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Ancient Indian Atomism in Ayurveda

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Abstract :

Ayurveda follows and accepts authorities of Veda which is oldest available literature on this planet. Ayurveda is based on its own principles, philosophy and metaphysics. To develop Ayurveda systems of life sciences used various Darshanas (Schools of philosophy) available at that time. The SankhyaDarshana, YogaDarshana, NyayaDarshana, VaisheshikaDarshana, Poorvamimansa and Uttarmimansa believing existence of the God and in Vedas known as AstikaDarshana, Also CharvakaDarshana, Jain Darshana and Buddha Darshana in the development of its own thinking and principles[i].

Introduction

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VaisheshikaDarshana was founded by MaharshiKanada proposed for the first time theory of atomism in ancient India[iii]. This school of philosophy is known for its insight in naturalism and is one of the six orthodox schools of Hinduism that is Vedic system of ancient India. In its early stages the Vaisheshika was an Independent philosophy with its own metaphysics, epistemology, logic, ethics and soteriology[iv].Vaisheshika sutra is main scripture on VaisheshikaDarshana and the period of Kanada is described 1360 BC in H. Vue'sDashapadarthasangraha.

The epistemology of Vaisheshika school of Hinduism like Buddhism accepted only two reliable means to knowledge 1) Perception and 2) Inference[v] and it is form of atomism in natural philosophy[vi]. It postulated that all objects in physical universe are reducible to Paramanus (atom) and once experiences are derived from the interplay of substance (a function of atoms, their number and their spatial arrangements, quality (Guna), activity (Karma), commonness (Samanya), particularity (Vishesh) and inherence (Samavaya, inseparable connectedness of everything)[vii]. As per VaisheshikaSchool, knowledge and liberations were achieved by complete understanding of the world of experience[vi].

Vaisheshika described that infinite, indestructible and eternal Paramanus (atoms) are responsible for creation of universe, all organic and inorganic substances. The union of atoms is responsible for creation of universe and disunion of atoms is responsible for destruction (Pralaya) of universe[viii]and to prove above philosophy Paramanuvada (atomism) had been described for the first time in ancient India by MaharshiKanada. Vaisheshika espouses from the atomism that reality is composed of four substances (Earth, Water, Air and Fire). Each of these four elements are described as atom (Paramanu) and composite (Karyadravya, divisible substances)[ix].

An atom is that which is indestructible, indivisible and have a special kind of dimension called small (Anu). The composite (Effect) is that which is divisible in to atom, whatever human being perceive is composite and even smallest perceptible thing fleck of dust has parts which are therefore invisible[x]. The Vaisheshika visualized the smallest composite things asa part triad (Trayanuka) with three parts, each part with dyad (Dvayanuka), he believed that dyad has two parts, each of which is an atom with their number and spatial arrangements[xi]. The Paramanus are indivisible and eternal they can neither be created nor be destroyed[xii]. Each Paramanu possesses its own distinct (Vishesha) i.e individuality[xiii]. The measure of

partless atom is known as ParimandalaParimana. It is eternal and it cannot generate the measure of any other substance. Its measure is its own absolutely[xiv].

In ancient Western World the word atom comes from Greek adjective, atom meaning indivisible or uncuttable[xv]. Since 19th century chemist began using the term in connection with growing number of irreducible chemical elements. Democritus (460 BC) an ancient Greek soratic philosopher was the first to propose the idea that all matters is made up of tiny particles (atoms).

AntonineLavoiser (1743 -1794) a French Nobleman and chemist determined "the Law of Conservation of Matter" by extensive experiment[xvi]. Joseph Proust (1754-1856) determined "the Law of Constant Composition" (Compound always contains the same proportion by mass of elements)[xvii]. John Dalton (1766-1844) a British Chemist and Physicist formulated theory of matter with four postulations, 1) elements are composed of small particles called atom. 2) All atoms of given element are identical, 3) atoms can neither be created nor destroyed in chemical reactions, 4) compound always contains the same proportion of elements. He proposed that each chemical element is composed of an atom of single unique type and though they can be altered or destroyed by means, they can be combined to form more complex structures[xviii].

J.J. Thomson (1856-1940) an English physicist revolutionized the knowledge of atomic theory by performing a CRT experiment and determined that X-Rays are composed of negative particle called electron, determined the Mass: Charge ratio for an electron came up with "the Plump Pudding Model of the atom"[xix]. The Curies (Marie and Pierre) in 1867-1934, French physicist and chemist discovered two radioactive elements Prolonium and Radium. Ernest Rutherford (1871-1937) New Zealand born British physicist perform "the Gold foil experiment" and determined that atom contains a very small positively charged core at the centre called this core as the Nucleus, came up with nuclear model of atom with electron orbiting around[xx].

Neil Bohr (1885-1962) Danish physicist made fundamental contribution to understanding atomic structure and Quantum theory. The Bohr's model can be summarized by four principles, 1) electron occupy only certain orbit around the nucleus. Those orbits are stable and are called stationary orbit, 2) each orbit has an energy associated with it. The orbit nearest the nucleus has an energy E_1, the next orbit E_2 and so on. 3) Energy absorbed when an electron jumps from lower orbit to higher one and energy is emitted when electron falls from

higher orbit to lower orbit,4) the energy frequency of light emitted or absorbed can be calculated by using difference between the two orbital energies[xxi].

Hennery Moseley (1887-1915) an English physicist found that atoms of given element contain the same number of protons in the nucleus[xxii]. Erwin Schroedinger (1887-1961) an Australian physicist expanded the idea that electron behaves as particle AND waves this development the quantum mechanical model of atom[xxiii]. James Chadwick (1891-1974) an English physicist discovered the neutron. He played vital role in atomic theory by discovering the neutron. Neutrons are located in the centre of an atom in nucleus along with protons. Neutron have neither positive nor negative charge but contribute the atomic weight with same effect as a proton[xxiv].

Expediency of Paramanuvada (atomism in Ayurveda): Ayurveda explains all the organic (Sendriya) and inorganic (nirendriya) substances of the universe are made up of five basic elements called Panchamahabhuta, namely earth, water, fire, air and ether[xxv]. These basic elements are made up of their respectiveparamanus. Our body is also made up of these five elements. According to Sankhya school of philosophy Panchamahabhutas are made up of panchatanmatras and knowledge of it alone is not possible by sense organs, these panchatanmatras are shabda, sparsha, roopa, rasa and gandha and are avishesha[xxvi]. In Vedant school of philosophy, it is described that tanmatras remains in its natural pure micro stages before development of macro Mahabhoota. Panchatanmatras are very minute, eternal, micro and atindriya and are not associated with Happiness, sadness, allureness, Dharma that's why called as Avishesha[xxvii]. These Tanmatras were referred by Vaisheshika as Paramanu andCharaka as SukshmaMahabhoota (Micro). Paramanus of VaisheshikaTanmatras of Sankhya philosophy and sukshma (Micro) mahabhuta of Charaka is one and the same thing[xxviii]. These Tanmatras and Paramanus have an attributes Satva, Raja and Tama and are opposite to each other but stays collectively in the state of equilibrium in Paramanu or Tanmatra[xxix].

All the organs, enzymes, digestive juices, hormones, joints, three humours (Air, bile and Phlegm) body tissues, (chyle, blood, muscles, bones, marrow, semen), three excretes (stool, urine and sweat), sense organs (ear, eye, nose, tongue and Skin), Motor organs and Mind are made up of five basic elements. Apart from human body all animals, plants, minerals, metals and whole universe is made up of these five elements by union of theirparamanus (C.Sha.7/17, 4/6, 2/33, 1/28, Su.sha 1/27)[xxx].

Discussion: Ayurveda have used all available schools of philosophy in the development of its own scripture and science. All the substances are made up of five basic elements, the micro structure of these five elements are called Tanmatras or Paramanus (Atoms) or Sukshma (Micro) Mahabhoota. CharakaSamhita is written approximately 1200BC and it reflects Principles of atomism in it, proves that Vaisheshika School of philosophy was as old as Charaka School of physicians. In ancient IndiaVaisheshika used the word Paramanu for indivisible part of substance and when two or more atoms join together (Dvayanuka, Trayanuka) molecule is formed. When two different elements amongst five basic elements join together changes in to compound and various compounds formed are responsible to create all organic and inorganic compounds. Law of conservation of atom is described in Vaisheshika sutra and mentioned atom as eternal. Although experimental studies on atom started since 19^{th} century AD in western world, proposed its structure nucleus, proton, electron and neutron along with design of atomic structure. The study of atomic energy started after the establishment of various atomic theories. The model and stucture of atom given by Neil Bohr is accepted by modern physicist.

When describing formation of Universe, Ayurveda adopted theory of Sankhya school of philosophy and explains all organic and inorganic substances are made up of Union of various Paramanus (Atom) or Tanmatras. Satva, Raja, Tama are attributes (Mahaguna) lives with atom. Satva is light and light emitting attribute and in my opinion it may be correlated with proton, Tama is heavy may be correlated with neutron and Raja is gatishila (Movable), may be correlated with electron. These Mahaguna remains in the state of equilibrium in atom. Ayurveda used atomism in embryology, human body, physiology and treatment (PanchabhautikaChikitsa).

Conclusion:

Thus in ancient India atomism was described with its constituents and used in developing Ayurvedic principles and Scripture.

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