



Congruence with Health by Divergence in Uses of Water: an Ayurvedic Notion

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Abstract

In the vocation of nutrition science, tremendous research has been executed over the analysis of food, its chemistry, conservation, preparation, consumption, production, deficiencies and so on. Even in present time professionals have pinned their eye over the manner of intake of food too, but the water being very essential element for survival has not been yet attracted the attention of the heavenly body. *Ayurveda*, one of the most ancient traditional systems of medicine contemplated water as an endorser of life which plays a pivot role in attaining vigor or occurrence of maladies. The scriptures divulged the facts that proper nourishment and metabolism of body also rely on the quality, quantity and even on the right manner of intake of water along with other major nutrients, and regarding this, a very comprehensive narrative is found in all the obtainable treatises of ancient medical science. This inspires the researcher to highlight such codes which can be directed as an additive protocol for the human being having pursuance of health. Moreover, an extensive search has also been performed to find out the parallel scientific evidences regarding the dogmas which can be established over the scientific background, so to make it more acceptable and admissible in the community and to also provide a pointer on which further research could be carried out.



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Introduction

Water has been deemed as the pedestal of life since ages and considered as a single most imperative nutrient of our body. It has a preeminent role in subsistence and decadence of any living being.

It is improbable to live more than 8-21 days without food and water,¹ although in starvation, the stored fuels can meet the requirements up-to 1-3 months depending on the extent of activity.² In order to conquer life and good health, an engrossment should

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be drawn not only over the use of functional foods, dietetics, lifestyle modifications etc but also over the apposite usage of water, which is one of the most needed areas to be explored. *Ayurveda*, the ancient system of medical science has its coherence in elucidating the implication of water according to its types, properties, purification methods, amount and manner of intake, storage etc. which significantly affects the metabolism and different functions of the body.

In *Ayurvedic* doctrines divergent domains of water usage have been described in a very substantial manner. The observance of the scholars was not confined only on the diet and dietetics but they explored the benefaction of conducive uses of water too. The right way of bathing with a right kind of water, type of water used for drinking in different conditions, the effect of water drinking pre or post to meal, as an after drink etc. were described very effectively.

Added to their usage, change in the properties of water keeping in different vessels, preparing different pharmaceutical preparations were the another appreciating work. Along with all these descriptions scholars also exemplified the conditions where the limited or restricted use of water is described and the disorders which can lead by imprudent use of water etc.

This motivates the researcher to enlighten such code of conducts accordingly which can be fruitfully connoted, that prevents the community from ailments and promotes their positive health. In addition to this, *Ayurveda* also signifies its role in different pharmaceutical preparations and as an after drink which varies in accordance with the condition. Discussing all the accustomed domain in one article seems next to impossible. So the manuscript has enlightened the areas having practical utility in day to day life like bathing, drinking etc. Keeping all this fact in mind the article has been stratified in several sections to discuss its customary uses in accordance to *Ayurvedic* scriptures are as follows-

- Bathing
- Drinking
- Intake of water in relation to meal
- Use of water according to season
- Attributes and actions of water kept in different

vessels

- Water as an After drink(*Anupana*)
- Water in different pharmaceutical preparations
- Restricted intake of water in certain clinical conditions
- Disorders due to imprudent use of water

This article aimed to give an idea to health professionals and nutritionist to make their counseling and treatment more effective and help the common people in betterment of health.

Method

A hand-pick method was opted to perform the review for the *Ayurvedic* dogmas. All the three authoritative books of *Brihadtrayee* i.e *Charak Samhita*, *Sushruta Samhita*, *Ashatanga Hridaya* along with *Ashatanga Samgraha* were searched for the purpose. Besides, numerous other textbooks of *Ayurveda* written by the premier authorities of this terrain like *Sushena's Ayurveda Mahodadhi* by T. Chandrasekharan etc were also reviewed to gather the pertinent facts regarding the search objective. All the relevant references were collected and the facts having practical utility were sorted and depicted in the present manuscript. Databases like PubMed, Scopus and Google Scholar were also searched for the parallel studies providing the scientific ground to the obtainable doctrines. For searching in PubMed and Scopus various search strings have been used in accordant to the related *Ayurvedic* notion like water AND metabolism, water AND meal, water AND obesity, Water AND ocular disease etc. The pertinent articles were listed together for further screening by reading their abstracts. Articles which were not relevant got excluded and the applicatory articles were again sequestered for the thorough apprehension.

Review and Discussion

Conducive Uses of Water: *Ayurvedic* Notion

In *Ayurvedic* literature, water has been speculated as a prime sustainer of life,³ responsible for harmonizing different functions of the body. Its dearth in the body instigates dryness of mouth, weakness and sometimes even the death. No physiological functions can be ensued accurately in the absence of appropriately adequate water both for the healthy and the sick individuals.⁴The litterateur of *Ayurveda* depicted its apt usage in various day to day activities

which can be beneficial to the individual's health if practiced regularly and are as follows-

Bathing

In *Ayurvedic* piece of knowledge *Snana*, i.e bathing is acknowledged something which improves hunger, sexual strength, the span of life, valor and potency. It further removes itching, dirt, exertion, sweat, stupor, thirst, burning sensation and sin.⁵ The scholars expounded that pouring warm water below the head is strengthening while the same over the head diminishes the strength of the hairs and eyes.⁶ Goto Y *et al.*, 2018⁷ have conducted a study to compare immersion/ warm bathing and the shower bathing in 38 participants. Results showed that warm bathing receives significantly lower score over visual analogue scale for fatigue, stress, pain and have a better skin condition. Moreover mood state scores for anxiety, anger, hostility, depression are also found to be lower in warm bathing. The researcher stated that warm bathing induces hyperthermic action increasing blood flow and eliminating metabolic waste providing strength and refreshment⁷

They further advised that one should not bath without wetting the head or with very little water or cold water.⁸ as cold water bathing induces a significant increase in heart rate, blood pressure, metabolism, and peripheral catecholamine concentration; and decrease in cerebral blood flow.⁹ In order to *Ayurvedic* piece of knowledge bath is not permissible for the person suffering from facial paralysis¹⁰ (although in older times it was believed that facial paralysis is due to exposure of cold howsoever it is completely a neurological disorder and no documentation is found in the literature regarding the temperature effect, yet a research is needed in this area)¹¹ diseases of eyes, mouth and ears; diarrhoea, distension of the abdomen, running nose, indigestion and just after taking food.¹⁰

Drinking

Numerous rules and regulations have been provided in the literatures for the proper intake of water which are as follows-

- One should not consume water from the palms of hands.¹² It may make the water infected, if the hands are not suitably germ-free which can bring into being various ailments.

- One should not consume the water of another kind after having a particular type of water till the first kind of water has been digested well. For instance; if uncooked water taken previously has not been digested, cooked water should not be taken over it and vice versa; the same thing is applied for consuming cold and hot water.¹³
- For the person who has a mild increase in *Doshas*, have the poor digestive capacity, who becomes weak after the long illness should not consume even the little quantity of water as it aggravates all the three *Dosha*.¹⁴ *Dosha* are the biological entities derived from *Panchamahabhuta* (five primordial elements) responsible for physiological functions and their regulations.¹⁵
- A diner should drink small and suitable quantity of water in between the meal.¹⁶
- The diner should wash his mouth with water in between the meal more often; as it cleanses the tongue and food can be relish better than before.¹⁷ Moreover, the tongue becoming satiated with a sweet taste at the beginning itself will not be able to perceive other tastes, hence it should be washed in between by the small quantity of water.¹⁷
- One who consumes food more of liquids does not aggravate the *Dosha*.¹⁸ Hence diner should practice food having more of liquid.¹⁹
- For the amount of water it is mentioned that half of the stomach should be filled with solid foods, one quarter by liquids and another quarter should be kept vacant etc.²⁰
- The wise person should eat fruits like *Dadima* (*Punica granatum*) etc at the beginning, preceding the liquid foods and then after the solids.²¹
- The drinks should be kept in silver vessels,²² whereas the water well boiled and then cool down should be kept in vessels of copper.²³

These all code of water intake should be critically analyzed and research should be carried out over these dogmas to outline the underlying mechanism.

Water-Intake During Meal

Ayurvedic compendia have mentioned the different effect of water with a meal in respect to the time of intake. One can practice its consumption according to desirability.²⁴ Drinking water before the meal reduces

the weight, during the meal maintains the health and after the meal increases the weight²⁴ which can be intelligently prescribed for the obese, healthy and emaciated individual respectively. The effect of pre-meal intake of water in weight loss is supported by researches. A study found that drinking 500 ml of water before a meal increased metabolism by 30 percent, and helps in the reduction of weight.²⁵ The significant improvement was found in weight-loss maintenance too.²⁶ Other studies claimed that drinking water elicited a stronger early gastric secretory response (acid, pepsin, and volume) which compensated for faster initial emptying and resulted in higher gastric acidity and volume.²⁷

Water-Intake According to the Season

Ayurveda accepts the effect of the environment on the human body and mentioned the usage of different kind of water in accordance to different season, which is as follows-

- In *Hemanta Ritu* (Nov-Dec) one should use warm water for all the cleaning processes (*Shaucha*).²⁸
- In *Shishira Ritu* (Jan- Feb) water boiled with *Musta* (*Cyperus rotunds*) and *Shunthi* (*Zingiber officinale*), *Arambhu* [water processed with the decoction of trees such as *Asana* (*Pterocarpus marsupium*), *Khadira* (*Acacia catechu*), *Chandana* (*Santalum album*),] *Madhvambu* (honey with water), should be used for drinking.²⁹
- In *Grishma Ritu* (May-June) one should avoid the consumption of alcoholic drink or should take in very little amount or after adding a large amount of water otherwise, it produces oedema, looseness of the joints, burning sensations and delusion.³⁰
- In *Varsha Ritu* (July-Aug) water collected (rain water of well, or water collected from depression of rock etc) should be boiled well and then should be used. In contrast when the weather is cloudy, drink along with honey or processed with oil ginger pepper etc should be consumed.³¹ One should practice pure and good alcoholic preparations like *Madira*, *Arishta* and

Mardvika diluted with little quantity of water.³²

- In *Sharad Ritu* (Sep-Oct) drink of medicated ghee which is bitter in taste should be taken. The ingested drink should be cold and easy to digest etc.³³ Additionally, water which is made warm by the sunrays and gets cooled by the moonlight and which in the influence of *Agastya* constellation becomes pleasant, such pure water after boiling when become cool is regarded as ideal for use in this season and given simile to the nectar.³⁴

Effect of Water on the Body Kept in Different Vessels

Ayurvedic scriptures have depicted that the properties of water get changed in respect to the type of vessel used as a reservoir. Water being *Yogvahi* in nature have the ability to possess the quality of the certain substance or material with which it comes in contact to. So many researches also proved that keeping water in the vessel of different material changes its physical properties like hardness, pH, alkalinity etc as well as the therapeutic utility. *Radha R. et al.*, 2015³⁵ in their study reported that vessels made of copper or its alloy should be used for containing the water as the water stored in it completely killed the progression of bacteria by their complete assassination with free copper ion. Similarly, the other studies also show the physiological distinctiveness of water which can aid desirable effect to the individual but yet much research are needed in this area. Description of vessels in the *Ayurvedic* compendia with their physiological attributes and actions are described in the table given below.

In this 'plastic age' it is evident that conventions of plastic vessels have potential health risk over the human wellness. The chemical constituents accounted for manufacturing of plastic are toxic in nature imparting adverse effect on the population including reproductive abnormalities, carcinogenic effect etc. Hence the use of above-mentioned vessels could be promoted accordingly to avoid such consequences and to conquer better health.

Table 1: Attributes and actions of water kept in different vessels³⁶

Vessels	Properties	Actions
Golden (<i>Swarna</i>)	Cool, <i>Madhura</i> (sweet) in taste and <i>Vipaka</i> (intermediary metabolic state)	Balances all the three <i>Doshas</i> , improves fertility, immunity, intelligence
Tin (<i>Trapusha</i>)	Sticky, Sweet in taste, increases <i>Kapha Dosh</i>	Increases the bulk of faeces and urine
Brass (<i>Ghosha</i>)	Pungent in taste and <i>Vipaka</i> , heavy, increases <i>Kapha</i> and <i>Pitta Dosh</i>	Increases strength and immunity when used for a long time.
Copper (<i>Tamra</i>)	Hot, sweet in taste, slightly pungent, increases <i>Pitta</i> and <i>Vata Dosh</i>	Decreases quantity of faeces and flatus
Pittala (<i>Reetika</i>)	Pungent, decreases <i>Kapha Dosh</i> and increases <i>Pitta</i>	It may increase <i>Meha Roga</i> (urinary disorders)
Iron (<i>Lauha</i>)	-	Unfit for drinking purpose result in <i>Raktapitta</i> , itching and diminished <i>Agni</i>
Wood of <i>Udumbara</i>	-	Increases the lusture, alleviates the <i>Pitta</i>
Earthen	-	Cleanses the <i>Mala</i> (excreta), balances <i>Dosh</i> and body tissues, improves potency strength and immunity

Water in Pharmaceutical Preparations

In the disquisition of *Ayurvedic* literature, it is expounded that all the existing substances can be used as a drug if handled intelligently.³⁷ The scholars of *Ayurveda* have notified multiple therapeutic uses of a single drug, which shows that the particular substance comprises different therapeutically active ingredients which are distinctively useful in a different state of diseases. All these ingredients can be extracted by adopting different procedures depending on its thermal stability, sensitivity, solubility etc.³⁸ Water being a universal solvent is taken as a media in most of the pharmaceutical preparations. It is considered as comparatively inert substance but can potentiate the action of the target drug by its *Yogvahi* (which imbibes the property of other substances without altering its own inherent traits) nature.³⁹ In addition to this its solubility, fluidity, molecular structure, bonding type, chemical reaction etc. differ in accordance to its physical state and exposition to temperature as well, which helps in the extraction of the desired molecule.

In the ancient heritage of knowledge *Panchvidha Kashaya Kalpana* is the five basic dosage form⁴⁰ of a drug which is quite acceptable and admissible among the practitioners throughout. *Swaras* (extract) and *Kalka* (paste), the first two preparations are formed by freshly collected plant by crushing, grinding etc.⁴¹ *'Kwaatha'* (decoction) *'Sheeta'* or *'Hima'* (cold water infusion) and *'Phanta'* (hot water infusion.) is the preparation of aqueous extract which requires administration of water.⁴¹ In *Kwaatha* and *Phanta* the extracts are obtained with the use of hot water whereas in *Hima* the extraction is done with cold water. In all these extraction methods water soluble active ingredients of the plant are extracted out. The concentration of the active ingredient extracted in the solvent varies according to the procedure used. The water insoluble plant material get separated and settled down as a waste material in the end of the extraction process.³⁹

Table 2: Different types of water-based pharmaceutical preparations

Pharmaceutical Preparation	Type of Water	Procedure adopted
<i>Kwaatha</i> (decoction)	Hot water	Boiling(requires high temperature for complete solubility of ingredients)
<i>Phanta</i> (hot water infusion)	Hot water	Infusion(low temperature is required, sensitive to high temperature)
<i>Hima</i> (cold water infusion)	Cold water	Infusion(sensitive to even low temperature)

It is evident that the expected plant ingredients having specific therapeutic action will be destroyed if other procedures of extraction are applied because of specificity and sensitive nature of the present plant ingredients.³⁹ Hence the water plays an important role in the preparation of various dosage forms too as the concentration and solubility of the active ingredients solely depend upon the temperature and amount of water.

Water as an *Anupana* (After Drink)

Anupana is the drink or liquid which is consumed after, before or along with the meal or drug.⁴² The various authorities of *Ayurveda* have considered *Anupana* as a vehicle (an inert substance which helps in carrying the active ingredient), an adjuvant (which hastens the action of the concern element) or a carrier (which facilitates the absorption or diffusion of a principal component) for the diet or drug.⁴³

Hence *Anupana* plays an important role in potentiating the action by enhancing the absorption, reducing

the biological lag (time between administration of drug and onset of response) and by increasing the bioavailability and efficacy of the drugs.⁴⁴ As a result, it strengthens the body and revitalizes the senses, gives a feeling of contentment, facilitates the downward movement of ingested food, helps in moistening, disintegration, digestion and distribution to all parts of the body.⁴⁵

In *Ayurveda* water is considered as the best *Anupana Dravya* (after-drink substance) as it acquires all the properties essential for sustenance of life and can be accustomed to all the living being.⁴⁶ The scholars further stated that the person having poor digestion and health, weak, wealthy and tender should essentially practice the *Anupana*.⁴⁷ As in the absence of *Anupana* ingested food does not moisten properly and hence the downward movement of the ingested material is delayed resulting in the formation of *Aama*(harmful metabolites produced due to improper digestion and metabolism), which gives rise to many diseases of faulty metabolism.

Table 3: *Anupana* and their prescribed conditions

<i>Anupana</i>	Conditions
Hot water	<ul style="list-style-type: none"> Oleation therapy (intake of fatty substance), except oils of <i>Bhallataka</i> (<i>Semecarpus anacardium</i>) and <i>Tuvraka</i> (<i>Hydnocarpus laurifolia</i>)⁴⁸ Aggravation of <i>Vata</i> and <i>Kapha Dosh</i>.⁴⁹ During <i>Hemanta Ritu</i>⁴⁶ Food which is hard to digest.⁴⁶
Cold water	<ul style="list-style-type: none"> Honey, food from flour of grains, curds, <i>Payasa</i>, wine, suffering from poison⁵⁰ Aggravation of <i>Pitta</i> and <i>Rakta</i>⁴⁹ Foods which cause burning sensation during digestion⁴⁶ <i>Sharada</i> and <i>Grishma season</i>.⁴⁶
Mastu or cold water	<ul style="list-style-type: none"> <i>Dadhi</i>(curd), <i>Kurchika</i> and <i>Kilat</i> (cheese)⁴⁶
Water with honey	<ul style="list-style-type: none"> Obese person⁴⁶

After consuming *Anupana* the person should not indulge in a long walk, speaking, study, singing or sleeping. By this *Doshas* in the stomach, chest and throat get vitiated giving rise to nasal catarrhal, weakness of digestive power, vomiting and many other diseases.⁴⁵

The ancient scholars also opined that rainwater collected in a clean vessel is the best among all *Anupana* or any other kind of water which is habituated to any person, that water itself is beneficial to him.⁴⁹

Anupana should not be practiced by those who are suffering from diseases of the parts of the body above shoulders, dyspnoea, cough, excess salivation, hiccup, hoarseness of voice, injury to the chest etc. Moreover, person who is suffering from accumulation of moisture in the body, polyurea, diseases of the throat, eyes and ulcer should not take an after drink.⁴⁵ One who is indulged in speaking, singing etc should also not practice the *Anupana*, because in such person moisture increases in the

throat, stomach and chest which results in watery discharges, indigestion and vomiting etc.⁴⁵

Restricted Intake of Water in Certain Clinical Conditions

Not only about conducive uses of water, *Ayurvedic* scholars also highlighted the conditions where the free usage of water is not permitted. For instance; those who are suffering from eye diseases, enlargement of spleen, abscess, abdominal tumour, anaemia, enlargement of the abdomen, diarrhea, haemorrhoids, duodenal disease and oedema. If such person inevitably desire for water they should only take the medicated *Jala* (water) and that also in small quantity only.⁵¹

Disorders by the Imprudent Use of Water

In the delineation of *Ayurveda*, it is clearly mentioned that if the judicious use of water prosper the health then the injudicious use of water may lead to various disorders too. So one should avoid practicing those behaviors which are as follows:

Table 4: Imprudent use of water and their effect

Imprudent use of water	Effect	Supporting Researches
Immersing own self to cold water after exposure to sunlight	Diseases of skin	<i>Wheatley VR et al.</i> , 1958 ⁵³ and several other studies opined that secretions from human epidermis contain vitamin D and their precursors. Furthermore, <i>Helmer AC et al.</i> , 1937 ⁵⁵ reported that having shower after the sunbath or high sunlight exposure removes the precursors of vitamin D from the outer layer of epidermis ⁵⁴ tends to low level of vitamin D in blood which has been linked to various skin disorders like cancer, psoriasis, atopic dermatitis, photodermatoses, autoimmune disorder etc.
Suppression of thirst	Emaciation, debility, deafness, delusion, giddiness and diseases of heart. ⁵⁶	<i>David E Leib et al.</i> , (2016) ⁵⁷ in their article "Thirst" has described that how the brain monitors the osmolality of the fluid and perform remarkable signs which motivate towards consumption of water. On the suppression, it shows different signs of lethargy, irritability followed by ataxia, trembling, seizures and death.
Drinking water before the meal	Emaciation ⁵⁸	<i>Boschmann et al.</i> , 2003 ²⁵ in their study reported that drinking pre-meal water reduces the weight.
Drinking water at the end of meal	Obesity, laziness and excessive sleep ⁵⁹	-

Contaminated water (for bathing or drinking)	Thirst, distension and enlargement of the abdomen, fever, cough, weak digestive capacity, ophthalmia, itching and boils on the skin ⁶⁰	<i>Mahendra P et al.</i> , 2018 ⁶¹ in their article outlined that in accordance to the data of WHO, 6.3% of the global death is due to usage of unsafe water, poor sanitation and hygiene. Microbial contamination leading to diseases like diarrhea, dysentery, giardiasis, amoebiasis etc. Contact to the skin causes leptospira infections in human and so on. Moreover, Ahmad S S, 2018 ⁶² in his study stated that several ocular diseases are attributed due to contact of contaminated water in swimming pools etc.
Drinking large quantity of water when thirsty	Increase of <i>Aama</i> (harmful metabolites produced due to improper digestion and metabolism) , thirst, sleep, stupor, flatulence , feeling of heaviness in the body, cough, poor digestive capacity, nausea , salivation difficulty in breathing and nasal catarrh. ⁶³	-

Conclusion

The entire review was performed with the aim of exploring the mystical knowledge of *Ayurveda* regarding the appropriate usage of water, which can act as a benefaction in prevention of diseases and promotion of positive health. It can also help the nutritionist and food professionals to incorporate the factual dogmas in their customized counseling and prescription for betterment of well-being. Though many of the doctrines of *Ayurveda* are scientifically proven but there are so many dogmas which are still to be work upon. Hence this narrative can provide a base for such research in this domain and make *Ayurvedic* tenets significant on the scientific ground viz. observational studies on water intake habits and their effect on the body.

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Conflict of Interest

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