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An Introduction to Ancient Indian Knowledge Systems

Rani Sadasiva Murty*

Sanskrit is the sine qua non of ancient Indian knowledge systems. It is the key for the treasure house of ancient Indian wisdom. Sanskrit itself is one of the earliest inventions of ancient scientific pursuits in the human world. In a so organized manner the physiognomic origin of speech sounds was well depicted in the ancient Indian texts on Sanskrit language even in Pre - Paninian Times.

The earliest traces of the concept of social living are well documented in Sanskrit. Since then Sanskrit has, through several millennia, been growing as the binding force of all the people of this Sub - Continent. From Kargil to Kanya Kumari and from Kamarupa to Saurastra, the whole India is one for every Indian because of his possessiveness for Sanskrit. The geographical descriptions available in ancient Sanskrit texts describe India as a single whole and never view it partly. This lofty idea of ‘One Nation – One people’ with regard to our country is as old as the Vedic tradition.

In the anatomic analysis of the linguistic body of India all the regional languages play the efficient role of various limbs. Each of the limbs should be strong, good and well structured enough for a healthy body. So also all the regional languages, which are the striking marks of Indian diversity, are strengthening the country from all sides. At the same time as the heart does purify the blood and pumps to all the limbs for their proper and efficient functioning Sanskrit supplies all the phonetic, morphological, semantic and syntactical elements and even the common and technical vocabulary to all the Indian languages irrespective of their Indo - European or Dravidian origin. This unifying nature of Sanskrit earned it a unique place among all the languages of our country. The sovereignty of linguistic India could be protected through Sanskrit and surely not through any other regional language.

One who systematically learns Sanskrit with commitment will imbibe all the noble qualities like Ahimsa (Non Violence), Karuna (Compassion) and Maitri (Friendliness). These assimilated qualities will ensure one to have an incomparable personality with an exemplary individuality.

Right from the Vedic times the Indian intellectuals are after the pursuit of establishing harmonious relation between the man and the Nature. They always advocate the mother and son relationship between the Nature and the man. The

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As all the western languages are indebted to Greek, the spring fountain of the western scientific terminology, so are all the Indian regional languages even today owe much to Sanskrit to coin new scientific terms in India. So it is very much essential for every scientist and expert of technology to learn Sanskrit as a language and also as a source of many scientific disciplines of knowledge to prepare subject wise glossaries of universal acceptance in the country to spread the science and technology to the thresholds of all Indian villages in their regional languages.

Every country, while importing the foreign stocks of scientific and technological knowledge, never disowns its own ancestral - indigenous knowledge in the respective fields. But in India we disown our intellectual wealth and cling to a parasitic approach to import or dump western technology which those countries have left some decades back. Always we have been lagging behind even while adapting the western content.

**Sastra and Science are synonymous:**

Here a little comparison may help to assess or evaluate the worth of our ancient Indian knowledge systems. Observation, hypothesis, experimentation, forming the principles through deduction and induction are if the essentials of science, the Sastras or various disciplines of knowledge in Sanskrit too possess the same essentials in the name of three means of acquiring knowledge viz. Pratyaksha (Direct Perception can otherwise be called Observation), Anumana (The process of hypothesis, deduction and induction methods of logic) and Sabda (Verbal testimony) which preserves all the principles of predecessors in text form. So the term Sastra can synonymously be used with the term ‘science’.

Scientific method was as old as the human thought in this **land of letters**. Vedic literature was its main spring. Vedic seers were the first generation scientists. They adopted the method of observation, experimentation and deduction to produce the reliable phenomenal expatiation of various facets of knowledge. In this pioneering task they took the instrumental assistance too of a high technical value. Besides the three dimensions observation, experimentation and deduction the seers took the help of the fourth dimension **intuition** in producing such volumes of scientific literature.
Hence our ancient seers advanced a set of **means of Knowledge** to say in other words the **essentials for acquiring knowledge** correspondingly representing the basic constituents of science in the following manner.

<table>
<thead>
<tr>
<th>Sl. No.</th>
<th>Means of Knowledge</th>
<th>Corresponding constituents of Modern Science</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>Pratyaksha or Direct Perception</td>
<td>Observation</td>
</tr>
<tr>
<td>2.</td>
<td>Direct Perception</td>
<td>Experimentation</td>
</tr>
<tr>
<td>3.</td>
<td>Anumana or Inference</td>
<td>Deduction or Induction</td>
</tr>
<tr>
<td>4.</td>
<td>Sabda or Verbal Testimony and Yogaja Pratyaksha (The intuitive perception)</td>
<td>Extra Sensual Perception</td>
</tr>
</tbody>
</table>

The **Two Fold Streams of Sastras and the Big Data of Indian Knowledge:**

All the Disciplines of Ancient Indian knowledge are divided into two streams as Injunctive Sciences and Mundane sciences adapting the methods of expansion of data, compression of data and encryption of data. While the Injunctive Sciences (The Vedas) regulate the human behavioral traits the Mundane sciences deal with the nature, scope and purpose of natural and physical world for the comfortable living of mankind. As a result the following disciplines through several millennia have been descended down to the modern world from the lineage of seers of India.

The huge volumes of Veda Samhitas, Brahmanas, Aranyakas, Upanishads, Srauta/Grhya/Sulba Sutra Texts, Shadangas, Anukramanika Texts, Pratisakhyas, 500 Smriti Texts, Six Orthodox Systems of Philosophy, Two Itihasas – The Ramayana and The Mahabharata, 18 Puranas, Texts on 64 Fine Arts, Agama Texts dealing with standard architectural techniques, Specialized Lexicons (Kosa granthas) and Various Sastra Texts dealing with the living crafts of human society are even today name wise and title wise are available. In these huge volumes of treatises lot of information is available pertaining to the modern areas of study such as Astronomy, Acoustics, Agriculture, Architecture, Botany (with rich etymological notes on thousands of herbal plants), Mathematics (with its branches of Arithmetic, Algebra, Trigonometry, Spherical Trigonometry, Binomial Theorem, Geometry), Metallurgy, Hydrology, Medicine, Physiological Phonetics, Articulatory Phonetics, Meteorology, Seismology, Dietetics, Mineralogy, Geology, Environmental Science, Cosmetics, Chemistry, Physics, Animal Husbandry, Zoology, Cosmology, Psychology, Parapsychology, Moralogy and Management Studies. All these
knowledge sections can assure the modern world to lead a pollution free long life for hundred and plus years.

In the pursuit of tracing out the scientific contents in Sanskrit one has to first have an introduction to various literary types of existing in this perennial language. To broadly introduce the following are the major branches of various disciplines of knowledge available in Sanskrit. They are -

When compared to the modern scientific fields the contents of those ancient texts are of three types as knowledge areas which have no modern parallels, knowledge areas which have equal modern parallels and knowledge areas which seem lower to the available modern areas of similar kind.

**Branches of Sciences found in Sanskrit:**

An observation helps to understand that the following branches of science are traceable in ancient Sanskrit literature.

**Physical and Chemical Sciences:**

Nyaya and Vaiseshika systems give the earliest reference to the atoms of air, fire, water and earth. Nyaya Darsana gives some information about preparing lenses. Manusmriti, Matsya Purana, Ayurvedic and Rasatantra texts present the details of mensuration. Rasatantra Texts give an abundant information of various metals, chemicals and chemical processing. An interesting information of constructing a chemistry laboratory is available in all the famous Rasatantra Granthas.

**Natural Sciences:**

The texts like Susruta Samhita, Amara kosa and Nirukta recorded the Indian system of Botanical Taxonomy. Susruta Samhita, Rgyeda and Atharva Veda and various Pauranic Texts give a good amount of information with regard to the Medical Botany. In the texts on Vastu, some texts on Vrkshayurveda and some epic sources present a detailed account of Agriculture and Gardening methods. There is a reference to the sense perception of plants in the Mahabharata. The Ramayana, Smritis and some Vedic texts give vivid picture of the classification of the animals and make a deep study of their structure and the methods of curing diseases of different animals.

**Indian Mathematics:**

Similarly in the field of Mathematics the process of counting numbers from one to Parartha in ten multiples is mentioned in Krshna Yajurveda, Ramayana, Brahmanda Purana and other texts. Lilavati is the text on Algebra. Suryasiddhanta deals with Trigonometry. Sulba Sutras of Apstambha and others present a detailed
study of Geometry for the purpose of structuring Sacrificial Altars. Halayudha’s commentary on Pingala’s Chandas furnishes a good information of Binary Arithmetic.

Earth and Space Sciences:--

Likewise in the text Brhat Samhita of Varahamihira we have a bulk of information with regard to the process of finding out underwater currents. Nearly two hundred methods are presented which can even today be put in practice. Seismology is another interesting subject available in the Brhat Samhita of Varahamihira. Brahma Siddhanta, Vasistha Siddnata, Surya Siddhanta, Paulisa Siddhanta and Romaka Siddhanta are the five famous Astronomical Works with wonderful content pertaining to the Planets, their positions, moments and their influence over the earth. Texts like Samarangana Sutradhara, Maya Vastu etc., stand as a concrete proof for the masterly knowledge of our ancient people in the field of Architecture.

BRANCHES OF SANSKRIT SCIENCE

<table>
<thead>
<tr>
<th>Physics and Chemical Sciences</th>
<th>Natural Sciences</th>
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<tbody>
<tr>
<td>* Nyaya and Vaiseshika Darsanas</td>
<td>* Botany (Indian Taxonomy)</td>
</tr>
<tr>
<td>* Manusmriti</td>
<td>* Medical Botany- Amarakosa</td>
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<tr>
<td>* Matsya Purana</td>
<td>* Agriculture – Krishi Parasara</td>
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<td>* Ayurvedic Texts</td>
<td>* Zoology – Smritis and Kosas</td>
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<td>* Rasatantra Texts</td>
<td>* Indian Medicine - Ayurveda</td>
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<table>
<thead>
<tr>
<th>Indian Mathematics</th>
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<tbody>
<tr>
<td>* Counting - Krishna Yajurveda, Epics &amp; Puranas</td>
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<tr>
<td>* Algebra - Lilavati</td>
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<td>* Trigonometry - Suryasiddhanta</td>
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<td>* Geometry - Sulbasutras of Apastambha etc.</td>
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<tr>
<td>* Binary Arithmetic - Halayudha’s Commentary on Pingala’s Chandas</td>
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<thead>
<tr>
<th>Earth and Space Sciences</th>
<th>Humanities</th>
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<tbody>
<tr>
<td>* Geology - Brhat Samhita etc.</td>
<td>* Behavioral Sciences</td>
</tr>
<tr>
<td>* Gemology - Ayurvedic Texts and Puranas, Rasa Tantras</td>
<td>* State Craft</td>
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<tr>
<td>* Seismology - Brhat Samhita etc.</td>
<td>* Human Management</td>
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<tr>
<td>* Astronomy - The Five Siddhantas</td>
<td>* Trade &amp; Commerce</td>
</tr>
<tr>
<td>* Architecture - Samarangana</td>
<td>* The art of Making Ornaments</td>
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</tbody>
</table>
Five fold sources of Scientific Literature in Sanskrit:-

All the above sources of various disciplines of ancient Indian Knowledge systems are fivefold as: Vedic Literature, Pauranic Literature, Independent Treatises related to the said modern areas, Inter-disciplinary References and Classical Sanskrit Literature. Here is a set of illustrations related to Mathematics and Botany from the said five sources. For the rest of the branches also one can develop material from all these five streams.

<table>
<thead>
<tr>
<th>Sl. No</th>
<th>Source Works</th>
<th>Mathematics</th>
<th>Botany</th>
</tr>
</thead>
<tbody>
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<td>1.</td>
<td>Vedic Literature</td>
<td>Krishna Yjurveda</td>
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<td></td>
<td></td>
<td>Atharva Veda</td>
<td>Taittiriya Samhita</td>
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<td></td>
<td>Satapatha Brahmana</td>
<td>Atharva Veda</td>
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<td></td>
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<td>Sulba Sutras</td>
<td>Nirukta</td>
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<td>2.</td>
<td>Independent Treatises</td>
<td>Lilavathi</td>
<td>Vrukshayurveda</td>
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<td>Sarangadhara Paddhati</td>
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<tr>
<td>3.</td>
<td>Puranas and Itihasas</td>
<td>Ramayana, Mahabharata</td>
<td>Ramayana</td>
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<td>Mahabharata</td>
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<td>Agnipurana</td>
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<td>Garudapurana</td>
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<td></td>
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<td>Matsya Purana</td>
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<tr>
<td>4.</td>
<td>Kavya literature</td>
<td>Saundarya Lahari</td>
<td>Works of Bhasa, Kalidasa</td>
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<td>Bana and others</td>
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<tr>
<td>5.</td>
<td>References in the Other disciplines</td>
<td>Pingala Chandas</td>
<td>Manusmriti</td>
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<tr>
<td></td>
<td></td>
<td>Sangita Ratnakara</td>
<td>Ayurveda</td>
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<td>Vedanga Jyotisha</td>
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<td>Other Astronomical works</td>
<td>Amarakosa</td>
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<td>Arthasastra</td>
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<td>Jyotisha</td>
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If the process of learning all these branches of knowledge and arts is revived and introduced in a novel way suitable to the modern times and to meet needs of our contemporary times it will be of high advantage and the pride of our nation also can be well protected.

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Goladhyaya of Bhaskara

A.Sripada Bhat*

Bhaskaracharya was one of the greatest mathematicians and the astronomers of ancient India. His contribution to the development of astronomy in ancient India was unique. He was born in the shaka year 1036 as mentioned by Bhaskara himself in his Siddhanta Siromani.

When attained the age of 36 he composed Siddhanta Siromani one of the greatest and the most popular astronomical text of ancient India. Siddhanta Siromani consists of four parts Patiganitam, Bijaganitam, Goladhyayah and Ganitadhyaya. Patiganitam deals with arithmetic and the Bijaganitam with algebra. Patiganitam is also famous as Lilavati. The Goladhyaya deals with spherical astronomy and the computation methods of planets were explained in Grahaganitadhyaya. Bhaskara enriched Siddhantasirohmani by writing a lucid commentary named Vasanabhashya. The text cannot be understood easily without Vasanabhashya. He also wrote a Karana text named Karana Kutuhalam.

It is firmly believed that the knowledge of ancient Indian astronomy is not complete without the study of Bhaskara’s Siddhanta Siromani. In this paper some of the important subjects of Goladhyaya are discussed in brief.

Bhaskara begins the Vasanabhashya of Goladhyayawith following verse.

I shall brief those difficult subjects of Goladhyaya which are not explained in the earlier texts to enlighten the students.

There are fourteen chapters in Goladhyaya, namely Golaprasamsadhyaya, Bhuvanakosadhyaya, madhyagatvasanadhyaya, Chhedakadhikara, Jyopatti-vasanadhyaya, Golabandhadhikara, Triprashnadhyaya, Grahanavasanadhyaya, Udayastadhikara, Shringonnati Vasanadhyaya, Yantradhyaya, Rituvarnanadhya and Prashnadhyaya.

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In the First chapter, Golaprasamsadhya Bhaskara ascertains the need of having the knowledge of Armillary sphere for an astronomer. In the second chapter he raises some basic questions regarding the positions of Stars, Planets and he explains the need of giving correction like Bhujantara, Udayantara. In the chapter Bhuvanakosadhyaya he presents the opinions of Jains, Bouddhas and Puranas regarding the position and the shape of the earth and finally he gives his own. The followers of Buddha maintain that the earth is falling down in the space. Bhaskara bluntly refutes their opinion by giving scientific proof. Bhaskara tells that if the earth is falling down in the space then anything thrown out from the earth would not have reached the earth. Bhaskara propounds that the earth has an inherent Property of attraction by Which it attracts any unsupported heavy thing towards it. The thing appears to be falling but actually it is in a state of being drawn to the earth.

आकृष्टिवर्तकः प्रजायते तत्तताति भाषा भस्मे समयतः क पतित्वियो खे॥

(गो.अ./भू.को/रसो.सं - ६)

In puranas it is told that the earth is level like a plane mirror. But Bhaskara refutes this theory by presenting the real facts and maintains that the earth is globular in appearance. To support his claim he explains-

येष्व तिष्ठत्वर्मी तत्तथामात्मानस्या उपरि स्थितं च।
स मन्यतेः कृत्वतुर्थस्य भूमिः ये तिर्यंगामनन्तिः॥

अथ: शिरस्सः कृत्वतुर्धस्य चाच्या मनुष्याः इव नीलपिँ
अनाकृल्लक्षिर्याभः स्थिरार्थ लिङ्गिति ते तथ वच्चं यथात्॥

(गो.अ./भू.को/रसो.सं - १९-२०)

The man on whatever part of the earth he may be thinks the earth is under his feet and he stands upright upon it and two individuals placed 90° from each other, each thinks that the other stands horizontally and those who are placed at 180° from each other, each thinks that the other stands upside down. All these stand with the same easeas we do here our place.

Bhaskara clarifies why the earth appears level like a plane.
As the one-hundredth part of the circumference is plane, and because the earth is a larger body, and man is smaller, the visible portion of the earth appears to a man on its surface to be plane. Such instances show that Bhaskara had a scientific vision. Basing on this theory only that we are able to build a compound wall around circular well.

Bhaskara also refutes the puranic theory that earth is held by Adishesha.

Bhaskara refutes that if the earth were supported by anybody or any material substance then that would require a second supporter and for that second a third would required, then here is the absurdity of an interminable series. Anavasthadosha. Bhaskara propounds that the earth stands in the space supportless by its own inherent power.

As heat is an inherent property of the Sun and of fire, as cold of the Moon, fluidity of water, hardness of stone, as volatility of the air, so is the earth stands in the space supportless by its own inherent power. How beautifully Bhaskara supports his claim by giving simple and convincing examples.
In this verse Bhaskara states that the circumference of the earth is 4967 yojanas and the diameter is \(\frac{1581}{24}\) yojanas. He explains the method by which he determined this. He presents very practical and simple example to convince the subject. Here is an excellent example of his inimitable style.

पुरानं चेतिदुस्मुनां स्वातंद्रविशेषप्रेतवैस्तवदोऽकिंप।
ब्रह्मशैक्षित्वनुयागतपुक्त: युक्तं निरुक्तं परिधः: प्रमाणम॥

(श.अ./भु.को/श्लो.सं. - १४)

Ascertain the distance in yojanas between the two towns and also ascertain the difference of the latitudes of those towns. If the difference of latitude gives this distance in yojanas what will be the distance for 360 degrees? This is the circumference of the earth. The trairasika (the rule of three) method of calculation applied here.

In the chapter four Bhaskara explains one interesting thing. He tells that the Bhuvayu the atmosphere around the earth spread to the extent of 12 yojanas from the earth, and the cloud, lightning are within this. It is amazing that even in those days such type of scientific thinking was existed in the minds of the ancient astronomers.

In Triprasnadhikara Bhaskara explains the places where some of the Rasis are always above and below the horizon.

त्र्यंशञ्चमरसा: फलांशका: यत्र तत्र विषये कदाचन।
दृष्ट्येति न मकारो न कार्युक्तं किं तं कर्किमित्वयुवी सत्यदिती॥

यत्र साधिगजाजिसमितस्थान वृश्चिक चतुष्यं न च।
दृष्ट्यतेऽथ वृषभाच्चमुखं सर्वदा समुद्रितं च लक्ष्यते॥

(श.अ./भु.को/श्लो.सं. - ५)

In those countries having the northern latitude of 69°-20 the Dhanu and Makara are never visible and the Mithun and Karka remain above the horizon. In the places having northern latitude 78°-15 the four Rasisvrishnika, Dhanu, Makara, and Kumha are never seen and the four Rasis Vrishabha, Mithuna, Karka and Simha always remain visible. In the same way where the northern latitude is 90°, the six rasis
beginning from Mesha are always visible and the other six rasis beginning from Tula are never visible. As long as the declination of the Sun is greater than the Lambamsha, co-latitude of the place the Sun never sets since the diurnal circles always remain above the horizon of the place. Therefore this type of phenomenon takes place.

In the chapter named Madhyagativasana Bhaskara explains different kinds of time reckonings like Savana, Nakshatra, Soura, Chandra, Pitra etc. and gives their definitions. He explains several corrections to the mean planets to get true Positions. To prove the point he shows different kind of diagrams chhedyakas like Prativruttabhangi, Nicocchavruttabhangi, Mishrbaughi in the chapter named chhedyakadhikara.

In the chapter Golabandhadhikara he explains the method to prepare the armillary sphere where the circles are made of bamboo. The methods of placing the important circles like ecliptic, horizon and prime vertical are being thoroughly narrated. By the help of this armillary sphere the several functions of astronomy can be understood.

In yantradhya the several astronomical instruments and their usages in observation are described as there is no merit in mere computations of the planets without observations. Bhaskara gives equal importance to the computations and the observation of the planets.

This is only an earnest effort to highlight the contributions of great Bhaskara to the field of mathematics and astronomy.

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The Nature of Vedic Science

Manoj Kumar Mishra*

It is firm belief of Indian tradition that the Veda is perennial source of all kinds of knowledge. All the sciences are evolved from it. It is a common tendency of all sorts of researches to trace the track of the historicity of any subject in the Vedas, which are the oldest literary documents of humankind. The derivative meaning of the word Veda is from verbal root विद्व (to know, to ponder, to exist, to attain etc). The Sastric tradition accepts all the etymologies tuned to the meanings of verbal root विद्व. But the etymology derived under विद्व ज्ञान has the dominance over other etymologies. Verbal root विद्व has been accepted in the sense of knowledge, yet it does not communicate simple knowledge but intuitive knowledge. The verbal root विद्व has its Germen parallel ‘wissen’ whereas ‘kennen’ stands for संस्कृतज्ञा. The verbal root ज्ञा is ज्ञा in the Avesta and ख्यान in old Persian. From this ख्यान The word ‘Science’ emerged, which stands parallel to ज्ञान. Now at derivative level the difference between the verbal roots विद्व and ज्ञा becomes distinct. The Science is defined as follows in Oxford Advanced Learner’s Dictionary- “Knowledge about the structure and behavior of natural and physical world based on facts that you can prove, for example by experiments”.

The Veda is exuberantly metaphysical. Physical and natural phenomenon can also be found in the Veda. But, behind physical and natural phenomena also, exists a metaphysical element, which is termed as अभिमानी etc. The Veda has given birth to so many sciences and crafts like- आयुर्वेद, स्थायत्ववेद, गान्धङ्वेद, नाटचर्बेद etc. Ayurveda protects the health with its prescriptions and so on, but Veda prescribes such remedies also, which cannot be certified or gauged by materialistic measures, hence termed as अलौकिक उपाय (Supermendane remedy). It’s why the great commentator Sayana staes that the scripture, which makes learn supermundane ways to ward off despised and attain the desired things is the Veda-

The Vedic science is not that kind of science, which is creating havoc in the world, which is killing nature, which has turned the nectar-like waters of the rivers like Ganga into poison; which has turned the cities into gas-chambers, which is

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proving to be curse for nature, since natural resources are being exploited at deadly extreme level. Vedic science is a science which has harmony with nature. Vedic science is not meant for the sole purpose of sense gratification and materialistic pleasure.

This fact is not properly understood by those scholars who are haughtily crazy of the science of modern European model. Perhaps, it is the reason that Prof. A.A. Macdonell² has unscrupulously mocked the contents of Vedic science.

“अन्यदः” is a unique term of the मिमांसाकाः, which is a metaphysical link between an action and its effect. दर्श्यौर्णाद्याभ्यां स्वर्गरक्षणो बजेत is a vedic injunction. The purport of this is that, a person who desires to obtain celestial world, should perform the sacrifices दशे (New Moon Day) पूर्णाभ्यां (Full moon day). These sacrifices are performed, but paradise is not gained. Had the attainment of paradise been effect of the performance the ritual of दश्यौर्णाद्याभ्यां the sacrificer would have attained it simultaneously with completion of the sacrifice. But, we do not perceive this. It is why अन्यदः is accepted. The liturgical performance produces a special imprint, which at its ultimate stage (परमायुदः) makes the sacrificer attain the bliss of heaven. Though this process is supermundane and imperceptible to our senses, yet its scientific base can be equated with some medicinal devices.

A person falls prey to tuberculosis. He undergoes the treatment under supervision of a skilled physician. The course continues uninterruptedly for six months with consumption of medicinal tablets everyday two or three times. If this chain is broken even for one day, redemption from the detrimental disease becomes impossible. What is the reason? Everyday every consumption of medicine creates some unconceivable imprint (अन्यदः), which accumulated, at ultimate time (completion of the course) produces the effect in form of emancipation from tuberculosis. The effect of every consumption of medicinal tablet can neither be assessed nor gauged by our senses or even by any machine, produced by edge cutting technology of today. The same can be applied with respect to अन्यदः which has already been explained as metaphysical link between कर्म and कर्मफल The similar view has been expressed by great scientist Albert Einstein-

“On the other hand, the physicist has to be severe and self-denying in regard to the material he uses. He has to be content with reproducing the most simple processes that are open to our sensory experience, because the more complex processes cannot be represented by the human mind with the subtle exactness and logical sequence which are indispensable for the theoretical physicist.”³
These subtle entities are imperceptible by human mind this axiom can be seen in याज्ञवल्क्य—गार्गी dialogue episode of वृहदराजण्यकोपनिषत् where याज्ञवल्क्य prohibits गार्गी from asking अतिप्रश्न the answer of which is not possible on account of imperceptibility of certain elements. In this episode गार्गी asked याज्ञवल्क्य that in which the Brahmaloka (Supreme divine abode) was interwoven. याज्ञवल्क्य stops गार्गी from asking the things beyond questions. If she asserted on her question about unquestionable her head would fall down - कस्मिन्य खलु ब्रह्मलोको ओत्तरच प्रोत्तरच। स होवाच गार्गी मातिप्रासिफी। ते गूढी व्यस्त। अनन्तप्रस्नमा वै देवतामतिपुउच्छिष गार्गी मातिप्रासिफीते ततो ह गार्गी वाचकमनुपरमा।

The negative view of the opponents on the authenticity of Veda is presented by Gautam as thus - तद्वामाण्यज्ञनुज्ञातात्पुनस्तदोपिपुष्म।" viz the evidence of the Veda cannot be accepted on account of its false statements, its contradictory statements, and its repetitive. The Veda prescribes performance of a ritual named - पुण्यित for obtainment of a son. After performance, if son is not begot, then it is proved that the performance of पुण्यित is a futile practice (अनुप्रतिष्ठीत)।

The ritual of अमिकोम is prescribed by the Vedas under some eligibility criteria. Somewhere it is stated that it should be performed before the sun is set. On other place, it is stated that अमिकोम ought to be performed after the sun has arisen. The third option is that it should be performed when the stars have disappeared but the sun has not arisen. The अर्थवाद of one option censors the others - राज्योपायस्यांतन्त्रसाधनाम कृतमित्रत्वात्। उदितो जुगोता/सबलोपायस्यात्नात्मात्मेतत्त्वो जुगो| जुगो। राज्यमण्डले बाबायोस्यांतन्त्रसाधनात्मेतत्त्वात:। य. समवायुपितो जुगो|।

The third objection is that a number of repetitions are found in the Vedas. The शामिलेन्द्री verses, which are specified as an auxiliary ritual of दर्शनमण्डला are just eleven in number. During this performance 15 recitations are prescribed. To attain the शामिलेन्द्री for desired 15 number, the first and the last verses are recited thrice in repetition. This repetition is a flaw according to adversary view - ति: प्रथमान्वां हि रत्नामिति वस्तुक्षो भवति। पुरुषके प्रमत्तसाध्यम।।

Now the seer Gautama refutes the adversary view of the atheists in this mode-न कर्मकर्तन्तसाधनवामग्यात।।

There is no false statement. There may be flaw either in performance or in performer or in the instrument or in all these three. The ritualistic performance might have been flawed. The performer may be inapt and of feeble character. The instrument might be blemished in the way of unconsecrated oblation, the formulae (Mantras) may be bereft of proper accents and the letters deprived of the place, effort etc of articulation. All these flaws stop पुण्यित from fructifying.
Now Gautam rebuts existence of व्यावात (contradictory statement) in the Veda - अनुष्पैताय कालेपदे दोषमयनात्. ⁹

There is no existence of contradictory statements in the Veda. The seeming contradiction in उदित, अनुदित and सम्यवाच्युष्टिः is solved by means of adopting one option out of three. When one option of offering oblation in the Agnihotra is adopted, then other options become censored. One who follows either of three options must stick to the same option. This way possibility of any contradiction is nipped in the bud itself. Now the third objection is countered - अनुवादोपगतर्पत्रः. ¹⁰

Meaningless repetition is called पुनस्क्र त whereas meaningful repetition is termed as अनुवाद According to this matrix the repetition of first and last verse trice during Samidheni is meaningful. This meaningfulness is supported by the अर्थवाद (eulogistic statement) of the Veda - तथाच मन्त्रार्थवाद: इति भाष्माम् पद्धतिकारणेन वायवपकेन वायुपमान् द्रव्यं यद वयं विश्व: इति पद्धतिकारणेन वायुपमान भविष्यति तद्भयासमन्तरेण न व्यावहित: ¹¹

The कर्मकर्तृसमाधनमैत्रय the adoption of one option of अप्रिहात regarding timing and the effect created by repetition of Mantra are not perceptible to our sensory organs. Hence, these elements are for beyond of human mind or intellect and far away from the reach of modern Materialistic science.

The performance of कारीरिषी produces ample rain. The oblation of this sacrifice is a herbal plant, namely कर्षित or कर्षम्. The etymological derivation of कर्षित also suggests that this herb invokes rain. Time and again it is tested also. सीराज्मणी sacriface cures irremediable disease. The Vedic science is applicable to the whole universe. The performance of sacrifice is reflection of cosmic happenings. यज्ञ yaga resembles evolution of cosmos. The milk poured in hot clarified butter flashes out on the same pattern of outburst of energy and evolution of the Universe. महावर is the source, where from the flash is produced. The same way from one and solo element all the energies are spurted. The rain produced by flawless performance of करीरिषी is natural extraction of rain water. It is not like artificial rain resorted to by the men of our age. Cure through सांत्रामणि does not involve even consumption of medicine, even of herbal type. The muttering of मृत्युण्या Mantra is very effective in life-saving. It is frequently experienced.

But the gradual effect and ultimate effect of all these is not sensed by our too common sense organs. The Mantra, the Yajña and cosmic energies are manifestation of solitary supreme conciseness, which is termed as Brhma. The divine flames of Brahman are always active in form of cosmic energy. This energy can be assimilated
by the means of penance. One ought to have faith to sense all these things -The
आर्यण-श्वेतकेतु episode on Chāndogya-paniṣad hints towards this very process.

न्यायोपतितम आहर्तीदं भाव इति प्रभुवैतिः प्रवृत्त प्रक्ष्रीवीव इति किंत्र पर्वकुवीव इति न किंचन भाव इति।

The gist of this is that the father ordered his son to bring the fruit of Banyan
tree and asked him to break it into pieces and one piece into many subtle pieces.
Śvētaṅkētu did what was ordered by his father. Then his father asked him what he saw
when the smallest seeds were further broken. Śvētaṅkētu replied that he did not perceive
anything. Then his father exhorted, that the most subtle part that Śvētaṅkētu was unable
to perceive after breaking the seed, alone bore the whole tree. In that invisible part
only the big banyan tree was inherent. For knowledge of this fact only faith is to be
resorted, since there is no other ways.

Thus, a safe conclusion can be drawn that the nature of Vedic science is quite
mystic. A person who is neither a seer nor has performed penance cannot understand
scientific tenets of the Vedas - न होऽु प्रक्ष्रममत्युष्थेतं तपस्ती च।

The faith in tradition alone
can make us understand the secrets of the Vedas, this is firm discourse of the श्रद्धा
विन्द्यते स्वयम् and Smṛti - श्रद्धावान् तमचे ज्ञानम्।

References:-
1. अभिमानिन्यपदेशां विशेषाणवतिभाम्। (ब्र.सू. 2-1-5)
2. They represent in fact the conjectural science of a primitive mental condition.
   For statements, which to the highly civilized mind would be merely
   metaphorical, amounting that early stage to explanation sides of the
   phenomena observed. (Vedic Mythology, P.1)
3. Prologue to the book where science is going authored by Max Planch, P.9
4. (ब्र.उप.- 3-6-1)
5. (न्या.सू. - 2-1-57)
6. (न्यायभाष्यम्)
7. (न्यायभाष्यम्)
8. (न्या.सू.2-1-58)
9. (न्या.सू. 2-1-59)
10. (न्या.सू.2-1-60)
12. According to Kātyāyanaśrautasūtram the performance of sūtraṃṇṇi is aimed at attaining prosperity, lost kingdom and obtaining abundant animals - (क.श्री.स. 19-1-1, 3&4) But Indra was cured by means of this Yaga by अन्विन्नी and सरस्वती, Hence its remedial importance is also certified - ह्रद्धैष्कवार्षिकम् अन्विन्नी सरस्वती च सौत्रामण्णी दृष्ट: - उत्त-बा.सं. 19-11.

13. यो अग्री रूढ़े य अन्वन्तयं ओषधीवीररुपं आविभेस। यः इमा विश्वा भुक्तानि चाक्कूपे सत्यमेव नमो अस्त्वप्राये। (अ वे. 7-87-1)

14. छा.उ. (6.12.1-2)

15. (मिर-13-12)

16. (ज.वे.10-151-1)

17. (पीठा.4-39)

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Bhūmisūkta of Atharvaveda; vision of seers on Environment and Sustainable Development

Viroopaksha V. Jaddipal*

Introduction:-

Environment and ecology:-

The environmental science and ecology are relatively modern disciplines of scientific study under which environment and its constituents are studied with all microscopic precision. As scientific methodology requires, environmental science and ecology are firmly established in 20th century with experimentation based on cause and effect theory. But ample references as well as germination of environment related original ideas can be seen in the Vedic and ancient Sanskrit literature.

Long before ecology got its due emphasis at the hand of environmentalists, at global and UN level, the ancient thinkers had already provided insightful thought to the generations on environmental ethos. It is said that the word ‘ecology’ is coined formed from the Greek word “Oikos”, meaning ‘home’ and “logus” conveying knowledge; whereas the word “Oikos” has its root in Vedic word “Okas/oka” which means “home” and in all such sense the word had been used in vedic texts.

In Indian subcontinent, for the first time, the British Government enacted the Forest Act, 1865, further revised it in 1878 and once again new Forest Policy of 1884 was formulated and finally the Forest Act of 1927 was enacted which contained all major provisions of the earlier Act, and British could acquire forestland, village forest and other “Common Property” resources through this act. In Independent India, the Environment (Protection) Act, 1986 has been very comprehensively drafted and included various salient features of the British Act 1927; but evidently absent even in the preamble to mention the vision of our Seers. The Act of 1986 defines the environment thus: ‘Environment includes water, air and land and the inter-relationship which exists among and between water, air and land and human beings, other living creatures, plants, micro organisms and property2. From the above legally valid definition, it can be gleaned that that environment consists of two components namely living organisms and non-living factors. The living organisms can be divided into three groups - those living mainly on land, in water and in air. The non-living materials of the environment are land, air, water, property etc.

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Sustainable Development:-

The word ‘sustain’ comes from Latin, Sustenere, meaning to hold or keep elevated. In the context of resources and the environment, to sustain would literally mean to maintain or prolong the productive use of resources and the integrity of the resource base. The term was first introduced in a 1987 report commissioned by the United Nations, “Our Common Future”. This is also known as Brundtland Report, since the organizing committee that produced the report was chaired by the then Prime Minister of Norway Gro Harlem Brundtland. Upon comprehensive discussion and after the publication of “Our Common Future”, the phrase “sustainable development” entered the widely accepted usage in that sense both by educationists, environmentalists and by Government agencies. It was employed, at the UN Earth Summit in Rio de Janeiro in June 1992 and has subsequently appeared in other ecological Summit meetings organized by the UN, such as the World Summit on Sustainable Development in Johannesburg in 2002.

Earth Summit held at Rio de Janeiro developed 27 principles for sustainable development. The author of the report argued that the use of the earth’s resources by the present generation was unsustainable. Sustainable development was defined as the use of renewable resources to promote economic growth, the protection of animal species and biodiversity, and the commitment to maintaining clear air, water and land. Other acceptable definition on sustainable development is to enhance the human’s living conditions on earth in a better way while using water resources, air for breathing, landscape for living or industrial purpose as well as impacting minimum on living creatures, plants, microorganism and surrounding properties of the universe.

The essence of sustainable development is centered on finding an appropriate equilibrium between economic growth with optimum momentum during the present times and preservation of natural resources for the requirement of future.

Environment, Sustainable Development and Climate Change:-

In the last few decades modern scientists brought to our attention, the environmental problems such as deforestation, unstable climate, tsunami, El Niño, acid rain, ozone depletion, green house effect, desertification, species loss, fertilization of agriculture etc. which have not only deeply threatened the well being of all creatures including Humans but their survival itself. It is the foremost important to address the global environmental problems by regenerating the consciousness of all stake holders on pollutant industries, drinking water crises, shortage of nutrients, deforestation, chemically oriented agricultural activities, use of pesticides, loss of Ozone molecules termed as depletion of the Ozone layer etc.
In recent times, recognizing the importance of controlling the temperature to arrest the climatic change, UN organized 21st session of “Conference of the Parties” (CoP-21) in Paris, France during 30 November to 11 December 2015 wherein various resolutions were adopted by signatory parties. The session called “deep reductions in global emissions will be required in order to achieve the ultimate objective of the Convention and emphasizing the need for urgency in addressing climate change, acknowledging that climate change is a common concern of humankind”. The article 7 of “Conference of the Parties” acknowledges that adaptation action should follow a country-driven... and should be based on and guided by the best available science and, as appropriate, traditional knowledge, knowledge of indigenous peoples and local knowledge systems”.

In this context, Bhūmisūkta of the Atharvaveda and vision of seers therein are very important and timely as such being traditional knowledge, knowledge of indigenous seers to view the globe as one family and Earth as Mother, Parjanya as Father; ourselves as off springs of the Earth4. This traditional knowledge will surely help to reduce the climate change as ultimately the human behavior in all activities is the prime cause for climate change.

**Vision of Seers on Environment and Sustainable Development:-**

The vedic prayers of seers contain the vision on the Environment and Sustainable Development with resonance of scientific ideas endowed with insightful thoughts. The Bhūmisūkta of the Atharvaveda in the mantra “Prthivīṁ Viśvadhāyasam Dhṛtamācchāvadāmasi” made direct reference to the notion of sustainable development5. Vedic seers urge the people to pursue the path of dedication and submission6 resulting in to sustainable activity, which may fructify in to sustainable development for the welfare of society. It said that with utmost care one has to grow from the earth as per its capacity to grow agricultural products not by over production7. The seer visualizes thus - Nikāme Nikāme Naḥ Parjanyo Varṣatu Phalinyo Na Oṣadhayaḥ Pacyantāṁ Yōgakṣēmō Naḥ Kalpatāṁ8. Vedic seers laid importance on universal well-being and sustainable development for the progress of all. Later times, in the Mahabharata, the concept of sustainable development has been explained by Sage Vyasa with an example of a honey bee in its characteristic style of collecting honey without harming to the soft petals of flowers9. Another verse of the Mahabharata says, “resource generation should be done with great care like a florist who picks and chooses from blossom to blossom with utmost care in a garden; not like a charcoal maker who uproots the plant, mindlessly fells and burns down young trees for the production of wood charcoal10.
The seers have pointed out the role of Prakṛti, generation of food from Prakṛti and contentment through such food. The food itself is described as Brahman by vedic seers. For seers, sun and moon are gods; air, water and sky are also gods. Earth, river and fire are visible gods in the physical form. According to Vedic ideology, Pañcabhūtās are the basic elements of the universe upon which the climate change is depending and clear understanding would reduce the causes for climate change. The universe is composed of five basic elements such as 1. Earth or land, 2. Water, 3. Fire or Tejas, 4. Air, and 5. Ether, which are building blocks of environment and further climate change.

**Bhūmisūkta of Atharvaveda:-**

The first sūkta of twelfth Kāṇḍa in the Atharvaveda is known as Bhūmisūkta or also as Prthvisūkta as it has Bhūmi or Prthvi as its Goddess and Atharva as its Rśi. The sūkta has 63 mantras, starting from “Satya Ą Bṛhad Ą Ugram” ending with “Śriyā Mā Dhēhi Bhūtyām”. The mantras in the sūkta narrate, explain, philosophize, personify and splendorize the earth as Goddess personified and note reverence of the Rśi to the earth by understanding her exquisite qualities. In doing so, mantras contain highly relevant prayers to enkindle the passion for the earth in the hearts of common man in this scientific era of universal exploitation of earth without any feeling.

**Bhūmisūkta of Atharvaveda and “Conference of the Parties-21” in Paris:-**

The United Nations 21st session of “Conference of the Parties” has emphasized the “traditional knowledge, knowledge of indigenous people and local knowledge systems”, hence the Bhūmisūkta qualifies to be traditional knowledge transmitted in Gurukulas through the line of Gurus to Shishyas in many parts of India. The Ministry of Environment, Forest and Climate Change, Government of India has brought out an e-book “Parampara India’s Culture of Climate Friendly Sustainable Practices” containing various practices in India so far to stop the climate change and the Indian messages resonant with ideas of various Vedic and Sanskrit texts. During the session, Shri Narendra Modi, Prime Minister of India while launching at the India Pavilion, has spoken elaborately on the vision of the Bhūmisūkta of Atharvaveda and Indian knowledge heritage therein and its importance in view of global concerns on climate change.

**Discussion on the general contents of The Bhūmisūkta:-**

The Bhūmisūkta in Atharvaveda is the oldest yet the most suggestive invocation on the environmental aspects discussed in an elaborate manner in any literary work of the world. In it, Atharvā, the seer declares the enduring filial love to
the Mother Earth: “Mātā Bhūmiḥ Putrōḥam Pṛthivyāḥ Parjanyāḥ Pitā Sa Naḥ Pipartu”. ‘Earth is my mother, I am her son, parjanya my father’ Mother Earth is renowned for all her natural bounties and particularly for her gifts of food, herbs and rich vegetation. Blessings of mother earth are sought for prosperity in all endeavors and fulfillment of aspirations of humankind. The vast and inexhaustible physical resources are also illustrated to acknowledge the superiority and dependence of all beings on earth. A thanks-giving is unto earth for all varieties of food we grow and secure from her for our sustenance. All four directions are requested to be pleasant for the happiness of beings so that the relation not only with other beings but with whole universe will be harmonious. A laudable pledge is made that humankind shall secure the earth against all environmental trespass and shall never let her be oppressed by any. The seasonal variations and its climatic dynamics severely impact the earth and people as well. Therefore a prayer is made to the earth to protect us from those impacts by absorbing such he effect. A prayer is made to the earth to secure vital breath of life, long span of life and happy life till we become old and grown in ripened age. A soul-stirring emotional prayer is sung in one of the mantras for the preservation and conservation of hills, snow-clad mountains, and all brown, black and red earth, unhurt, un-smitten, unwounded, unbroken and well defended by Indra.

The Vedic seers regarded the Earth as ‘sacred space’ to fulfill the holy endeavors, aspirations of humankind and for the practice of self-control and accountability. The earth is sustained by truth, formidable right, consecration, penance, Brahman and sacrifice. The Vedic vision of the earth is filled with the prayer for the purity of environment, enhancing the spiritual side of the environment and sustaining the highest moral order on the earth.

Select Mantras of Bhūmisūkta of Atharvaveda and insight therein on sustainable development:

Now, we consider a few mantras for insightful thought of Atharva Rṣi in the Bhūmisūkta of Atharvaveda.

In the first mantra, 6 factors which hold the earth in its proper order and also the capacity of the earth to hold whole mass of population in ever expanding space of 14 Slokas have been eulogized.

सत्यं बृहद्द्विग्नं दीक्षा तपो ब्रह्मवेदः पृथिवीं धारयनिः।
सा नो भूतस्य भव्यस्य पतन्युं लोकं पृथिवीं न: क्रणोद्व।।

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The third mantra narrates about the water bodies like ocean (samudra) river (sindhu) etc, to be pleasant to sustain the life and breath on earth; and also due to them earth is the place for the production of food and drinks for beings.

The sixth mantra, the words “Viśvambharā” “Vasudhānī” “Pratiṣṭhā” “Hiranyavakṣā” “Jagato Nivēśanī” are pregnant with very deep layers of meaning. “Viśvambharā” signifies the capacity of the earth to hold and sustain the universe; “Vasudhānī” denotes the non-exhaustiveness of resources to be used for human welfare; “Pratiṣṭhā” and “Jagato Nivēśanī” convey as well as confirm the earth as a safest place for dwelling in this universe for generations.; “Hiranyavakṣā” is endowed with suggestive power, therefore, the knowledge of ṛṣis about the earth on its unlimited resources such as gems, minerals etc are also brought out.

The similar idea is also resonant in twenty-sixth mantra; it is said -

Rock, earth (Bhūmi), stone and dust, these all together are held to the earth (Bhūmi); the earth is endowed with Gold-chest (suvarṇa-vakṣas) and I pay my homage to her.

The forty-fourth mantra notes about the treasures of jewels (manaī) hidden in the earth’s womb and it is prayed for such abundant wealth to be bestowed by earth on us.

The earth is personified as a milking cow, that itself projects the idea of sustainable development to draw wealth; that is said thus -
Let the earth, as a place to endure the people of different faiths, customs and speeches living in many homes yield us thousand streams of wealth like a steady (dhruva) unresisting milking-cow.

Those who are born of earth, the mortals grow on the earth itself; the earth is a place of sustained place of living for bipeds, quadrupeds and for races of men; the rising sun spreads his immortal rays of light to fill all with energy and life force.

The regenerative capacity of the earth due to the impact of rain on the natural food production was a prime concern for Atharvā - Rṣī. Hence such fundamental nature of the earth is noted in the mantra. The sentence “Bhūmyai Parjanyapatnyai Namōstu Varṣaṃēdasē” is notable for the depth of meaning; as food, rice and barley are the stuff for the five races on the earth. The makes it categorically known thus-

The phrase “Viśvasvaṃ Mātaramōsadhiṇām” ‘all-producing mother of herbs’ conveys the rare inherent curative qualities in the medicinal plants grown on the earth.

Atharva-Rṣī knew about the adverse impact of climate due to imbalance of seasons like rainy season, autumn, winter, cool season, spring and space and time factors like years, let day-and-night. On them, an emotional prayer is made to earth to keep all in perfect order so that these would be pleasant and harmonious.

We consider the earth a great place for dwelling for humans; ‘Bhūmē Mātarni Dhēhi Bhadrāyā Supratiṣṭhitām’ the seers had also proclaimed the earth as the pleasant place of dwelling;
What villages, what forests, what assemblies of learned people and all places upon the earth, what hosts, what gatherings-in all of them we speak about the pleasant nature of the earth.

**Conclusion:**

By going through the above quotations it is very clear that great seer Atharvā has dealt with the multi-dimensional aspects of ecology and sustainable aspects of earth in the Bhūmisūkta of Atharvaveda. According to the sūkta, earth is the individual, multi-dimensional, collective, ethical and spiritual entity having the dimensions of environment in its fold. Earth is not mere physical entity, she is more than that; spirituality is galore in her as mother earth. Therefore, Vedic view of earth, ecology and environment transcend all dimensions such as visible, non-visible and spiritual power of nature. The Vedic view as manifested in texts, particularly the conception of earth in the Bhūmisūkta of Atharvaveda perceived this aspect and prescribed a built-in spiritual, intellectual and cultural thesis for an environment-friendly value system to adhere to and follow a balanced lifestyle to sustain the growth pattern required even in this complex time of omnipresent-economics.

The Bhūmisūkta of Atharvaveda declares that all aspects and phenomena of nature are united in a perfect co-ordination and are bound in a physical as well as metaphysical form knit together. The charters of 21st Conference of Parties adopted are to be implemented with the sense of spirituality, ethics and spiritual consideration, if the UN effort on climate change is to be sustained. Under the umbrella of spirituality, global people are to play a noteworthy role in creating and sustaining a passion for ecological balance, equilibrium, sustenance of earth qualities as thought of by Atharva-Rṣi in the Bhūmisūkta.

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2. Section 2(a) of the Environment (Protection) Act, 1986.

3. Preamble to the Resolutions of “Conference of the Parties”.

4. Mātī Bhūmiḥ Putrōhaṁ Prthivyāḥ Parjanyāḥ Pitā Sa Naḥ Pipartu Bhūmisūkta, Atharva - 12-1-12
5. Yasyaṁ Vṛksā Vānaspatya Dhruvaśtiṣṭhanti Viśvahāl

Pṛthvīṁ Viśvadhāyasāṁ dhṛutāmacchāvadāmasiḥ Bhūmisūkta, Atharva - 12-1-27

On whom stand always fixed the trees, the forest trees (vanaspatya), the all supporting earth that is held (together) do we address.

6. Tena Tyaktēna Bhuṇja Ṭāśāvyam - 1-1
7. Kālāprāptamānānārtham Rājā Prasūcayēti

Ahanyāhāni Sanduhyanmahīṁ Gāmiva Buddhimāṁ Mahābhāratam,Śānti - 32

8. Yajurveda 22.22; “let the clouds shower upon us rain waters in plenty and at the right times; may our plants grow in great abundance, laden with ripening fruits; may we win enough treasures not acquired so far, and conserve the resources properly for the well being of all of us”.

9. Yathā Madhu Samaddattē Rakṣan Puṣpāṇi Śaṭpadaḥ!

Tadvadarthān Manuṣyēbhya ĀdadyādavihīṃsayaēMahābhāratam, Udyōga parva - 34-17

10. Puṣpāṇ Puṣpam Vicinīta Mūlacchedam Na Kārayet!

Mālākāra Ivārāme na yathāṅgārakārakhī Mahābhāratam, Udyōga parva - 34-18

11. Annaṁ Brahmēti Vyajānāti Tāttirīyē


13. Nānāvīryā Īsādhīryā Babharti Pṛthvī Naḥ Prathatīṁ Rādhyatīṁ Naḥ!

Bhūmisūkta, Atharva - 12-1-2

14. Sā Nū Bhūmirvadhāvādvardhamānāṁ Bhūmisūkta, Atharva - 12-1-13

15. Śilā Bhūmirāśmā Pāṁśuḥ Sā Bhūmiḥ Sandhṛtā Dhṛtā

Tasyai Hiraṇyavakṣase Pṛthivyā Akaraṁ Namaḥ Bhūmisūkta, Atharva - 12-1-26

Yasyaṁ Vṛksā Vānaspatya Dhruvaśtiṣṭhanti Viśvahāl

Pṛthvīṁ Viśvadhāyasāṁ dhṛutāmacchāvadāmasiḥ Bhūmisūkta, Atharva - 12-1-27

Nidhiṁ Bibharti Bahudhā Guhā Vasu Maṇīṁ Hiraṇyaṁ Pṛthivī Dadātu Mē!

Vasūnī Nō Vasudā Rāsamānā Dēvī Dadhātu Sumanasyamānāṁ

Bhūmisūkta, Atharva - 12-1-44
Great (brhat) truth formidable right, consecration, penance, brahman, sacrifice sustain the earth; let her for us, mistress of what is and what is to be-let the earth make for us wide room (loka).

23. BhūmisūktA, Atharva-12-1-1
Bhūmisūktta of Atharvaveda vision of seers on Environment and Sustainable Development

24. Bhūmisūktta, Atharva-12-1-3  
25. Bhūmisūktta, Atharva-12-1-6  
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Psychosomatic diseases - Effective Rasayana therapy in Ayurveda

Parthasarathi*

Now a days the knowledge of Vedas are getting poularity with their scientific evidences, Ayurveda the science of life is the essence of Vedas, considered the Upaveda of Rigveda Veda and it is one of the oldest systems of medicine in the world. The goals of Ayurveda are to 1) preserve the health of a healthy person, 2) to prevent disease, and 3) to promote longevity by improving the quality of life in mind, body, and spirit.

Sushruta, one of the great scholars of Ayurveda, described the essence of Ayurveda as

Samadōṣaḥ Samāgniśca Samadhātu Malakriyāḥ
Prasannātmēndriyamanāḥ Svastha Ityabhidhīyatē.

(Susruta Samhita 15-38)

Meaning health is the state of equilibrium of doshas (biological humor), agnis (transformative physiological system functions), dhatus (tissues and organs), and malas (metabolic byproducts), along with sensorial, mental, and spiritual well being.

As stated in the preamble to its charter, the World Health Organization (WHO) defines health as the following: “Health is a state of complete physical, mental and social well-being and not merely the absence of disease or infirmity”

Psychosomatic disorders:-

A Psychosomatic disease also known as psychophysiological disease is essentially a disorder of stress. It is termed psychosomatic because the initial cause of such a disease centres on the psyche and the manifestations are obviously somatic. For instance, a peptic ulcer diathesis is initiated in the form of psychic stress that ultimately results in the formation of a stomach or duodenal ulcer, which is very much a somatic presentation. Besides peptic ulcer, the other important psychosomatic disorders are ulcerative Colitis, Essential Hypertension, Ischaemic heart disease, Bronchial Asthma, Diabetes mellitus and Rheumatoid Arthritis.

The Psychosomatic disorders are the outcome of the modern way of life and changing value systems In recent years, the incidence of Psychosomatic diseases has shown a tremendous increase throughout the world, especially in western affluent

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Psychosomatic diseases are emerging as a greater and growing challenge before the medical profession. It is at this juncture that attention has been drawn to Ayurveda for their utilization in promotive, preventive and curative care of psychosomatic ill health.

**Etiopathogenesis of Psychosomatic Diseases:**

A classical stress response consists of increased production of neurohumours, hormones, specially the cortisol and catecholamines leading to a series of resultant physiological and metabolic changes. When such a response overrides a limit, it starts producing irreversible changes in the body and thus precipitates a psychosomatic disease. Thus the pathogenesis of a psychosomatic disease passes through four describable phases

1. Pure Psychic Phase
2. Psychoneurotic phase
3. Psychosomatic phase
4. Advanced organic phase

Phenomenon leads to the development of specific psychosomatic disease such as Hypertension, Bronchial Asthma, Rheumatoid disease etc. psychosomatic make-up plays a great role in the development of specific psychosomatic disease in a particular type of individual. Probably an individual develops the psychosomatic disease of a particular system or organ which is genetically weak. This is the reason why the same stress factor produces different types of stress diseases in different individuals.

**Lifestyle changes-Leads to Psychosomatic disorders:**

The incidence of lifestyle diseases like hypertension, diabetes mellitus, dyslipidemia, and overweight/obesity associated with cardiovascular diseases is high on the rise. Cardio vascular disorders continue to be the major cause of mortality representing about 30% of all deaths worldwide. With rapid economic development and increasing westernization of lifestyle in the past few decades, prevalence of these diseases has reached alarming proportions among Indians in the recent years.

Ayurveda narrated this phenomenon as ‘Prajnaparadha’ (intellectual blasphemy) which is one of the three basic causes of any disease. There are ample improper actions as an impact of Prajnaparadha which are root causes of various diseases, e.g., habit of suppression of any natural urge is a result of Prajnaparadha and enlisted
as a cause of nearly 50% of the diseases. Improper removal of the waste products formed during metabolism leading to accumulation of toxins is the basic cause of a disease.

**Recommendations:**

* In the management of lifestyle diseases, Ayurveda offers various regimens including Dinacharya (daily regimen),

* Ritucharya (seasonal regimen),

* Panchakarma (five detoxification and bio-purification therapies),

* Rasayana (rejuvenation) therapies.

* The Sadvritta (ideal routines)

* Aachara Rasayana (code of conduct) are utmost important to maintain a healthy and happy psychological perspective.

* The inclusive utilization of all these treatment modalities has a great effect on lifestyle disorders.

* The application of organ-specific Rasayana herbs also provides enough scope not only for prevention of disease, but also for the promotion of health and cure of disease too.

Rasayana signifies not a single drug or medication rather refers to a rejuvenating regimen, which of course uses rejuvenating remedies/drugs, diet and over-all healthy lifestyle and positive psychological outlook (Singh 73).

**Ayurvedic Approach of Disease Prevention - Rasayana:**

**Rasayana Chikitsa:**

Rasayana has been considered as a form of rejuvenative recipes, dietary regimen and a special health promoting conduct and behaviour (Achara-Rasayana) This therapy helps the individual to attain longevity, memory, intelligence, freedom from disorder, youthful age, excellence of luster, complexion and voice, optimum strength of physique and sense organs, successful words, respectability and brilliance.
Types of Rasayana (Rejuvenation) therapy:

According to achievable outcome- Rasayana is of three types:-

1. Naimittika rasayana
   (nimitt-Sanskrit for “cause”) It is used to combat or balance a specific cause responsible for the disease in the body. Few examples include Dhatri rasayana, Mandookaparni rasayana, Brahmi rasayana, and Triphala rasayana.

2. Ajasrika rasayana
   It is used to maintain good health and improve the quality of life through a healthy lifestyle, diet, or exercise. It is also called as Vayasthapan Rasayan.

3. Kamya rasayana
   This is described as to fulfill a wish or desire or to serve a special purpose (Kama - desire).
   
   It is of 4 types
   a. Prana Kamya- best quality of prana (life energy) in the body.
   b. Medhya Kamya- enhancing the memory and intellect. e.g. Shankhpushpi
   c. Ayush Kamya- increasing longevity.
   d. Chakshu Kamya- maintaining healthy eyes.

According to modalities:-

It is of three types

1. Achar Rasayan (Behavioural modalities)
   Describes a type of rasayana for psychological and spiritual health. It focuses on the body, mind, and soul.

2. Ahar Rasayan (Dietary modalities)
   Includes rules relating to eating, sleeping, and celibacy create rejuvenation in a person, following a sattvik diet and life style, speaking the truth, practicing non-violence, living in harmony with the nature, following social ethics and conducts, are all included under this category of rasayana.

3. Dravya (Aushadha) Rasayan
   Includes some herb and food types that are indeed beneficial for the optimum functioning of the body as well as the brain.
To prevent Psychosomatic diseases Medya Rasayan and adaptation of Achara Rasayana are very essential in our life.

What is Medhya Rasayanas?

In Ayurveda, Medhya is described in broad way. Medhya comprises of all the three mental faculties- Dhee, Dhriti and Smriti and these are interrelated with each other.

The ‘medhya rasayanas’ are known to be beneficial

* To improve the intellectual.
* used for prevention and treatment of mental disorders
* Promote the Intellect (Dhi) Retention power (Dhriti), memory (Smriti).
* RemoveMood disorders
* Prevents suicides
* Poor quality of life.
* Medhya rasayanaplays as neuroprotection
* Treatment of psychiatric and psychosomatic diseases.
* The mode of this therapy involves the individual to attain sedation, calmness, tranquility or a stimulation of activities of brain.
* Promoting the functions of “Buddhi” and “Manas” by correcting the disturbances of “Rajas” and “Tamas”.
* relieve from stress, anxiety and depression.

Therefore, it has become a major public health problem today. Unfortunately modern medicine based psychoactive drugs have met with limited success in treatment of various neurological and psychiatric disorders due to multi-factorial nature of these diseases.

The medicinal plants in the Ayurvedic system are classed as brain tonics or rejuvenators.

**Medhya Rasayana is a group of 4 medicinal plants that can be used singly or in combinations:**

1. **Mandukaparni (Centella asiatica Linn.)- Family – Umbelliferae)**
   Act on behaviour besides being neuroprotectives brain growth promoter, inhibits the memory impairment induced by scopolamine through the inhibition of ACHE.
2. Yastimadhu (Glycyrrhiza glabra Linn.)- Family – Fabaceae

It increases the circulation into the CNS system, improves learning and memory on scopolamine induced dementia.

3. Guduchi (Tinospora cordifolia (Wild) Miers)- Family Menispermacea

possess learning and memory enhancing, antioxidant, and anti-stress action, enhances the cognition in normal and cognition deficits animals in behavioural test. It is useful for treatment of bhrama (Vertigo), in improving behavior disorders, mental deficit and IQ levels.

4. Shankhpushpi (Convolvulus leuricaulis Chois)- Family Convolvula-ceae

Effective in chittodvega (anxiety disorders), reverses the social isolation stress-induced prolongation of onset and decrease in pentobarbitone-induced sleep, increased total motor activity and stress-induced antinociception in experimental model

The formulation of Medhya Rasayana drugs are of two types:-

1. Shita Virya and Madhura Vipaka

It promotes kapha and enhances “Dharana Karma” (i.e., retention of cognition) e.g., Yastimadhu, Bramhi, Sankhpushpi etc.

2. Ushna Virya and Tikta Rasa

It promotes pitta and enhances Grahana and Smarana (i.e., grasping power and Memory) e.g., Guduchi, Vacha, Jyotishmati etc.

Medhya Rasayana drugs Rasa,guna, virya,vipaka

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Aindri (Bacopa monniera) Tikta Laghu Usna Vata-kapha Katu
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Jyothishmati (Celastrus Katu, Tikshna Usna pittahara Katu
Family – Celastraceae)

Kushmanda (Benincasa Madhur Laghu, Sita Pitta Madhur
hispidusFamily – Cucurbitaceae) Snigdha shakam

Vacha (Acorus calamus Katu, Laghu, Usna Kapha-Vata Katu
Linn., Famly – Araceae) Tikta Tikshna shakam

Jatamansi (Nardostachys Tikta, Laghu, Sita TriDosha Katu
jatamansi Fam– Kasaya Snigdha shakam
Valerianaceae) Madhur

Achar Rasayana and the concept of Ayurvedic Psychology:-

Ayurveda’s approach to health and views of modern science

* Modern medicine primarily focuses on treating the disease and not on prevention
* Ayurveda goes to the root of the problem treating the cause in order to remove or prevent the disease.
* Ayurveda effectively treats chronic conditions by removing the cause, which is often related to the habitual patterns of our diet and lifestyle.
* The physical body is the product of diet and sensory inputs (i.e. lifestyle). Similarly, all ailments are the product of faulty diet and lifestyle and health is the result of right diet and lifestyle. This concept is the basis of health promotion and disease prevention.

Āhārasambhavaṁ Vastu Rōgaścāhārasambhavāḥ
Hitāhitaviśeṣāca Viśeṣaḥ Sukhaduḥkayōḥ
(Caraka Samhita Sutrasthan 28–45)

* Ayurveda is continually addressing the body, mind and spirit as a whole.

Concept of Achar Rasayana (behavioral medicine):-

Achara rasayana, as described by Charaka, says that everyone who wants to have a long life span and to prevent psychosomatic disorders should be careful to observe the following rules:
* Achara rasayana is a unique concept in Ayurveda that implies moral, ethical, and benevolent conduct.

* Truth, nonviolence, personal and public cleanliness.

* Mental and personal hygiene, devotion, compassion.

* These behaviors bring about rejuvenation in the body-mind system.

* One who adopts such conduct gains all benefits of rasayana therapy without physically consuming any material rasayana remedy or recipe.

* The concept of achar rasayana is to change our behaviors in order to reverse the disease process and stay in balance. The highly technical terms and aspects of this branch of Ayurveda are available in textbooks.

* According to Charaka One who follows very optimistically all codes of conduct (achar rasayana) need not take other Rasayanas, and those who take other Rasayanas without following code of conduct do not receive the optimum results of rasayanas.

**Achara Rasayana-Principles:-**

* Persons who are truthful and free from anger,

* who are devoid of alcohol and sex indulgence,

* who do not indulge in violence (himsa) or exhaustion,

* who are peaceful and pleasing in their speech, who practice japa (incantation) and cleanliness,

* who are stable and steady, who regularly practice charity and tapas (penance),

* who regularly offer prayers to the gods, teachers, preceptors and old people,

* who are absolutely free from barbarous acts,

* who are compassionate,

* whose period of awakening and sleep are regular,

* who habitually take milk and ghee,

* who acquainted with the measurement of (things appropriate to ) the country and the time,

* who are experts in the knowledge of rationality, who are free from ego,
* whose conduct is good, who are not narrow minded, who have love for spiritual knowledge,
* who have excellent sense organs,
* who have reverence for seniors, astikas (those who believe in the existence of God and validity of the knowledge of the Vedas), and persons having self-control
* Who regularly study scriptures, get the best out of rejuvenation therapy.

If persons endowed with these qualities practice rejuvenation therapy, they get all the rejuvenation effects described above.

Carak-Samhita, Chikischastana - Chapter 1

**Analysis of Ayurvedic Achara Rasayana with regards to Modern Lifestyle:-**

1. **Satya vadinah – truthfulness**

   When we live life without being untrue to our self and others, the physiological response from stress in the body is the main cause of many diseases in the modern world.

2. **Akro dhinah – do not be angry**

   Anger creates a rush of blood, which then raises the blood pressure as well as the heart rate. Stress triggered by anger disturbs the harmony of the physiological environment of the body.

3. **Madya Nivrati – do not indulge in alcoholic drinks.**

   Alcohol can raise the Pitta, or fire, in the body, which can be contraindicated for people with aggravated Pitta conditions. can be harmful to many skin conditions, such as eczema, and can affect the liver, kidneys, and heart health.

4. **Maithuna Nivrati – observe celibacy and the sexual act according to the code.**

   Perform the sexual act based on the season, time of day, and emotion of both partners. According to the texts in Ayurveda, Ojas (Saptha datu sara) is our immunity, which helps us against the disease.

5. **Ahimsa – non-violence**

   Violent minds create violent bodies and a violent environment. When the body is not settled in peace and tranquility, healing is not possible.
6. **Anayasaka – avoid overexertion.**

   It is not recommended to over exert because it aggravates Vata, which is the air quality of our body physiology. Ayurveda says to exercise to fifty percent of your maximum capacity.

7. **Prashantam – be calm and peaceful in mind.**

   The body heals itself when the mind is tranquil and is not in a state of emergency. We can gain clarity about our actions and deeds so we can make better choices each and every moment.

8. **Priya vadinah – do not hurt others with your speech. Speak pleasantly.**

   Do no harm is the core principle of every medicine practices. Physical, emotional or verbal abuse is to be avoided to live in harmony with our self and others.

9. **Japa para – remember always the creator of the Universe (God).**

   Having connection with the creator develops focused mind and cultivates centeredness and grounding. Spiritual connection with the creator makes us a conscious being. This will help us take right choices and actions in life for our health and well-being.

10. **Soucha Para – Purity**

    Personal hygiene and cleanliness are major indicators of one’s good health. Impurities on both internal and external body clog up the channels or tissues in our body that is key to healthy metabolism.

11. **Dheera – Patience**

    When there’s victory of mind, then there’s victory in life. Being courageous for good purpose mean giving up those habits that no longer serve us and implementing those that benefits for our overall well-being.

12. **Dana – Charity**

    Accumulation of things we do not need or over consumption creates not just the physical clutter in the space we live in but it reflects the lack of clarity in mind.

13. **Tapaswin – Austerity**

    understanding one’s own belief and living in virtue. Imposing one’s own religious views and beliefs on others can be self-destructive. But rather how can we make a difference by doing virtuous acts based on our own belief system
14. Samadara – Be respectful

There is always a training or teaching involved in one’s evolutionary process. Giving respect to peers and elders are a common decency of a healthy society.

15. Anrashamsya – do not be cruel to anyone.

Cruelty breeds hatred; makes our heart and mind unsettled. If we were to live in harmony with nature and our true essence is unconditional love, why would we then be cruel to anyone may that be animals, birds or fellow humans.

16. Nitya karuna vedinah – be merciful to all who are in need of help

Human beings have the capacity to rise to the occasion and give to those in need. Sympathy and empathy are essential in one’s own evolutionary process.


According to Ayurveda, different organs of our body are active at different times of day and night. For example, liver is active between 12-2 am in the morning while small intestine is active between 12-2 pm in the day. For the optimum function and health of these organs, we should be in a restful state of sleep during the time when liver is processing the toxins and should be awake during the day when small intestine is actively digesting foods. If we are awake in the middle of the night, the organs, which are active during that time, could not do its job in effectively.


Milk nourishes the deepest tissues and tones the body. The sedative quality of milk when used with a pinch of nutmeg is often recommended for people with insomnia. It raises the healthy cholesterol (HDL) while maintaining the bad cholesterol (LDL) and not raising it when consumed in moderation.

Ghee enhances Ojas, the subtle essence of all tissues. It increases all agnis, all digestive energies and enzymes of the body. It promotes jatharagni.

19. Desha-Kala-pramanagya – be a knower of place, time, and measures of activities.

Our body takes time to adapt to a new climate and weather conditions. When we live in harmony with nature and the season, we experience greater health of body, mind and spirit.
20. Yuktigya – Plan ahead to achieve your goals.

It is said that “failing to plan is planning to fall” in your life. Without a clear path, there is no destination. Similarly, without plans, it is difficult to reach the objectives. Tools like meditation and yoga help to gain clarity so we can plan our future effectively.

21. Anahamkari – avoid super egotism

Breaking the ego is the best possible practice in the modern day world. Onset of disease processes is intimately connected to a deficiency of ego gratification.

22. Shastachara – maintain good behavior established by Apta

The good behavior established by sages is the by-product of their discipline set through their experiences of the ups and downs of ever changing life. These can be guiding principles for our own personal journey through life.

23. Asamkiran – be generous and sharing

Giving is receiving; the more we give, the more we receive. Sharing cultivates caring of others and in turn, caring for you. Generosity creates harmony with family and friends, neighbors and co-workers.

24. Addhyatma Parayanam – be conscious

A conscious mind is a pure mind or a Sattvic mind. Sattva is the impulse to evolve, to go forward, the relationships between formal mindfulness practice and improvements in psychological functioning, suggesting that the practice of mindfulness meditation leads to increases in mindfulness, which in turn leads to symptom reduction and improved well-being (Journal of Behavioral Medicine. Web. 23 Jul., 2011).

25. Upasitarah vriddhanam – respect and serve your elders.

Elders have showered us with so many blessings – giving birth, raising us, and giving us knowledge and wisdom in order to weave through life with the utmost grace. They do not just earn our honor and respect but we are who we are because of them. Serving them is serving your own soul.

26. Upasitarah Astikanam – respect and serve priests, sages, and saints

We can learn much from their path of righteousness. One way to learn that goodness is to serve them or have respect for their path of excellence.
27. Upasitarah Jitatmanam – respect and serve the people

We are pulled in so many directions because of our desires to be healthy, wealthy, and powerful. Our senses cause desire. Healthy desires are good for overall wellbeing.


A focused and devoted mind can conquer any obstacle in life with utter grace. Having engaged in religious activities gives us a meditative mind, which has clarity and precision.

29. Shastra para – continually study new sciences, advances, research,

It is important to have an understanding of all practices including holistic and modern sciences to maintain the health of a healthy person and treat the diseased. When we put our heart and mind into combining all practices, new advances, and research in treating the root cause of an imbalance.

This should be considered as supplementary procedure for the treatment. Ayurveda prescribes certain rules for maintaining a healthy state of mind. This is called an ethical regimen (Sadvritta). These are not simply moral principles of right conduct that are applicable to all people of all times and all places. Practicing these rules gives balance and peace of mind prevents & cures psychosomatic diseases (Quoting Charak Chikisathan Chapter 1:4, 30-35; Ranade 34).

Yoga And Ayurveda Sister Sciences – prevent Psychosomatic Disorders:-

Life (Ayu) is the combination (samyoga) of body, senses, mind and reincarnating soul. Ayurveda is the most sacred science of life, beneficial to humans both in this world and the world beyond. (Charaka Samhita, 1.42-34) Yoga and Ayurveda are sister sciences that developed together and repeatedly influenced each other throughout history (Frawley 5). The Yoga Sutras, the main classical text on Yoga, defines Yoga as “the calming of the operations of consciousness.” (Yoga Sutras of Patanjali, Book I, Sutra 2). Classical Yoga provides an eightfold approach (Asthanga) to achieve its aim of reintegration. These eight “limbs” are not simply steps or stages, though they do follow a certain sequence (Frawley, 263).

According to the Yoga Sutra of Patanjali, this is the eightfold path:-

* Yama – Rules of social conduct
* Niyama – Rules of personal Conduct
* Asana – Physical postures: right orientation of the physical body
* Pranayama – Breath control: right use of the vital force
* Pratyahara – Control of the mind and senses
* Dharana – Concentration: control of attention
* Dhyana – Meditation: right reflection
* Samadhi – Absorption: right union

Ayurvedic medicinal plant products and formulations are most convenient and have greater acceptance amongst the users due to their easy availability and minimum side effects.

Plant based formulations may be effectively used for the treatment of psychosomatic disorders.

**Plant Name, Common name, Useful part Actions/uses:-**

1. Asparagus racemosus Willd. (Liliaceae) Satavari Root Medhya, Rasayana,
2. Bacopa monnieri (Linn.) Penn. (Scrophulariaceae) Brahmi Whole plant Medhya,
3. Clitoria ternatea Aparajita Dried leaf Medhya, Unmada,
5. Emblica officinalis Gaertn. (Euphorbiaceae) Amalaki fruit Medhya rasayana
6. Glycyrrhiza glabra Linn. (Fabaceae) Yastimadhu root Medhya rasayana
7. Moringa oleifera Lam. Sigru Dried seed Atinidra
8. Mucuna prurita Hook. (Fabaceae) Atmagupta Seed Medhya Rasayana
9. Nardostachys jatamansi DC. (Valerianaceae) Jatamansi Dried rhizome Manasaroga,
10. Santalum album Linn. Sveta Chandana Dried heart Bhrama
11. Vitis vinifera Linn. (Vitaceae) Draksa Dried maturefruits Madatyaya
12. Withania somnifera Dunal (Solanaceae) Aswagandha Root Medhya rasayana

**Some Ayurvedic formulation used in psychosomatic disorders:-**

1. Aswagandharista AFI, Part I, 1:6 Murccha, Apasmara, Unmada
2. Saraswatarista AFI, Part I, 1:36 Apasmara, Manasa dosa, Smritiksina
5. Dhatryadi Ghrita AFI, Part I, 6:21 Mada, Murccha, Unmada
7. Brahmi Ghrita AFI, Part I, 6:32 Apasmara, Unmada,
8. Maha kalyanaka ghrita AFI, Part I, 6:33 Buddhi daurabalya, smritiksaya, apasmara,
9. Maha panchagavya AFI, Part I, 6:36 Apasmara
10. Sarasvata Ghrita AFI, Part I, 6:43 Improves Medha, Smriti
11. Candanadi Taila AFI, Part I, 8:14 Apasmara, Unmada
12. BalaasvagandhalaksadiTailaAFI, Part I, 8:36 Unmada
13. Maha Narayana taila AFI, Part I, 8:45 Unmada
15. Rajata Bhasma AFI, Part I, 18:13 Apasmara
17. Svarna Bhasma AFI, Part I, 18:20 Budhiksaya, Apasmara
22. Yogendra Rasa AFI, Part I, 20:31 Apasmara, Unmada

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