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Viruses and Their Treatment - A Review

V. Karthik[1], Lakshminarayanan Arivarasu[2*], Leslie Rani. S[3]

[1]Research Associate, Saveetha Dental College and Hospitals, Saveetha institute of Medical and Technical sciences, Saveetha University, Chennai, India
Email: 151801097.sdc@saveetha.com

[2]Assistant Professor, Department of Pharmacology, Saveetha Dental College and Hospitals, Saveetha institute of Medical and Technical sciences, Saveetha University, Chennai, India.
Email: lakshmin.sdc@saveetha.com

[3]Department of General Pathology, Saveetha Dental College and Hospitals, Saveetha institute of Medical and Technical sciences, Saveetha University, Chennai, India.
Email: leslieranis.sdc@saveetha.com

ABSTRACT

Viruses are tiny infectious agents, cause infectious diseases like common cold, flu & ward and severe illness like AIDS, smallpox, Ebola etc. Herbal medicines and purified natural products provide a rich resource for novel antiviral drug development. There are some herbs, which have antiviral properties and can be used in moderation when you are under the weather. It inhibits the growth of the virus, boosts immunity and fights the foreign pathogen. Viral infection is a proliferation of a harmful virus inside the body. Viruses cannot reproduce without the assistance of a host. The main way to control and treat viral diseases is by vaccinating. We aimed to evaluate various treatments being practised against different virus infection. A search strategy was employed using keywords to search the literature in online databases. Articles related to virus treatment, resistance of viruses and vaccines are included.Findings shows , virus plays a major role in increased human mortality rate and believed these efforts will play a significant role in controlling the wide spread of virus.

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INTRODUCTION

Infections are minuscule living beings that exist wherever on earth (Anderson, Bingham and Hierholzer, 1988). They can contaminate creatures, plants, parasites and even microscopic organisms. An infection may likewise affect one sort of life form, however an alternate impact on another (Garrus et al., 2001). Infections fluctuate in unpredictability. They comprise of hereditary material, RNA or DNA encompassed by a layer of protein, lipid or glycoprotein (McManus and Sharp, 2002). infections can't recreate without a host. There is no remedy for an infection, however immunization keeps them from spreading (Shi, 2003). An infection exists just to replicate, its posterity spread to new cells and new has (Thompson, 2002). They can spread through touch, trades of salivation, hacking, or sniffling, sexual contact by tainted food or water and so forth (Welch et al., 1997). As the infection repeats in the body, it begins to influence the host. After a period known as the brooding time frame , side effects may begin to show (Tang, Hobom and Luo, 1994). The absolute most normal viral infections are smallpox, regular cold, measles, mumps, rubella, chicken pox, shingles, hepatitis, herpes, polio, rabies, Ebola, AIDS, SARS and dengue fever and so forth (Colonno, 1992)(Coburn and Cullen, 2002). Some infections,

* **Contact**: Lakshminarayanan Arivarasu , *Assistant Professor, Department of Pharmacology, Saveetha Dental College and Hospitals, Saveetha institute of Medical and Technical sciences, Saveetha University, Chennai, India.*
lakshmin.sdc@saveetha.com

for example, the Human papilloma infection can prompt malignant growth (Johnson et al., 1997). At the point when the body's resistant framework recognizes an infection, it begins to react and empower cells to endure the assault (Crowe, 2003) (Novina et al., 2003). A cycle called RNA interference separates the viral hereditary material (Ramesh et al., 2016). Body sends T cells to decimate the infection (R, Rajakeerthi and Ms, 2019). Most popular contaminations trigger a defensive reaction from the insusceptible framework, yet infections, for example, HIV and neurotropic infections taint the nerve cells (Mathew et al., 2015). They are liable for maladies, for example, polio, rabies, mumps and measles and so on (Mootha et al., 2016).

Bacterial diseases can be treated with antimicrobials , however popular contaminations require either immunization to forestall them in any case or antiviral medication to treat them (Lakshmi et al., 2015) (Sharma et al., 2019). Now and then the main conceivable treatment is to give indication help (Mehta et al., 2019).

Antiviral medications have been grown to a great extent because of the AIDS pandemic (Ezhilarasan, Lakshmi, Vijayaragavan, et al., 2017). These medications don't obliterate the microorganism, however they hinder their turn of events and hinder the advancement of the malady (Perumalsamy et al., 2018). Antivirals are likewise accessible to treat contamination with the Herpes simplex infection, Hepatitis B, Hepatitis C, flu, shingles and chickenpox (Ezhilarasan, Lakshmi, Nagaich, et al., 2017) . Expanded contact with creatures, fundamentally because of the development of the human natural surroundings, is the reason for the rise of new infections. Recently rising infections incorporate HIV, Ebola infection, SARS-CoV, MERS-CoV (Wolf et al., 2003).Previously our team had conducted numerous clinical trials and in vitro studies[1–20] over the past 5 years. Now we are focusing on narrative reviews

Viral infections

Viral disease is a multiplication of a hurtful infection inside the body. Infections can't imitate without the help of a host (Ge et al., 2003)(Gitlin, Karelsky and Andino, 2002). Infections contaminate a host by bringing their hereditary material into the phone and seizing the phones inward apparatus to make more infection particles (Opalinska et al., 2006). A portion of the viral diseases and the causative infection are appeared (Table 1) (Marlin et al., 1990).

Virus transmission

There are two sorts of transmission: level transmission and vertical transmission (Duechler et al., 1989)(Skern et al., 1984). (Table 2) kinds of transmission. The course of transmission is critical to disease transmission experts since examples of contact change between various populaces and various gatherings of populaces relying upon financial, social and different highlights.

Airborne transmission alludes to irresistible operators that are spread through bead cores containing infective microorganisms. These life forms can make due external the body and stay suspended noticeable all around for significant stretches of time. They contaminate others through the upper and lower respiratory parcels.

A typical type of transmission is by method of respiratory beads, produced by hacking, sniffling, or talking. Respiratory bead transmission is the standard course for respiratory diseases. Transmission can happen when respiratory beads arrive at helpless mucosal surfaces, for example, in the eyes, nose or mouth.Organisms spread by bead transmission incorporate respiratory infections, for example, flu infection, parainfluenza infection, adenoviruses, rhinovirus, respiratory syncytial infection, human metapneumovirus, Covid and so on.

Antiviral drugs and it mechanisms

The overall thought behind present day antiviral medication configuration is to distinguish viral proteins, or parts of proteins, that can be incapacitated. These objectives ought to by and large be as not normal for any proteins or parts of proteins in people as could reasonably be expected, to diminish the probability of reactions. The objectives ought to likewise be regular across numerous strains of an infection, or even among various types of infection in a similar family, so a solitary medication will have wide adequacy (Rotbart, Webster and for the Pleconaril Treatment Registry Group, 2001). The potential methods of activity of antiviral specialists: Inactivate extracellular infection particles, Prevent viral connection as well as section, Prevent replication of the viral genome, Prevent union of explicit viral protein, Prevent gathering or arrival of new irresistible virions. A portion of the antiviral medications are abacavir, acyclovir, adefovir, amantadine, baloxavir marboxil, combivir..etc.

Pytoconstituents in Antiviral therapy

There are a few spices, which have antiviral properties and can be utilized with some restraint when you are sick. It restrains the development of the infection, supports insusceptibility and battles the unfamiliar microorganism. Ginger has great antiviral, antibacterial and mitigating properties. Studies propose that this spice is viable in avian flu, RSV,and cat calicivirus (FCV). Ginger contains mixes, for example, gingerols and zingerone that assists with forestalling the development of the

virus.The fundamental compound of fennel seeds is trans-anethole, which is discovered to be very viable against herpes infections. The little seeds additionally support your resistance and diminishing aggravation in the body. Home grown meds and purged characteristic items give a rich asset to novel antiviral medication advancement (Stanway, 1999) (Zell et al., 2017). Recognizable proof of the antiviral components from the regular specialists has revealed insight into where they connect with the viral life cycle, for example, viral passage, replication, gathering, and delivery, just as on the focusing of infection have explicit cooperation. (Table 3) shows the rundown of normal items against viral ailments. .

Ebola virus and treatment

Ebola infection is an uncommon yet destructive infection that causes fever, body hurts and the runs and now and then bleeding inside and outside the body (Anitha and Ashwini, 2017) (Ashwini, Ezhilarasan and Anitha, 2017). As the infection spreads through the body, it harms the resistant framework and organs. It makes levels of blood thickening cells drop, prompting wild dying (Harsha et al., 2015).The early side effects of Ebola are high fever, migraine, joint and muscle throbs, sore throat, shortcoming, stomach torment and absence of hunger (Ezhilarasan, 2018). Later it causes seeping inside the body, just as from the eyes, ears and nose (Ezhilarasan, Sokal and Najimi, 2018). A few people will regurgitate or hack up blood, have ridiculous looseness of the bowels and get a rash (Gheena and Ezhilarasan, 2019). Treatment incorporates a test serum that decimates contaminated cells (Menon et al., 2018). Manifestations of Ebola can be made with liquids and electrolytes, oxygen, pulse drug and blood bondings (Rajeshkumar, Venkat Kumar, et al., 2018).

Coronavirus and treatment

Covid are a gathering of enormous RNA infections that cause sickness in late well evolved creatures and fowls (Karthiga, Rajeshkumar and Annadurai, 2018). In people, these infections cause respiratory plot contamination (Zhang et al., 2019). That can run from gentle to deadly conditions. Mellow sickness incorporates basic cold, while deadly condition incorporates SARS, MERS and COVID - 19 (Holshue et al., 2020) (Rajeshkumar, Agarwal, et al., 2018). There are no antibodies till now for this human Covid are to a great extent, generally, round particles with bulbous surface projection. It is an encompassed infection with glycoprotein. Tainted transporters can shed infections into nature (Corman et al., 2020).

There is some proof that tuberculosis immunization Bacillus-Calmette-Guerin (BCG) has vague valuable impacts against non related diseases. A few investigations guarantee that there is a connection between morality of COVID-19 rate and BCG antibody . The measure of difference in the event that and passings clarified by BCG immunization strategy ranges somewhere in the range of 12.5% and 38% by generally separating the nations into 3 classes demonstrating high, center or low development pace of cases . BCG which can stay alive in the human skin for a while, triggers explicit memory B and T cells as well as invigorates the platelets for a delayed period.

The S protein of SARS-COV, a sort 1 transmembrane glycoprotein, answerable for infection restricting combination and section and is a significant inducer of killing antibodies. S protein comprises a solitary peptide. It focuses on the cell film into nearness, which brings about infection combination and section. A few recombinant vector based antibodies communicating SARS-COV S protein have been surveyed in preclinical examinations.

CONCLUSION

These findings show that the virus plays a major role in increasing the rate of human mortality and the rate of spread of the virus is more rapid. currently COVID - 19 the rate of spread is more and the mortality rate is high, viral infections usually are known to resolve without treatment in case of strengthend immunity , but medications can relieve symptoms of infection. There is limited treatment for the viral infection , but vaccination prevents it from spreading. It is to be believed these efforts will play a significant role in controlling the wide spread of viruses.

AUTHOR CONTRIBUTIONS

Idea and study was conceptualized by Lakshminarayanan Arivarasu, collection of the literature and drafting the manuscript was done by Karthik, revising of the manuscript was done by Leslie rani.

CONFLICT OF INTEREST

The authors declare no conflict of interest

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ETHICAL CLEARANCE

It is taken from “Saveetha Institute Human Ethical Committee” (Ethical Approval Number-SDC/SIHEC/2020/DIASDATA/0619-0320)

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Table 1: Virus causing diseases.

INFECTIONS	VIRUSES
Common cold	Rhinoviruses parainfluenza virus Respiratory syncytial virus
Meningitis	Jc virus Measles Arbovirus rabies
pharyngitis	Adenovirus
cardiovascular	Coxsackie B virus
Skin infection	Smallpox HSV 6 Varicella zoster virus
STD	HIV
Pneumonia	Influenza virus A&B

Table 2: Vectors spreading diseases

TYPES OF VECTOR	**DISEASES**
Mosquitoes	Dengue fever Yellow fever Chikungunya West nile fever Rift valley fever Japanese encephalitis
Sand files	Pholebotomus fever

Table 3: Natural products against Viral diseases

VIRUS	NATURAL PRODUCT EVALUATED
Coronavirus	Saik osaponins against HcoV-22E9 Lindera aggregata - SARS - coV
Dengue virus	Baicalein - DEN V2 Narasin - DEN V2
Enterovirus	Ethanolic extract of ocimum basilcium
Hepatitis B virus	Isochlorogenic acid A from Laggera alata
HSV	Ent - Epiafzelechin from cassia javanica