Ayurvedic Perspectives on Vyapanna Jala and Jalanirvishikarana: A Review

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***Abstract*—Water (*Jala*) is vital for life, and its purity is fundamental to health in *Ayurveda*. *Charaka Samhita, Sushruta Samhita, Ashtanga Hridaya*, and *Ashtanga Sangraha* have elaborated on water sources, qualities of *Vyapanna / Dushta Jala* (contaminated /polluted water), health hazards, and *Jalanirvishikarana* (detoxification/purification) techniques etc. *Acharya Sushruta* provides the most detailed account in *Sutrasthana* Chapter 45, supplemented by *Acharya Vagbhata* and foundational descriptions by *Acharya Charaka*. These methods include use of natural coagulants like *Kataka* (*Strychnos potatorum*), filtration, boiling, solar exposure, herbal ashes, and aromatic scenting etc.**

Many align with and are supported by modern scientific validation. This review compiles classical references with key quotes and discusses contemporary relevance and empirical evidence for sustainable water purification.

***Index Terms*—Ayurveda, Jala, Vyapanna Jala, Nirmalikarana, Jalanirvishikarana, purification.**

I. INTRODUCTION

Water (*Jala*) which is also known as *Paniya, Neer, Jeevana ,Udakam ,Ambu ,Toya* and *Soma* is one of the fundamental necessities for the sustenance of life and maintenance of health. In *Ayurveda Udaka* (water) is described as *"उदकमाश्वासकराणाम्,[1]"* emphasizing it's refreshing and thirst-quenching properties, while also highlighting its essential role in maintaining physiological balance, supporting metabolism, and preventing diseases.

Not all water that appears clean is safe to drink. Water, the essence of life, can become contaminated by a variety of pollutants, making it hazardous to human health and aquatic ecosystems. This deterioration in water quality, commonly referred to as water pollution, threatens the availability of safe drinking water and the sustainability of natural resources worldwide. Causes of Water Pollution are Industrial waste – Chemicals and toxic substances discharged from factories, Sewage and wastewater – Untreated domestic sewage entering water bodies, Agricultural runoff – Fertilizers, pesticides, and animal waste washed into rivers and lakes, Oil spills – Leakage of oil from ships and offshore drilling operations, Plastic waste – Plastic bags, bottles, and micro plastics polluting aquatic environments, Mining activities – Release of heavy metals and other pollutants into water sources. Contamination of water by these pollutants can lead to a wide range of health disorders. Biological contaminants are responsible for water-borne diseases such as diarrhoea, cholera, typhoid fever, dysentery, hepatitis, and parasitic infections. Chemical pollutants, including arsenic, fluoride, heavy metals, pesticides, and micro plastics, may cause fluorosis, neurological disorders, kidney and liver damage, reproductive abnormalities, endocrine disruption, and certain cancers. Physical impurities such as suspended solids and turbidity can facilitate the survival and transmission of pathogenic microorganisms, thereby increasing the risk of infectious diseases.

II. CLASSIFICATION OF WATER

Acharya Charaka, in *Charaka Samhita Sutrasthana* Chapter 27 (*Annapanavidhi Adhyaya, Jala Varga*), provides a foundational classification of water based on origin and seasonal variations. He describes the ideal qualities of wholesome water as: *"शीतं शुद्धं शिवं मृष्टं विमलं लघु षड्गुणम्"*[2] - "Water by nature is cold

(*Shita*), pure (*Shuddha*), auspicious (*Shiva*), pleasant (*Mrushta*), clear (*Vimala*), and light (*Laghu*)." He further warns that water which is *"पिच्छिलं क्रिमिलं किल्न्नं पर्णशैवालकर्दमैः । विवर्ण विरसं सान्द्रं दुर्गन्धं न हितं जलम"*[3] - (slimy, infested with worms, mixed with leaves, moss, urine and faeces, discoloured, highly dense, bad in taste and foul-smelling) is unwholesome and should be avoided. *Charaka* stresses the consumption of fresh, clean water suited to the season for maintaining health.

Acharya Sushruta presents the most detailed account of water in *Dravadravyavidhi Adhyaya*. He describes *Antariksha Jala* (rainwater) as the purest form of water. Rainwater exposed to sunlight, moonlight, and fresh air is called *Gangambu* and is considered wholesome, life-promoting, and beneficial when collected properly. *Sushruta* further explains the sources of availability and quality of river water varies according to the direction of flow, terrain, and environmental exposure. Flowing water exposed to sunlight and air is generally considered lighter and safer than stagnant water.

Table 1: Classification and Properties of Water Based On Source of Availability[4]:

Types of source of water	Property of water
Koupya Jala	Well water-alkaline, vitiates *pitta.*
Sarasa Jala	Natural lake-sweet taste, light, increases digestive power.
Tadaga Jala	Artificial pond-heavy water, vitiates *vata*.
Chauntya	Water collected in rock pits, Increases *Agni.*
Prasravana	Mitigates *tridoshas.*
Audbhida	Sweet taste water, alleviates *pitta.*
Vapi jala	Sweet taste water, light
Nadi jala	*Katu rasa, ruksa guna, vata- vardhaka.*

Table 2: Classification of Water Based On Sources and Its Impact On Health[5]:

Aspect	Description According to *Sushruta*
East-flowing River Water (*Pragvahini*)	Light (*Laghu*), wholesome, suitable for regular consumption, promotes health.
Flowing Water Over Rocky Terrain	Clear, well aerated, less contaminated, easy to digest and beneficial.
Water Exposed to Sunlight and Air	Naturally purified, wholesome, suitable for drinking.
Stagnant Water	Heavy (*Guru*), prone to contamination and disease production.
Water Covered with Algae & Aquatic Vegetation	Considered impure (*Vyapanna Jala*), unsuitable for consumption.
Muddy and Turbid Water	Difficult to digest, contaminated, disease-causing.
Water Containing Organic Matter	Produces various disorders and should be avoided.

Table 3: Classification of Water Based On Predominant *Mahabhutas* and Organoleptic Properties of Water [6]:

According to *Dhanvantari*, the taste of water depends on the dominant *Mahabhuta* (element) present in the land through which it passes. Different proportions of the five *Mahabhuta —Pṛithvi* (Earth), *Apa* (Water), *Teja* (Fire), *Vayu* (Air), and *Akasa* (Space)—give rise to different tastes in water. Thus, water acquires a specific taste according to the predominant elemental quality of a region.

Dominant *Mahabhuta*	Resulting taste (*Rasa*) of water
Prithvi	*Lavana, Amla rasa*
Apa	*Madhura rasa*
Teja	*Tikta, Katu rasa*
Vayu	*Kasaya rasa*
Akasa	*Avyakta rasa*

Table 4: Classification of Water Based on Seasonal variations *(ritu)*[7]:

Ritu (Season)	Property of water
Varsa	Guru, Abhisyandi, Madhura rasa.
Sarad	Laghu, Anabhisyandi.
Hemanta	Snigdha, Balya, Guru, Shukravardhaka
Sisira	Lighter than in Hemanta ritu & alleviates kapha-vata.
Vasanta	Kasaya-Madhura rasa, Ruksa guna
Grisma	Abhisyandi

Sushruta also introduced the concept of *Vyapanna Jala* (contaminated water), characterized by abnormalities in touch, colour, taste, smell, potency, and post-digestive effect. Consumption of such water may result in fever, edema, anaemia, indigestion, cough, skin diseases, and gastrointestinal disorders.

Table 5: Classification of Water Based on Characteristics Signs of *Vyapanna Jala*[8] (Contaminated Water) :

Type of Defect	Sanskrit Term	Description
Touch Defect	*Sparsh* Defect	Abnormal touch, excessive coldness, heat, sliminess, roughness, etc.
Appearance Defect	*Rupa Dosha*	Abnormal colour, turbidity, discoloration.
Taste Defect	*Rasa Dosha*	Unpleasant or altered taste
Smell Defect	*Gandha Dosha*	Foul or abnormal odour
Potency Defect	*Virya Dosha*	Alteration in natural thermal potency and qualities.
Post-digestive Defect	*Vipaka Dosha*	Produces harmful effects after digestion.

Acharya Vagbhata elaborated on practical methods of water purification including filtration through cloth, boiling, solar exposure, immersion of heated objects, and use of natural clarifying agents such as *Kataka* seeds, lotus roots, pearls, algae roots, and gemstones. He also explained the therapeutic benefits of *Kwathita Shitala Jala* (boiled and cooled water), which is considered light, digestive, and beneficial in preventing water-borne diseases.

The *Ayurvedic* concept of *Jalanirvishikarana* reflects a sophisticated understanding of environmental hygiene and preventive medicine. Many of these methods have now been validated through modern scientific studies. Therefore, *Ayurvedic* principles of water purification continue to hold relevance for sustainable and community-based water management.

Purification (*Jalanirvishikarana* / *Nirmalikarana*) Methods:
Acharya Charaka, under *Jala Varga* in *Charaka samhita Sutrasthana* 27 discussed the characteristics of river water, rainwater, and water concerning to various seasons. No *Jalanirvishikarana yoga* was specified by him. *Acharya Sushruta* in *Sutrasthana* 45th *Adhyaya*, under *Dravadravyavidhim* discussed about *Antariksha Jala*, sources of water, taste of water determined by the presence of *Mahabhuta,* impacts of drinking contaminated water, properties of water flowing in different directions, *Gangambu* (rain water), properties of various types of water, and finally some of the *Dravyas* performing *Nirvishikarana* of *Jala*. *Acharya Sushruta* stated seven *jala Nirvishikarana* or *Jalaprasadana Dravya.*[9] They include
1. *Kataka* (*Strychnous potatorum*)
2. *Gomeda*
3. *Bisagranthi* (Lotus Root)
4.*Saivalamoola* (root of certain aquatic algae)
5. *Vastra* (fine cotton cloth)
6. *Mukta* (Pearl)
7. *Mani* (*Sphatika*)

Purification of Water Using Plant Ashes (*Bhasma Jalashodhana*):
Acharya *Sushruta* also described another method of *Jalanirvishikarana* in *Kalpsthan,* in which contaminated water is purified using the ashes of certain medicinal plants. The ashes possess adsorptive, clarifying, and detoxifying properties that helps to remove impurities from water.
The plants mentioned include[10]:
Dhava (Anogeissus latifolia)
Ashvakarna (*Dipterocarpus alatus*)
Asana (*Pterocarpus marsupium/Terminalia tomentosa*)
Patala (Stereospermum suaveolens)
Paribhadra (*Erythrina variegate/ Azadirachta indica*)
Sidhak (*Ougenia oojeinensis/Lagerstroemia speciosa*)
Mokshak (*Schrebera swietenioides*)
Somvalkal, katphal (Myrica esculenta)

In the *Ashtanga Sangraha*, *Acharya Vagbhata* described methods for purifying water[11].
The methods are:
1. Polluted water should be filtered through a thick cloth to eliminate insects and worms.
2. Polluted water should be heated over a flame.
3. By placing it in sunlight.
4. By placing red-hot metal balls into polluted water.
5. Polluted water can be clarified by using *Parnimula* (a type of grass known for its diluting properties), knots (tubers) of the lotus, pearls, seeds of *Kataka*, algae, thick cloth, or *Gomedaka*.

6. Bad smell should be removed by putting it into the flowers of *Patala, Karavira*, and other fragrance-bearing flowers.

Modern Scientific Validation of *Ayurvedic* Methods:

Contemporary research has increasingly validated many Ayurvedic water purification techniques, bridging ancient wisdom with evidence-based science.

Kataka (*Strychnos potatorum* / *Nirmali* seeds)[12]: Multiple studies confirm its efficacy as a natural coagulant. The seeds reduce turbidity, total dissolved solids (TDS), and levels of magnesium and iron while exhibiting antimicrobial properties. Pilot studies in contaminated areas (e.g., North Chennai) demonstrated significant

improvement in water quality. Phytochemical analyses highlight proteins that act as natural coagulants by neutralizing charged particles, leading to flocculation and sedimentation.

Solar Exposure (*Suryatapa*): Directly corresponds to Solar Water Disinfection (SODIS), a WHO-recommended method. Filling clear PET bottles with water and exposing them to sunlight for 6 hours inactivates bacteria, viruses, and parasites through UV-A radiation and mild heat. Large-scale community studies show 30–40% reduction in childhood diarrheal incidence, validating Acharya *Vagbhata* and *Sushruta's* recommendations.

Boiling (*Agni Kwathana*): Universally accepted as a reliable thermal disinfection method that kills most waterborne pathogens, aligning perfectly with classical descriptions.

Cloth Filtration and Storage Vessels: Simple straining removes particulates and insects. Studies on Ayurvedic storage vessels (copper, silver, clay) show reductions in microbial load and TDS due to oligodynamic effects and natural material properties.

Other Agents (alum, pearls, minerals, aromatic flowers): Alum is a standard coagulant in modern treatment. Aromatic infusions improve palatability and may provide mild antimicrobial benefits. Herbal ash formulations and lotus roots warrant further targeted research but show promise in traditional and preliminary modern evaluations.

These validations highlight the sustainability, low cost, and eco-friendliness of *Ayurvedic* methods, making them particularly valuable in resource-limited and rural settings.

III. DISCUSSION

Ayurveda recognizes water as a fundamental determinant of health and emphasizes both its quality and safety. The classical texts provide detailed descriptions of wholesome and contaminated water, highlighting the importance of environmental hygiene long before the advent of modern water science. The concept of *Vyapanna Jala* demonstrates an advanced understanding of the health hazards associated with polluted water and the necessity of its purification before consumption. The purification methods described by *Acharyas* such as filtration, boiling, solar exposure, and the use of *Kataka* and other natural substances reveal a practical and sustainable approach to water treatment. These

methods were designed to improve the clarity, safety, and acceptability of drinking water using locally available resources.

Interestingly, several of these traditional practices have gained scientific support in recent years. Boiling and solar disinfection are widely accepted methods for reducing microbial contamination, while *Kataka* seeds have shown significant coagulating and water-cleansing properties. Such correlations highlight the scientific relevance of *Ayurvedic* principles in present-day water management.

In the current era of increasing water pollution and limited access to safe drinking water, these cost-effective and eco-friendly techniques offer valuable insights. Further research and standardization may facilitate their integration into modern public health strategies, particularly in rural and resource-constrained settings.

IV. CONCLUSION

Water is indispensable for life, and its quality plays a crucial role in maintaining health and preventing disease. Classical *Ayurvedic* literature presents a comprehensive and holistic framework for understanding water quality, describing various water sources, the characteristics of wholesome and contaminated water (*Vyapanna Jala*), and methods of *Jalanirvishikaraṇa*. These descriptions reflect the remarkable insight of the ancient *Acharyas* into the health consequences of polluted water and underscore *Ayurveda's* strong preventive and public health orientation.

The assessment of water quality requires a comprehensive evaluation of physical, chemical, and biological parameters. Physical characteristics such as colour, odour, taste, turbidity, and temperature provide preliminary indications of water quality; chemical analyses detect dissolved substances, toxins, and pollutants; while biological examinations identify pathogenic microorganisms and other biological contaminants. Together, these parameters provide a reliable and scientifically accepted framework for determining the safety and suitability of water for human consumption and environmental sustainability.

To ensure the availability of safe water*, Ayurveda* advocates several practical and sustainable purification measures, including filtration, boiling, solar exposure, and the use of natural clarifying agents such as *Kataka* (*Strychnos potatorum*), lotus root, pearls, and medicinal plant ashes. These methods are simple, eco-friendly, and locally accessible. Importantly, modern scientific studies have validated the effectiveness of several of these traditional practices, particularly *Kataka*-mediated coagulation, solar disinfection, and thermal purification, thereby supporting their relevance in contemporary water treatment.

In the present era of escalating water pollution, increasing water-borne diseases, and limited access to safe drinking water in many regions, these traditional *Ayurvedic* approaches offer valuable guidance for developing affordable and environmentally sustainable water purification strategies. Further experimental research, standardization of purification protocols, and interdisciplinary collaboration are needed to strengthen the evidence base and facilitate their wider application. The

integration of validated *Ayurvedic* principles with modern methods of water quality assessment and treatment holds significant potential for advancing sustainable public health, environmental protection, and water resource management in the future.

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