Immune Boosters to Combat Zoonotic Viral Diseases

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ABSTRACT

Zoonotic viral diseases continue to be a long-standing danger to worldwide health, demanding thorough plans to strengthen the human body's defenses against potential infections. This summary delves into the idea of using immune boosters as a proactive method to fight against zoonotic viruses. The discussion covers a wide range of strategies, including dietary choices, lifestyle changes, and the use of supplements. Eating a diet full of nutrients is essential, with vitamins C and D, as well as zinc, playing crucial roles in supporting the immune system. Probiotics, present in fermented foods, support a strong and healthy gut microbiome, improving overall immune function. Consistent physical activity, quality sleep, and effective stress reduction are all vital elements that work together to build up the body's ability to fight off infections. Staying hydrated and consuming foods rich in antioxidants help to maintain the integrity of our cells, thus supporting our immune system. The potential immune-boosting properties of herbal supplements like echinacea and elderberry are being carefully investigated and considered for incorporation. It is recommended to consult with healthcare professionals because there may be potential interactions or reasons why certain medications should not be taken together. The chapter emphasizes the significance of a comprehensive and tailored strategy for boosting the immune system, recognizing the diversity of individual reactions. It also highlights the crucial role of vaccination in preventing zoonotic diseases and triggering specific immune reactions. While these methods of boosting the immune system can improve overall health, they are not replacements for medical treatments. It is crucial to seek prompt medical help if you suspect you have a zoonotic infection. As the world faces new viral challenges, it is essential for the global community to develop a thorough immune-boosting plan to strengthen public health resilience.

KeywordS: Zoonotic viral diseases; Immune boosters; Infection prevention; Holistic health; Public health resilience

CITATION

Saqib M, Iqbal KJ, Khan S, Gulnaz R, Iqbal T, Mankga LT and Fatima K, 2023. Immune boosters to combat zoonotic viral diseases. In: Aguilar-Marcelino L, Zafar MA, Abbas RZ and Khan A (eds), Zoonosis, Unique Scientific Publishers, Faisalabad, Pakistan, Vol 3: 344-358. https://doi.org/10.47278/book.zoon/2023.107

CHAPTER HISTORY Received: 02-Feb-2023 Revised: 09-July-2023 Accepted: 21-Aug-2023

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1. INTRODUCTION

1.1. ZOONOTIC VIRAL DISEASES EXPLANATION

Zoonotic viral diseases are infectious illnesses that arise from the transmission of viral pathogens from animals to human beings. The etiology of these aforementioned ailments is primarily attributable to viral agents that are endemic to animal populations, comprising feral fauna, domesticated stock, and companion animals. In the majority of instances, viruses prove to be innocuous to the animals they infect. However, upon transmission to humans, they have the potential to elicit illness and, in severe cases, fatality (Prince et al. 2022).

Zoonotic viral diseases have emerged as a noteworthy public health issue as they possess the potential to rapidly spread and instigate epidemics and pandemics. Several examples of viral diseases that are transmissible from animals to humans, which are commonly referred to as zoonotic diseases, include Ebola, SARS-CoV-2, also known as the virus responsible for causing the COVID-19 pandemic, as well as influenza, more typically recognized by its popular name, the flu, among numerous others (Contini et al. 2020).

Transmission of zoonotic viruses from animals to humans can take place through diverse pathways, including but not limited to direct contact with infected animals or their bodily fluids, consumption of food or water contaminated with the virus, and the bite of an infected arthropod, such as a mosquito or tick. The incidence of zoonotic viral infections is considerably heightened in regions where individuals coexist in intimate proximity with animals or where there is a substantial incidence of animal trade or consumption (Kruse et al. 2004).

It is of paramount importance to avert the transmission of zoonotic viruses as a means of reducing the likelihood of outbreaks and safeguarding the well-being of the general populace. The realization of aforementioned objectives may be attained via a plethora of strategies, which may encompass the advancement of inoculations, intensified vigilance and tracking of animal communities, and implementation of public health education initiatives aiming at fostering prudent animal product manipulation and consumption practices (Wimalawansa 2020).

1.1. IMMUNE BOOSTERS IN PREVENTING AND TREATING DISEASES IMPORTANCE

Enhancing the immune system through the utilization of immune boosters plays a significant role in averting and managing zoonotic viral diseases due to a host of reasons.

1.2. THE IMMUNE SYSTEM STRENGTHENING

Immune enhancers, whether innate or man-made have the potential to fortify the immune system which is indispensable in combatting viral infections. An effective immune system possesses superior ability in identifying and combating viral pathogens, thereby potentially averting or mitigating the onset and progression of infectious disease (Islam et al. 2022).

1.3. VACCINE EFFICACY ENHANCING

Enhancement of vaccine efficacy is reportedly achievable via immune boosters, which have been identified as one of the most efficacious strategies in the prevention of viral infections. The implementation of immune enhancers, such as adjuvants, has been demonstrated to augment the

immune response elicited by vaccines, culminating in heightened resistance against the viral strain (Slifka and Amanna 2014).

1.4. VIRAL REPLICATION REDUCING

Several immunity-enhancing agents, for instance, antiviral medications, possess the capacity to specifically target the virus and mitigate its capacity to reproduce within the organism. This intervention has the potential to retard the pace of disease advancement, diminish the gravity of symptoms and enhance the probability of recuperation (Dube et al. 2021).

1.5. OVERALL HEALTH SUPPORTING

Adopting a wholesome dietary plan and maintaining a healthy lifestyle can significantly enhance immunological function and mitigate the susceptibility to viral infections.
Immune enhancers possess the capability of significantly impacting the protection and management of zoonotic viral infections, through the fortification of the immune system, amplification of vaccine effectiveness, conduction of viral replication reduction, and assistance in maintaining holistic well-being. By integrating immunomodulators in both prevention and treatment tactics, it is plausible to mitigate the repercussions of zoonotic viral illnesses on human welfare (Arshad et al. 2020).

2. IMMUNE SYSTEM OVERVIEW

2.1. FUNCTIONS OF IMMUNE SYSTEM

The immune system is a complex hierarchical organization comprised of cells, tissues, and organs with concerted function aimed at the preservation of the body by shielding it against a spectrum of pathogens, including viruses, bacteria, fungi, and parasites (Marshall et al. 2018). The immune system's main functions.

2.2. PATHOGENS IDENTIFICATION AND ELIMINATION

The immune system demonstrates the capacity to discern and discriminate between self and non-self-entities, which encompasses the molecular constituents present on the pathogens' surface. Upon identification of a pathogen, the immune system has the ability to initiate a response mechanism to eradicate the pathogen from the host organism (Medzhitov 2007).

2.3. IMMUNE RESPONSE MOUNTING

The immune system mounts a response against pathogens through the generation of specialized cellular components, including white blood cells that are capable of specifically targeting and eradicating the foreign agent. The immune system is capable of generating antibodies, a class of proteins that demonstrate the ability to identify and counteract specific pathogens (Spiering 2015).

2.4. IMMUNOLOGICAL MEMORY GENERATING

Upon encountering a pathogen, the immune system has the capacity to elicit immunological memory, a phenomenon that confers the ability to mount a swifter and more efficient response to subsequent infections caused by the same pathogenic agent (Quast and Tarlinton 2021).

2.5. BODY SYSTEMS COORDINATING

The immune system is responsible for the crucial function of safeguarding the body against pathogens and upholding a state of general wellness. To achieve this, it engages in intricate interactions with other systems of the body, including the nervous and endocrine systems, in order to regulate immune responses. It is crucial to maintain a robust and harmonious immune system to thwart infections and combat illnesses (Ziemssen and Kern 2007).

2.6. THE HEALTHY IMMUNE SYSTEM IMPORTANCE IN COMBATING VIRAL INFECTIONS

The maintenance of a robust immune system is of paramount importance when addressing the challenge of viral infections owing to various compelling factors.

2.7. ELIMINATION OF EFFECTIVE VIRUS

A robust immune system is more proficient in eradicating viruses by generating specialized T and B cells, which possess the capability to specifically target and eliminate infected cells, as well as neutralize the virus (Li et al. 2020).

2.8. MEMORY OF IMMUNOLOGICAL

The phenomenon of immunological memory observed in a healthy immune system following an initial infection confers the ability to mount a rapid and potent response against future infections caused by the same virus (Dan et al. 2021).

2.9. SYMPTOMS OF REDUCED SEVERITY

A robust immune response has the potential to mitigate the gravity of symptoms that are linked with viral infections, including but not limited to fever, fatigue, and myalgia (Woods et al. 2020).

2.10. COMPLICATIONS OF LOWER RISK

A healthy immune system is less predisposed to experience complications that are linked with viral infections, including encephalitis or pneumonia. An optimal immune system is crucial in mounting an effective defense against viral infections. A robust and balanced immunological response can serve to forestall infections, mitigate the severity of clinical manifestations, and decrease the susceptibility to developing complications. The implementation of various strategies aimed at preserving a robust immune system, including the consumption of a nutritionally-balanced diet, adherence to a consistent exercise regimen, and sufficient sleep, are of paramount significance in the prevention and management of viral infections (Khan et al. 2022).

2.11. DIFFERENT COMPONENTS OF THE IMMUNE SYSTEM

2.11.1. IMMUNE SYSTEM DIVIDED INTO TWO COMPONENTS

2.11.1.1. INNATE IMMUNE SYSTEM

The innate immune system represents the initial barrier against pathogens and is constituted by non-specific mechanisms which possess the capability to promptly react towards a vast array of pathogens.

The human immune system comprises both anatomical and physiological barricades, such as the epidermis and mucosal linings, in addition to specialized cellular components such as macrophages, neutrophils, and natural killer (NK) cells. These cells have the ability to identify and purge pathogens using non-specific mechanisms including phagocytosis and the excretion of cytotoxic substances (Cota and Midwinter 2012).

2.12. ADAPTIVE IMMUNE SYSTEM

In contrast, the adaptive immune system is a discerning defensive mechanism that has the capability of selectively recognizing and targeting particular pathogens. The present system encompasses distinct cell types, notably T and B cells, capable of discerning and reacting to particular antigens, specifically proteins that appear on the exterior of infectious agents. The adaptive immune response constitutes a more intricate and protracted process, yet it confers enduring immunity against distinct pathogens. The adaptive immune system possesses the ability to generate immunological memory, thereby facilitating expedited and optimized response to subsequent infections caused by the same pathogen. The conjoined actions of the innate and adaptive immune systems serve as a robust mechanism for effectively shielding against potentially harmful pathogens. The innate immune system offers an expedient, unspecific reaction to a diverse array of pathogens, whereas the adaptive immune system elicits a nuanced, focused response to distinct pathogens. The integral role of both innate and adaptive components of the immune system cannot be understated with regard to upholding holistic well-being and safeguarding the body against potential infectious agents (Marshall et al. 2018).

3. BOOSTERS IMMUNE

3.1. IMMUNE BOOSTERS

Immunomodulatory agents may be administered in various forms, including supplements, vitamins, herbs, natural remedies, as well as lifestyle interventions such as dietary modifications, exercise, and stress management techniques (Noureen et al. 2022).
Although certain immune boosters have been scientifically validated as efficacious, a vast number of them have not received sufficient trials, and therefore, their potency and safety remain uncertain. Consultation with a healthcare provider is crucial prior to the consumption of any immune booster in order to ascertain its safety and suitability with respect to individual requirements (Pudalov et al. 2020).

3.2. IMMUNE BOOSTER'S TYPES

There exists a myriad of immune-enhancing interventions, encompassing both organic and artificial modalities.

3.3. IMMUNE BOOSTERS NATURAL

Immune-enhancing agents of a natural origin are obtained from botanical resources including plants, herbs, and comestibles (Singh et al. 2021).

3.4. EXAMPLES OF NATURAL IMMUNE BOOSTERS

Vitamin C, a robust antioxidant with the potential to enhance immune function and defend against infections, is naturally present in citrus fruits, berries, and leafy greens (Saha et al. 2021). Zinc, an

essential nutrient for immune function, can be sourced from various food items such as oysters, red meat, and poultry. Its role in combating infections is noteworthy (Kanwar and Sharma 2022). Echinacea, a frequently utilized botanical remedy, is purported to bolster the body's immune response while ameliorating the intensity of symptoms associated with cold and influenza viral infections (Namdeo 2021). Probiotics, which are present in fermented foods such as yogurt, kimchi, and sauerkraut, have been shown to enhance intestinal health and fortify immune responses (Şengün and Güney 2021). Synthetic immune boosters refer to artificially produced compounds that have been formulated to augment the functionality of the immune system (Nath et al. 2021).

Immune checkpoint inhibitors are a class of synthetic agents that function by obstructing specific molecules that possess the capacity to restrain the immune system's functioning, thereby enabling it to effectively combat cancer cells (Ge et al. 2018).

3.5. THE IMMUNE BOOSTERS WORK

The mechanism by which immune boosters enhance the body's immune system function may differ depending on the particular immune booster being examined. In a broad sense, immune boosters operate through the amplification of the immune system's functionality, primarily accomplished by the inducement of immune cell production or the activation of pre-existing immune cells (Bartleson et al. 2021).

For instance, certain natural agents that enhance immunity, including vitamin C and zinc, represent indispensable nutrients that play crucial roles in promoting optimal immune system performance. The acquisition of optimal levels of vitamin C is a crucial determinant for the synthesis of white blood cells, whereas zinc plays a pivotal role in the progression and efficacy of immune cells, particularly T and NK cells. The provision of essential nutrients to the body has been shown to significantly enhance immune function, thereby decreasing susceptibility to various infections and diseases (Cámara et al. 2021).

Various natural immune enhancers, such as Echinacea and probiotics, function by directly stimulating the immune system. Echinacea is purported to stimulate the production of leukocytes and other components of the immune system, while probiotics have the ability to foster the proliferation of advantageous microorganisms in the gastrointestinal tract, thereby fortifying immune function (Provenza and Villalba 2010).

4. NATURALLY IMMUNE BOOSTERS

4.1. BOOST IMMUNITY FOODS AND NUTRIENTS

Zinc is a mineral which plays an indispensable role in the growth and operation of the immune system's T cells and NK cells. Excellent dietary sources of zinc consist of mollusks such as oysters, beef, chicken, legumes, nuts, and whole grains (Vishwakarma et al. 2022).

Vitamin D is a crucial nutrient that plays a vital role in enhancing immune function, and scientific evidence suggests that it can effectively safeguard against respiratory infections. Fatty fish like salmon and tuna, fortified milk and cereal, as well as exposure to sunlight, serve as viable sources of vitamin D (Smith et al. 2020).

Probiotics refer to the so-called advantageous microorganisms that inhabit the gastrointestinal tract and assist in bolstering immune functionality. Various food items are considered to be good sources of probiotics, such as yogurt, kefir, kimchi, and sauerkraut (Damián et al. 2022).

The nutritional properties of garlic entail active elements that exhibit antimicrobial and immune-enhancing effects. Evidence supports the efficacy of these compounds in promoting health and well-being. This particular ingredient possesses the potential to enhance both the taste and nutritional value of a diverse range of culinary preparations (Chakraborty and Majumder 2020).

Turmeric, a plant-derived substance, exhibits a bioactive constituent named curcumin which possesses notable anti-inflammatory and immunomodulatory attributes. This ingredient may be incorporated into various types of dishes, such as curries, soups, and smoothies, to enhance the flavor profile and impart notable health advantages (Mrityunjaya et al. 2020)

Green tea is known to possess polyphenols, which have been demonstrated to exhibit immune-stimulatory properties. This drink can be consumed both hot and cold, providing a variety of nutritional benefits (Otto 2022).

4.2. HERBAL SUPPLEMENTS USED IN IMMUNE BOOSTERS

Moreover, apart from dietary intake, a plethora of herbal supplements have been conventionally employed to enhance the immune system.

Echinacea, an herb long revered for its medicinal properties, has been widely utilized throughout history for its ability to enhance immune function and provide relief from various types of infections. The mechanism of action is presumed to involve the activation of the biosynthesis of leukocytes and various immunological cells. Echinacea supplements can be procured in diverse forms such as capsules, tablets, and tinctures (Catanzaro et al. 2018).

The fruit of elderberry has been conventionally employed to remedy colds and flu. The chemical composition of this substance includes flavonoids, which possess antioxidant and anti-inflammatory attributes that could potentially enhance immune function. Elderberry supplements are offered in a range of preparations such as syrups, lozenges, and capsules (Srivastava et al. 2020).

The herb known as Astragalus, with a longstanding history of use in traditional Chinese medicine spanning thousands of years, has attracted significant attention within the academic and medical communities. It is postulated that it exerts a beneficial effect on the immune system through the activation of white blood cells and other related immune cells. A multitude of formats of Astragalus supplements can be readily obtained, encompassing capsules, tablets, and tinctures (Shahrajabian et al. 2019).

Andrographis, an herbal remedy with origins in Ayurveda medicine, has found common use in treating symptoms of cold and influenza. The substance in question comprises compounds that have demonstrated anti-inflammatory and immune-enhancing properties. There exist diverse types of Andrographis supplements which come in different forms, such as capsules and tablets (Gaur et al. 2010).

Ginger, a plant root with a long history of medicinal use, has traditionally been utilized for its therapeutic benefits in the treatment of colds and flu. The composition of the substance comprises elements that possess attributes that are conducive to mitigating the effects of inflammation and fortifying the immune system. Ginger supplements can be obtained in diverse formats, which include capsules, tablets, and teas (Agarwal 2021).

4.3. MODIFICATIONS OF LIFESTYLE

Regular physical activity has been demonstrated to possess immunomodulatory capacities. This intervention exhibits the potential to elevate circulation, enhance lymphatic circulation, and activate the

synthesis of immune cells. The objective is to engage in moderate exercise for a minimum of 30 minutes on a daily basis throughout the majority of the week (Hasan 2022).

Sufficient sleep is paramount to promoting immune system capabilities. Insufficient slumber may lead to impaired immune response and heightened vulnerability to infections. It is recommended that individuals strive to obtain between 7 and 8 hours of sleep per night (Yousfi et al. 2020).

The management of stress is paramount, as its chronic manifestation may serve to compromise the immune system, thereby elevating the vulnerability of infections. The exploration of efficacious stress management techniques, including those incorporating meditation, yoga, or deep breathing exercises, has the potential to bolster immune function (Vagga and Dhok 2020). The implementation of proper hygiene practices has the potential to mitigate the transmission of infectious diseases. Observing proper hygiene practices, such as frequent hand washing, cough and sneeze etiquette, and minimizing contact with ill individuals, are effective ways of preventing the spread of disease (Mieth et al. 2021).

Smoking cessation is of paramount importance since smoking is known to have deleterious effects on immune function and amplifies the likelihood of contracting infectious diseases. The act of ceasing cigarette smoking can yield both immediate and enduring advantages with regard to immune health (Eltorai et al. 2019).

5. SYNTHETIC OF THE IMMUNE BOOSTERS

5.1. IMPORTANCE OF VACCINES AND PREVENTING VIRAL INFECTIONS

The employment of vaccines constitutes a fundamental initiative in countering the dissemination of viral infections. The mode of action of these agents is rooted in fostering immune recognition and response against specific viral pathogens. Vaccines consist of either a weakened or killed version of the virus, or an immunogenic viral constituent, which is capable of stimulating an immune response. Upon receiving a vaccination, the immune system of an individual is intentionally and safely exposed to the virus, thereby facilitating the production of an immunological response to the virus without inducing any manifestations of the disease (Shih et al. 2020).

5.2. VACCINES INHIBITING VIRAL INFECTIONS

The administration of vaccines has been found to offer protection against severe and potentially fatal illnesses, including measles, polio, and influenza (Soriano et al. 2022).

Herd immunity is a phenomenon wherein a sufficient proportion of individuals within a given community have been immunized against a specific virus, leading to a decrease in the likelihood of transmission of the virus. As a result, even individuals who are unable to receive vaccinations, such as infants or those with compromised immune systems, are shielded from the virus as it is less likely to spread (Pollard and Bijker 2021).

The prevention of outbreak and epidemics by means of vaccines is an efficacious strategy that involves mitigating the number of individuals who can contract and propagate viral infections. This approach serves to curtail the morbidity and mortality rates of infectious diseases (Li et al. 2020).

Vaccines present a cost-effective measure in the prevention of infectious diseases. Notably, they offer the potential to substantially ease the financial burden associated with medical care, hospitalization, and diminished productivity resulting from illness. Vaccination represents a significant tool in curtailing viral infections and safeguarding the health of the general population. Adhering to the recommended

vaccine schedules is crucial to guarantee that both individuals and communities are safeguarded against diseases that can be prevented through vaccination (Kohli et al. 2021).

5.3. ROLE OF ANTIVIRAL DRUGS FOR TREATING VIRAL INFECTIONS

Antiviral drugs are a therapeutic class of pharmacological agents developed specifically for the treatment of viral infections. These drugs operate by disrupting viral replication mechanisms or by impeding the viral pathogen's ability to propagate and spread among host cells. Antibiotics, being designed to target bacterial infections, are distinct from antiviral drugs which are specifically tailored to combat viruses and are not effective against other microorganisms (Meganck and Baric 2021).

5.4. USED OF ANTIVIRAL DRUGS TO TREAT VIRAL INFECTION

The management of acute infections entails the administration of antiviral agents, which impede the proliferation of viruses and mitigate the intensity and duration of symptoms. Influenza, herpes, and hepatitis are among the viral infections that can be effectively treated using antiviral drugs (Tompa et al. 2021).

Antiviral drugs have been demonstrated to be efficacious in averting the transmission of specific viral infections, such as human immunodeficiency virus (HIV) and hepatitis B, from maternal to fetal during the duration of gestation or at the time of delivery (Hou et al. 2019).

The management of chronic infections is a paramount concern in the medical field. Certain viral infections, such as human immunodeficiency virus (HIV) and hepatitis B and C, have the propensity to progress into a chronic state, necessitating the utilization of prolonged antiviral drug therapy to both mitigate symptoms and avert complications (Terrault et al. 2018).

Emergency therapy may involve the administration of antiviral agents in situations such as critical viral infections, including the Ebola virus or severe acute respiratory syndrome (SARS), wherein prompt intervention is crucial, and failure to treat expeditiously may result in severe morbidity or mortality (Cao et al. 2020).

It is imperative to acknowledge that antiviral medications are not universally efficacious against all viral infections, as their effectiveness is contingent upon numerous variables such as the specific type of virus and the particular stage of the infection being treated. Furthermore, the utilization of antiviral medications may result in the manifestation of adverse effects and drug interactions; hence, it must be administered solely under the supervision and recommendation of a healthcare professional (Kursat et al. 2020).

5.5. MONOCLONAL ANTIBODIES USE SEVERE VIRAL INFECTION

Monoclonal antibodies, herein referred to as mAbs, represent a category of synthesized proteins with the capability of being manipulated to selectively recognize and bind to distinct proteins located on the outer membranes of viruses. In the field of medicine, immunomodulatory have been implemented as a therapeutic strategy for combating highly consequential viral infections. Their primary purpose is to enhance the immune system's ability to identify and eliminate the infectious virus (Raytthatha et al. 2020).

5.6. MONOCLONAL ANTIBODIES USES

The therapeutic strategy for COVID-19 involves the administration of monoclonal antibodies, which have been granted emergency use authorization. These therapeutic agents function through the mechanism

of attaching to the spike protein located on the exterior of the SARS-CoV-2 virus, thus impeding its ability to invade cells and concurrently lessening the gravity of the disease manifestation in patients who have contracted the infection (Kelley et al. 2022).

The management of Ebola virus infection involves the use of monoclonal antibodies as a therapeutic option, which demonstrate the ability to lower viral load in the bloodstream, resulting in enhanced survival rates (Iversen et al. 2020).

The prevention of viral infections can be achieved through the utilization of monoclonal antibodies, particularly in individuals who have encountered the virus. This approach is particularly applicable to those who are susceptible to experiencing severe disease resulting from influenza or respiratory syncytial virus (RSV) (Behzadi and leyvagrado 2019).

The management of chronic viral infections has garnered considerable attention, with monoclonal antibodies emerging as a possible therapeutic avenue. These antibodies have been extensively researched as a potential treatment option for hepatitis B and HIV, specifically in their ability to aid in immune system stimulation and reduce the viral load in circulation (Iannacone and Guidotti 2022).

The efficacy of monoclonal antibodies as a viable remedy for severe viral infections has exhibited promising outcomes. The efficacy of antiviral therapies may exhibit variability contingent on the virus type and the stage of the pathogenic infection. Additionally, these treatments can potentially elicit undesirable outcomes, including but not limited to allergic and infusion reactions. The appropriate utilization of monoclonal antibodies necessitates the expert guidance of a healthcare practitioner (Chung et al. 2021). Fig. 1 shows the list of zoonotic viral diseases.

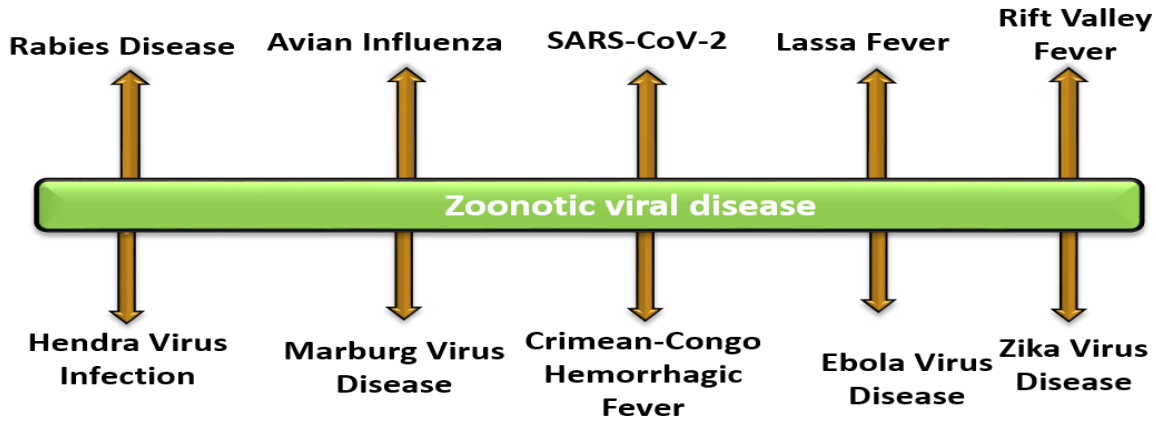

Fig. 1: Zoonotic viral disease

6. PREVENTION AND TREATMENT OF ZOONOTIC VIRAL DISEASES

6.1. ZOONOTIC VIRAL DISEASES EXAMPLES

Ebola virus disease (EVD) is caused by a virulent virus that exhibits high levels of infectivity. Human transmission of the virus primarily occurs via contact with infected animals, most notably fruit bats, monkeys, and chimpanzees. The virus has the potential to precipitate a grave hemorrhagic fever syndrome and engenders a high fatality rate (Caron et al. 2018).

The causative agent of the COVID-19 pandemic is SARS-CoV-2, a viral pathogen that primarily affects respiratory function. The etiology of the virus under consideration is conjectured to have originated in

bats and has been postulated to have been transferred to humans via an animal host which serves as an intermediary vector, potentially a pangolin (Ortiz-Prado et al. 2020).

The H1N1 influenza, commonly known as swine flu, is a strain of influenza virus that is typically prevalent in swine species. The transmission of the virus to humans may occur via direct exposure to infected pigs or through indirect exposure to contaminated surfaces (Jilani et al. 2018).

Rabies is a viral zoonotic disease that can be transmitted to humans via the bite of an infected animal, including but not limited to dogs, cats, and bats. The pathogen targets the nervous system and poses a significant risk of morbidity and mortality if not appropriately managed in a timely manner (Horta et al. 2022).

MERS-CoV, an acronym for Middle East respiratory syndrome coronavirus, is a contagious viral illness that can be contracted by humans through exposure to infected dromedary camels. The virus has the capability to induce serious respiratory illness and exhibits a significant fatality rate (Conzade et al. 2018).

Zika virus disease represents a pathogenic ailment which is contracted by humans upon being bitten by infected Aedes mosquitoes that are known to serve as carriers of this arbovirus infection. The mode of transmission of this viral illness is predominantly orchestrated through mosquito bites, with several other vertical transmission routes having also surfaced in recent times. The virus has been observed to engender minor ailments in the majority of individuals, whereas its impact on pregnant women could lead to grave complications, including congenital malformations in neonates (Veeresha et al. 2022).

There is a plethora of viral diseases that are zoonotic in nature. The implementation of preventive measures is crucial in inhibiting the proliferation of said diseases. This may entail refraining from any form of interaction with afflicted animals, observing proper sanitary practices, and acquiring vaccination, if available (Khan et al. 2021).

6.2. STRATEGIES OF PREVENTION

Vaccination is considered to be one of the most efficacious means for treating the Contagious effects of viral disease. Vaccinations operate through the stimulation of the immune system to produce specialized proteins known as antibodies, which possess the capability to neutralize the virus if an individual is exposed to it subsequent to vaccination. Several viral diseases, such as influenza, measles, and hepatitis B, can be treated with vaccines (Zhang et al. 2020).

The utilization of Personal Protective Equipment for instance, masks, gloves, and gowns, plays a vital role in reducing the risk of exposure to infectious materials. The implementation of PPE is beneficial in preventing the transmission of viral diseases amongst individuals. Personal Protective Equipment holds particular significance for healthcare professionals who are at risk of exposure to infected patients (Hirschmann et al. 2020).

Effective hand hygiene practices, such as washing one's hands with soap and water or utilizing alcohol-based hand sanitizers, have been shown to inhibit the transmission of viral diseases by eliminating any viruses that may be present on the hands (Lee et al. 2020).

Social distancing is a set of preventive measures that involves maintaining a minimum distance of six feet from individuals and abstaining from large gatherings as a means of curbing the transmission of viral diseases. The practice succeeds in limiting the possibility of close interaction among individuals, which effectively deters the spread of such diseases (Pandi-Perumal et al. 2021).

Limiting the movement of individuals through travel restrictions is a viable strategy to contain the dissemination of viral diseases. Such measures effectively diminish the number of people traveling to or from regions experiencing elevated levels of infection (Chinazzi et al. 2020).

Controlling the diffusion of zoonotic viral diseases frequently necessitates the implementation of animal control measures to curtail propagation of the disease within animal populations. The prevention of disease dissemination often entails vaccinating animals, imposing quarantine protocols, or engaging in the targeted euthanization of infected livestock (Fritz and Byers 2023).

6.3. TREATMENT OF ZOONOTIC DISEASES

The possible course of action for addressing zoonotic viral diseases exhibits variability contingent upon both the identity of the virus in question and the perceived levels of severity pertaining to the infection. Several conventional treatment options are available.

The provision of supportive care is frequently considered the primary therapeutic modality for addressing zoonotic viral illnesses. Possible academic rewriting: Diverse interventions can be employed to manage the clinical presentation of a patient with a severe respiratory illness. These could encompass interventions aimed at mitigating oxygen deprivation, restoring abnormal fluid and electrolyte balances, and addressing coexisting infectious complications. The specific treatment options may depend on the individual patient's condition and the underlying disease etiology. Providing adequate supportive care is crucial for patients who are afflicted with severe infections and necessitate hospitalization (Baseler et al. 2017).

Convalescent plasma, a blood derivative, is harvested from individuals who have successfully recuperated from a viral illness. The plasma comprises of antibodies that exhibit therapeutic potential in the context of viral infections by serving as an effective tool to combat the virus. Consequently, it can be utilized as an intervention strategy for patients currently affected by the infection. Convalescent plasma has been employed as a therapeutic intervention for a variety of viral ailments, among which SARS-CoV-2 ranks as a prominent example (Ranganathan and Iyer 2020).

Experimental therapeutics may be employed in certain instances for the management of zoonotic viral illnesses. Novel antiviral drugs, gene therapies, and immunomodulatory agents may be employed as potential therapeutic interventions. Notwithstanding, these interventions are commonly employed solely in clinical examinations and are not extensively accessible (Xu et al. 2020).

7. CONCLUSION

This chapter emphasizes the importance of immune boosters in preventing zoonotic viral diseases that transfer from animals to humans, causing severe health complications and deaths. This chapter covered the immune system's functions, including innate and adaptive responses, and discussed different immune-boosting agents. The text discussed nourishments, supplements, lifestyle adjustments, and preventive measures such as vaccinations and medications for zoonotic viral afflictions. The chapter emphasizes the need for innovative research to find effective treatments for illnesses. Improving the immune system can be done through natural supplements, herbal remedies, and lifestyle changes such as exercise and rest. Immune boosters can increase immune cell quantity and efficacy, antibody synthesis and overall immune system performance. They can help reduce the intensity and duration of viral infections. They can mitigate infections, especially zoonotic diseases. Immune boosters can help combat these diseases. Augmenting agents boost immunity, preventing viral infections, reducing complications, and promoting overall health.

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