

An Enigmatic View of Bio-climatology and Ayurveda

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ABSTRACT

Climate and weather have always influenced the human health. In return the living bodies have also contributed to the variations occurring in the environment. The particular changes in weather extremes, from time to time affect the environment that provides the ecosystem with clean air, water, soil, food, shelter and security. In the present times climate changes, together with other human and natural factors have threatened the human life, other living forms and the planet itself in numerous ways and the result impacts on health and well-being around the globe. Given that the outcome of these drastic changes are projected to enhance in coming years and century and leave nothing but barren lands, scarce water and food, polluted air for the next generations, it is our primary and foremost duty to mitigate the amount of these alterations and suggest priorities to restore public health, help and identify research needs. It will be time consuming for these initiatives to come to act, but eventually with the aid of ancient system of medicine where there is absolute analytical and radical information about climate, land, water, air and so on the path may come to ease. *Ayurveda* has always stood firm in the testing periods, as it is more a way of living than just scriptures. In the virtue of this paragon the balance which all the health care system in the world is seeking for will be found and established. So in account of mending ways, initially it is significant to know the description and methods mentioned in the classics and then rule the latter. Thus it seems appropriate to have transparency regarding the literature from classics.

Key Words *Climate, Weather, Ayurveda, Paragon, Enviroment, Public health*

Received 20th March 2024 Accepted 26th May 2024 Published 10th July 2024

INTRODUCTION

The origin of *Ayurveda* dates back to 6000 B.C. Though the fundamental principles of the science had taken shape during the pre-*vedic* and *Vedic* period, the documentation took place in *Arsha* period (period of *Rishis*). This period extends

over several centuries and is characterized by the appearance of many systemized treatises by *Lord Dhanvantari* and *Bharadwaja* who developed the surgical and medical aspects of *Ayurveda* separately around 9th century B.C. Later the science developed in the *Samhitha* period by the *brhatrayee* and *laghutrayee* whose works are

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utilized and implicated till present date. *Ayurveda* is the science which deals with good, bad, happy and unhappy life, its promoters and non-promoters, measurement and nature. The knowledge of health or disease of a creature is given utmost importance in *Ayurveda*. Maintenance and preservation of human health is the basis of *Ayurveda*.

¹Bioclimatology is the branch of climatology that deals with the effect of physical environment on living organism over an extended duration of time. Although Hippocrates touched on these matters 2000 years ago in his treatise of air, water and places, the science of bioclimatology is relatively new. It is developed into significant field of study during the 1960 owing largely to the growing concern over the deteriorating environment. The scope of bioclimatology is limitless due to the enormous effect of climate and weather on living organism. The influence of weather and climate on physiological process in normal healthy human and their diseases has been given more importance.

Meteorology is the science of atmosphere, which mainly includes phenomena such as wind, rain, temperature etc. In India, in vedic age meteorological description is seen in the Rigveda, about, 5000 years back. In *Ramayana and Mahabharata* there is mention of weapons like ‘*Varunastra*’ (weapon of rain) and ‘*Agnyastra*’ (Weapon of fire). *Panini*, describes rainy season as *Pravrit* and *varsha* in the 5th century B.C. He observed ‘*Varshapramana*’ for the measurement of rainfall and “*Ghoshapada*” as the measure.

The *Manusmriti* in 2nd century A.D. also enumerates meteorological references.

²The human body undergoes drastic changes by the impact of weather, climate, air, water, and soil from time to time. The focal point here is the alterations happening in the physiological and biological process of a living organism due to the variations in the climate. The inter relationship between the environment and living organism provides a broader spectrum of study in bioclimatology. As *Ayurveda* deals with both of them in an intricate manner by providing scientific reasoning, the fundamental principles of the same have to be dealt elaborately.

Classical literature

Climate has been explained in depth in the ancient classics. The detailed description of wind (*Vayu*), water & rain (*Jala*), time (*Kala*), *Desha* (Land/ Soil) will be dealt with along with their normal and abnormal state and effect on living beings.

*Vayu*³

Normally, *Vayu* has various functions both inside and outside the body. Within the human body it gives shape to the *Dhatu*, divides the *Dhatu*, but outside the body it holds the earth, gives continuous movements to sun, moon, stars producing clouds, raining water etc. while moving inside, it not only holds its work on the body but mind too. It controls the mind provokes the sense organs to perform their functions and holds each and every organ. In an aggravated state it dries the skin, enhances the hunger and thirst, fainting, discoloration. Where in the light

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breeze produces the secretion. The breeze from south is beneficial for health, improves the bodily strength, mitigates bleeding disorders. On the other hand, breeze from the north is moist, mild, sweet, cold and does not increase the tridosha.

⁴Vedas opine that the winds have an important role on weather. Winds from east bring rain, from west drives away rain, from north favors rains, from south does not produce rain, this was the general rule of the vedic seers. They were also familiar with the hot and dust raising from the southwest and because of the bad effects, the southwest direction itself was considered inauspicious. They also used the surer method of measuring wind direction with the help of a pole of 12 cubits in length, and the top of which a flag of black colour 4 cubits in length was attached.

*Jala*⁵

Water sustains and supports life. It comforts and gives a sense of satisfaction. There are various forms of it like *antarikshajala*, *Dhara* (Rain water), *Kara* (water from melting hailstones), *Tausara* (water from mist), *Haima* (water from melting of snow/ ice), ground water.

Antarikshajala has *avyakta rasa*, has effects like that of nector, enriching, strengthening, satisfying, life supporting, body comforting, relieves fatigue, exhaustion, thirst, toxicity, fainting, sleepiness, burning sensation and is suitable for health. The same rain water after falling to the ground, attains different taste as it is stored in various kinds of reservoirs such as *nadi* and *nada* (rivers), *saras* (large natural lake),

tadaga (artificial lake), *vapi* (tank with flight of steps), *kupa* (tank without flight of steps), *cunti* (small pit near the river), *prasravana* (stream), *udhbhida* (spring), *vikira* (water spurting out from the ground and collected), *kedata* (meadows or fields), *palvala* (marshy place) etc. As the soil on the ground changes so does the taste of water. Rain water coming in contact with red-brown soil will have sweet taste, white soil sour taste, yellowish- white will have salty taste, blue, yellow will have pungent and bitter taste respectively.

Water of river flowing westward is healthy because of being light in digestion. Water to east is heavy for digestion. That from the south is considered mediocre.

All kinds of water have mention in the classical literature. Collection of water, to the flow of direction of the water, rain water, river water, ocean or sea water, water from small streams to spring all when it has to be collected, when consumed what diseases are caused, what diseases are subsided, in which form one has to drink it, all of these description area major part of the Ayurveda science. The science considers water as holy, spiritual and life saving. It is mentioned as the one that which forms life itself.

*Desa*⁶

Desa are of three types as per Ayurveda. They are *Jangaladesa*, that which has little water and scarce flora and fauna, strong winds and intense sun. Second comes *AnupaDesa* with abundant water and numerous vegetation, mild air and void

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of sunlight. Last one is the *Sadharanadesa* that which shows balance in all aspects.

*Desa*⁶

Desa are of three types as per Ayurveda indicated in table 1. They are *Jangaladesa*, that which has little water and scarce flora and fauna, strong

Table 1 *Different types of Desha* (land/ region)

<i>Jangaladesa</i> (Desert land)	This type of land is abundant in sand dunes and pungent substances. It has less water, inhabited by people who are capable of enduring hardships, not suffering from various diseases and live long.
<i>AnupaDesa</i> (Forest land)	This type of region has abundant water, cold winds, mountains, thick forests, rivers, lakes, ponds, wells, flora and fauna. Inhabited with community of people suffering from various ailments.

*Kala*⁷

Kala is divinity and it is neither a beginning nor end. Based on time only, the movement of sun, the moon, other planets, five basic elements, increase and decrease of season, strength of *tridoshatakes* place. table 1.1 shows that time is divided into *matra*, *kastha*, *kala*, *nadika*, *muhurta*, *yama*, *ahoratra*, *paksha*, *masa*, *rutu*, *ayana*, *varsha* or *samvatsara*, *yuga*. The present era manifestation of time is compared in table 1.2 with the classical understanding of time.

winds and intense sun. Second comes *AnupaDesa* with abundant water and numerous vegetation, mild air and void of sunlight. Last one is the *Sadharanadesa* that which shows balance in all aspects.

Table 1.1 Division of time (*Kalabheda*)

<i>Akinimesa</i> (time taken to blink the eye)	1 Matra
15 Matra	1 <i>Kastha</i>
30 Kastha	1 <i>Kala</i>
20 1/10 Kala	1 <i>Nadika</i>
2 Nadika	1 <i>Muhurta</i> (48 minutes)
3 3/4 Muhurta	1 <i>Yama</i> (3 hours)
4 Yama	1 <i>Ahah</i> (day) / <i>ratri</i> (night)
15 Ahoratri	1 <i>Paksha</i> (fortnight)
2 Paksha	1 <i>Masa</i> (month)
2 Masa	1 <i>Rutu</i> (season) (2 months)
3 Rutu	1 <i>Ayana</i> (6 months)
2 Ayana	1 <i>varsha</i> (1 year)

Table 1.3 Classical and present day seasonal and calendar description (*Rutukala*)

Sl. No.	Rutu (Seasons)	Maas (Month)	Month (Western)	Rasi (Zodiac signs)	Characteristic features	Kala
1.	Sisira	Magha-phalguna	Jan 21 - Mar 21	Kumbha-Mina	As it is the beginning of <i>adanakala</i> , dryness will be very less and coldness is high due to the clouds, breeze and rain.	<i>Adana kala</i> (<i>Uttarayana</i>)
2.	Vasanta	Chaitra-Vaishakha	Mar 21 - May 21	Mesha-Vrshabha	Barley, wheat, <i>jangalamamsais</i> to be taken. Avoid sweet and sour substances and also heavy, unctous and cold substances	<i>Agni</i> pre-dominant. Sun moves towards north. Progressive dryness.

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3.	Grishma	Jyeshtha-Asadh	May 22- July21	Mithuna-Karkataka	Sun shines bright and earth seems to burn. Exercises, consuming <i>Katu, amla and lavana</i> rasa is avoided. <i>Jangalamamsa, raktashali, ksheera, ghee, draksha, narikelajala, sarkara</i> should be taken.	<i>Tikta, kashaya</i> enhances. Strength is debilitated.	<i>katu, rasa</i>
4.	Varsha	Sravana-Bhadrapada	July22-Sept 21	Simha-Kanya	Due to vitiation of <i>tridoshavamana, virechana, vastiare</i> performed systematically. Old barley, wheat and <i>sali</i> rice along with meat soup should be consumed. <i>Madhvika, arista</i> with madhu is taken. Unctuous, warm, sour and salty diet is taken.	Visarga kala (Dakshinayana)	
5.	Sarad	Asvayuja-Kartika	Sept 22- Nov 21	Tula-Vrshchika	Sunshines brightly and is devoid of clouds. <i>Tiktaghrtapana, Raktamokshana and Virechana</i> are recommended. <i>Kashaya, madhura, tikta rasa pradhanaaharasevana</i> is suggested.	Moon is predominant. Sun moves towards south. Unctousness is gradually increased.	
6.	Hemanta	Margasira-Pushya	Nov 22-Jan 21	Dhanush-Makara	During this season thick mist and smoky appearance occurs in wells, rivers etc. Cold breeze causes <i>romaharsha and Jatharagni</i> increases. Consumption of sweet, sour, salty and unctuous substances, black gram, sugarcane, milk, muscle fat is more.	<i>Amla, lavana, madhura</i> rasa enhances. Restores strength.	

These six seasons (rutu) as mentioned in table 1.3 are divided on the basis of predominance effects of sun and moon. *Kala* is divided into 2 *Ayana* (*dakshina and uttara*). These two *ayana* together make one *samvatsara* (year). These five years make one *yuga*. Hence *kala* starting from *nimesha* and ending with *yuga*, rotates continuously like a wheel and is understood as *Kalachakra*.

In *yuga* after *yuga* a quarter of righteousness is reduced in this order along with similar reduction in the quality of living beings leading finally to the dissolution of the universe. After completion of one hundred years, there is loss of one year in the lifespan of the living beings in the respective ages.

All the four factors (wind, land, water and time) in their normal state bring fruitful result to the

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human body and balance the ecosystem as well. But in abnormal or deficit state chaos is created in both human body and environment.

It is unambiguous with these minute details that how equipped the ancient scholars were. Every single piece of information, advice and recommendations from time to time with concern to human health is untouchable and flawless. This shows that by following the seasonal regimen, maintaining clean soil, water and air, by consuming wholesome food as per season, time, one's own digestive capacity; it is not difficult to create a healthy environment. With the adoption of few changes in day-to-day life a large impact can be created in maintaining the balance between climate and living bodies.

Summary:

The aspect of bioclimatology has been reflected in Ayurveda in various forms. For instance, the two parts of *samvatasara* (6 *rutus* and 12 months) are well described in *samhithas*. But it is described based on *gunas* which further helps to co-relate its effect on human body that is *Acharya Charaka*⁸ and *Acharya Sushruta*⁹ both have described *Adanakala* and *Visargakala* based on *ruksha* and *snigdha gunas*. *Caraka samhitha* describes the six *rutus* counting *Varsha* as single *rutu* and *Hemant* in two (*Hemant* & *shishira*), but *Sushruta samhitha* describes *Varsha rutu* in two (*Varsha* and *Pravrit*) and *Heman* in single *rutu*. This difference is based on the effect of different atmospheric conditions at places and its different effects on the human body. This evidence portrays the roots of bioclimatology in Ayurveda.

DISCUSSION

While commenting on the time of *pittavridhhi* in human body by *Acharya Sushruta*⁸, *Dalhana* correlated the effect of short distance between earth and sun at the time of day on human physiology. This is one of the best examples of depth of bioclimatology in Ayurveda. In the *Vranaadhyaya* of *Sushrutasamhitha* the author has described different time duration for opening a bandage in different seasons. This is technically possible only when we can exactly calculate the *rutu* and the healing process of human body. The effect of *brahma muhurata* on body has also been described by our great *Acharya*¹⁰.

Hence with these examples it is very clear that the bio-climatological aspect in *Ayurveda* is scientifically conceptualized on the basis of not only the calculations of time but the timely calculations of different *Gunas* and different *Kriyakalas* over a period of time in the normal individual forms and its various effects on the health of an individual.

With the sudden alterations in weather and climate the environment is undergoing drastic changes. These changes are resulting in exposure to vulnerable diseases with unknown pathology and cure. Innumerable viruses, bacteria and other micro-organisms are entering the living body and creating signs and symptoms that are fatal. Only by adopting the methodologies of present system will give no solution. Therefore, it is the need of the hour to introspect the scriptures once

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again and reduce the havoc in health care systems.

CONCLUSION

Our ancestors were well aware about the different climatic components. They knew how to measure the rainfall, to find out the direction of the wind, probably speed also. They were not oblivious to calculate the time from *nimisha* to *yuga*, *samvatsara* etc. They had extensive knowledge about the construction of calendar based on the movements of moon and sun. *Acharyas* have given clarity in the relations of the environment and its effects on the human body. They have scientifically justified the changes occurring in human body with the alteration in the climate, weather, wind, water, soil and time. Thereby not only this unique work goes hand in hand with the present day but also fulfils the purpose of entering a new dimension in the study of science.

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