some-human-pathogenic-bacteria>.
34. Commentary By : Dr. Bulusu Sitaram Foreword By : Prof. K. C. Chuneekar, Bhāvaprakāśa of Bhāvamiśra (Original Text Along With Commentary And Translation) (Including

- Nighaṇṭu Portion) Vol.I, Reprint ed. Haritaki Varga quotation no.149-150, Varanasi Chaukhambha Orientalia; 2018, Page No. 160.
35. Commentary By : Dr. Bulusu Sitaram Foreword By : Prof. K. C. Chuneekar, Bhāvaprakāśa of Bhāvamiśra (Original Text Along With Commentary And Translation) (Including Nighaṇṭu Portion) Vol.I, Reprint ed. Haritaki Varga quotation no.149-150, Varanasi Chaukhambha Orientalia; 2018, Page No. 161.
36. Dr. J. L. N. Sastry, Foreword By Prof. K.C. Chuneekar, Dravyaguna Vijnana (Study of The Essential Medicinal Plants In Ayurveda) Vol.II, 3rd ed point 6-7., Varanasi Chaukhambha Orientalia; 2008, page no.203.
37. Commentary By : Dr. Bulusu Sitaram Foreword By : Prof. K. C. Chuneekar, Bhāvaprakāśa of Bhāvamiśra (Original Text Along With Commentary And Translation) (Including Nighaṇṭu Portion) Vol.I, Reprint ed. Vataḍi Varga quotation no.34, Varanasi Chaukhambha Orientalia; 2018, Page No.346.
38. <https://hal.univ-reunion.fr/hal-01657104/document>.