

Ayurvedic Inheritance of India
Dr. M. S. Valiathan
National Research Professor, Manipal University
Indian Institute of Technology, Madras

Module - 1
Evolution of Ayurveda

Lecture - 1
Roots of Ayurveda

Hello, it is with great pleasure and privilege that the NPTEL team announces a series of lectures on Ayurveda as an Indian system of medicine by one of its foremost exponents in the last few decades, professor M.S.Valiathan who is a Padma Vibhushan and national research professor Manipal, Karnataka, India. Padma Vibhushan is the second highest civilian award that can be given to an Indian citizen by the country and Dr Valiathan is among the illustrious sons of India. The cardiac surgeon of international repute, professor Marthanda Varma Sankaran Valiathan has been researching in Ayurveda for the past 2 decades and has been a prominent researcher in that field. He is currently a second term national research professor of the Government of India with location in Manipal University, where he was also its first vice chancellor. He has received several honors in a career spanning three decades including the presidentship of the Indian National Science Academy. He is a fellow of the National Academies of Science, Engineering, and Medicine in India and a fellow of the Royal College of physicians, England and the Royal College of Physicians and Surgeons, Canada. He is a recipient of honorary doctorates from several universities.

Professor Valiathan was born in Kerala and obtained his first degree in medicine MBBS from the medical college Trivandrum, Kerala. He was a surgical trainee in the University of Liverpool, England which lead to FRCS and a master's degree in surgery. Subsequently, he specialized in cardiac surgery at the Johns Hopkins and George Town University hospitals in USA and became a fellow of the Canadian Royal college in cardiovascular and the thoracic surgery. He served as professor of cardiac surgery and Director at the Sree Chitra Tirunal Institute, Trivandrum for two decades when it became an institute of national importance.

Following his term as Vice-Chancellor at Manipal University, DR Valiathan took up a serious study of Ayurveda with the encouragement of the university. This received a boost by his appointment as a National Research Professor which is a prestigious Government of India award to the researchers for lifelong contributions in their fields. Among DR Valiathan's many valuable research contributions in medicine, he is perhaps most well-known for developing and successfully transferring for production, a series of high tech devices such as the tilting, disc heart valve, oxygenator, blood bank etcetera, which laid the foundation for a modern medical devices industry in India.

More recently, he has conceptualized and organized several studies on a science initiative in Ayurveda among a network of major institutions across India. These studies in basic sciences take their cues from traditional medicine such as the genomic basis of Dosha Prakriti, effect of rasayanas on DNA chain break repair and microstructure of metallic basmas. Apart from regular surgical work, he trained over 20 cardiac surgeons, published over 100 scientific papers, 3 books and several chapters in books.

Lastly, DR Valiathan has received many prestigious awards such as the Hungarian professorship of the Royal College of Surgeons, England, R.D. Birla Award, Om Prakash Bhasin Award, Jawaharlal Nehru Award, Dhanvantari Prize, Aryabhatta medal, J.C. Bose medal, G.M. Modi Award, H.K. Firodia Award, DR Samuel P. Asper Award of the Johns Hopkins University, and the Chevalier in the Order of the Palmes Academique of the French Government to cite a few. It is with great honor that the National Program on Technology Enhanced Learning announces a series of lectures by him on Ayurveda as a system of medicine from very ancient times. These will be made available through the NPTEL website and also through the NPTEL YouTube channel. I request professor Valiathan to deliver his lectures. Thank you.

SL. NO. 01: LECTURE 01:

EVOLUTION OF AYURVEDA

ROOTS OF AYURVEDA



2

This course on India's Ayurvedic inheritance is an unusual course; unusual in the sense, the lecture is being given by a surgeon on Ayurveda and secondly, it is being addressed to students of science and technology, not to Ayurvedic physicians. So, both these are unusual about this course, but I am greatly privileged and delighted to be giving this course. You may well ask, why should a scientist or a student of science or student of technology know anything about Ayurveda? They can build bridges; they can build houses, build hospitals, build instruments, even practice medicine without knowing anything about Ayurveda. Now, to answer this question I have two illustrative examples.

(Refer Slide Time: 05:55)

ROOTS OF AYURVEDA

Contents:

- Urge to heal : an evolutionary necessity.
- Animals as healers.
- Indus Valley civilization: sanitary intimations.
- Medicine in Atharvaveda: earliest written tradition.
- Faith-based medicine of Atharvaveda to the reason-based medicine of Ayurveda: disappearance of rituals and mantras in Buddhist India; treatment of jaundice as example.

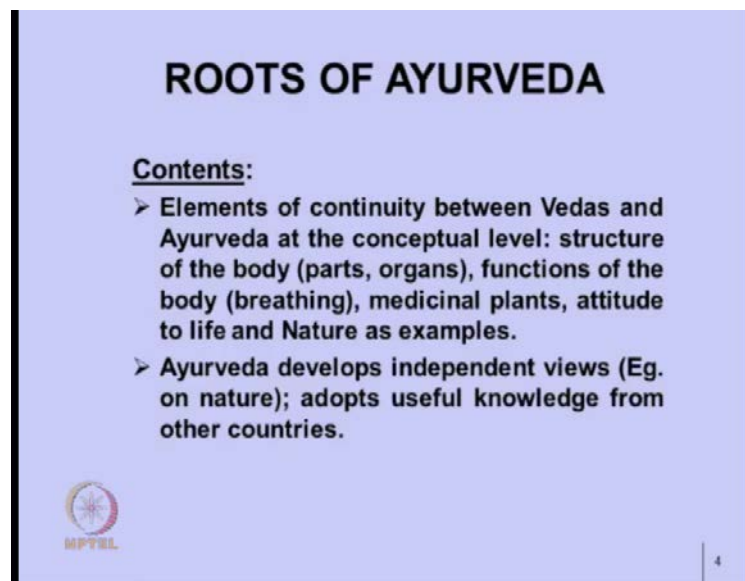


Contd.

3

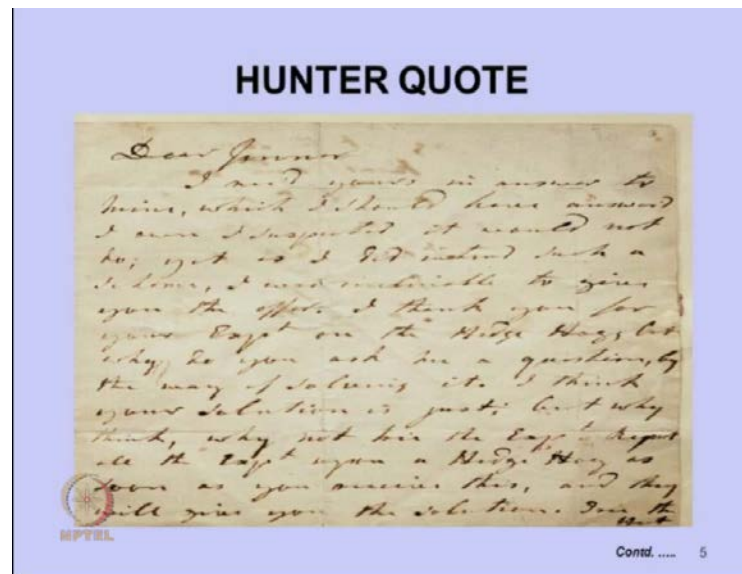
Now, before I get on with this lecture, I would like to give you the contents of what I am going to say. Just like a book when you read, you have the contents given. First of all, I would like to say something about the urge to heal, where Ayurveda begins, animals as healers - part of evolution, Indus Valley civilization - a side story very important and interesting, something about medicine in the Atharvaveda to which Ayurveda traces its roots. Then something about the changes which came about during the practice of Ayurveda, how it differed from the Vedic practice.

(Refer Slide Time: 06:41)



Then, elements of continuity - how in spite of differences, a thread of continuity continues from Vedic to Atharvavedic medicine and how Ayurveda develops views of its own going beyond the Vedas? This is about what I will be covering in the course of these lectures.

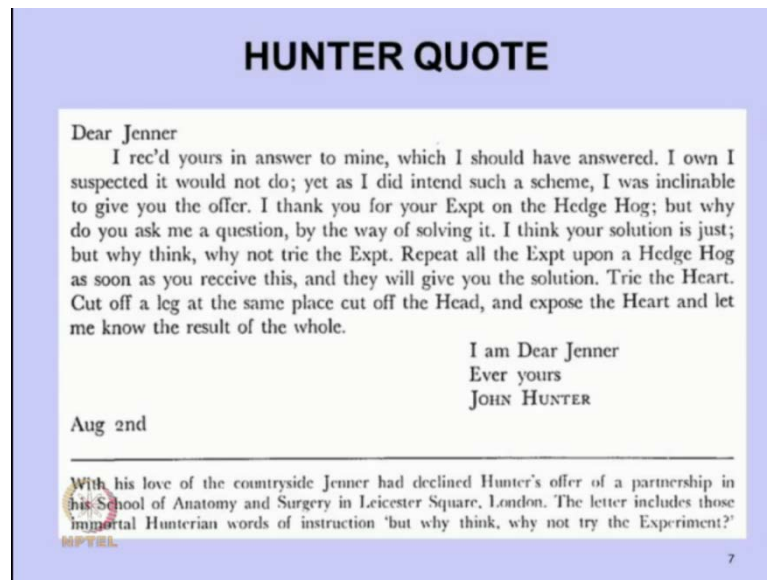
(Refer Slide Time: 06:58)



Now, the first illustrative example I would like to give. Here is an old faded letter from the 17th century. You may not be able to read it. I got it from Royal College of Surgeon's archives. This is a famous letter written by John Hunter to Edward Jenner. These were great figures in the 18th century. That was a time when the surgery was becoming a scientific discipline and John Hunter was known as the father of this process. And Jenner was a student. He passed from London, MBBS; then he moved to Gloucestershire to set up practice, but he used to be in continuous touch with Hunter writing letters to him about the experiments he was doing, asking for advice, and so on. There was a running correspondence.

At one point, he was doing an experiment, a series of experiments on Hedgehogs trying to study the role of heart in circulation, regional circulation - circulation of the brain, circulation of the liver, how does heart adjust the circulation? This was the subject of the study doing it in Hedgehogs. At this letter Jenner wrote to Hunter, this is his reply.

(Refer Slide Time: 08:14)



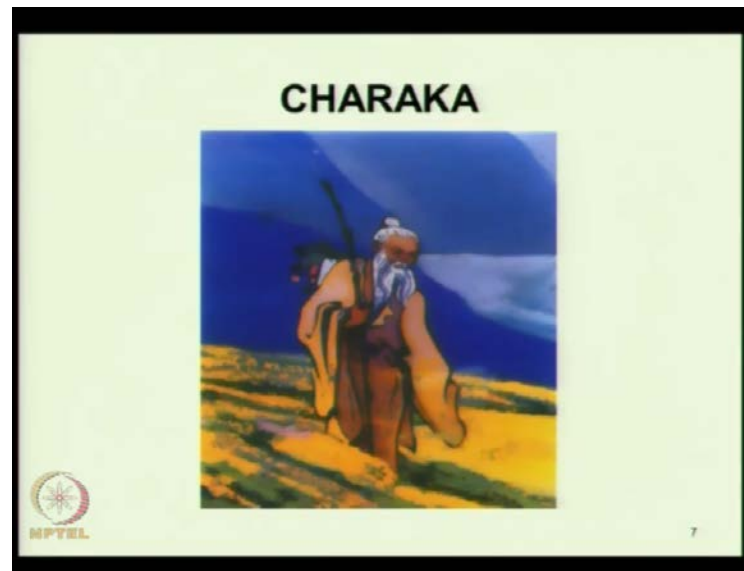
Now, this is not, you can read this, these collection of letters have been published and the most important line there which has become a historic quote - why think? Why not try the experiment? That has become a classic quote; everywhere, you will hear this. And the reason is - instead of asking questions and asking me to answer them, why do not you do the experiment and find the answers? This was John Hunter's reply. Now, this impressed Jenner to such an extent.

Several years later, he was encountering the problem of smallpox, great epidemics in England at that time. Thousands of people dying from one outbreak of small pox; no treatment and he was helpless, and he used to hear from the milk maids in Gloucestershire that if we got, we do not get smallpox because we get cow pox in our hand, milking the cows. Now, this, he took it seriously, but the doctors there, they thought very lightly of this. They thought these stupid women who have no education, this is simply superstitious belief; they never attached any importance to it.

So, he remembered what John Hunter addressed in this historic letter - why think? Why not try the experiment? Now, that was the beginning the cow pox material which he started inoculating and the rest is history as they said. Today, if the world is rid of smallpox, one of the worst scourges that we ever had, that is all because of this experiment. Now, this knowledge would not have come to him, if he had not paid attention to the culture in which he was living. The ignorant people who are part of it,

part of that knowledge ecosystem, if you had ignored it, he would have been impoverished; whole science, medicine would have been impoverished. There is one very important reason why the cultural surroundings became so exceedingly important to the pursuit of science or technology.

(Refer Slide Time: 10:22)



Another example, which I would let before I come to Charaka, this is a famous painting of Roerich. Another example is more recent. DR Abhay Bang is a very distinguished physician who was trained in Johns Hopkins and his wife is a gynecologist. When they came back from the United States, unlike so many other medical couples, they decided to practice medicine in the among the tribal people of India and they choose the most backward district of Maharashtra, Gadchiroli to set up practice. And when they went there, they discovered that the Government had already built a very good primary health center; nice building, good equipment, but the tribals would never go there. It had practically closed down and they wondered why the tribals were not going there. But they were determined to live there. They built a hut very much like the tribal huts and doing practice of medicine.

Slowly, they endeared themselves to the tribal people; they understood some other tribal language and one day Abhay Bang asked these people - why is it you never go to this hospital? And they said - sir, we never go there because that place is white in color and the doctors, all the people there, they have these white coats; in our culture, the whole design of place, this white color, this signifies death; so, we will never go there. So, here

is another example. You are practicing medicine for the benefit of the community; all the technology, all the science, it has meant for them, but they do not want it. So, here again, you find that our background, the culture in which we live, we practice, we have to be a part of that; otherwise, essentially, you defeat that purpose.

And Ayurveda is an integral part of our cultural inheritance that has been practiced uninterruptedly from Vedic times, especially dominant during Buddhist ages in India, but it was systematized by Charaka, whose painting you see here. This was painted by Nicholas Roerich, a great Russian painter who made India his home. He loved the Himalayas and many of his paintings are about Himalayas, and this painting is in the Banarsidas Kalabhavan museum. He donated all his paintings to Kalabhavan and you could see this painting there; Charaka coming down the slopes of Himalayas looking for medicinal plants; that is this painting.

Now, this Charaka says in one passage - Ayurveda is ageless. That is one of the statements he makes. And the way he meant it, diseases which he was dealing with from the old descriptions many centuries prior to him and what he saw, they were essentially unchanged; the picture of tuberculosis, the picture elephantiasis; it had not changed hundreds of years. And medicinal plants which were supposed to act in a particular way in old text, transmitted through gurus, interacted the same way in his time. Similarly, philosophically, if a particular property resided in a principle called samavaya, the property is residing in a particular substance. If you take that property away, that substance is still said to be that substance; so, that guna inherent, the principle of inherence, samavaya. That was a law, was a principle, which was there hundred's of years before Charaka; that was still valid. So, therefore, on that basis, Charaka said Ayurveda, since it incorporates all these, Ayurveda is ageless.

(Refer Slide Time: 14:19)

URGE TO HEAL IN NATURE

- Traits in dogs, pigs and other animals to feed on selected plants when they are ill.
- Broken chain of DNA repairs itself; damaged cell membrane reconstitutes; injured tissues heal on their own.
- Healing essential for survival; an evolutionary necessity.

9

In a different sense, also this is correct because there is what is called the urge to heal and this was noticed by vedic sages also. I will show you the quotation later on. Now, when the dogs, pigs, other animals, when they are sick, you will find them going and selectively nibbling on certain plants. They do not normally eat them. And Chimpanzees in Africa, there is an extensive literature on this, they often get parasitic infections in the gut and they again go and selectively nibble plants. And this was believed to be due to the cognitive abilities of chimpanzees, but that cannot be said about pigs and dogs and now, there is more evidence. People working in this area, moths, fruit flies, they also have this. So, obviously, it is something innate; it is nothing to do with the cognitive abilities because moths, they do not have any cognitive abilities as far as we know.


So, therefore, the geniture the urge to heal, it is there in animals. Not only that, if you go further down, you find the DNA. Whether it single strand or it is double strand, if you break them, immediately they begin to heal; there is a DNA healing. There are healing enzymes. Cell membrane - if you disturb, it reconstitutes. So, there are at the very basic level, where it is the molecular level, cellular level, organ level, there is a tendency to heal. And this is why, a great surgeon in France 16th century Ambroise Pare, his famous statement - I dressed the wounds; God healed them. This is a famous quote just like Hungarian quote. So, therefore, that urge to heal, this is as old as life. So, when Charaka says Ayurveda is ageless, it has also meaning in this sense because Ayurveda the mission is healing.

(Refer Slide Time: 16:21)

ANIMALS AS HEALERS

“I call upon those healing creepers known by pigs,
mongoose, snakes and Gandharvas to protect us.
I call upon the healing herbs of the Angirasas
known by kites, the divine herbs known by raghats
(probably bees) and the plants known by swans to
protect us”

Atharvaveda

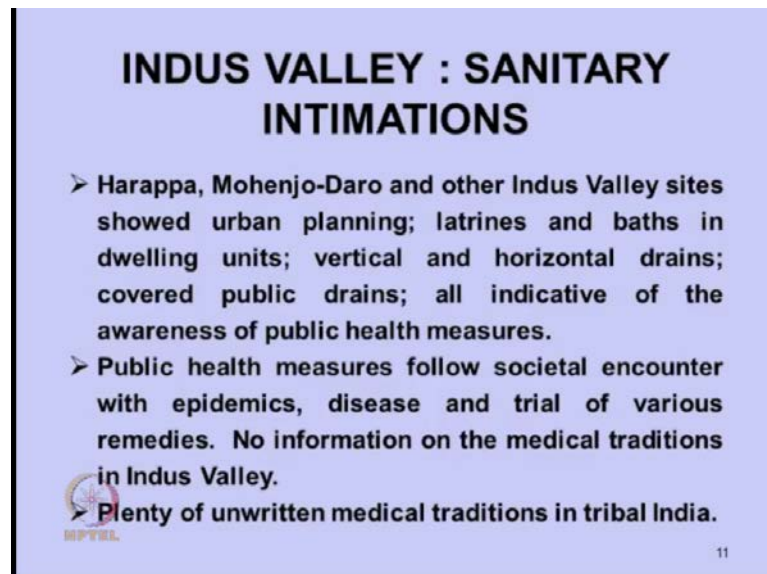


10

Now, this is the quote from the Vedas. You see, they had also observed, this is an invocation to the medicinal plants. I call upon those healing creepers known by pigs, mongoose, snakes and Gandharvas to protect us. I call upon the healing herbs of the Angirasas known by kites, divine herbs known by raghats which are probably bees and the plants known by swans to protect us. So, they all knew even in Atharvaveda, this quote shows, they had recognized these animals, birds, they want to heal themselves and know where to find that helps self-medication.

Now, little topic of interest not directly related to Ayurveda, long before that, as all of you know there is an Indus valley civilization of India.

(Refer Slide Time: 17:14)



INDUS VALLEY : SANITARY INTIMATIONS

- Harappa, Mohenjo-Daro and other Indus Valley sites showed urban planning; latrines and baths in dwelling units; vertical and horizontal drains; covered public drains; all indicative of the awareness of public health measures.
- Public health measures follow societal encounter with epidemics, disease and trial of various remedies. No information on the medical traditions in Indus Valley.

Plenty of unwritten medical traditions in tribal India.

NPTEL

11

Now, these Indus valleys is around the (()) the early 20th century. He started doing extensive archaeological work in Sindh area and he was fascinated by these burnt bricks of a constant dimension; hundreds of thousands of them in vast constructions. It took a while to realize what this all represented? And that was the time Sir John Marshall came. He made an extensive survey a study in the discovery of a Harappa, Mohenjo-Daro and the famous Indus valley civilization.

Now, when you look at this Indus valley, whatever has been excavated, now, we know it is spread much in to Gujarat like Dholavira; in fact, much extensive area Rajasthan. Now, in all these, the same patterns you find; the same type of town planning, roads and so on, but along with that you find drains. Along the side of the road, there is a horizontal drain; under the double storage building, there are vertical drains coming down joining and finally, they are all taken to a stream or a river of somewhere at the edges of the city.

Now, you will see these drains and also there are latrines in the domestic units. There are several of them. I will show some pictures. Now, the important thing for us is, it is well known in every civilization. This is public health engineering. Now, this public health engineering comes long after a particular community has suffered epidemics, diseases, lots of people dying before they realize clean water is important here. It has something to do with it. So, public health engineering comes after a great deal of suffering through all this. Now, here in this Indus valley, we had this advanced public health engineering

drains, latrines. They had some understanding of this, but we have no idea whatsoever about the medical practices in this Indus valley.

(Refer Slide Time: 19:14)



Now, these are some other pictures. You can see the drains opening on the right hand side. You can see the drains opening different stories. This is another one laid opened their covered drains.

(Refer Slide Time: 19:35)



Here you can see the latrines; several of them; see all.

(Refer Slide Time: 19:40)



Here again, you see that how well it is constructed. All horizontal drains going along the edges.

(Refer Slide Time: 19:54)

**WRITTEN TRADITION:
ATHARVAVEDA**

- All the Vedas contain references to diseases, legendary gods like Aświns, therapeutic rituals: but Atharvaveda conspicuous for medical references.
- Vedas viewed diseases as punishments decreed by Gods such as Indra and Agni for human transgressions.

Contd.

15

Now, the written tradition: All these are unwritten and we have the written tradition starts with the Atharvaveda. And Charaka explicitly says in his great book that those who wish to study Ayurveda must be loyal to Atharvaveda. He specifically says that. And all the Vedas contained references to diseases, how diseases are punishments awarded by Gods Agni, Varuna, and so on. So, these are in all Vedas. They have mentioned even

something about treatment, but Atharvaveda is an unusual Veda; in the sense, some 30 percent it has 5000 verses and 1000 prose lines. Approximately, 30 percent of this is devoted to the human body, about diseases, about treatment of diseases and so on. This is something very unusual and it is not correct that Atharvavedic hymns were composed long after Rig Veda.

This is not correct because as you know even today Atharvaveda there is a lot of use of talisman amulets; all these are very very often mentioned in Atharvaveda. But today, as you know, the Rig Vedic rituals, hymns are not chanted very often and the Rig Vedic havens are hardly ever done, but use of amulets and chants is all over India even now. So, there is something in the Indian mind which is fascinated, attractive to these amulets and charms. So, Atharvaveda was simply reflecting a long standing trait in the Indian mind and it contains the, because the large number of diseases are mentioned and the Gods to be propitiated because if a particular God Varuna is angered and the punishment is diarrhea. And so, when you make it some kind of a treatment, you are going to propitiate Varuna and there will be a hymn address to Varuna. So, there are large number of hymns about diseases. But there is another very interesting hymn called the wonderful structure of man. It is a long hymn.

There it describes all the organs of the body. Everything is mentioned, but in a poetical fashion - who made these eyes? Who made these cunning fingers of the man? Who gave the two arms and made him a hero, like that there is a little poetic touch, but starting from head to foot, all the organs: hip, the knee, toes, all these are mentioned, and goes beyond and says who put in the breath, inspiration and expiration in this man; who created the sense of truth and untruth? Like that it is a long series of questions written in a very poetic style and the entire hymn is called the wonderful structure of man. That is a part of Atharvaveda.

(Refer Slide Time: 22:53)

WRITTEN TRADITION: ATHARVAVEDA

- Many diseases such as fever, dropsy, paralysis, jaundice, retention of urine, worms etc., described; many medicinal herbs mentioned.
- Vedic approach to treatment included chanting of mantras, medicinal plants used orally or externally, and rituals.




16

So, the Vedic approach to treatment. There are three elements: one of course is the rituals; the amulets being tied and medicinal plants would be used, but their function was supposed to be divine. In other words, a medicinal plant tied as a amulet would be as effective, not more effective than being taken orally. That was the was essentially a faith based system of medicine - Deivavyapashraya, in Charaka's words.

(Refer Slide Time: 23:24)

VEDIC PERIODIZATION

- The conventional date of 1500 BC is mentioned in these lectures regarding Atharva Veda; this may call for reappraisal.
- The GSI and several geologists have produced substantial evidence that Saraswati river, figuring prominently in Vedas, dried up abruptly due to a tectonic event in Himalayas between 2400 – 1900 BC, which diverted the waters of Saraswati in a South - easterly direction through Tons-Yamuna system.



Contd.
17

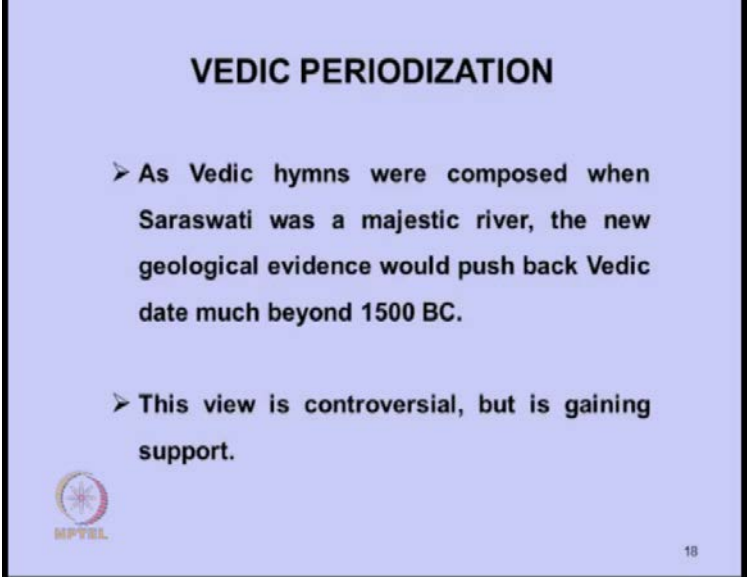
Now, the Vedic periodization: I must say a word about it. I mentioned 1500 BC as the time of the Atharvaveda. This is a periodization which is universally accepted; western

countries also, but recently in the last 20, 25 years, there is an extensive literature produced by scientists, Geological Survey of India. There is even a book on that subject which they have produced based on papers by scientists. Now, what they have found? There is extensive evidence and Professor Vauldier has written a book on this subject. There was a tectonic event in the Himalayas between 2400, 1900 BC and when that and as you know Himalayas there is a lot of tectonic activity, because (()) is pressing northwards, and all sorts of geological events take place in an active area.

During one of these, during this about 500 years, due to the tectonic event, the great river Saraswati which was flowing because Vedic hymns including the Atharvaveda, they always talk about gigantic marvelous river. The river was Saraswati. The hymns to Saraswati - the Rig veda also has that. So, these were saints living on the banks of the Saraswati. There was a civilization there; maybe it is Indus Saraswati civilization; that is a new term which many are using, but these were composed there.


Now, that Saraswati river, with this tectonic event, there was no flow in to the Saraswati channel and this entire water was stolen by the Tons - Yamuna system. Southeast direction it is not flowing; maybe some towards Sutlej towards the west.

(Refer Slide Time: 25:31)



VEDIC PERIODIZATION

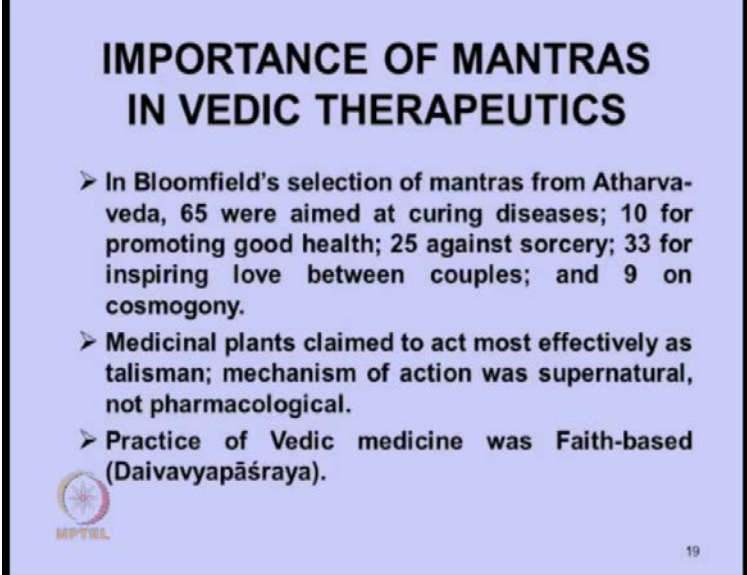
- As Vedic hymns were composed when Saraswati was a majestic river, the new geological evidence would push back Vedic date much beyond 1500 BC.
- This view is controversial, but is gaining support.

 18

Saraswati overnight became dry and the population had to migrate and that is how you see the perennial channels and so on. This is a view which many in India believe and on this lot of evidences collecting. It is not final, but I thought I should mention that here. If


that is if the proven then this our date in the Atharvaveda etcetera, we have to go back maybe by a 1000 years.

(Refer Slide Time: 25:38)



IMPORTANCE OF MANTRAS IN VEDIC THERAPEUTICS

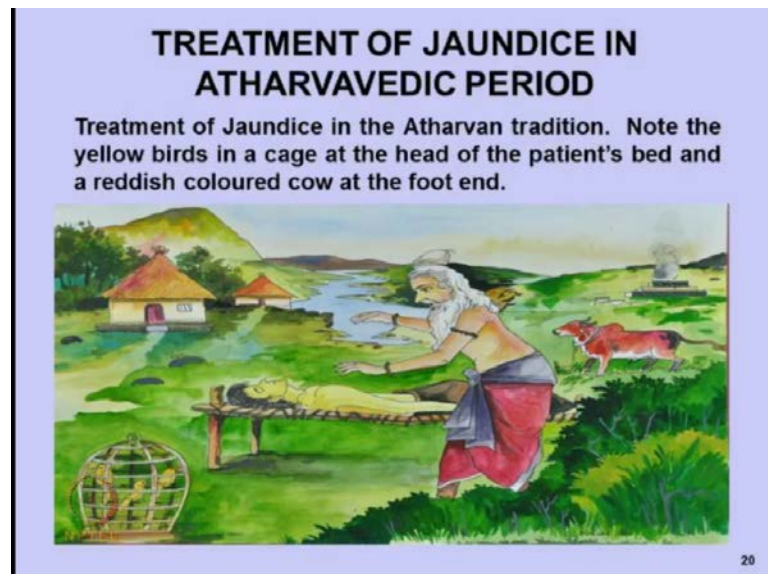
- In Bloomfield's selection of mantras from Atharvaveda, 65 were aimed at curing diseases; 10 for promoting good health; 25 against sorcery; 33 for inspiring love between couples; and 9 on cosmogony.
- Medicinal plants claimed to act most effectively as talisman; mechanism of action was supernatural, not pharmacological.
- Practice of Vedic medicine was Faith-based (Daivavyapāśraya).



19

Now, the importance of mantras in Therapeutics: Professor Maurice Bloomfield was who was a professor was Johns Hopkins more than 100 years ago, he was a student of Atharvaveda and he wrote a book called The Hymns of the Atharvaveda; a very important book. Now, there, in his collection he has chosen what he thought was interesting and there I counted, there are 65 aimed at curing diseases; there are 10 for promoting good health; 25 against sorcery; 33 for inspiring love between couples and 9 on cosmogony. That gives you an idea the kind of importance, the diseases and their management received in the Atharvaveda. And medicinal plants claim to act most effectively as talisman. This is the point I made earlier at the mechanism of action as supernatural, not pharmacological, and the practice of medicine was faith based.

(Refer Slide Time: 26:40)



Now, here I thought I would illustrate this because if you read one of these hymns of Atharvaveda, that hymn if you read, it does not really make much sense. What actually, how did they treat and to understand what was the ritual accompanying that particular mantra, you have to read what is called Koushika sutra which was a part of Atharvaveda. It was annexure. So, here I have taken specifically the example of Jaundice, a very common disease even today. And if a patient with jaundice had approached the Bhishak; Bhishak was name in Atharvaveda for physicians. So, if the Bhishak was approached by a patient with Jaundice, how would he treat?

Now, here is from Koushika sutra, we understand if that patient lying on the cot, if he was brought to the Bhishak, first of all he would be given a amulet tied around him with some invocations; though invocation is mentioned, an amulet will be tied. Then, you see a cow there, a red colored cow, and that cow would be washed; a little bit of that water, a sip of that, would be given to this patient. And following this, he would be made to sit on a piece of bull skin fixed with the peg; this is dipped in milk and is anointed with ghee; that is where he would be made to sit. And he would be given milk and a porridge made of turmeric. He would be made to drink that and he would be completely anointed all the way from head to foot with this porridge. Following that, this would be washed off and he would be given a fermented drink. We do not know whether it was intoxicating, but a fermented drink will be given. And then, he would be made to sit on this cot or couch;

there he sits and he is made to chant a particular hymn which I will show you in the next slide.

Now, there he sits and the Bhishak recites this mantra and the patient repeats after him. Now, that mantra when you read, you get an idea about birds; you get ideas about a cow; we do not know how they all fit in here. What actually that he is doing at this cot if you see, at the head side to the cot there is yellow birds; there are 3 yellow birds in that cage; that cage is placed at the head side of the cot and at the foot of the bed you will see that red cow; that is also an integral part of this.

(Refer Slide Time: 29:38)

**TREATMENT OF JAUNDICE IN
ATHARVAVEDIC PERIOD**

Hymn chanted during the Vedic ritual

**"Up to the sun shall go thy heartache
and thy jaundice : in the colour
of the red bull do we envelop thee.**

**We envelop thee in red tints, unto
long life. May this person go
Unscathed, and free of yellow colour!**

Contd.

21

Now, the hymn when you... this is the hymn which the Bhishak chants followed by the chanting by the patient. Here is what it says - Up to the sun shall go thy heartache and thy jaundice; in the color of the red bull do we envelop thee. We envelop thee in red tints, unto long life. May this person go unscathed, and free of yellow color.

(Refer Slide Time: 30:07)

**TREATMENT OF JAUNDICE IN
ATHARVAVEDIC PERIOD**

**The cows whose divinity is Rohini,
They who, moreover, are
(themselves) red (rohini) –
(in their) every form and every
strength do we envelop thee**



Contd.

22

The cows whose divinity is Rohini, and the cow is red, remember. They who more over are themselves red in their every form and every strength do we envelope thee.

(Refer Slide Time: 30:21)

**TREATMENT OF JAUNDICE IN
ATHARVAVEDIC PERIOD**

**Into the parrots, into the ropanakas
(thrush) do we put thy jaundice, and,
furthermore, into the haridravas
(yellow wagtail) do we put thy jaundice.**

(Bloomfield's translation)

**The ritual was symbolic and aimed at banishing the
yellow colour from the patient to yellow creatures
and the sun, where it properly belongs, and securing
for the patient redness from the red bull where it is
peculiarly at home.**



23

Into the parrots, these are the birds, into the ropanakas, probably thrush, do we put thy jaundice, and furthermore, into the haridravas do we put thy jaundice. Because it was believed in those days including in Greek medicine that diseases or suffering could be transferred from one living being to another; this is a widely held belief. So, here, this whole ritual is symbolic. What along with this various things which had been done? This


yellow color of this patient is being transferred the yellow birds, where it naturally belongs. And the red color, remember, this was written in the north-west of India where people have almost a reddish color. Now, that cow's red color is being transferred to this (()) which is their natural color; it is been transferred.

Now, this is, when you read this, the Kaushika sutra, then only this chant will make sense. If you do not read that, simply read this, it does not make much sense; it is confused. So, this is the kind of practice which existed at that time. Now, contrast this with the practice of treating jaundice in Charaka's time.

(Refer Slide Time: 31:37)

TREATMENT OF JAUNDICE ACCORDING TO CHARAKA

- ❖ Known as "Kāmala", the disease was well known and described. Regarded as a manifestation of the accumulation of disturbed pitta in the gut and blood.
- ❖ Early stages and terminal stage of liver failure described.

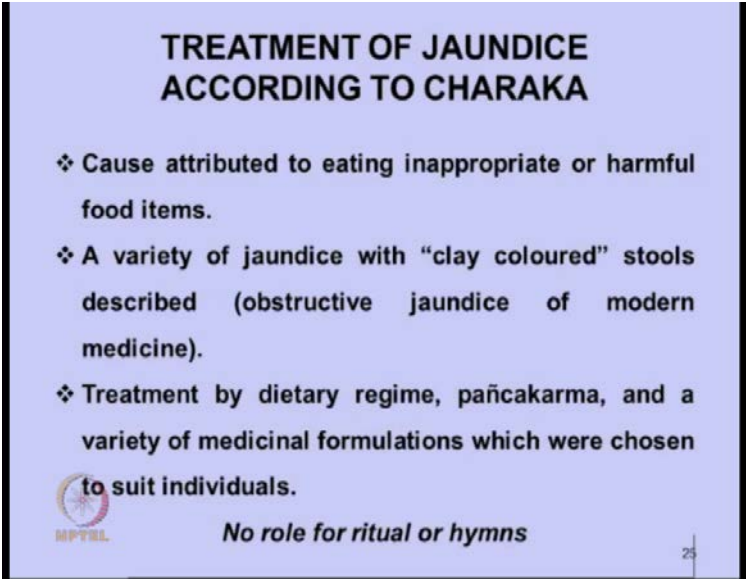
NPTEL

Contd.

24


In Charaka Samyukta which was the first century AD, you will find it was called Kamala – jaundice; it was well known, well characterized, will described and is regarded as a manifestation of disturbed pitta in gut and blood; that was the explanation. And early stages, terminal stage, liver failure, they are all described natural course of the disease.

(Refer Slide Time: 32:02)



**TREATMENT OF JAUNDICE
ACCORDING TO CHARAKA**

- ❖ Cause attributed to eating inappropriate or harmful food items.
- ❖ A variety of jaundice with “clay coloured” stools described (obstructive jaundice of modern medicine).
- ❖ Treatment by dietary regime, pañcakarma, and a variety of medicinal formulations which were chosen to suit individuals.

 **No role for ritual or hymns**


25

It is attributed to you eating in appropriate or harmful food items, incompatible items, etcetera. And a variety of jaundice with clay colored stools which we know is obstructive jaundice, that is described. And the treatment is by dietary regime what is called pattiya, panchakarma, various types which we will be dealing with later on, and a variety of medicinal formulations. That is, essentially there is no role for rituals; there is no role for mantras; so, this is medicine as we know today. So, there is a very big difference. The Charaka who said you should be worshipful of Atharvaveda, in treatment has completely deviated from that. This is a major break in the practice of medicine between Atharvaveda and Ayurveda. This is by no means unique because all diseases treatment follows this pattern.

(Refer Slide Time: 33:00)

TRANSITION FROM VEDIC MEDICINE TO AYURVEDIC MEDICINE

- ❖ Slow process of 1500 years from Atharvaveda to Charaka.
- ❖ Transition characterised by shifting of practice from faith-based to reason-based mode (daivavyapāśraya to yuktivyapāśraya).
- ❖ While practice changed beyond recognition, elements of continuity endured at the conceptual level.


26

Now, the transition from Vedic medicine to Ayurvedic medicine: It was a slow process over hundreds of years and transition was characterized in Charaka's own words from daivavyapasraya faith based to reason based yuktivyapasraya; these are Charaka's own phrase and it completely changed the practice of medicine. But does it mean there was a complete break in the whole of Ayurveda? That is not correct. Only the treatment path because there are golden threads of continuity between Vedic medicine and Atharvaveda medicine; that we can detect them.

(Refer Slide Time: 33:48)

ELEMENTS OF CONTINUITY BETWEEN VEDAS AND AYURVEDA AT THE CONCEPTUAL LEVEL

- ❖ Structure of the human body; body parts, viscera, vital spots (anatomy).
- ❖ Functions which sustain the body (physiology).
- ❖ Medicinal plants used in therapeutics.
- ❖ Attitude to life.
- ❖ Attitude to Nature.

27

I think here are what I have found; very distinct threads of continuity. One is the structure of the human body; the understanding in Vedic times, listing of organs, listing of bones and all that, which are largely you can detect them in Ayurveda. Second - functions to sustain the body I have taken the example of breath, breathing air; that is again you will find continuity. Thirdly - medicine plants, and next - attitude to life, attitude to nature. In all these, you will find there is a thread of continuity between Vedic medicine and medicine in Ayurveda.


(Refer Slide Time: 34:28)

STRUCTURE OF THE HUMAN BODY

Filliozat listed 333 anatomical terms in Vedas “which are not veritable terms consecrated by the usage of the language. They are much less technical terms”. Many went out of use; many retained in Ayurveda.

Examples:


Aṅga	Limb
Antaparśvya	Intercostal muscle
Antra	Entrails
Asṛij	Blood
Cakṣu	Eye
Dhamani	Vessel
Grīva	Neck
Guda	Rectum

 Contd.
28

Now, structure of the human body: Professor Filliozat, one of the great enterologist of France in his classic study, he has found number of anatomical terms used in the Vedas and he found 333 terms. These are not described as anatomy or science or anything, but these are terms which ordinary usage, these are all terms really a small examples I have taken; 333 I cannot indicate here, but you can see all these words which you see on the left hand side Antra, Asrij, Caksu; these are all terms normally these are every day being used even today. These were all used in Vedas indicating different organs, different parts of the body and so on. So, they are continuing to be used.

(Refer Slide Time: 35:18)

STRUCTURE OF THE HUMAN BODY	
Examples:	
Jaṭhara	Abdomen
Kanṭha	throat
Lalāṭa	Forehead
Nāḍī	Canal, Vessel
Paṇi	Hand
Plīha	Spleen
Puritat	Pericardium
Snāvan	Tendon
Vasti	Urinary bladder
Vṛkka	Kidney
Hṛd	Heart




Contd.

29

(Refer Slide Time: 35:24)

STRUCTURE OF THE HUMAN BODY
<ul style="list-style-type: none">❖ Charaka listed a total of 360 bones in the body in agreement with the Vedic total whereas Suśruta chose to differ and limited the total to 300.❖ Anatomical terms purely incidental in Vedas which were religious texts: but they could not be coined without observation.❖ Meanings of certain Vedic terms changed in Ayurveda Eg. Nāḍī was a conduit of air in Vedas; but a general conduit in Ayurveda. Ayurvedic sira evolved from Vedic hira: marma of Ayurveda evolved from marman of Vedas.

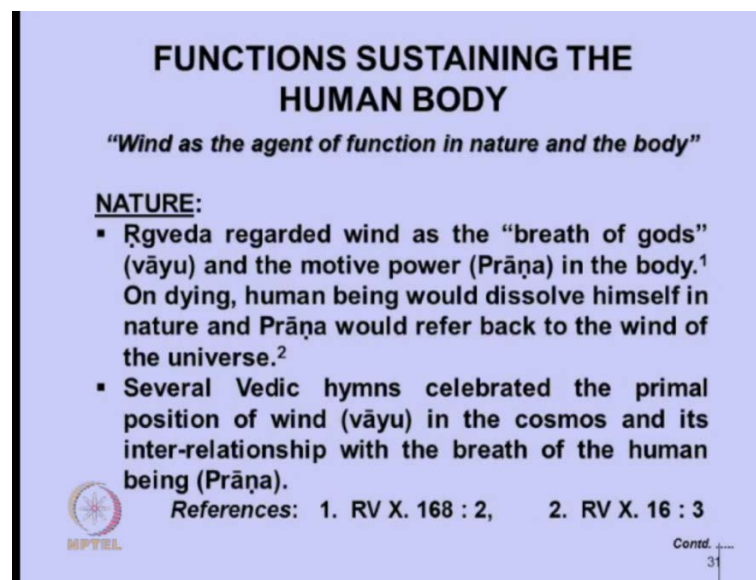


30

Charaka listed 360 bones. Total number of bones in the body and the Vedic the total is exactly the same, but Susruta differed. He said I do not agree with this Vedic; there are around 300 bones; you see that very explicit statement. So, again, you will find that continuity with the Osteology; the total number is taken from Vedas by Charaka. But these anatomical terms in the Vedas, they are purely incidental. They are not textbooks of Anatomy or medicine. These are incidental references when they do sacrifices for example or they have observed; during wartime, they must have seen injured people.

So, these are observations made in different contexts and that is how they all find a place; not as a discussion of anatomy. But some other terms, they have changed their meaning from Vedic times to... for example, I have given two examples here: Nadi - Nadi is a commonly used term in Ayurveda, but in Vedas it is a conduit only for air; but in Ayurveda, it is a conduit not only for air, but all fluid substances; blood also can go through that. So, there is a difference in the significance in the meaning. Similarly, Ayurveda uses a word Sira; again it is a conduit, but in Veda it is Hira. So, you will find that many terms they have come, but slightly changed. The meaning also has slightly changed; again, it is showing a thread of continuity.

(Refer Slide Time: 37:00)



FUNCTIONS SUSTAINING THE HUMAN BODY

"Wind as the agent of function in nature and the body"

NATURE:

- Ṛgveda regarded wind as the "breath of gods" (vāyu) and the motive power (Prāṇa) in the body.¹ On dying, human being would dissolve himself in nature and Prāṇa would refer back to the wind of the universe.²
- Several Vedic hymns celebrated the primal position of wind (vāyu) in the cosmos and its inter-relationship with the breath of the human being (Prāṇa).

References: 1. RV X. 168 : 2, 2. RV X. 16 : 3

MPTEL

Contd.
31

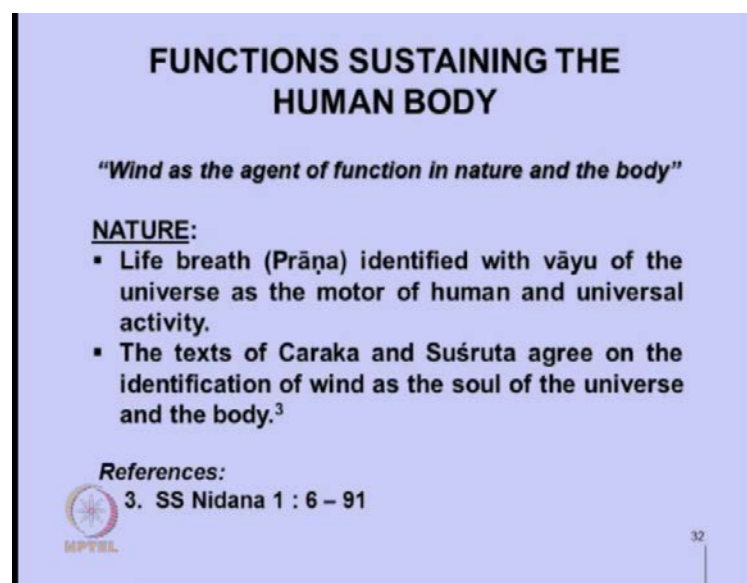
Now, when we look at the functions, this is more difficult area to detect the continuity. I took this wind as the agent of function in nature and body. And here why nature and the body because from Veda as well as Ayurveda, there is a continuous attempt to show the human being as a part of an integral part of the universe. Thus, macrocosm is the universe and microcosm is the human being; is the human body. Now, this is a theme which is dominant. You will find it in the Vedas; you will find it in Atharvana Vedas and in Ayurveda.

So, here, nature, Rig Veda for example, the wind that is the breath of gods; that is how it is seen. And the wind in the body - Prana, that motive power, that is what moves everything. Wind is what moves everything in the universe, life breath or the breath of

gods, and the life breath in the human body is what keeps everything moving here. And on death, the human being would dissolve itself into nature and the wind would be referred back, the Prana would be referred back, to the wind in the universe. So, that is a theme which is reflected in one of the Rig vedic hymns.

Now, several Vedic hymns celebrate the primal position of wind in the cosmos and the inter-relationship with breath of the human being, Prana. So, there is a constant attempt to identify the Prana within the body with wind in the universe or in the world.

(Refer Slide Time: 38:40)



FUNCTIONS SUSTAINING THE HUMAN BODY

"Wind as the agent of function in nature and the body"

NATURE:

- Life breath (Prāṇa) identified with vāyu of the universe as the motor of human and universal activity.
- The texts of Caraka and Suśruta agree on the identification of wind as the soul of the universe and the body.³

References:

3. SS Nidana 1 : 6 – 91

MPTEL 32

So, this you will find texts of Charaka and Susruta also. When it comes to Ayurveda, you will find the mentions specifically. I have given the quote here - Identification of the wind as the soul of the universe and the body. So, that is a thread of continuity through this. And if you look at it from the body point of view, Rig Veda again envisaged Prana has distributed in the body as compartments. That was a particular, like for example, the food that we eat, it has to go down to the stomach throughout the gut; that movement is made possible by one division of Prana.


(Refer Slide Time: 39:26)

**FUNCTIONS SUSTAINING THE
HUMAN BODY**

“Wind as the agent of function in nature and the body”

BODY:

- ❑ R̥gveda envisaged Prāṇa as distributed in body compartments. Prāṇa occupied the upper part of the body, apāna the lower part, and vyāna as the link between the two.
- ❑ In several Vedic hymns, the division involved five compartments (Prāṇa, apāna, vyāna, samāna and udāna). This became central to body functions in Ayurveda.



Contd.
33

Now, the wind has different compartments. Now, these you will find in the Vedic hymns also: Prana, apana. Prana is the localization of the wind in the body. Prana, apana, vyana, samana, udana. There are 5 different compartments of body. Prana in the body - this was central to the functions in Ayurveda. Apana is, for example, evacuation that is all dealing with; apana it is a different type of wind. Prana is the upper part of the body. So, this is kind of localization of wind in the body.


(Refer Slide Time: 40:00)

**FUNCTIONS SUSTAINING THE
HUMAN BODY**

“Wind as the agent of function in nature and the body”

BODY:

- ❑ Charaka Samhita had a major discussion on Prāṇa and its subdivisions, where differing views were expressed: “but the natural notion of wind was not substituted by symbolism” (Filliozat). Each movement or action of the body was seen as activated by Prāṇa.



34

That is a concept which is dominant in Ayurveda. Charaka Samhita, for example, had a major discussion on Prana. Again, you will find these five divisions of Prana responsible for different functions so that it is not symbolic. Filliozat actually point out that these are actually Ayurvedic. Apana disturbance means somebody will have colonic disturbances and may be constipated. All kinds of problems related to the lower part. That is, Apana wind problems.


So, this division of wind in the body Prana and disturbances in the nature; this is Charaka has a long description. Wind is what moves everything in the universe; what we call gravity, all kinds of forces. It was identified with Vayu in the universe. If that is not there, suppose it stops. And there is a famous story in our epics. Once the wind god was angry because Hanuman, Maruti was the son of wind god and Indra hit him. His jaw was damaged and Vayu became so angry at this injury to his son. He decided not to do anything; he went on strike. And then it describes about the total paralyses; there was no movement in the universe; everything would come to a stop and everybody entreating this Vayu - please be generous to us; please be active. There was a story like this.

Now, it is the opposite. If the wind is in anger, then they will have cyclone; wholesale destruction; that is what would happen. So, therefore, in the body Charaka says, similarly, if the wind is peaceful, vata, pitta, kapha - they are all in harmony, then everything is fine; there is perfect health. On the other hand, if vata is perturbed, if it is out of balance, then there can be very serious illness. So, there is a constant attempt to find the state of the wind in the universe and the state of Prana within the body. So, this is against one functional aspect where you find continuity.

(Refer Slide Time: 42:05)

MEDICINAL PLANTS IN THERAPEUTICS

- A number of medicinal plants were used in the treatment of sick people in Vedic times.
- Examples include arjuna, apāmārga, māṣaṇṇi, kuṣṭha, guggulu, daśamūla, pippali, bilva, priyāṅgu etc., which are widely used even today.
- The plants were invested with divinity and were supposed to act through supernatural forces: they were often used as talisman.
- The medicinal plants mentioned in Atharvaveda adopted in Ayurveda.



35

Then, we come to medicinal plants. As I mentioned, a large number of medicinal plants are mentioned in Vedic times. Example, I have given a few examples here. There is a whole lot of them here: arjuna, apamarga, masaparni; all these are being used even today. Pippali, bilva very commonly used in Ayurvedic medications wholly and the Atharvavedic formulary has been adopted in Ayurveda. But then, in the Vedic times, these were associated with divinity and there was supposed to act through supernatural forces; often tied as a talisman and almost all of them, I do not think there is any medicine, any plant mentioned in the Atharvaveda has been left out in Ayurveda; almost totally adopted.

(Refer Slide Time: 43:03)

CONTRAST IN THE MECHANISM OF ACTION OF MEDICINAL PLANTS IN VEDIC PRACTICE AND IN AYURVEDA

- In Vedic practice, the efficacy of plant-based drugs was the result of supernatural forces; amulets made of plants were as effective, if not more effective, than their oral intake.
- In Ayurveda, plant-based drugs were believed to act and bring about therapeutic results through their taste (an ancient indicator for chemistry, which will be discussed later), potency, post digestive taste (chemistry of the digested food and drugs) and unknown mechanisms (prabhāva). This was part of the rational practice of medicine advocated by Charaka.

Contd. ...
38


But the difference is this; in Vedic practice, whereas the mechanism of action was based on supernatural forces whereas in Ayurveda, when it came to that 1500 years later, they were supposed to act through their own Pharmacologic mechanisms. And this was rasa is chemistry; we will be dealing with that later; rasa is a short hand for chemistry in those days. Rasa Sashtra came from that. Now, the rasa of that particular medicinal plant potency or veerya, and once it gets digested, it acquires a different post digestive taste because its chemistry has changed and then some factors which are not known for power. So, these are the mechanisms which make these plants effective.

In other words, the Ayurvedic pharmacology, the mechanism of action essentially was pharmacologic. It was not supernatural. There is a fundamental difference between the way medicinal plants were conceived to work in Vedic times and how it was conceptualized as working in Ayurveda.

(Refer Slide Time: 44:12)

VEDIC ATTITUDE TO LIFE

- ❖ Numerous hymns in Vedas sought life for a hundred years in good health.
- ❖ A famous hymn of R̥gveda summed up the human aspiration.
“Gods, may we, with our ears, listen to what is good,
And, O Holy Ones! with our eyes see what is good;
And may we, with firm limbs and bodies,
offering hymns of praise to you,
enjoy the divinely ordained term of life”¹



Reference: 1. RV 1.89 : 8

Contd.


37

Now, then, we come to the vedic attitude to life. It is a very important area. Vedic people were essentially a happy cheerful people. There are a number of many number of hymns (()) May we live for a 100 years. They wanted to live a long life, happy life, healthy life. And a famous verse, famous mantra is this gods [FL] that famous mantra here: may we, with our ears, listen to what is good, and may we, with our eyes, see what is good, and may we, with firm limbs and bodies, offering hymns of praise to you Sthirai Rangai Stushtuvaamsa Stanooobhihi enjoy the divinely ordained term of life. So, that was their prayer. They wanted to live long. They wanted to live healthy, happy. This was a cheerful attitude.

(Refer Slide Time: 45:18)

VEDIC ATTITUDE TO LIFE

- ❖ Atharvavedic hymns prayed for the growth of hair in balding and cure for impotence.
- ❖ Attitude to life was cheerful, lively and practical; no denigration of the human body or life on earth.

38

Atharvavedic hymns specifically asking for the growth of hair in a balding man, asking for a cure for impotence, you will find prayers for these in Atharvaveda; essentially asking for physical well-being, happiness. The attitude was life. So, the other worldly, world announcing attitude was singularly absent in the Vedic hymns. And there is no denigration of the human body which you see in Vedic texts, you see in Vedantic texts; you will not see that in these Vedic hymns.


(Refer Slide Time: 45:46)

AYURVEDIC ATTITUDE TO LIFE

According to Charaka, a normal person is moved by three desires.

- *Desire for long life.* Universal because loss of life means "loss of everything".
- *Desire for wealth.* Second place only to life because there is nothing more miserable than a long life in poverty.
- *Life in the next world.* "Which raises many doubts".

The Ayurvedic view is in conformity with Vedic attitude to life and refutes the Indian stereotype of a life of asceticism, disparagement of wealth and fatalism.

39


And when it comes to Ayurveda, look at this. Charaka says there are three basic urges for a human being: One is the desire for long life, Praneshtana; long life, a healthy happy life; that is the first urge according to Charaka. The second - desire for a wealth. And he says there is nothing more miserable than long life in poverty. So, it is important that you have some wealth. All that you should be a farmer, you should go and work for the king; we should have some income; specifically Charaka says that. And thirdly, he goes on to that Veteshana and the last is Paralokeshana that is the life after death. There he immediately acts. There is some doubt about this. And then through a long series of arguments, he finally tries to convince the reader that there is indeed a life after death, but he is not totally convinced, but the first two he is totally convinced. So, the Ayurvedic view is in conformity with the Vedic attitude to life. And again that Indian stereo type, I think it is totally refuted. This point will come again as we go on with these lectures on Ayurveda.

(Refer Slide Time: 46:57)

VEDIC ATTITUDE TO NATURE

- Vedic attitude earth, rivers, trees, plants, birds and natural phenomena such as dawn was reverential.
- The grand Atharvavedic hymn.
“Hymn to Goddess Earth”¹ typical of the Vedic adoration of Nature. It states “Earth is mother, I am earth’s son”.
- Many other hymns reflecting a child’s adoration of a generous mother.

Reference: 1. AV XII 1 : 1 - 63



40

Then we come to the view on nature. Now, Vedic attitude to earth, rivers, trees, plants, birds, natural phenomena such as dawns, always a reverential. There are mantras; one of the most beautiful mantras on Ushas - dawn. There were not only mystified, there were reverential. In fact, Maxmuller calls Pantheism - seeing god in all these; so, they were reverential to nature. And the grand Atharvavedic hymn Bhoomi Sukta, it was a long suktha in Atharvaveda; a hymn to earth. That is one place it says earth is mother; I am earth’s son; that is in the Bhoomi Sukta; it is a famous line from that. And there are many


others. They are all child's adoration for mother. That is the attitude the vedic sears had about nature.

(Refer Slide Time: 48:03)

AYURVEDIC ATTITUDE TO NATURE

- Ayurvedic attitude is in conformity with its Vedic forerunner "This world is the most beloved of all; do not die before old age".¹ Spirit of love and reverence for earth pervades Ayurveda.
- The discussions which characterise Charaka Samhita held in the picturesque Himalayan valleys.
- Charaka's stipulations for locating a house for treatment included its location in a quiet, scenic spot, with plenty of trees and medicinal plants, lakes and birds, and cattle.
- Invocations to plants before collecting them.

Reference: 1. AV V: 30, 17



41

Ayurvedic attitude to nature: Again, you will find, it is in conformity with the Vedic. This world is the most beloved of all; do not die before old age. He must have been anguished by premature death, young people dying. This is in relation to that. So, again, enjoy life. It is a great nature, great earth that we have inherited. Let us be happy; so, this attitude of spirit to love with reverence which prevades just like the Vedas throughout Ayurveda. Now, the discussions Charaka Samhita is not like any other great classic. Many of them are actually discussions held outdoors, on the bank of river, under trees, a small number of students maybe 6 to 10, they sit around Acharya and they discuss things. This is how you find the description; trees, the bird song, the clear water in the river. So, it is a very wonderful Himalayan scenic stage where all these discussions were held.

It reflects in fact Tagore's Shantiniketan. This is what he was trying to do in Vishwa Bharati. He wanted classes held like this; not within classrooms like this. So, this was again continuity from our past. So, most of these are again a great love of nature which is reflected in the Charaka Samhita. And Charaka also talks about building a house for treatment. When patients had to have treatment for a particular reason and it required in-house facilities, you could not do it in the patient's house. There was nowhere the

physician could accommodate in his own house. So, he recommends building a house for treatment, for procedures which required elaborate measures like Panchakarma for example a special type of fermentation; in all these, when we need in-house facilities, a special house for treatment have to be built.


Now, the description, if you read again, you will find the location of the house in a house of great scenic beauty; there will be plenty of trees, plenty of streaks, lakes with clear water, cattle, bird song, all these he describes. Not only that, that house itself the room for the patient, there should be flowers to decorate that room.

And that house should be a house not only for the patient, the physician, attendant, a store room and there should be balladeer to tell stories to the patient to make him divert his attention. There should be musicians to sing. So, when you read that, you realize it is not really a hospital at all. It would not look like a hospital; it would not sound like a hospital; it would not smell like a hospital; it is a place for healing. Now, that description you read, it is only a person who really loves nature he will be able to conceptualize a place like this.

(Refer Slide Time: 51:12)

SUŚRUTA'S DEFINITION OF NATURE; GOING BEYOND VEDAS

- ❖ Suśruta, among the Great Three of Ayurveda, gave a clear definition of Nature. It envisioned Nature as an aggregate of *Innate disposition, Providence, Time, Chance, Destiny and Evolution*. Each had specific meanings in a physician's calling.
- ❖ *Innate disposition (svabhāva)*: In human beings, this referred to constitutional types which influenced their physical and mental traits; in the universe, it meant the original, undifferentiated existence from which the universe with its enormous diversity evolved.

Contd.
42

Now, then we come to nature. There is a Shvetashvatara Upanishad, one of the old Upanishads. Nature, how did they define nature? What exactly, how do you define that And Shvetashvatara in the definition here? Susruta, many centuries later, he has given a clear definition of nature. There he says innate disposition, providence; I will give brief

descriptions of each of these, time, chance, destiny and evolution. These are what constitute what we call Prakrithi. But Shvetashvatara Upanishad which went long before Charaka, there it talks about time; does not talk about providence; chance it talks about, destiny it talks about, but it does not talk about evolution. So, here you find Susruta has extended that. He has added providence; he has added evolutions. He is going beyond vedic description.

Now, what do these mean? Innate disposition, svabhava. In the case of human beings, it is what we call Vata, Pitta, Kapha Prakrithis. Every human being is endowed. We will discuss this in detail, later on. But every human being at the time conception, he is endowed with the particular Prakrithi which may be Vata, which may be Pitta, which may be Kapha. These are essentially detected on the basis of a certain number of physical traits, certain mental traits, certain behavioral traits. When they combine, aggregate of this would make it vata; another aggregate would make it pitta and kapha. Now, importance of this in Ayurveda is because the tendency to get diseases, predisposition to diseases, the course of diseases, response to treatment, all these are determined by the Prakrithi. So, without determining the Prakritis, there is no way you can treat a patient. But in terms of nature, what does Prakriti mean?


And Prakriti here, all that we see as the universe with a stupendous diversity. It all started from Atyartha is an indeterminate, ill - defined kind of existence; that is Prakriti in nature. From that, it starts. We will talk, we will discuss this in detail later on how that whole process of evolution from that indeterminate existence that is the Prakriti and final stage of what we saw called, the universe. So, that is Prakriti in nature, in the universe and Prakriti in the human being. So, that is what Susruta is talking about innate disposition.

(Refer Slide Time: 54:26)

**SUŚRUTA'S DEFINITION OF NATURE;
GOING BEYOND VEDAS**

❖ **Providence (Īśvara):** Healing, rains and sunshine, instinctive affection between mother and child and all other manifestations of beneficence.

❖ **Time (Kāla):** The unchanging background and determinant of natural phenomena – gestation, birth, growth, ageing and death; stages of disease; march of seasons and so on.



Contd.
43

Then it is providence. Providence is not Isvara or Isvara cannot be a part of this nature. But what is meant here which is not in the Shvetashvatara Upanishad? It is the, it is a very important thing; the healing process which I talked about. It is not something that we have been invented or developed. It is something as old as life itself. If there is a damage, that damage tends to heal itself; not because we do anything; we may facilitate it, but it happens on its own; whether it is at the cell level or DNA level or various levels of biological organization, that healing is an integral process. Now, that is something which is a gift. Rain and sunshine, suppose we did not have them or too much of it. This is again a gift both for the good and the bad; sunshine is on evil and good; everybody gets it; that is again a gift. It is beneficence, instinctive affection between mother and children.

Suppose all the mothers, they did not have the affection and the state had to look after all the children, what would be life like that? So, that comes; it is again a gift; nobody has made it. So, therefore, all these that we see are acts of beneficence; appreciate her or not, but they are there. Now, this Isvara is a gift. Susruta talks about kala - time that is the constant back ground and determinant of all that we see. And especially for a physician, gestation, birth, growth, ageing, death, stages of diseases, early stage, late stage, plays a big difference to treatment, march of seasons, all that. Everything is against the background of time which upanishads also agrees, kala which is very important.

(Refer Slide Time: 57:20)

**SUŚRUTA'S DEFINITION OF NATURE;
GOING BEYOND VEDAS**

❖ **Chance (Yadrccha):** Unseasonal weather, fetal anomalies, attacks by wild animals and many other events represented chance in operation: one cannot assign a cause to them. However another domain existed side by side where cause was claimed to exist – karma. Both domains exist, inextricably combined.

❖ **Destiny (Niyati):** A traditional view held fate as supreme, unalterable, unresponsive to human manipulation: another view held that human effort could alter the course of destiny. Ayurveda was inclined to the latter view, especially Vāgbhaṭa.

Contd.

44

Then, we come to chance: There is a long standing argument as we know about causal events, a causal event. Causal events is karma. Something is done something will fall. Somebody keeps on heavy smoker, he would get lung cancer. There is a cause; result. This is something which we can see. A number of examples are there. But there are a number of things happening at the same time for which no cause can be found. If a man is walking along the street a coconut falls on its head. He gets a severe head injury. There is no cause that can be found. A tiger attacks somebody; no cause can be found. So, there is a causal process. So, in what we call as strange life of ours, there are a causal events happening and there are also causal events happening. Both these are there. Only then life becomes complete. You cannot deny that everything has a cause; you cannot really find a cause for so many things that exist.


So, therefore, that Yadrccha - the chance, that is also part of a life and then we have destiny. Is there something in this life predetermined? This is a question which Charaka discusses at a great length. I will come to that later on. There is a school of thought in India from ancient times; everything is predetermined; it is no use struggling against a faith; daiva decides everything. That was one view very prominent; even today, it is a very prominent view. But India also had another point of view especially pioneered by yoga Vashista most eloquently stated- yeah, may be some of them are predictable.

But there is also a fact. You have to take note of that human effort can overcome faith. Varpada is a great propounder of that. So, there is that particular view is called the Purisheya view which was advocated by Yoga Vasistha and Ayurveda meant to move in that direction because life is predetermined. We will discuss it much later when you deal with prognosis. Human effort can overcome many of these. So, there is a need to assert and work. Why not defy faith? That is an attitude. So, the question of destiny – Niyathi, that is also a part of nature.

(Refer Slide Time: 58:40)

**SUŚRUTA'S DEFINITION OF NATURE;
GOING BEYOND VEDAS**

➤ *Evolution (Pariṇāma):* The process began with a perturbation in the original, unmanifest, undifferentiated existence (prakṛti): this was followed by a sequential cascade of twenty four stages ending in the stupendous diversity of the universe. The initial perturbation was unpredictable, but the subsequent cascade was preset and predictable. However, unlike the open-ended Darwinian evolution, Ayurvedic evolution would ultimately dissolve into Prakṛti and start the cycle all over again.



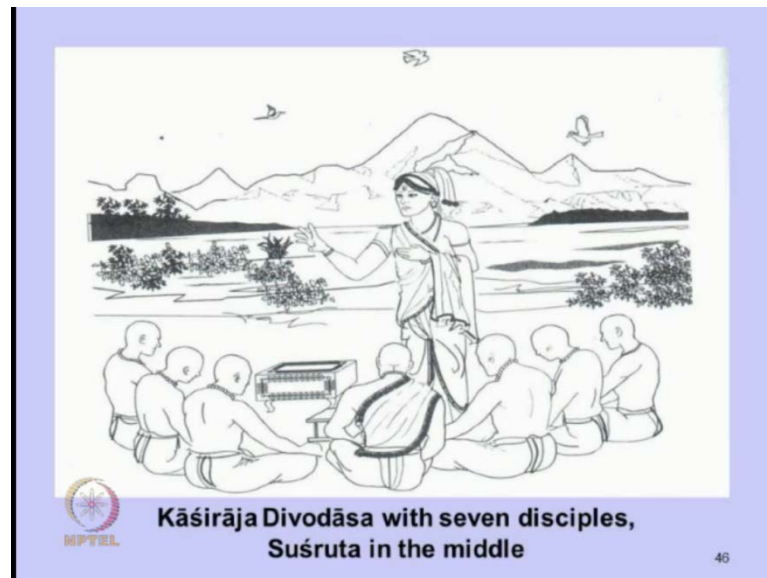
45

And lastly, we have Parinama - evolution; evolution is not there in the Upanishad Parinama is only Susruta who has introduced. Now, here is what I mentioned how this whole universe has evolved from that indeterminate stage, then consciousness comes in there and that is followed by individuation. Then you have the fore runners of Pancha Bhutas, the 5 elements like fire, heat, water, earth, etcetera, all those 5 elements Bhutas; these are Pancha thanmathras are the fore runners of this. We will discuss this with the figures etcetera later on, but all these Pancha Bhutas, they have evolved from the Avyakta stage from the beginning; next is the Mahat; consciousness comes in there; next is followed by individuation; from a collective mass individuation comes; next is the thanmathras which are the fore runners of the Pancha Bhutas. Then comes the 5 Indriyas of the human body by which we are aware of.

After all, the universe we can only sense it with our five senses. What is supra sensory we do not discuss at all. In fact, Ayurveda also says we only deal with what our senses can pick up. What is supra sensory is not a concern in Ayurveda. So, how we are talking about is what is accessible to the five senses and once the five senses come Indriyas; then the Indriyarthas come; that is vision, smell, taste. Now, those, all those which can be sensed by these that is our universe. You may use an instrument to see something else; it is also a vision, extended vision. So, this great variety of what we call universe. That is how Parinama takes place.

And the Indian... this is actually a Sangya system which Charaka actually contributed to this Sangya doctrine. According to Professor Das Gupta, the original Sangya, moola Sangya, was Charaka's contribution. It is not the sangya karika by Sinsira Krishna that is what Professor Das Gupta said. We will discuss this interesting question later, but the whole point is that Parinama, that is also part of what we call nature. So, you can see that from the time of Upanishads, not only Ayurveda adopted a great deal of what was in the Vedas, but also it added certain things to Ayurvedic concept. This is a specific example.

(Refer Slide Time: 01:01:23)




Now, here is a picture of Susruta, just to give you an idea of kind of classes which were held. This is Susruta Samhita. Based on that, Susruta's teacher was Kasiraja Devadasa, a King of Kasi believed to be an incarnation of Dhanvantri. He was the teacher of Susruta and Susruta Samhita begins a group of disciples here. They all go to his teacher and tell

him, sir we would like to learn medicine. Then, he says - yes I am glad to accept you, but what would you like to learn in medicine? And they said, we would like to learn surgery that is Shalya. Shalya is surgery and in the 8 division of Ayurveda, the very first is Shalya. And he says, I am very glad you have chosen that; I will be happy to teach you. So, that Kasiraja Devadasa he was standing there and telling them, accepting them as his students and the students proposed that sir we will all be asking questions and if everybody starts asking questions, it would make it very hard for you. So, we would like to nominate Susruta; he is the best among us; he would ask questions on our behalf. So, he is sitting in the center. That is the particular picture here.

(Refer Slide Time: 01:02:45)

FOREIGN CONTRIBUTIONS TO AYURVEDA

- Interaction between Ayurveda and Greek medicine did occur in ancient times: Indian medicinal plants are mentioned by Hippocrates. But any significant influence in either direction is debatable.
- The use of mercury and rasaśāstra in Ayurveda developed several centuries after Bṛhatrayī: the source is probably Arab medicine, but it was extended in practice and mystical interpretation by Nagārjuna and other teachers in India. PC Ray studied several original Indian texts on rasasastra. Eg. Rasārṇava.
- Pulse (Nāḍī parīkṣa) did not figure in Bṛhatrayī for diagnosis. It was probably adopted from Arab or Chinese medicine.



Ayurveda was not averse to adopting useful knowledge from foreign lands.

47

Now, Ayurveda was not averse to accepting knowledge from abroad and there are a few examples I would like to give. There are descriptions of Alexander when he came, he took away Ayurvedic physicians from here, Hypocrytic medicines. Corpus Hypocrytic medicine about Indian medicinal plants like cinnamon, pepper and so on. But we do not know much about the exchanges at that time. We have no evidence to say influencing either way; some medicines being used that does not tell us very much.

But what is definitely known in the Brihatrayi Charaka Susruta Varpatha, there is very little reference to the use of mercury in rasa shastra. But as you know, later that became a very important part of Ayurvedic practice - rasa shastra; especially like Srisailam it became a great university in Andhra Pradesh dealing with the rasa shastra. Nagarjuna

became a great alchemist. So, that became a very important part of Ayurveda. But it is much later and there is obviously some evidence to think that this was the inspiration came from Arab medicine because they have been using these inorganic materials, metals, minerals for a very long time in the Middle East. And that was extended by the Indian physicians and they were given a mystical interpretation to the use of rasa.

I know that in Tamilnadu, Siddha system had been using for a long time. We do not really know the introductions of these. But the fact is there is no question that Arab medicine did play a big role in the introduction of mercury into Ayurveda, the way it is been. And PC Ray who one of our Acharyas, modern chemistry, the father of chemistry in India, as you know he had registered number of these. He took a special interest in rasa shastra in India. He has edited a number of books including one called Rasarnava.

So, there is a certainly evidence of adopting its knowledge from outside. Another Nadi - feeling the pulse. There is no mention of Nadi in Charaka, Susuruta or varpatha whereas Nadi pariksa is today accepted by Ayurvedic physicians. And there is some doubt whether it came from China or whether it came from Arab; certainly it did not originate here. So, therefore, if there was something useful to treating of sick people, Ayurveda was not averse to accepting this knowledge from outside. And this is in keeping with Charaka's own philosophy where he says – [FL]. For the wise, the whole world is a teacher that is in keeping with this whole dictum of Charaka.