ISSN 2321 – 2349

Bulletin on Microvita Research and Integrated Medicine

BOMRIM

Vol. 5 No. 1 April 2013

Contents:

Official Bulletin of

Society for Microvita Research and Integrated Medicine (SMRIM)

(Registered under Societies Registration Act 28, 1958 (Raj.) No. 73/UDR/08-09)

Website : www.microvitamedresearch.com

Editorial

VIROLOGY AND MICROVITOLOGY

Virology is the established branch of science dealing with all relevant studies concerned with the viruses. It deals with virus identification, nomenclature, classification, isolation and culture, disease production and the treatment of viral diseases. For a physician, viruses are the smallest infectious agents (ranging from about 20 nm to about 300 nm in diameter) and contain only one kind of nucleic acid (RNA or DNA) as their genome. The nucleic acid is encased in a protein shell, which may be surrounded by a lipid containing membrane. The entire infectious unit is termed as virion. Viruses are inert in the extracellular environment; they replicate only in the living host cells, being parasites at the genetic level.

The Universe of viruses is rich in diversity. Viruses vary greatly in structure, genome organization and expression and strategies of replication and transmission. The host range for a given virus may be broad or extremely limited. Much information on virus-host relationship has been obtained from studies on bacteriophages, the viruses that attack bacteria.

Universal system of virus taxonomy has been established in which viruses are separated into major groupings called families. Virus family names have the suffix- viridae. Each family is subdivided into genera. Genus name carry the suffix- virus. By 1995, the International Committee on Taxonomy of Viruses had organized more than 4000 animal and plant viruses into 71 families, 11 subfamilies and 164 genera, with hundreds of viruses still unassigned. Currently, 24 families contain viruses that infect humans and animals.

Microvitology, the branch of science (physical/metaphysical/spiritual) has not yet developed, because the theory of microvita is relatively recent one. The term microvita (singular: microvitum) was first coined in 1986 by Shrii P.R. Sarkar. According to this theory, the microvitum is the smallest living entity (<20 nm or even smaller than 0 nm). They are smaller than viruses and the smallest one are beyond the perception of physical means (electron microscope) and require special type of perception which is nothing but the reflection of conception at the periphery of perception and requires higher psycho-spiritual status of mind. In fact, viruses are included in the category of microvita and it has been suggested that microvitum will be better term than the virus.

Microvita come within the realm of both physicality and psychic expression. The existence is just between ectoplasm (psychic realm) and electron (physical realm), but they are neither of these two. They have been categorized based on density or subtlety into three types. Based on the nature, they may be positive, negative or neutral. The most fascinating characteristic is the movement, which is throughout the Universe, unconcerned with the atmospheric conditions, but through a medium or media. The subtlest one may move through ideas. Microvita create mind and bodies and also destroy minds and physical bodies. They are responsible for physical and mental illness as well as physical, psychic, and spiritual well being. The science of micrvitology requires extensive research and as per Shrii Sarkar's contention - the research work on microvita should be started immediately in order to solve many problems prevalent in modern society, in a nice way.

- Dr. S.K. Verma

HISTORICAL FOOTSTEPS IN SEARCH OF VIRUSES

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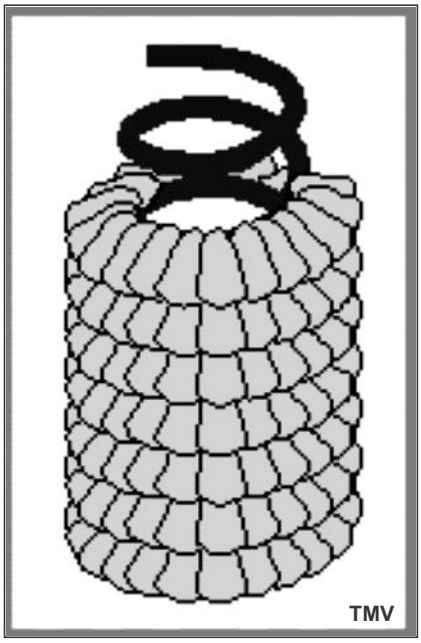
'Virus' is a latin word meaning venom / poisonous emanation. In Sanskrit, its meaning is *Visha* (poison). First known use of this word is reported in 1599. However, the term 'Virus' as an infectious agent; was first used by the Dutch scientist Martinus W. Beijerinck in 1898. In this context, Virus is known as '*Vishaanu*' in Hindi, which means a molecule filled with poison.

In the historical streamline of microbiology, it was easier to detect relatively larger size microorganisms as the causative agent of the diseases but as compared to bacteria, fungi, protozoa and helminthes, the viruses were more difficult to demonstrate, because most were too small to be seen with light microscope and none could be grown on an inanimate artificial culture medium. At first, they could be demonstrated only by observation of the diseases they produced; when infected tissue was inoculated into a susceptible animal. In 1881, Pasteur and his colleagues failed to isolate any microorganism capable of causing rabies, but they were able to reproduce the disease in dogs and rabbits by the intra-cerebral injection of brain tissue or saliva from a fatal case. They suggested that the causal agent was an organism too small to be seen, although the agent might be a bacterium or a large microbe that was present, but it remain undetected.



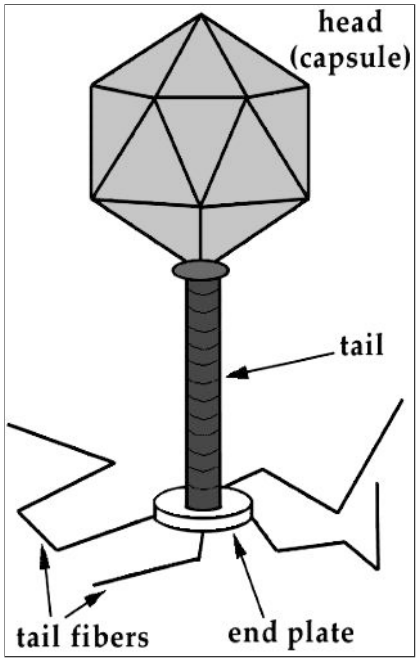
The means of excluding such a possibility was devised by a Russian biologist Dmitry Ivanovski in 1892 in his experiments with viral mosaic disease of Tobacco where he transmitted the disease to healthy plants by inoculation of juice from the diseased plant part after it had been filtered through bacteria proof Chamberland filters. He suggested that infection was caused by the toxin produced by bacteria. Later, in 1898, Beijerinck repeated Ivanvoski's work and concluded that it was not a toxin but it was a filterable infectious agent which multiplies only in dividing living cells and he called it '*Contagium vivum fluidum*' and re-introduced the word 'virus' for these agents. These filter passing viruses were soon demonstrated in foot and mouth disease of cattle by Friedrich Loeffler and Paul Frosch (1898) as first animal virus.

In 1908, Bang and Ellerman showed that a filterable virus could transmit chicken leukemia and Peyton Rous (1911) reported transmission of chicken sarcoma with a virus. Bacteriophages- the viruses which kill bacteria were first recognized by Frederick Twort (1911) and, independently by Felix D'Herelle in 1917. In 1928, Thomas Milton Rivers at USA has published all the information about viruses known up to that period in his book 'Filterable Viruses' and he was the first person who suggested that viruses appear to be obligate parasites as their reproduction is dependent on living cells.

It is assumed that Dr. J. Buist (1886) was the first person to see virus particles in vaccine lymph as 'micrococci'. Virology did not progress rapidly, however, until after the Second World War, when the availability of electron microscope enabled viruses to be visualized and the use of living human and animal tissue cells for the *in vitro* culture of viruses was developed by John Enders (1949) and others from the earlier work of pioneers such as Alexii Carrel. Invention of electron microscope by Ernst Ruska and Max Knoll in 1931 has shown that bacteriophages have a complex structure. In 1935, Wendell Meredith Stanley at USA, successfully isolated Tobacco Mosaic Virus (TMV) in apparently pure crystalline state and showed that it

remains active even after crystallization. For this work, he was awarded with Nobel Prize in Chemistry in 1946. Later works of Stanley and Max Lauffer has separated the virus into protein and RNA parts. Max Delbruck (1937) described the basic life cycle of a bacteriophage and later in 1952, Hershey and Chase made important observation on replication of T_2 bacteriophage and for these discoveries all the three have been awarded Nobel Prize in Physiology (1969).

The first X-ray diffraction pictures were available for crystallized TMV by Bernal and Fankuchen (1941) and on the basis of those data, Rosalind Franklin discovered the full structure of TMV in 1955. In late 20th century, many viruses causing various human diseases were discovered. Hepatitis B virus was discovered in 1963 by Baruch Blumberg. In 1965, Howard Temin described the first retrovirus and the first retrovirus infecting humans was identified by Rober Gallo in 1974. By 1975, functioning of Oncoviruses was also clarified considerably. Later in 1977, Frederick Sanger has first time sequenced genome of any organism and that was a bacteriophage φ X 174.



A Bacteriophage

First case of AIDS was reported in 1981 and HIV, the retrovirus causing AIDS was identified in 1983 by Montagnier, Barre-Sinoussi and Gallo. In 1994, Human Herpes Virus 8; the cause of Kaposi's Sarcoma was identified. In 21st century, earth became victim of many more dreadful viral epidemics like SARS (2003), Bird Flu by H5N1 strain (2005), Swine Flu by H1N1 viral strain (2009) and MERS-CoV which started from Saudi Arabia (2012). Apart from these, discovery of Virophages meaning Virus eaters like Sputnik, Mavvirus, Organic Lake Virophages in past few years has opened a new era of science by controlling virus's reproduction through another virus and it can revolutionize treatment of viral diseases in future.

Today more than 4000 animal and plant viruses are known to us and still many more yet to be identified. Viruses can also change their structure easily and can come up in front of human beings with many more inextricable and terrific circumstances. Looking to this, the research work in field of virology must be progressed incessantly with full speed. With the improvement in techniques of molecular biology and genetics, it is hoped that we will be able to protect the lives from attacks of these ultra-microscopic, enigmatic, complex, living or non-living entities in a better way.

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"There should be extensive research work regarding this microvitum or these microvita. Our task is gigantic and we are to start our research work regarding these microvita immediately without any further delay, otherwise many problems in modern society will not be solved in a nice way."

-Shrii P. R. Sarkar

General Properties, Isolation and Cultivation of Viruses

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Viruses are the entities that need a host cell or living cell for its multiplication. Although they have their own genetic material yet they rely on the host cell for energy, metabolic intermediates, and protein synthesis. Virus is therefore, an obligate intracellular parasite whose replication is dependent on entry into a suitable living cell. Viruses can exist in either extracellular or intracellular forms. The extracellular form of virus can exist outside the host and thus facilitates transmission from one host cell to another. So, their movement can be unlimited through the entire universe. As per the scientific literature, virus must enter a cell to replicate which is known as infection. Viruses can replicate in a way that is destructive to the host cell, therefore, some viruses are classified as agents of disease. However, viruses may also enter into a cell's genome and replicate along with the cell without destroying it. Like other genetic materials i.e. plasmids and transposable elements, viruses may confer important new properties on their host cells. These properties will be inherited when the host cell divides if each new cell carries the viral genome in its next progeny. These changes are not always harmful and may even be beneficial.

General Properties of Viruses

Viruses are not cells and thus are classified by scientists as nonliving when outside a host cell. But I would like to call them living and undergoing hibernation as polar beer does in winters under extreme environmental conditions. Viruses possess a genome encoding the information they need in order to replicate. However, viruses rely on host cells to provide the energy and materials needed for replicating their genomes and synthesizing their proteins. In its extracellular form, a virus is a microscopic particle containing nucleic acid surrounded by a protein coat called capsid and sometimes, envelop also. Once a virus enters a cell, the intracellular state begins and the virus replicates. New copies of the virus genome are produced, and the components of the virus coat protein or envelop are synthesized. Certain animal viruses (such as polio and respiratory syncytial virus) may skip the extracellular stage when moving from cell to cell within the same organism. Instead, they cause the fusion of uninfected cells with the infected cells and thus transfer themselves to new cells. However, they move from one organism to another in their extracellular form. Virus redirects the host metabolic functions to support its own replication and its assembly. Viruses do not grow like human beings from smaller to bigger size rather their components are manufactured inside the host cell and then assembled into complete virions. Ultimately, new viral particles are released, and the process repeats itself.

Viral Genomes

The genetic material in all the cells of plants, animals and human beings is double-stranded DNA. But viruses have either DNA or RNA as their genetic material and they are classified accordingly. They are further subdivided according to whether the nucleic acid is single- or double-stranded, linear, or circular.

Viral Hosts and Taxonomy

Viruses can be classified on the basis of the hosts they infect as well as by their genomes. Thus, we have viruses which infect vertebrates, invertebrates, animals, plants, fungi and bacteria. Although it is not reported in scientific literature yet there could be viruses (positive microvita) killing viruses (negative microvita). Most viruses are not only species specific but also cell/tissue specific. In rare cases, viruses expand their host range barrier. Viruses that infect bacteria are called **bacteriophages** (or phages). In Greek phagein means “to eat”. Species of both Bacteria and Archaea are infected by specific viruses. Most of the basic concepts of virology were first studied using bacterial viruses and were later applied to viruses of higher organisms. Because of their enormous medical importance, animal viruses have been studied extensively, whereas plant viruses,

although of enormous importance to modern agriculture, have been less well studied. A formal system of viral classification exists that groups viruses into various taxa, such as orders, families, and even genus and species. The family taxon seems particularly useful. Members of a family of viruses all have a similar virion morphology, genome structure, and strategy of replication. Virus families have names that include the suffix -*viridae* (e.g. *Herpesviridae*). The virologist David Baltimore, who along with Howard Temin and Renato Dulbecco shared the Nobel Prize for Physiology or Medicine in 1975 for the discovery of retroviruses and reverse transcriptase, developed a classification scheme for viruses (Table 1).

Nature of the Virion

Viral morphology and size is being elucidated with the help of electron microscope. As reported in literature, the size of viruses may vary from 20-1000 nm in length. Most viruses are smaller than prokaryotic cells, ranging in size from 20–300 nm. Smallpox virus, one of the largest viruses, is about 200 nm in diameter (about the size of the smallest cells of Bacteria). Poliovirus, one of the smallest viruses, is only 28 nm in diameter.

Viral Structure

The structures of virions are quite diverse, varying widely in size, shape, and chemical composition. The genetic material of the virion i.e. DNA/RNA is always located within the virus particle which is surrounded by a protein shell called the **capsid**. This protein coat is composed of a number of individual protein molecules called **capsomeres**, which are arranged in a precise and highly repetitive pattern around the nucleic acid. The capsomere is the smallest morphological unit that can be seen with the electron microscope. A single virion can have a large number of capsomeres. In some viruses, the capsid is covered by an **envelope**, which consists of some combination of lipids, proteins and carbohydrates. Inside the virion are often one or more virus-specific enzymes.

Enzymes in Virions

Virus is metabolically inert when outside a host cell. However, some virions do contain enzymes that play important roles in infection. For example, some bacteriophages contain the enzyme lysozyme, which they use to make a small hole in the bacterial cell wall. This allows the virus to inject its nucleic acid into the cytoplasm of the host cell. Lysozyme is also produced in large quantity in the later stages of infection resulting in bacterial cell lysis and release of the new virions. Many viruses contain their own nucleic acid polymerases for replication of the viral genome and for transcription of virus specific RNA. For example, retroviruses are RNA viruses which possess an RNA-dependent DNA polymerase enzyme called reverse transcriptase that transcribes the viral RNA to form a DNA intermediate. These virion enzymes are necessary because cells cannot make DNA or RNA from an RNA template.

Table 1: The Baltimore classification system of viruses

Class	Type of genome with examples
I	Double-stranded DNA genome e.g. Lambda and T4 phage, Herpesvirus, poxvirus
II	Single-stranded DNA genome e.g. Chicken anemia virus
III	Double-stranded RNA genome e.g. Reoviruses (Rotavirus, Bluetongue virus)
IV	Single-stranded RNA genome of plus configuration e.g. Poliovirus
V	Single-stranded RNA genome of minus configuration e.g. Influenza virus, rabies virus
VI	Single-stranded RNA genome that replicates with DNA intermediate e.g. Retroviruses (Human Immunodeficiency virus)
VII	Double-stranded DNA genome that replicates with RNA intermediate e.g. Hepatitis B virus

Isolation and Cultivation of Viruses

Since viruses cannot replicate outside a living cell, hence, their detection, enumeration, cultivation and identification is a tough task. Bacteria can be grown in lab using artificial chemical media but viruses need living cells for their multiplication. Living plants and animals are difficult and expensive to maintain in lab for studying viruses. However, viruses infecting prokaryotes i.e. bacteriophages are typically the easiest to grow in the laboratory.

Growing Bacteriophages in lab

For the study of bacterial viruses, pure cultures are used either in liquid or on semisolid (agar) media. By determining the number of infectious units per volume of fluid, a measure of virus quantity, called a titer, can be obtained. The use of solid media for the growth of bacteria can also be used for detecting and counting virus particles. When a phage initiates an infection on a layer of bacterial cells growing on a flat surface, a zone of lysis may be seen as a clear area. This clearing is called a **plaque**, and it is assumed that each plaque originated from the replication of a single virion. A sample of bacteriophage is mixed with host cell i.e. specific bacteria and molten agar which is then poured into a petriplate containing a hardened layer of agar growth medium. Each virus infects a bacterium, multiplies and lyses the bacterium thus releasing several hundred new viruses in the medium. This produces a zone of lysis or clearing called plaques which is visible against the lawn of bacterial growth on the surface of agar (Figure 1).

Growing Animal Viruses in lab

Most animal viruses and many plant viruses can be cultivated in tissue or cell cultures. Plant viruses can be more difficult to work with, because sometimes their study requires the use of whole plant. Since plants grow much slowly than bacteria. Animal and human viruses can be grown in embryonated eggs which can be a very convenient and inexpensive method. Besides this, animal cell cultures can also be used for virus cultivation. Animal cell culture is derived from cells originally taken from an organ of an experimental animal or embryonated eggs. Organs or pieces of tissues are aseptically removed and cells are dissociated either mechanically using scissors or enzymatically by treating the cells with trypsin or collagenase to degrade the extracellular material that holds animal cells together. The resulting cell suspension is mixed with a suitable culture medium and then spread over a flat surface which can be a tissue culture flask or microtiter plate. The thin layer of cells adhering and growing onto the glass or plastic surface after suitable incubation at specific temperature is called a cell monolayer (Figure 2). The culture media used for cell culture growth is quite complex, containing a number of amino acids, vitamins, salts, glucose and a bicarbonate buffer system. For best growth, small amount of blood serum is also added to provide vital nutrients, and several antibiotics are added to prevent bacterial contamination. Virus infecting and multiplying in such a monolayer of cells results in deterioration of cells called cytopathic effects (Figure 3). Such cultures called primary cell culture are used for studying the viruses. Some cell cultures prepared in this way can be sub-cultured and grown indefinitely as permanent cell lines (Figure 4).

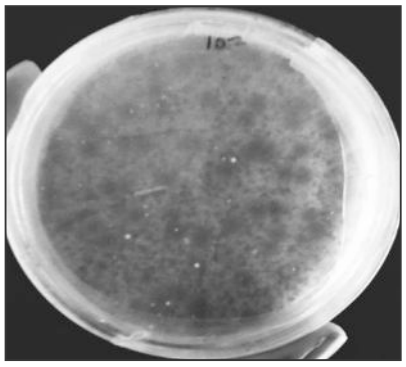

Figure 1
Viral plaques formed by bacteriophages on a lawn of *Escherichia coli* bacteria.

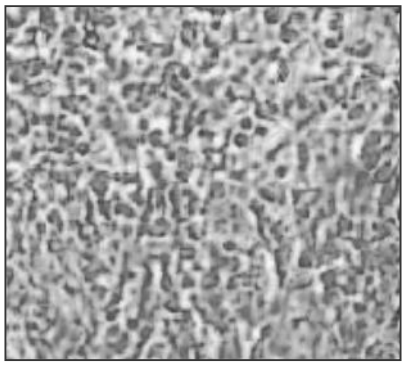

Figure 2
Primary chicken embryo fibroblast cell culture observed under inverted stage microscope.

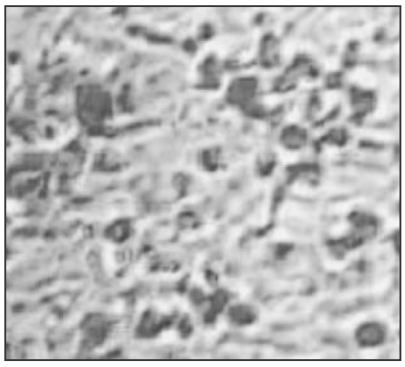

Figure 3
Cytopathic effects observed in primary chicken embryo cell culture

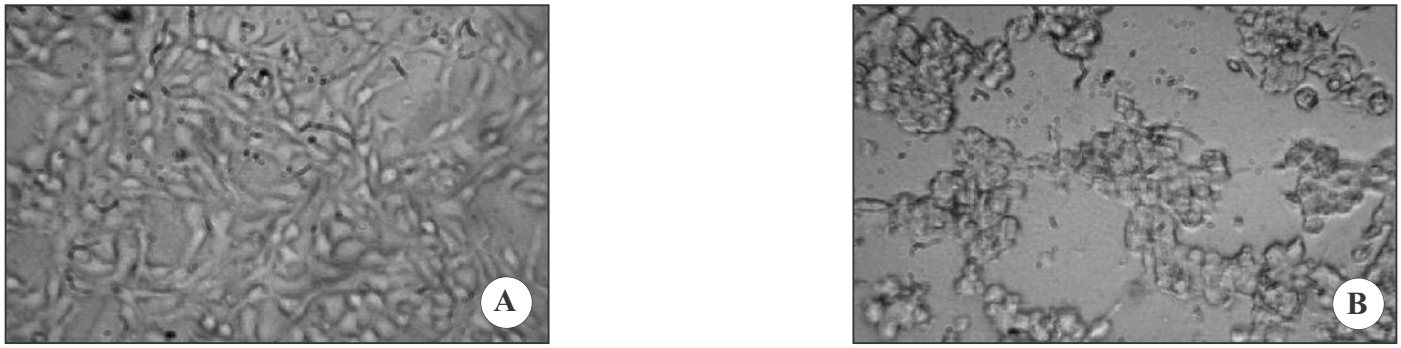

Figure 4: (A) : Normal MA104 cell line; (B) : Rotavirus infected MA104 cell line showing cytopathic effects

Overview of Bacterial Viruses

Bacteriophages are quite diverse. Most bacterial viruses that have been investigated in detail infect well-studied bacteria, such as *Escherichia coli* and *Salmonella enterica*. However, viruses are known that infect a wide range of Bacteria and Archaea. Most known bacteriophages contain dsDNA genomes, and this type of bacteriophage is thought to be the most common in nature. However, many other kinds are known, including those with ssRNA genomes, dsRNA genomes, and ssDNA genomes. In fact, this remarkable diversity of genomes may have been an important factor in the evolution of nucleic acid function in cellular organisms.

Multiplication of bacteriophages

The means by which a virus enters and exits a host cell may vary but the basic mechanism of viral multiplication is similar for all the viruses. Bacteriophages can multiply by two mechanisms: lytic or lysogenic. The lytic life cycle means the phage will end the life of bacteria while lysogenic means the host cell will remain alive. The viral replication cycle can be divided into five steps:

1. Attachment or adsorption of phage to a susceptible bacteria.
2. Penetration or entry of the phage or its nucleic acid into a susceptible bacteria.
3. Synthesis of phage nucleic acid and protein using host cell metabolism.
4. Maturation: Assembly of capsids (and other components in enveloped viruses) and packaging of phage genomes into new virions.
5. Release of mature virions from the cell.

Consequences of Virus Infection in Animal Cells

Viruses can have several different effects on animal cells. Lytic infection results in the destruction of the host cell. Enveloped viruses are released from the host cell by budding process, may be slow, and the host cell may not be lysed. The infected cell may therefore, remain alive and continue to produce virus indefinitely which is known as persistent infections. Viruses may also cause latent infection in which there is a delay between infection by the virus and host cell lysis e.g. fever blisters (cold sores) caused by the herpes simplex virus. Herpesviruses exist in a relatively inactive state within nerve cells known as latency. A low level of transcription continues, but the viral DNA does not replicate. Finally, certain animal viruses can convert a normal cell into a tumor cell which is known as **transformation**. Some enveloped viruses promote fusion between different animal cells, creating giant cells with several nuclei. Such cell fusion allows viruses to avoid exposure to the immune system.

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VIRAL INFECTION AND CANCER

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The spectrum of diseases caused by viruses is quite wide. Viruses involve practically all the organs of the body. The severity ranges from mild upper respiratory tract infection of short duration to chronic and life threatening diseases such as cancer. The present article deals with the possible connections between the persistent viral infection and development of cancer in man.

It is estimated that persistent viral infection is the root cause of as many as 20 % of human malignancies, where viral infection is a critical and ultimately determinative early step, forcing infected cells to enter the cell cycle and enhancing their survival. The virus-infected cell undergoes the subsequent genetic changes that allow the enhanced autonomous growth and survival, characteristics of a malignant cell. It is however, important to recognize that acute short term viral infection is not the causative factor in the genesis of cancer. It requires persistent viral activity that results in malignant transformation of the affected cells.

Supporting evidences

There are many evidences supporting a causal role of viral infection in genesis of malignancies. These evidences include:

1. Epidemiologic data
2. Presence of viral DNA in all tumor cells
3. Ability of the viruses to transform human cells in culture
4. Results of in vitro assays for transforming effects of specific viral gene
5. Pathological data

Virus related human malignancies

1. Hepatocellular carcinoma

This liver malignancy is now believed to be caused by chronic inflammatory, immune and regenerative responses to Hepatitis B virus (HBV) or C virus (HCV) infection. Epidemiological data firmly link HBV and HCV infections to hepatocellular carcinoma. The chronic infection by these viruses, elicit repetitive cycles of virus induced liver injury, followed by repetitive tissue repair and regeneration, and acquired chromosomal changes result in enhanced cell proliferation and survival and eventually ending in heaptocellular carcinoma.

2. Cervical carcinoma

Almost all cervical carcinoma in females is caused by persistent infection with 'high-risk' genital Human Papilloma virus (HPV) strains. In contrast to HBV and HCV infections which stimulate cell growth indirectly in response to virus induced injury, proteins E6 and E7 of HPV type 16 or 18 can directly affect cell growth by causing the loss of two cell proteins (p53 and RB) with tumor suppressing function. These viral proteins can also increase genetic instability (Fig. 1.)

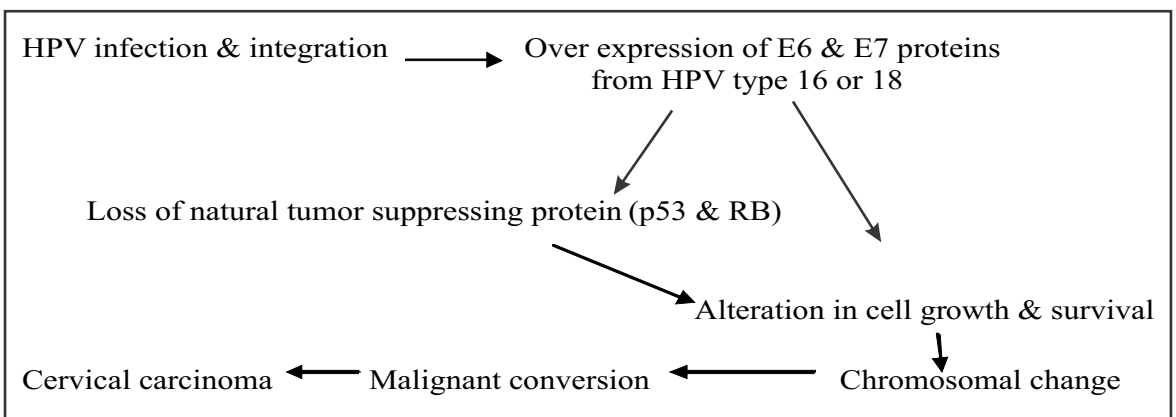

Fig.1: Human Papilloma Virus (HPV) infection and cervical carcinoma

3. Epstein-Barr Virus (EBV) infection and malignancies

a) In normal immunocompetant humans, the immune response to strongly antigenic EBV latent infection protein prevents uncontrolled B cell lymphoproliferation. However, when humans are immunosuppressed by post-transplantation medications, HIV infection or genetic immunodeficiencies, EBV induced *B cell malignancies* can emerge.

b) EBV infection also plays a role in the long term development of certain B lymphocytes and epithelial malignancies. Persistent EBV infection and expression of the EBV oncogene LMP1 in latently infected epithelial cells appear to be critical early steps in the evolution of *anaplastic nasopharyngeal carcinoma*.

c) High levels of LMP1 expression in Reed-Sternberg cells is also a hallmark of many cases of *Hodgkin's disease* (Fig.2)

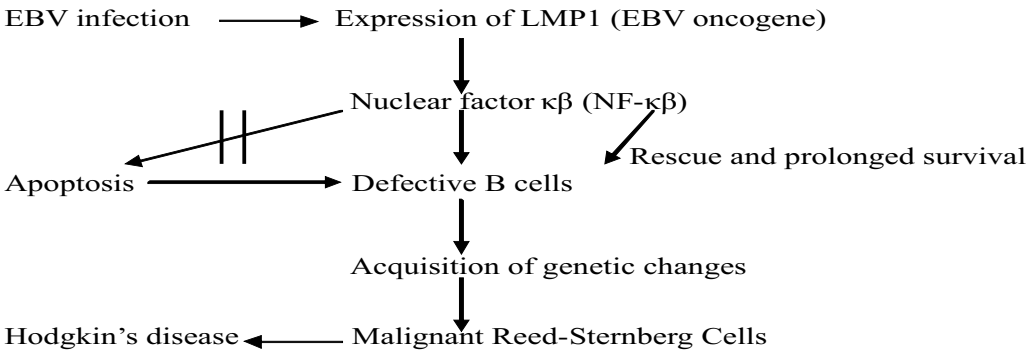

Fig. 2: Epstein-Barr Virus (EBV) infection and Hodgkin's disease

4. Human T Lymphotropic virus-1 (HTLV-1) Tax and Rex proteins appear to be critical to the initiation of cutaneous *adult T cell lymphoma/leukemia* that may occur long after primary HTLV-1 infection.
5. Molecular data confirm the presence of Kaposi's Sarcoma Herpes Virus (KSHV) DNA in all *Kaposi's tumors* and is also etiologically implicated in pleural-effusion *lymphomas and multicentric Castleman's disease* which are more common among HIV infected people. Several KSHV proteins that can be expressed in latently infected cells, such as v-cyclin, v-interferon regulating factors (v-IRF) and latency-associated nuclear antigens (LANA) are implicated in increased cell proliferation and survival.

Preventive strategies and outcome

The study of virus related malignancies has provided an opportunity to expand our understanding of the biological mechanisms important in the development of cancer. Furthermore, viruses have also offered unique opportunities for the development of vaccines and therapeutics that could prevent or specifically treat cancers associated with virus infection. Following are some useful outcome of the knowledge regarding viral infection and cancers-

a) Widespread immunization against Hepatitis B has resulted in a decreased prevalence of HBV associated hepatitis and will likely prevent most HBV related liver cancers,

b) Testing for HPV DNA in high-risk populations may improve early detection and management of cervical cancer. Studies of an HPV vaccine have shown reduced rates of colonization with high risk HPV strains and a decreased risk of cervical cancer.

c) Successful use of *in-vitro*-expanded EBV-specific T cell population to treat or prevent EBV-associated post-transplantation lymphoproliferative diseases demonstrates the potential of immunotherapy against virus associated cancers.

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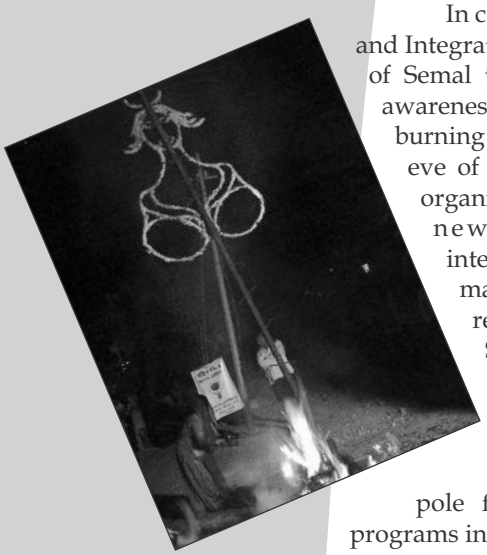
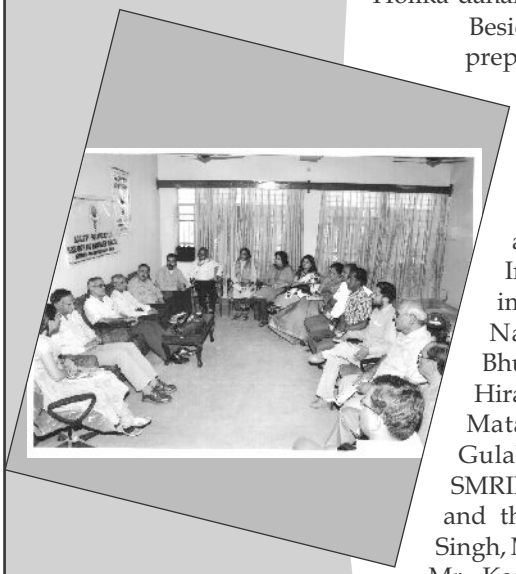
Semal Conservation Mission – Glimpses 2013



In continuous efforts of Society for Microvita Research and Integrated Medicine (SMRIM), Udaipur, for conservation of Semal tree, this year too, steps were taken to create awareness among masses along with implementation of burning eco-friendly Iron pole for Holika-dahan. On the eve of World Forest Day, a group discussion was organized in collaboration with a reputed local newspaper Rajasthan Patrika where intellectuals, environmentalists and common man were called upon to share their views regarding conservation and protection of Semal tree in forest areas nearby Udaipur city. Many valuable suggestions came forward among which few important ones are burning Group-Holi, adopting Iron-pole for Holika-dahan and arrange awareness programs in villages two months preceding Holi festival every year. Many of them agreed for burning eco-friendly Iron pole Holika-dahan.



Besides this, first time in Udaipur city, iron Holis prepared by SMRIM were made available for display in the city in an open vehicle on a day before Holika-dahan and a very good response from the citizens of Udaipur came. Every body was curious and asked about the costing and durability of Iron-pole Holi. This innovative idea was implemented this year at Chitrakoot Nagar, Jai Laxmi Apartment, New Bhupalpura, Panchwati, Goverdhan Vilas, Hiranmagari, Sector 4, Krishanpura, Meladi Mata Temple, Balicha, Udaipur and at Gulabpura, Bhinder and Kanore villages. SMRIM is highly thankful to Dr. Rupa Sharma and the entire Jai Laxmi Society, Mr. Chaman Singh, Mrs. Anju Rathore, Mr. Purushottam Paliwal, Mr. Kamlendra Singh Panwar, Mr. Mohan Singh Rathore, Mr. Satyanarayan, Mr. Mod Singh and Mr. Om Prakash and all those who have supported and adopted this concept and helped for conservation of Semal tree in a real sense. Hope, with efforts of all of us one day, we will definitely succeed in large scale conservation of Semal tree.

It is a matter of pleasure and privilege
that "BOMRIM" has entered in
its 5th year and received
International Standard
Serial Number (ISSN) 2321-2349.
We hope that it will reach to glorious heights
with affection and support of
its readers and members in the coming years.

-Editors

BOOK-POST

To,

From :
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WHAT IS MICROVITA ?

Microvita : Micro- Small, Vita- Living

Definition : Entities or objects which come within the realm of both physicality and psychic expressions, which are smaller or subtler than atoms, electrons or protons; and in the psychic realm, may be subtler than ectoplasm or its extra-psychic coverage; endoplasm have been termed as "Microvita" (Singular- Microvitum) by Shri P. R .Sarkar.

Physicality : The position of microvita is just between ectoplasm and electron, but they are neither ectoplasm nor electron.

Categories :

A) Based on density or subtlety -

First : Coming within the scope of a highly developed microscope.

Second : Not coming within the scope of a perception but coming within the scope of perception as a result of their expression or actional vibration.

Third : Not coming within the scope of common perception but coming within the scope of a special type of perception which is actually the reflection of conception within the periphery of perception.

B) Based on nature -

1. Positive
2. Negative
3. Neutral/Ordinary

Movement :

- Move throughout the entire universe.
- Move unbarred, without caring for the atmospheric conditions.
- Move through a medium or media i.e. sound, form, figure, smell, tactuality or ideas.

Root cause of life :

Microvita create minds and bodies and also destroy minds and physical bodies. The root cause of life is not the unicellular protozoa or unit protoplasmic cell, but this unit microvitum.

AIMS AND OBJECTIVES OF SMRIM

1. To propagate the knowledge and science of microvita by psycho-spiritual practice in individual and collective life.
2. To increase moral values, to generate scientific thinking, to remove dogma with the spread of knowledge of microvita at school, college and university levels.
3. To initiate and inspire about research on Yogic, Vaedic, Naturopathic, Ayurvedic and Homoeopathic schools of medicine.
4. To incorporate faculty of Physics, Chemistry, Botany and Medicine for research on microvita and integrated medicine; including research on medicinal plants and Homoeopathic medicine.
5. To organize free medical camps in villages and cities involving specialists of different system of medicine.
6. To publish result of the research in national and international journals and interact with other people working in the field in and out of the country.
7. To make judicious use of different systems of medicine and microvita for the treatment of diabetes, hypertension, heart diseases, cancer and diseases of modern era.
8. To establish laboratory and research centers for relentless research on microvita and integrated medicine for the welfare of entire humanity.

Who can join?

Any person interested in serving humanity through research on microvita and integrated medicine and abides rules and regulations of the society can become the member of the society.

Life Membership fee : Rs. 2000/- (Once)

NOTE

With the issuance of ISSN from now onwards the standard abbreviation of BOMRIM will be *Bull. Microvita Res. Integr. Med.*

READERS

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Published by : Society for Microvita Research and Integrated Medicine (SMRIM), Udaipur (Raj.) INDIA
Printed at : National Printers, Bhuwana, Udaipur (Raj.) Ph.: 0294-2440994

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