

CONCEPT OF PANCHAMAHABHUTA IN AYURVEDA – A SCIENTIFIC APPROACH

Dr. Ashok Naikar^{*1}, Dr. Savita², Dr. Renuka³, Dr. Gururaj⁴ and Dr. Pramod⁵

¹HOD, Department of Shalya Tantra, N.K. Jabshetty Ayurvedic Medical College & P.G Centre, Bidar.

²Third year P.G Scholars, Department of Shalya Tantra, N.K. Jabshetty Ayurvedic Medical College & P.G Centre, Bidar.

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*Corresponding Author: Dr. Ashok Naikar

HOD, Department of Shalya Tantra, N.K. Jabshetty Ayurvedic Medical College & P.G Centre, Bidar.

ABSTRACT

Vedic literature gives some knowledge about the panchamahabhutas later, Upanishads elaborated them. Darshana's have further utilized this theory to explain the animate and inanimate creation. Ayurveda which is upaveda of atharvaveda naturally, follows panchamahabhuta theory. History of medicine reveals that Panchamahabhuta theory is similar to Biochemistry – western medicine was also based upon four or five elements theory in the earlier days. Emplidocles(492-432 BC) (lep.utm.edu) philosopher and poet his works on nature and purifications gives four element theory of matter Earth, Air, Fire, Water, Later Hippocrates father of medicine added the fifth element Ether and accepted fifth elements theory. The treatment mainly depends upon panchamahabhutas theory quoted "Bhutebyo hi param yasmnat nasthi chinta chikitse" (sushruta). Earlier many scholars have tried to interpret this theory with metaphysics and Biophysics. But it appears to be an attempt made to find out the chemistry behind this unique concept.

KEYWORDS: Panchamahabhuta, Upanishad, Ayurveda, Biochemistry, Biophysics, Metaphysics.

INTRODUCTION

There is a lot of resemblance between the construction of human body, its function and the surrounding nature. The whole nature is made up of 5 basic elements making up the composition of the human body gets impregnated with atma or soul, the life gets manifested in the mass of 5 elements which we call as physical body.

The current understanding of panchamahabhuta can be categorized under 2 parts.

- Panchamahabhuta as important factors for biological process.
- Panchamahabhuta involved in the creation of universe i.e. subtle forms of tanmatras

In addition to the correlation with 5 spins in quantum mechanics, the panchamahabhuta are important links in creation is evolved from unmanifest (Avyakta) through cosmic intelligence (mahat) and ago (ahamkara). Then the panchatanmatra (subtle forms of panchamahabhuta) are evolved from rajas dominant and tamas dominant. The panchatanmatras are important links for knowledge that allows scientists a more detailed understanding of panchamahabhutas.^[1]

(1) Panchamahabhutas in creation of life

Avyakta in the primary cause of creation, which is imperceivable in nature. In biochemistry it is the unknown cosmic energy/ radiation which is considered as the source of energy to the universe.

Mahat which is comparable to highly charged energy particles like- Positron, Meson, Neutrino etc.

Ahamkara- in creation and divided into three fragments Satwa, Rajaha, Tamah. These three elements can be correlated to Proton Electrol and Neutron respectively, they show individual conceit or vanity in the following manner.

The proton- satwa considers it as the main charge and Neutrol (Tamah) considers itself as full hedged being both Positive & Negative

From trividha ahamkara will emerge the ekadosha indriyas- Functional aspects of sensory and motor activity and panchatanmatras- physical aspect of elements.

Charaka mentioned panchamahabhutas among the the nine karana dravyas (9 basic characters of creation)

Akash (Ether), Vayu (air), agni (fire), jala(water), prithvi(land), atma(soul), manaha(mind), kala(time) and disha (direction). Again he explained the ingredients of a dravya –drug, Rasa- taste, Guna- physical property, Veerya- unmetabolised active ingredients, Vipaka- metabolized active ingredients are only panchabhautika but not considered as karana dravyas. On the other hand- sushruta's concept of creation mainly prakruti or avyakta and purusha or atma.^[2] However both the acharyas have excepted chaturvimshati or panchyustati tatwas. (24 or 25 factors of life).

Dominance of satwa or vaikorka and rajah or tejasa together with Tamas or Bhutadi ekadasha indriyas will form. In modern physiology – it is accepted that trans membranous exchange of positive and negative charges will result in all the sensory and motor functions in the body, in other words depolarization and repolarization across the resting membrane by means of positive (a+ ,

k+, Na+) and negative ions(cl-, o-) will result the bodily activities.

With the dominance of Tamah or Bhutadi and Rajah Taijasa together with satwa or vaikarika with pancha tanmatras will form.

In modern chemistry accept that atomic weight is provided by the neutron (bhutadi) and chemical behavior of the element depends upon the electrons (Taijas) in the outer shell. The protons (satwa) are placed in the nucleus along with the neutrons. This statement shows that ancient and modern concepts therefore have common approach towards the formation of elements.

After the existence of pancha Tanmatras will emerge the panchabhutas which form the base for all animate and inanimare creation.

Continuation of Creation of life

Panchamahabhuta	Akash	Vayu	Agni	Pruthvi
Physical	orbit	voilance	electrol	proton nutron
Chemical	H+	O	P-	NC+

Panchamahabhutas

Physical	Vaccum	Gases	Plasma Liquids Solid
Chemical	Hydrogen	Oxygen	Phosphorus Nitrogen Carbon

The ultimate factor, which decides about the activity of creation, is said to be purusha or atma. This is a comparable to the atomic activity since ayurveda explains atma as Chetana (activity) three types of atma are usually described in the ancient philosophy.^[3]

- Bhutamta = activity in the inorganic chemicals
- Jeevatma = activity in the organic matter
- Paramatma = activity in the galaxy which is imperceivable.

Panchamahabhutas in Biochemistry

The sukshma bhutas (C, C, P, O, H etc) will form mahabhutas i.e compounds of biomass through pancha panchikarana (polymerization) it is known that life mainly depends upon five compounds viz- Co₂, CH₃, Po₃, H₂O, NH₃. In biochemistry the utility of carbohydrates Hydrocarbons and Proteins for the body and metabolism is well explained these three compounds is as follows-

Carbohydrates = C_n (H₂O) _n

Hydrocarbon = CH₃ (CH₃) COOH

Protein = R CH NH₂ COOH

The first two compounds are mainly energy sources while the proteins are tissue buildings. This special behaviour of proteins is because of the panchamahabhutika nature. Proteins are made up of five elements – Carbon (Pruthvi), Nitrogen (Jala), Phosphorus (Agni), Oxygen (Vayu) & Hydrogen (Akash). Hence proteins are body building blocks.^[4]

Panchamahabhutas in Genetics

The Genetic codes are carried from the parents to the offspring by means of Shukra (spermatozoa) and Aartava (ovum)

In Ayurveda documented that the spermatogenesis occurs at lower temperature than body temperature and ovulation occurs at higher then body temperature. 'Sukhram Soumyam, Artavam Agneyam' ⁵Ancient texts also mentioned about the.

Beeja – spermatozoa or ovum

Beeja bhaga – parts of spermatozoa & ovum

Beeja bhaga avayava – chromosomes

Accordingly certain genetic disorders are also described eg- Vandhyatwa, Trinaputrika, Putipraja etc.

In the modern genetics it is found that 3 or 5 compounds which are involved in genetic code.

They are- Adenine, Guanine, Thymine, Cytosine, Uracil – These five compounds and their characteristics are needed for better understanding with the panchamahabhutas.

Panchamahabhutas in Anatomy

Anatomically, the human body is made up of sapta dhatu – seven tissues according to Ayurveda. These sapta dhatus are made up of panchamahabhutas and the chemical composition of these dhatus are.

1. Rasa – Jala – 90% of water 6-8% proteins, 0.855% inorganic salts.
2. Rakta – Agni – 4ml of heme and 1ml of globin = Hb.
3. Mamsa – Pruthvi – Posses amino – NH a group
4. Meda – Jala – C & OH will present in fats.
5. Asthi – Vayu – Tricalcium Phosphate.
6. Majja – Jala – ossein (protein) and large amounts of fatty materials.
7. Sukra – Jala & Pruthvi

The six major constituent elements of the body may be considered as,

Pruthvi – Carbon 50% Calcium 4%

Jala- Nitrogen 8.5%

Agni – Phosphorus 2.5%

Vayu – Oxygen 20%

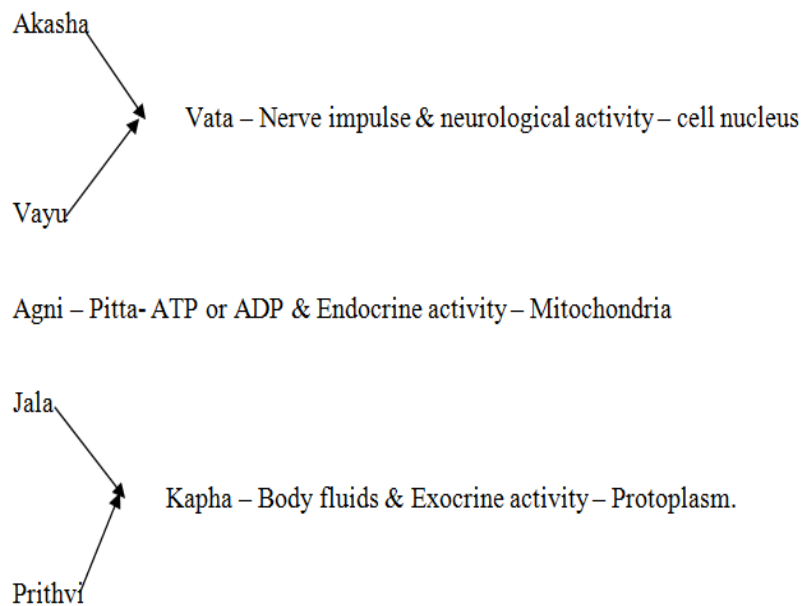
Akash – Hydrogen 10%.

Panchamahabhutas in Physiology

Ayurvedic physiology is based upon tridoshas. It is described that their physiological Status will result in Homeostasis and their vitiation results in so many disease.

"Guton physiology starts with Chapter on Homeostasis where in oxygen water & nutrient were mentioned as the balis needs of survival of life. Charaka explained the same Concept through the Chronology of srotus viz prana, Udaka & Anna.

Physiology of tridosha evolved from Panchamahabhuta



Panchamahabhutas in Pharmacotherapeutics

Ayurveda believed that the drug action depends upon panchamahabhuta configuration of a drive and fate of the drug inside the body. Some approach in the modern pharmacology which deals with pharmacodynamics- Structure related activity and pharmaco- Kinetics - Fate of the drug in the body.^[6]

Fundamentals of Ayurvedic meteria medica deals with five aspects.^[9]

Rasa -Taste

Guna- Physical properties

Veerya - Unmetabolised pharmacologically active substance

Vipaka - Metabolised pharmacologically active ingredient

Prabhava – non specific pharmacological therapeutic effect.

Ayurvedic Concept of pharmacodynamics.

Dravya- Akasha, vayu, agni substances will cause Vamana.

Jala and prithvi dravya will causes virechana.

Rasa- madhura which is of Jala's prithvi (H₂O + C = Corbohydrates) will causes nourishment of all tissues. Amla - is claimed to be Hridya (Good for Heart) known as vit c prevents the atherosclerotic Changes and thus help hearts and cvs.

Guna- Drugs like a Isafgol & Ager act on the basis of physical property (osmosis)

Veerya & Vipaka- morphine which is the ingredient of opium acts on CNS while its conjugated fraction Causes Constipation. The first effect is comparable to veerya and the Second effect to vipaka.

Prabhava The two major constitutions of Opium ie morphine and papavarine will out in two differnt ways.

The earliest one is narcotic while the later one is non narcotic.^[5]

*Ayurvedic concept of pharmacokinetics

- 1) 'रसो निपाते द्रव्यानाम्' - Effect on Rasa is known through its action on tongue
eg: pungent taste immediately results in nasolacrimal Secretions.
- 2) वीर्यम व्याधिवशात् निपतंचोपलभ्यते - Veerya can either act externally or internally i.e Bhallataka(marking nut) Causes blisters on skin when it falls on the body. The same will be usefull in different diseases when administered orally.
- 3) 'विपाक कर्मा विष्टयः' - Vipaka is assessed though the final effect of the drug on the urine faeces & Semen eg: Conjugated fraction of morphine causes constipation.
- 4) 'विशिष्टाः कर्मणामन्चैव प्रभावः' - Nonspecific properties of drug.^[7]

DISCUSSION

In Ayurveda it is well documented that panchamahabuta theory in many aspects by claiming Loka purusha samya (Similarity in Biomass and physical world). Ayurveda proved the importance of panchamahabhutas in every step of life.

Physics behind in panchamahabhutas

Akash-Vacum Vayu. Gases, Agni-plasma, Jala- liquids, prithvi- solids, their inherent gunas represent - Sabda - Sound, is related to its orbit Size eg- heating a metal Sound is produced. Here gases have radius and metals have more radius. Sparsha (Touch) is attributed to impulses produced by Vata and is perceived only by blowing air but not in vacuum, Rupa-(Colour) differs from element to element and hence calorimetry. Rasa - (Taste) is related to with liquid medium Since liquid is required. to transport the ions across the taste buds. Gandha (Smell) in related with solid particals. Since Small particals are essential for the olfactory function.

Similarly Akasha is comparable to orbit Vayu is comparable to Vailance Agni is comparable to atomic energy of radiating Jala is comparable to the proton which is mainly providing the Characterstic features of water formation to Hydrogen (water producing element) & prithvi is comparable to atomic mass which is related to the neutron.

Chemistry behind in panchamakabhutas.

It is proposed that Helium shall be Considered as the primary and purest non-reactive Akasha and Graphite is accepted as the purest and nonreactive type of prithvi in the physical world. The spectrum of biomass will be distributed between the most reactive type of Akasha and prithvi- bhutas. ie between Hydrogen and carbon

which occupy the first and Second place in the most Compound forming elements.^[10]

Oxygen is considered as Vayu bhuta Since it is essential for life (prana) and also to lit the life. This view justifies the concept of Anila - (air & fire).

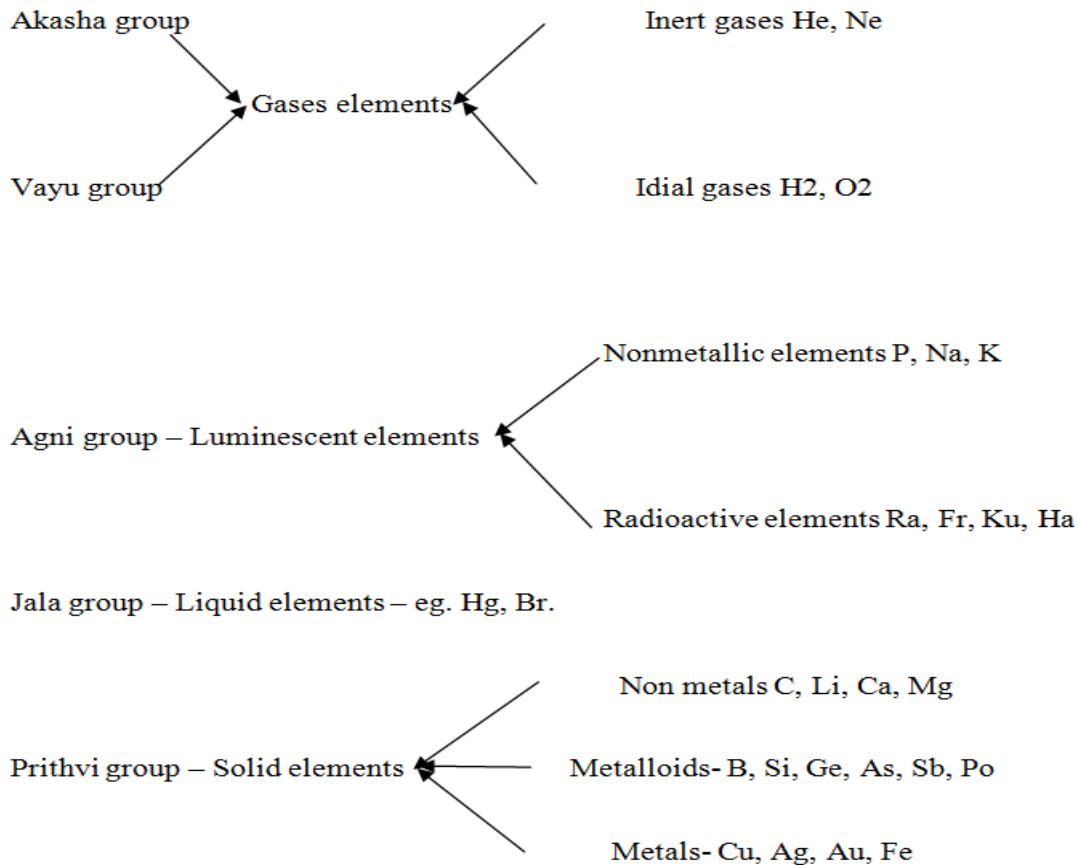
Nitrogen is the only gaseous element, which devices from the law of ideal gaseous and is easily liquefiable at atmospheric conditions. Hence is accepted as Jala. Moreover, if neither fall under inert gases nor under ideal gases.

Phosphorous is comparable to Agni Since it burns of atmospheric Conditions it become phosphate (ATP and ADP) in the biomass and acts as pitta.

Carbon is shown as prithvi in this Study because its allotrope Graphite in the most Stable Solid, At the same time C terms many organic Compounds also.

Atmas Shall be considered as the kinetic energy which is responsible for every activity in the world.

Based upon the physical Chemistry, the elements of the periodic table can be re-arranged into the following panchabhuta groups.^[8]



In this study Angony unpravasha or pancha panchikas ana are considered as quantification or polymerization, paramanu, Dwanuka and Tryanuka are compared to Atom, molecule, and compound respectively, However, this requires further study.

Present study proposed a new approach is towards understanding the panchmahabhuta theory.

CONCLUSION

Panchamahabhuta theory is based upon physical chemistry in many aspects. It may also concluded that pancha Tanmatras are physical as far as Sound, Touch, Luminescence, Taste & Smell are Considered, and Chemical as for as ionic States of elements are considered likewise panchamahabhutas are physical states of matter i.e Vacuum, Air, Plasma, Liquids, and Solids as well as Chemical States i.e elements like H₂, O₂, N₂ P & C.

An attempt has been made in this article to explain the scientific basis of panchamahabhuta theory with physical Chemistry – sushruta's words.

एकं शास्त्रम अधियाने न विद्या अथ शास्त्र निश्चयम I

One who knows Only one branch of sciences Cannot acquire complete knowledge are the guidelines the further study on Panchamahabhuta theory.

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