Ayurveda: a distinctive approach to health and disease

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The enormous complexity of human body offers scope to conceptualize its dynamic organization in a number of ways such as structural, biochemical, functional, etc. The conventional western medicine views the body from a structural perspective, whereas ayurveda, the ancient medical system of India, understands the human body from the perspective of functions/tridoshas (vata, pitta and kapha). These different viewpoints of ayurveda and western medicine have resulted not only in the use of different terminologies and metaphors to explain the human system but also in their different approaches to health and illness. This article focuses on the distinctive approach of ayurveda to health and disease and the science behind it.

Keywords: Ayurveda, kapha, pitta, tridoshas, vata.

THE world is going through an unprecedented and extraordinary health scenario. Unprecedented because ill health is increasingly becoming a major problem and a fact of life and many diseases are vying with each other to take the top slot as formidable health hazards. Extraordinary because with all the technological advances, the large body of knowledge available about human biology and the great strides made in taking care of the illness of the humanity, there seems to be increasing levels of challenges ahead and significant limitations at hand. Extensive research inputs from disciplines ranging from physics, chemistry, pharmacology, biology, biochemistry and engineering to mathematics, form the backbone of western medical science both in terms of its understanding as well as diagnosis and treatment of diseases. But, despite huge amounts of money spent on medical research, not only have a number of diseases increased in prevalence but some diseases also defy the state-of-the-art of diagnosis and treatments[1,2].

On the other hand, if one looks at the health scenario in India, one finds that in the not too distant past (pre-colonial India), Indians were leading a healthy lifestyle and were health literate[3,4]. The then prevalent medical systems like ayurveda were handling effectively, ailments, surgical cases (like cataract, removal of urinary stones, otoplasty and rhinoplasty) and even some medical emergencies (like snake bites)[3–5]. They had even practised innoculation till the British banned it around AD 1802/1803 (refs 6 and 7). But, starting with colonization and the subsequent meteoric ascent of western medicine and its widespread popularity, all indigenous systems of medicine were swept into near oblivion[8,9]. Now, an increasingly chemical-weary population has begun turning towards alternative approaches during illness not only in India but the world over. The wheel has thus come a full circle. The growing interest in ayurveda has prompted a relook at this ancient medical science of India.

Ayurveda is a highly systematized medical system resting on proven theories and thousands of years of documented clinical observations with unbroken and successfully continuing clinical practices. Despite these, proper recognition and appreciation have been denied for ayurveda. One of the major criticisms is its use of a language seen to be archaic and of terms that do not relate to the modern scientific terminologies that one is familiar with. This, coupled with the fact that ayurveda's concepts and approaches to health and diseases are very different from those of western medicine, has made one wonder whether ayurveda is yet another mystery of India. This article is an attempt to present a coherent description of ayurveda and demystify it, in particular, the concept of *doshas*, which form the basis of ayurveda.

Models for understanding human body

Human body is a highly complex biological system with sophisticated network of controls, switches, feedback loops, self-correcting mechanisms, etc. It is a well-coordinated dynamic organization of structures (gross and subtle), biochemicals, functions and many other activities (measurable ones like electrical and magnetic, and non-measurable ones like mental and emotional) and physiological parameters. There is, therefore, more than one way to conceptualize this dynamic organization of the body. For example, human body can be understood from

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the viewpoint of structures, biochemicals or functions. Just like physics, chemistry and biology study the same matter from different perspectives, it is possible to study/understand human body as well from different perspectives.

Biomedical model

The model adopted by western medicine is a structural one with atom as its fundamental unit. This model has a clear structural hierarchy with atom in the lowest level forming the building block of the entire human body. Atoms make molecules, which in turn form cells and then tissues, organs, organ systems and finally the entire organism (human body). The human body is understood in terms of different systems like skeletal, endocrine, reproductive, circulatory, etc. Since this approach is based on structures and reduces everything to the fundamental unit of matter, it is generally referred to as a reductionistic viewpoint. This model looks at illness as being caused by the deranged behaviours of the molecules and organs in the body[10]. Reductionism is breaking down of a complex system into smaller, more manageable parts and then studying these separately. It has been a tremendously useful and successful method of studying the human body and has led biologists to unravel the human genome and the neurobiologists to uncover in minute details, the working of the nerve cells in the brain. This approach places emphasis on obtaining measurable structural information using technologies and has fine-tuned the various diagnostic tools to obtain such information. It is to be borne in mind that other models with different perspectives of the human body, need not have any requirement of similar technologies and diagnostic tools to understand and treat diseases.

Ayurveda

Ayurveda, meaning science of life, has its roots in the *Vedas*[8,9,11,12] which are considered the oldest written literature in the world and from which many theories and philosophies have sprung. The word '*veda*' means knowledge and *Vedas* are books of knowledge covering a wide range of subjects. The systematized science of ayurveda has resulted from the amalgamation and practical application of various schools of thought (known as '*darshanas*') that have sprung up from *Vedas*. The *darshanas* forming the basis of ayurveda are – Vaiseshika, Nyāya, Purva Mimāmsa, Sānkhya, Yogā and Uttara Mimāmsa/Vedanta. These form the logical and philosophical schools of thought of ancient India resulting from the efforts of its ancient seers in trying to understand the ultimate nature of reality. Some are materialistic and concerned with the physical structure of the universe while others are in the realm of metaphysics, concerned with creation, relationships and their philosophical implications. All these form the basic sciences that have given rise to the theoretical framework of ayurveda and under which ayurveda has put together an enormous body of observational data and has developed its own methodologies to understand the human body and also diagnose and treat diseases. While modern medicine is a highly rationalized empirical science, ayurveda has theoretical backing for its practices[13].

The history and development of ayurveda is closely interwoven with the history and culture of this country. In India, ayurvedic thoughts and methods have had a very deep impact on the lifestyle of the people. In almost every household, there was/is knowledge of ayurvedic treatment for common ailments and each of them had/have their own time-tested and valued recipes passed down from one generation to another for treating a wide range of health conditions. In addition, ayurvedic principles of healthy living were/are incorporated into day to day practices like use of medicinal ingredients in traditional cuisine, daily activities and some also in the form of religious rituals. Ayurveda has, thus, perhaps the longest unbroken health tradition in the world.

Ayurvedic model

In ayurveda, an organism is not considered a system of organs, but a system of relationships which define the functions. Ayurveda's understanding of the functioning of the human body, therefore, is different from that of biomedicine. It is based on *tridoshas – vata*, *pitta* and *kapha*. These words in Sanskrit, the language of ayurveda, refer to functions like movement, transformation, and support and growth, respectively[14]. Ayurveda refers to these as '*doshas*', which literally means 'that which can become vitiated'. This is apt because in a disease it is ultimately the functions which become impaired.

A function results from the collective efforts of many parameters in the body ranging from structures (gross and subtle), biochemistry, measurable activities such as electrical and magnetic, and non-measurable activities such as mental and emotional, to many other physiological parameters. For example, let us look at functioning of the heart. Heart in any other shape will not function in the same way, making structure a very important component of function. It is well known that the electrical activity of the sino-atrial node, heart's natural electrical pacemaker, is a crucial component for the proper functioning of heart. It is also now well established that mental and emotional activities affect heart's functioning[15,16]. All functions are expressed through the physical medium of the structures. A function, therefore, is an emergent property of many parameters. It characterises the whole system, where all the various components work together to yield a function. A functional model will, therefore, be an inclusive model,

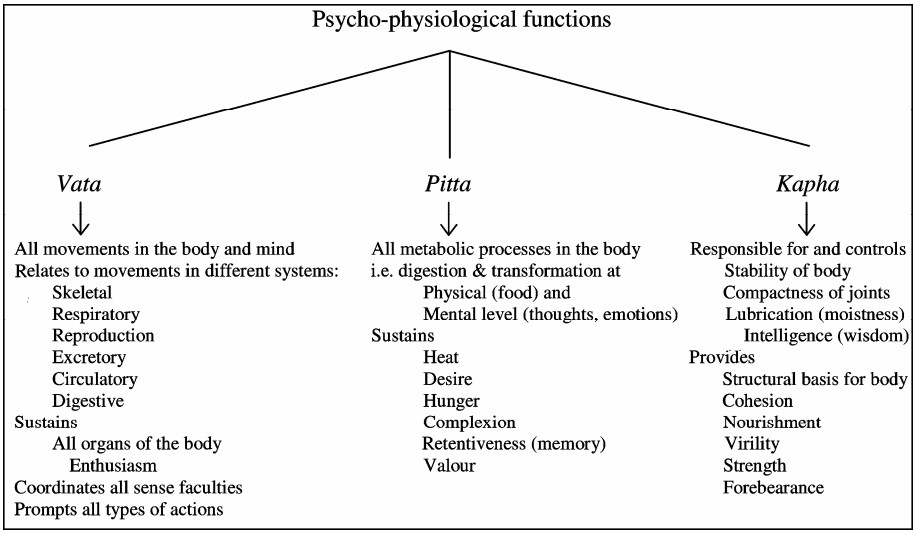

Figure 1. Classification in the functional model of ayurveda.

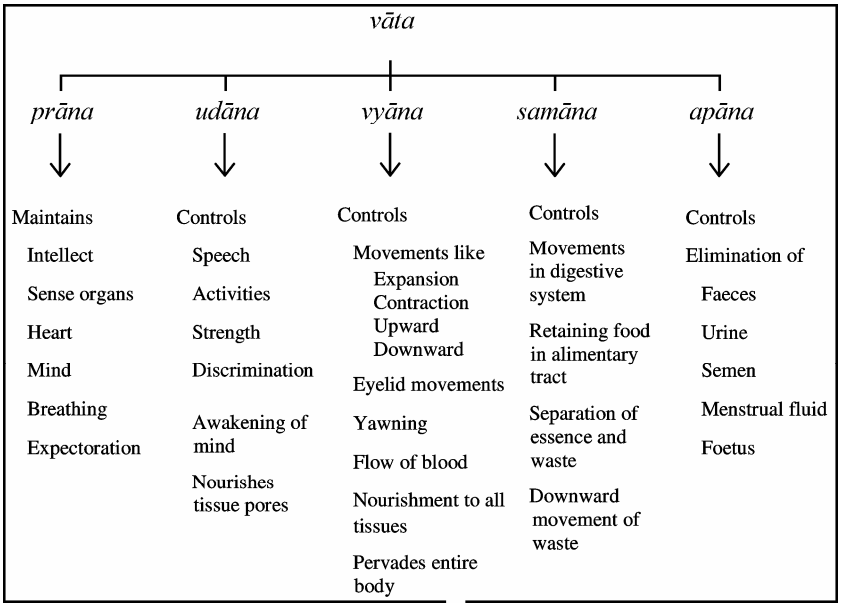

Figure 2. Sub-classification of *vata*.

taking into account all parameters, which contribute to a function. It will be a reflection of the whole system, where all the various components working together result in a function.

The *tridoshas* actually represent a set of parameters, which are physico-chemical and functional in nature. For example, *vata* represents dryness, lightness, weightlessness, coldness, roughness, minuteness and movement. *Pitta* refers to parameters like slight unctuousness, penetrating, heat producing, lightness, bad smell, causing movement and liquidity. *Kapha* indicates unctuousness, producing coldness, heavy, sluggish, smoothness, shining, firm/static[17]. These parameters express through the structures and give them their functionality. Figure 1 shows the ayurvedic classification of the functional parameters under *vata*, *pitta* and *kapha*, which are further sub-classified with each of the sub-classified *doshas* denoting certain functions in the body and also corresponding to different regions of the body (Figures 2–4)[18,19]. This not only eases the handling of information and the diagnosis but also increases the effectiveness of treatment. It is to be noted that an exhaustive list of functions is not given for *doshas*/sub-*doshas* in this article.

It is interesting to note that *vata*, *pitta* and *kapha* cover not only the physiological but also the psychological functions. It is important to note that in this functional model, there is no hierarchy, i.e. there is no building block/fundamental unit. The existence of *doshas* occurs

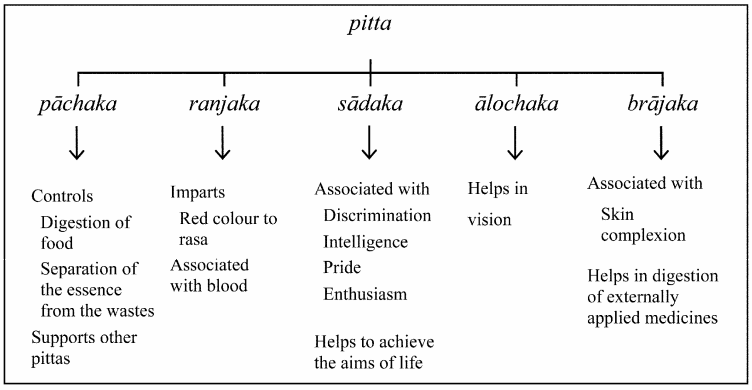

Figure 3. Sub-classification of *pitta*.

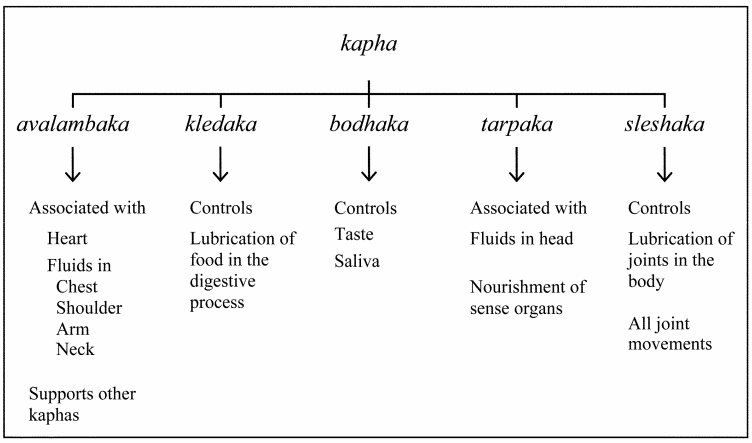

Figure 4. Sub-classification of *kapha*.

at the macroscopic level and also at subtler levels like cells and molecules. The three '*doshas*' exist in fine balance indicating homeostasis. A change in one will cause changes in the other two. For example, when *vata* increases, certain functions and parameters in *kapha* and *pitta* will change and vice versa. If the *vata* parameter dryness increases, this will reduce the unctuous property of both *pitta* and *kapha* and affect the functions associated with them. Similarly, changes in other parameters of one *dosha* will cause increase or decrease of parameters in the other two *doshas*, resulting in some impaired functions. Disease results when the *doshas*/functions are out of balance and ayurvedic treatment involves bringing the *doshas* back to balance. The model adopted by ayurveda is thus a model dealing with nonlinear relationships.

Doshas, thus, represent a different perspective of the body and provides a conceptual framework different from that of biomedicine. Under this theoretical framework, ayurveda has put together an enormous body of observational data and has developed its own methodologies of diagnosis and treatment. These well-developed theories and practices have been documented and validated by practice over thousands of years and continue to be validated. The consolidated results and conclusions have been documented in numerous ayurvedic texts just like biomedical textbooks, where consolidated information is provided but individual cases are not discussed. Ayurveda's unbroken chain of experience indicates that its theories and therapies have been tested by thousands of physicians on millions of patients and have thus stood the test of time. This is in stark contrast to the clinical trials in biomedicine which are conducted for a maximum period of three years on a few thousands of patients[20].

It is pertinent to note that ayurveda has also a structural classification of the body based on '*panchamahabhutas*' and '*dhatus*' (tissues) and a classification based on '*srotas*' similar to the system-wise classification of western medicine[21–23]. It would, therefore, be wrong to presume that ayurveda does not recognize the importance of the mechanical/structural aspects of human body. Infact, it had a highly developed branch of surgery[24]. Susruta, the ayurvedic surgeon acknowledged as the father of surgery even by the West, describes the importance of dissection and many surgical procedures. Some of his methods such

as rhinoplasty and otoplasty have been acknowledged and adapted by modern surgery[25,26]. Yet, ayurveda looks beyond the purely structural view by considering life as a complex interrelationship of various forces. The core idea of *tridoshas* underpins all ayurvedic understanding of human body and treatment of diseases. Ayurveda's view of life as a complex interrelationship of *vata*, *pitta* and *kapha* and not merely a structure made of atoms and molecules is unique and gives it its distinctness in dealing with human body in a holistic way. It is interesting to note that while biomedicine's paradigm is based on classical Newtonian physics and lies outside quantum concepts, ayurveda's concepts are seen to resonate with some of the concepts of quantum physics, in particular, the quantum physical worldview[13,27].

From theory to practice

Diagnosis: Since the central tenet of its theory is that illness results from imbalance of '*doshas*', identification of the *dosha/doshas* gone out of balance in a disease plays an important role in diagnosis in ayurveda. Other factors such as '*prakruti*' (person's physical and mental constitution), age, occupation, season, region in which the patient lives, etc. also play an important role in diagnosis. All clinical symptoms have been classified under the three *doshas*. For example, consider swelling. If it is air-filled and associated with pain, then *vata* is affected. If the swelling is reddish with burning sensation, then *pitta* is associated. On the other hand, if it is a pitting oedema and associated with no/dull pain, then *kapha* is impaired[28]. A combination of these would indicate the derangement of more than one *dosha*. All clinical symptoms ranging from cold, cough, fever, diarrhoea to swelling and skin disorders have been classified under *vata*, *pitta* and *kapha*[29].

The clinical symptoms can thus be directly linked to the *dosha*/*doshas* (read functions), which have gone out of balance, which in turn can be directly related to the known causative factors (such as diet and lifestyle activities – physical and mental) responsible for this imbalance. For example, let us take the disease osteoarthritis. According to ayurveda, in this disease *vata* is deranged and hence it is a *vata* disorder. The *vata* parameter 'dryness' has increased causing a reduction in the lubrication (a function of *kapha*) between the joints. The reason for this increase in *vata* could be the patient's *prakruti* (*vata* predominant) or age of the patient (*vata* predominates after the age of 60 years) or diet and activities which had increased *vata*. All these are assessed leading to a proper diagnosis and appropriate treatment is then given. Diet and lifestyle changes are always part of any ayurvedic treatment. On the other hand, biomedicine's diagnosis places emphasis on structural changes (gross and subtle) and the various diagnostic tools are also designed and fine-tuned to observe these changes, which need not be the causative factors of the disease. It may reflect only symptoms of the disease. It is pertinent at this point to note that ayurveda identifies the etiology (causative factors) for all the diseases.

Questions always arise as to whether ayurveda can manage diseases that were not known 1000s of years ago, in other words, contemporary diseases. Since it has a theory of health and disease, it can handle new diseases. This can be explained in the following way – if a person knows the theory of addition, he/she will be able to add any combination of numbers by applying the theory. In the same way, by applying its theory of health and disease, ayurveda can understand, diagnose and treat new diseases. This is also clearly mentioned in texts like *Caraka Samhita*, while mentioning the treatment of new diseases and those not mentioned in the text[30]. It says:

> 'In fact, diseases are of innumerable varieties depending upon their distinctive features …. Only important diseases have, however, been enumerated. Other diseases can be classified similarly according to the factors (doshas) involved in their manifestation' (slokas 42, 43).
>
> 'If a physician is not able to name a particular disease, he should not feel ashamed on that account because it is not always possible to name all types of diseases in definite terms. When aggravated, one and the same dosha may cause manifold diseases depending upon the various etiological factors and the sites of manifestation. So, a physician should try to comprehend the nature of the dosha, the site of its manifestation and etiological factors and then initiate the treatment. A physician, who so initiates the treatment after having full knowledge of these three aspects would never fail in his attempt to cure the disease' (slokas 44–47).

In any disease, ultimately some functions or the other in the body are going to be impaired and by identifying them with the *doshas*, ayurveda can diagnose and treat it. The advantage of this approach is that even if ayurveda lacks *a priori* knowledge of a new disease, this disease can be handled because it can identify the deranged functions and their causative factors. The strength of ayurveda is this simplicity in diagnosis and it should not be regarded as its weakness.

Treatment: Ayurvedic treatment involves removal of the causative factors and bringing the functions/*doshas* into balance. For this, ayurvedic medicines, diet and activities (mental and physical) are also understood in terms of *vata*, *pitta* and *kapha*. Medicines are categorized according to their action on either one or two or all the three *doshas*. For e.g. *Rāsnādi kashāyam* is a *vatahara* (vata reducing) medicine. Food is also categorized similarly.

While items which are sweet and fatty increase *kapha* (i.e. certain functions and parameters in the body) and decrease *pitta* and *vata* (again certain functions and parameters in the body), those which are (chilli) hot and spicy will increase *pitta* predominantly and also *vata* and decrease *kapha*. Table 1 shows the relation between the tastes (*rasas*) and the *doshas*/functions. Physical activity like exercise will increase *vata* whereas mental activities like worrying and anger will increase *vata* and *pitta*, respectively. To put in a nutshell, everything ranging from medicines to diet to mental, physical and emotional activities are categorized and understood in terms of the changes they cause in the *doshas*/various functions of the body.

These classifications have occurred through centuries of experimentation, observation and clinical applications. Millenia of such careful study and documentation have produced this successful model, which offers a comprehensive and holistic paradigm with time-tested successful treatment protocols. While this approach seems strikingly simple, it is clinically very effective and gives a distinctive approach to the ayurvedic practice and results that outscore those of western medicine, specifically for the treatment of complex diseases. In the case of osteoarthritis discussed in the previous section, since *vata* is increased, the entire treatment will act to reduce the increased *vata* (particularly its dryness aspect), i.e. '*vata* reducing' medicines, procedures (e.g. medicated-oil application), diet and lifestyle activities.

Ayurvedic treatment involving medicines, diet and lifestyle activities which restore the *doshic*/functional balance shows how a textual theory has been translated into a successful and viable clinical practice. Since health is a balanced state of the *doshas*, interconnections between various functions (*doshas*) in the body are known in ayurveda and the treatment is able to avoid side effects by judicious use of medicines, diet and activities. Ayurvedic texts clearly mention that treatments should have no side effects and this is adhered to in practice as well. In biomedicine, benefits from treatment are quite often outnumbered by the side effects of the medication[31–35].

More importantly, ayurveda takes health into the realm of one's personal responsibility (empowerment of the so-called patient) by offering several methods to stay healthy and prevent diseases. Ayurvedic principles and methods of healthy living can be incorporated easily into people's daily life, their cuisine and other day to day activities. It can thus have a pervasive influence on the daily life of people by providing optimal health by customizing and harmonizing diet and lifestyle activities. This way, people are made responsible for their health and they need not consider themselves as victims of factors beyond their control. Ayurveda, therefore, goes beyond treating diseases and is a healthcare system teaching one how to be healthy by facilitating harmonious diet and activities (*svastha vrittam*).

Table 1. Relationship between taste (*rasa*) and *doshas*

Taste/*rasa*	Increased *doshas*/ functions	Decreased *doshas*/ functions
Sweet	*Kapha*	*Pitta* and *vata*
Sour	*Kapha* and *pitta*	*Vata*
Salt	*Kapha* and *pitta*	*Vata*
Hot	*Vata* and *pitta*	*Kapha*
Bitter	*Vata*	*Pitta* and *kapha*
Astringent	*Vata*	*Pitta* and *kapha*

Conclusion

As the world faces increasing chronic, psychosomatic, stress and lifestyle-related disorders, ayurveda with its different understanding of the human body and distinctive approach can play a crucial role in the future of healthcare. Medical scientists are beginning to realize that it is difficult to understand the totality of health by understanding individual parts as in a mechanical system. The understanding of human body yielded by structural/biochemical analysis is just only one part of the complex picture. Health cannot be limited to parts since there are multiple levels of interaction which integrate in such a way that the whole organism functions smoothly. Ayurveda offers a systematic methodology to take care of the different relationships at different levels based on *doshas* and use them to design therapeutic protocols and customize them. '*Doshas*' represent a major difference in the perspective of understanding the human body based on functions than the currently used one in modern biology. It is a distinct nonlinear way of viewing the complex human system, which is definitely not a linear system. It is important to bear in mind that within the body, *tridoshas* are not compartmentalized and do not exist separately. This is only a viewpoint to help us handle the complex information in the human body and use them to understand health and disease conditions. But this viewpoint gives a distinctive and different approach to ayurvedic practice when compared to biomedicine.

Although western medicine is very successful in dealing with medical emergencies and certain diseases, it is now faced with a situation where diseases are no more single entities but are complex, with one leading to another. For example, obesity leads to a number of other diseases such as cardiovascular disease, diabetes, cancer, osteoarthritis, sleep apnoea, etc.[36,37]. The reductionistic approach of conventional western medicine and its belief in linear causality faces limitations. On the other hand, health and illness are more holistically understood in the conceptual framework of ayurveda, which differs in fundamental ways with the tenets of western medicine. Ayurveda with its holistic perspective, different approach

to health, and disease and emphasis on diet and lifestyle activities can play an important role. Its experience and expertise accumulated over several millennia should be used to benefit suffering people.

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