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VEDIC MICROBIOLOGY: MICROBIOLOGY IN THE VEDA –A REVIVED HISTORY

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The present paper proposes to present the microbiological scenario as depicted in the ancient Sanskrit texts. I am presenting a new branch of microbiology but oldest in its own way –Vedic Microbiology.

INTRODUCTION: —From ancient times microorganisms (~*Kṛīmī*) have fascinated the humans as these invisible creatures occupy significant position in the Brahma's creation. Microbes are known for their disease producing ability as well as their beneficial role in the nature. Microorganisms include Bacteria, viruses, fungi, protozoa, helminthes, and algae. Generally, it is believed that microbiology evolved in western hemisphere. We owe great respect to the role of western scientific community in bringing out the science of microorganisms with the aid of sophisticated instruments and chemical reagents, which has consolidated microbiology in the Veda and other scientific Sanskrit texts.

Vedic Microbiology encompasses that science of microorganisms, which is given in the ancient Vedic scientific texts. A new branch of Vedic sciences and that of Microbiology that I would like to introduce.

VEDIC MICROBIOLOGY: TOXIN THEORY OF DISEASE AND GERM THEORY OF DISEASE: —

Microbes are causative agents of many diseases was an enigma for the western intellectual people. Microbiology began (*in western hemisphere*) when people learn to grind lenses from pieces of glass and combine them to produce magnifications greater enough to enable microbes to be seen.¹ The Germ theory of disease was established by Robert Koch, Louis Pasteur and De Bary.² Thus, there was beginning of golden period of microbiology in the western hemisphere.

As far as Vedic Bhārat is concerned, the Germ theory of diseases was first established by Vedic R̥ṣi's and was recorded in Vedas. In fact, Vedas are first text in the world to record nexus between microbes and disease. Rigveda, Yajurveda, and Atharvaveda followed by Āyurvedas provide rich insight into microbial sciences that existed in Bhārat many thousands of years ago.

In Rigveda, R̥ṣi? Agastya pinpoints out that there are two types of poisonous creatures viz. those exceedingly poisonous and others are less poisonous. Some are visible venomous, while others are invisible one. Some of them live in water, while others live on earth.³ Perhaps R̥ṣi? Agastya is the first person to state that invisible creatures are also toxin producers. He also prescribes antidotes as remedy for the poison. Atharvaveda reiterates that whenever there is accumulation of toxins within the body, disease results.⁴

Atharvavedic sūktas namely *Krimijambhan?am*, *Kriminās?nam*,



Krimighnam and *Raks'ogham* gives ample information about microorganisms, its shape and size, its organ / organelles, sexual differentiation, family, ecological niche, its diseases producing ability, its contaminating property, its transmission from person-to-person (Susruta calls it 'Naranarram') via biological vector and by physical agents etc.

The Atharvaveda also speaks of various shape and size of microorganisms. These *Krimi* can be black red, dark-brown eared,⁵ black with white arms, variegated with white underparts,⁶ and some possess poison-sac.⁷ Others are described as being spotted and whitish with three heads and three horns.⁸ Others are said to be vulture (-like) (conveys saprophytic microbes) and wolf (-like) (conveys pathogenic microbes).⁹

Krimi also possess organ/organelles that work equivalent to eyes, heart, tongue and teeth.¹⁰ The fumes of yagna lead to destruction of eyes in some *Krimi*, in others heart is destroyed, and still in others tongue and teeth are inactivated. The motility of microbes is mentioned too. The *R?si?* reveals that these microbes move in the eyes, nose and teeth. In other words specific microbes infect specific organs.¹¹

Some of them exhibit sexual differentiation.¹² Microbiologists know that some bacteria like *E.coli* has F⁺ and F⁻ strain respectively called male and female cells, where F factor is known as sex factor or fertility factor.

As far as ecological niche of microorganisms are concerned, they are the only creatures that harbors all the regions of this planet due to their small dimensions, high multiplication rate and high adaptability. Atharvaveda highlights that these microbes are present in the earth, in waters, and in the upper strata of the atmosphere, in the forests, in the mountains. Not only this they are also present in the plants, in the cattle and in the human's too.¹³

On contamination, Atharvaveda warns us that disease-causing microbes enters into food, water and milk, which when consumed causes illness in man.¹⁴ One of the Yajurvedic verse makes it clear that microbes adheres to the containers from which food or drink has been taken. When another person uses the same container without washing he suffers from illness.¹⁵ Thus Vedas proclaims man to maintain hygienic conditions.

By the same token, surgical operations were aseptically performed during Vedic period. The wounds and abscesses were washed and made germ free by using warm water and antimicrobial herbal pastes were employed. A certain incense were kept burning all the time in the operation room.¹⁶ The hospitals were equipped with many *havan kundas*, which produced fumes that were beneficial in disposing off the nosocomical infections.

According to Chander Chakraborty, "The diseases that are produce by the tyranny of the Gods (through thunder and lightning), through curses (phobia), Sorceries of the Atharvaveda (infectious diseases), and through contagion (syphilis) are daiva-vala (god-sent, i.e. beyond human control). These diseases are of two kinds as occasioned by thunder-lightning or by demons (infectious diseases as cholera or small -pox). And again they are of two kinds -through accidents (as thunder lightning) or through contact (as syphilis)".¹⁷

Epidemic diseases have been mentioned in the Atharvaveda in which many villages were afflicted and eroded.¹⁸ The great political scientist *Kauti?lya* in

Arthashastra points out that air is subject to contamination by toxins. In Susruta Samhita 6/18 there is separate chapter named -*Janpadodhawansa rog*. One of the great social philosopher *Vatsyâyana* in his work *Kamasutra* has advised woman to find a man who is free from diseases like tuberculosis and leprosy and firm addiction to alcohol also.¹⁹ It is worth mentioning that Vedas are one step ahead of today's scientists and microbiologists in terms of stating that to maintain a toxin free life as well as germfree life.

LAW AND VEDIC MICROBIOLOGY:—Manu is regarded as the oldest reputed lawmaker in the world. His famous work *Manusmrt?i* deals with the laws of creation, progress and self-realisation. In ancient times the characteristics of microorganisms were also taken into consideration in the law. *Manusmrt?i* and *Bhrtr?hari* 's *Nitis?atakam* are leading examples.

Manu states that, disciples who uses the property of his guru falls in the Microbial *Yoni* in his next birth. In *Nitis?atakam* 9, *Bhrtr?hari* has beautifully portrayed that the dogs enjoy the flavor of human bones. That bone is messed with microbes, wet with saliva, smelling, fleshless. The dog does not feel shy even if *Indra* i.e. GOD is standing besides. *Bhrtr?hari* points out that the low-grade persons are unable to know about the valuelessness of material object. Interestingly, in Nyâya Philosophy, a Nyâya namely, *Vis?hkrimiNyâya* is found. This maxim is about the worms / microbes bred in poison. It is used to denote a state of things, which though fatal to others, is not so to those who being bred in it, are injured or neutralized to it, like poison which, though fatal to others, is not so to the worms / microbes bred in it.²⁰

VEDIC SCIENTIFIC TERMS FOR MICROORGANISMS:—The word "*Krimi*" or "*Kr?mi*" has been used extensively in Vedas, Âyurvedas, and large number of other Sanskrit texts. According to Yâskâc?harya, "A *Krimi* is that which grows and develops on a decaying corpse/matter."²¹

In lieu of *Krimi*, Veda also extravagantly uses equivalent terms viz.—*Adr?s?ta*, *Râks?as* (*Raksah?*), *Pis?câch*, *Yâtu*, *Yâtudhân*, *Kimidi*, *Gandharva*, *Apsarâ*, *Amtoâ*, *Dûran?âma*, *Asur* etc.²²

The term like *Râks?as*, *Pis?câch* are commonly used in Bhârata meant for giant demons is only an imagination. In fact these commonly used term are referred for pathogenic microbe. The mystification regarding the use of these term with respect to microbes gets cleared on pondering upon the Atharvavedic mantra no.5/29/5,6,7 where in it is given that *Pis?câch* i.e. diseases causing microbes have eaten away the flesh of man (infected the body). Further they are also found in the eatables, milk, cereals etc. (contamination done by pathogens). So it is almost impossible for a giant to enter in human body and in milk, cereals etc. This all convey that such *Pis?câch* is meant for disease causing agents.

These are the Vedic patented terms for microbes, which has hidden meaning; see *Adr?s?ta*—This term means "the unseen" has been used in both Rigveda²³ and Atharvaveda²⁴ pertaining to the living invisible creatures. The sun has been called *Adr?s?ta* -han i.e. "destroyer of (invisible) Microbes".²⁵ *Râks?as*: - i.e. one should refrain from it, as it kills individually and moves at night and destroys the nutritious seven elements of the body i.e. *Rasa* (lymphchyle), *rakta* (Blood), *mâm?sa* (Flesh), *Meda* (Fat), *asthi* (Bones), *majjâ* (Marrow) and *aukra* (Semen)²⁶. *Pis?câch* — "*piûitâmûnâti*" i.e. which eats flesh (flesh eater e.g.



S.pyogenes).²⁷ *Yātu* : —That which can reach and give pain (e.g. *Helicobacter pylori*).²⁸ *Yātudhân*: — i.e. that which gives pain.²⁹ *Kimidi*: — i.e. oh! What is that which is moving?³⁰ *Gandharva*: — i.e. that which sings or speaks (insects) i.e. that which are attracted towards smell or that which recognizes smell.³¹ *Apsarâ*: — that which carry out mobilization or which comes out of water. Also that which moves in water.³²

CARAK'S CLASSIFICATION OF MICROORGANISMS:

Carak has classified microorganisms in his treatise –Carak samhita. According to Carak there are two different kinds of microorganisms, viz. internal and external. They are further subdivided on the basis of their place of origin, viz., external dirt, phlegm, blood, and stool.

Microbes, which are phlegm born, are of seven different types: —1) Some of them are thick; 2) Some are tapes made of leather; 3) Some like earthworms; 4) Some like sprouts of paddy; 5) Some thin; 6) Some long; and 7) Some of these are very minute in the body

Some of them are white in colour, whereas the others are copper coloured. They are named, 'antra'da, udhara-besta, hridaya'da, maha'guda, churu, darbha-kusuma, and sugandha.

Those microbes, which grow in blood, have their place of origin in the blood-carrying veins and arteries. They are very minute in body, are devoid of feet, globular in size, and copper coloured. They are of six different kinds, and are named, "keshada, roma-bidhwansa, roma-dwipa, urumbara, saurasa, and ma'ta'," respectively. They give rise to leprosy.

Those microbes, which grow in stool, have their place of origin in the pakva'shaya or the lower part of the stomach. These microbes are of five different kinds, viz., 1) Those, which are thick, globular, and plump in shape, 2) those which are blackish red in colour; 3) those which are yellow; 4) those which are white, and 5) those, which are black.

They are named a) *kakeruka*, b) *makeruka*, c) *sausura'da*, d) *sashula'khyā*, and e) *leliha*, respectively.³³

COW, YAJNA—TECHNOLOGY AND VEDIC MICROBIOLOGY:—

The healing properties of cow dung and cow's urine are also mentioned in ancient Hindu texts. Cow dung has antibacterial properties. This is why we use dried cow dung cakes to make fire in the agnihotra process.³⁴ The research conducted by doctors at the cow-protection commission indicates that the urine can cure anything from skin diseases, kidney and liver ailments to obesity and heart ailments.³⁵ The cow dung and urine possesses carbolic acid and manganese, which are responsible for antimicrobial activity. Also aurum oxide is found, it imparts antimicrobial and antitoxic activity of dung and urine. The presence of sodium and Iron makes it blood purifier.³⁶ Cow's urine is an extremely effective pesticide and plant fertiliser. Italian scientists have discovered the cow dung smell has the power to prevent malaria. Russian scientists believe cow dung could be used as a sort of protection against radioactivity.³⁷

After extensive research the German scientists discovered that the smoke emitted by agnihotra has the power to destroy the bacteria and viruses that are responsible for creating toxin in the blood.³⁸ It has been found that the energy produced by agnihotra process is capable of purifying eight hundred square feet of atmospheric air surrounding the spot of performance of agnihotra. Experiments conducted by the bacteriological department of Ferguson college at Pune has dis-

covered that 97% of bacteria in the surrounding area is destroyed by the process of agnihotra.³⁹ According to Dr. Arvind D. Mondkar, a microbiologist, Agnihotra fumes are rich in formaldehyde and other substances, which have inhibitory effect on microorganisms.⁴⁰

By one estimate, there are at least 5,000 kinds of viruses and more than 3,00,000 species of bacteria that challenge human beings, many of which are to replicate and evolve billions of time in one human generation.⁴¹

Globalization, modern medical practices, accelerating urbanization, and climatic change resulting from global warming and social and behavioral patterns have contributed in evolution of new kinds of microbes and spreading of infectious diseases.⁴²

In these devastating circumstances cow and Yajna –technology can only save the life on earth. Thanks to our R?si's who presented us this great knowledge and to scientists, who have consolidated the importance of —Cow and Yajna –Technology.

PHILOSOPHY AND VEDIC MICROBIOLOGY:—

"Take six measures of food one each for dogs, the poor/beggars, the sick, birds such as crow, and microbes/insects and feed them to sustain them." Manu the great social philosopher has stated this.

Our respects for the living beings are due to the Philosophical doctrines preached by our R?si's and yogis. Every living being is the part of the one *Param Brahman*, and that all living beings have equal rights to utilize the resources of mother earth.

The R?si of Atharvaveda has prayed for maintaining the Philosophy of "Live and let Live", as

"The Lord and Master on our right the south direction, is God, Indra –His is the power and the glory. He protects us from the lines and swarms of the crooked ones, poisonous insects and parasites...If someone hates us in evil, we surrender all that hate and jealousy into the furnace of the Lord's justice. Let us hate no one, let no one hate us. Let us all live in love and friendship".⁴³

REVIVED HISTORY OF MODERN MICROBIOLOGY: —

From the above facts that has come into light, no microbiologist or life scientist can deny that the Vedas are the first Book that revealed the existence of microscopic forms of life. Not only this, the Vedas are also the source of microbiological protocols that was followed by the Vedic persons since ages. The Karma kanda of Vedas are very significant in the eyes of microbiology as one of the purposes of these karma kanda were to control the diseases produced by microbes and other non-microbial diseases. In this and other many facts the present history of microbiology demands amendment.

R?si? Agastya seems to be perhaps the first person as per Rigveda, who put forwarded that among many poisonous creatures there are microbes also. He also suggested using antidote against the poisonous creatures.

On switching to Atharvaveda, we find that R?si? Kân?va and their descendents have composed large number of mantra in the suktas *Krimijambhan?am*, *Kriminâs?nam*, and *Krimighnam*, which gives vital information on the microbes and its various characteristics. By the same title *Kriminâs?nam* there is another sukta by R?si? Bâdarâyani?, which provides information on both microbes and antimicrobial herbs.



In the Atharvaveda, itself there is another sukta namely *Raks'ogham*, composed by R'si? Châtan, where the word Pischach denotes microbes probably highly virulent one. There is much other large number of R'si?s in the Vedas, which have given microbiological centered mantras; further inquisition is needed.

On pondering Âyurveda two most important Âyurvedic Persons evolve who have contributed in microbiological knowledge. They are Carak and Suû'uta. Their work Carak samhita and Suû'uta samhita is an excellent medical book that also deals with medical microbiology.

CONCLUSION: —

From this discussion, it can be concluded that Vedas are the first text that foreshadows the principles and practices of microbiology. Some facts that have resulted are that —

- 1) Origin of microbiology took place in Bhârat.
- 2) The founding fathers of microbiology are Vedic R'si?s.
- 3) The microbiology enshrined in Vedas is based on scientific analysis and interwoven with the ambrosia of philosophy.
- 4) Many antimicrobial and antiinfective drugs have been prescribed in the Vedas. Most importantly, R'si? has engineered Yajna-technology, which serves triple purpose of prophylaxis, (mass) immunization, and remedy against large number of microbial and non-microbial diseases.
- 5) Instead of giving more emphasis on germ theory of diseases, Vedas directs us to maintain toxin free life.
- 6) The overuse of antibiotics has lead to evolution of multiple drug resistant microbes, which have attained resistance against large number of antibiotics. Yagna —technology can prove beneficial in present circumstances.

Ancient R'si?s brought about these Veda-centered facts and findings by dint of yogic power, for the material and spiritual upliftment of the society. Hence, on arriving at a common platform both Vedic and modern microbiology can curb the misery of society caused by microbial diseases. Moreover, we should not fall prey in engaging ourselves with this creation, instead we should take U-turn and apply our precious mind for knowing the Great author of this creation. For observing microorganisms today we have highly developed microscopes but a soul is subtler than microbes, not graspable by any powerful instrument. Only by the instrument of intuition, that we will be able to know the philosophy of creation.

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