



FROM THE DESK OF EDITOR

On March 11, 2020, WHO declared COVID-19 a pandemic. It created a state of panic among the people all over the world. The same state of affairs was observed within our own country where people, strongly driven by fear and took every precaution to minimize their exposure to the world around them. Governmental and non-governmental organizations have been meticulously working to understand and operate in accordance to the situation. They periodically share directives to reduce the difficulties experienced by the people at large.

However, the social and electronic media was rapidly filled with content highlighting the escalating cases of COVID-19, its impact on the economy and the isolating protocols imposed by different countries, leading to alarm and dread among the people. We, the team of Pharmavision, strongly believe that knowledge dissemination is very important during these critical times for people to not only understand the nature of the disease but also to identify & adapt strategies to cope up with this new way of life that has been imposed upon us in a sudden and drastic manner. However, the content of the information should be filtered so as to reduce the ever increasing anxiety among the masses.

For this purpose, we have dedicated this issue mainly to the opinions of the experts related to our current situation with the hopes that it will help ease the apprehensions within our students and readers while providing them with a better understanding. We wish you all safety and courage in these times.

Dr. Sidra Tanwir
 Editor
 Faculty of Pharmacy



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SURVIVAL OF THE FITTEST' IN THE TIMES OF COVID-19 AN OPINION **PROF. RAFAQ ALAM KHAN** DEAN, FACULTY OF PHARMACY ZU

The emergence of COVID-19 around the globe has exposed the humanity to a ubiquitous challenge pertaining to its survival. There have been waves of panic and uncertainty everywhere. Along came several theories regarding the virus origin, etiology and treatment. The websites and social media are now flooded with articles. With such plethora of information, it is getting harder to distinguish facts from stories. That has exacerbated confusion among masses. In addition, people are getting update on the death toll and the number of persons affected on daily basis. Reminders for maintaining social isolation and personal hygiene ring from every nook and corner. Mayhem prevails.

During the chaos, it is important to remind our self of bare essentials nature has provided for human survival. Herbert Spencer may have endorsed supremacy of particular specie when he put forward the idea of the survival of the fittest. However, in recent times, in my opinion, the axiom has morphed to give a different meaning. Indeed, in the face of COVID-19, the fittest would survive. Those who are physically fit have a better chance at defeating the onslaught of the virus. But the question is how do we achieve

optimal level of fitness? The answer has been there all along. Man, now more than ever, needs a robust immune system which can be acquired through balanced diet, sufficient water consumption, non-sedentary lifestyle and sound sleep. Within diet, it is of utmost importance to avoid all types of processed foods and consume food rich in vitamins, antioxidants and flavonoids like fruits and vegetables. Furthermore, it is beneficial to consume black cumin, also known as *Nigella sativa*. It is full of antioxidants and is excellent at eliminating bacteria-induced inflammation. Prophet Muhammad SAW said that, 'in it (*Nigella sativa*) there is healing for every disease, except death' [Al-Bukhari and Muslim]. Zhang and colleagues (2020) recently reported that inflammation, oxidation and exaggerated immune response are more expected to contribute COVID-19 pathology. Considering the risk factors, the aforementioned remedial steps sound relevant. Moreover, the team of researchers also presented melatonin as a potential aide for treatment in critical care patients by reducing vessel permeability and anxiety.

Melatonin commonly known as the sleep

hormone, is produced by the pineal gland when it gets dark as the first step to sleep. The secretion of melatonin is hampered when pupils are dilated due to light. It may be from the light emanating from screens of laptops, mobile phones etc. Therefore, it is important to listen to the nature's call and let our bodies rest when it is time. Melatonin not only induces sleep, boost immune system, but would help combat COVID-19 in the light of its well-known antioxidant and anti-inflammatory properties, since it blocks formation of pro-inflammatory cytokines. Moreover, adequate water consumption is vital to strengthen immunity. Water flushes out toxins and as a result lessens inflammation. Similarly, like healthy diet, exercise on regular basis also contributes to good health.

Sufficient exercise helps our body in producing antibodies needed to fight off the bacteria.

In times like these, one must remain calm and take necessary steps to boost immunity. Stress jeopardizes the immune



system. In the face of any stressor, the human body mobilizes resources in the body to combat the threat. If the periods of alarm & resistance continue for a long time, the resources deplete and human body becomes exhausted and vulnerable due to excess of cortisol in the bloodstream. Therefore, it is required to not let the body drive into overload unnecessarily. Furthermore, immune system functions in response to exposure to antigens and

strengthens its capacity when it does so. Needless hygiene would steal that opportunity from the immune system, compromising its function.

Man has more trust in medicine than he does in the power of lifestyle he follows. So much so that he would discard centuries-old wisdom endorsing use of natural products, adequate sleep, healthy diet and regular exercise. COVID-19 serves as

a reminder to prioritize natural lifestyle that enhances health and immunity.

Reference: Zhang R, Wang X, Leng Ni, Di X, Ma B, Niu S, Liu C, Reiter RJ. COVID-19: Melatonin as a potential adjuvant treatment. *LifeSciences*(250) 1 June 2020, 117583.

CORONA: DESERVES CROWN & PRESENTS SIGNS FOR WISE

DR. GHULAM ABBAS DIRECTOR OF PG STUDIES AND RESEARCH, FACULTY OF PHARMACY, ZU

Human race entered the 21st century with lot of pride owing to the development in various fields, especially that of medical sciences. The eyes marvels at the advent of next generation equipment (sequencers and analyzers), high throughput technology, state-of-the-art spectroscopy, significant increase in computational power and remarkable progress in artificial intelligence. These hi-tech setups were believed to shelter us from the illnesses. Due to this unprecedented advancement in the history of medical science, the word "pandemic" was generally considered excluded from the medical dictionary. However, it appeared to be true until Dec, 2019 when a virus with a crown, namely corona virus, started to play havoc with humanity. It respected no geographic boundaries and almost the entire world has been infected till date. Estimates are that millions more will be victimized by this virus. It is high time that the technology should come into action and protect their inventors from this virus. A cursory look at the therapeutic strategies reveal that current treatment plans include vaccine, remdesivir (nucleoside analog), hydroxychloroquine (anti-malarial), azithromycin (anti-bacterial), plasma therapy and purified immuno-

globulins. It is pertinent to mention here that all of aforementioned concepts under scrutiny to kill this novel Covid-19 virus are decades old. Not a single new pharmacological target, specific towards this novel strain is identified and validated so far. The information regarding its continuous mutating nature may also ask for continuous efforts to build new vaccine each year, as is the case with Flu virus. The possibility for lack of vaccine cannot be ruled out, which has already been observed in the case of HIV. It appears that the virus will end up on its own, as reflected from data of some severely hit countries, before any medicine or vaccine will be available. On top of it, the international politics, allegations for biological attack and espionage towards anti-viral development among rival countries have exacerbated the situation. When the world needs joint efforts, humans have also started to mutate producing different strains with inhuman traits thereby crippling the endeavors against corona. In the end, it shall not be an exaggeration to deduce that the modernization has not helped much in current milieu. The present high tech world is seemingly helpless in front of this virus, which has proven that the crown really belongs to

it. Whatsoever hope that we see currently is because of the wisdom offered by classics, proving old to be gold still. The year 2020 will be remembered for a long time as an eye-opener in the history of mankind, when the jaws dropped at counting the mortalities and eyebrows raised at the response from modern world. Last year, I read somewhere that the human race is passing through the bottleneck of time and their ability to offer solutions against various problems is stretched to the limit. At that time it was difficult for me to believe that mindful of the advancement I was witnessing with each passing day. However, the response from the scientific world, especially that of the developed nations, against this virus makes me believe it now.

I remember once asking a post-graduate student of mine to think out of the box, his astounding reply was: "Sir, I am neither thinking in the box, nor thinking out of the box. At the moment, I do not even know where the box is?" and today I wonder if the same applies for Covid-19 situation...the notion worthy of pondering upon as it holds the divine secrets.....food for thought!

ACTIVITY UPDATE AO BHOOK MITAYEN

DR. SARAH HAROON DEPT OF PHARMACY PRACTICE, FACULTY OF PHARMACY, ZU

Charity is the Third Pillar of Islam, hence being charitable and providing for the needy are important features of the Muslim character. Charity serves as a way to bring justice, balance and kindness to every society and community. The existence of countless starving, poor, hungry and destitute Muslims and non-Muslims in our surroundings especially during these trying times, points to the need for this essential teaching to be put into practice. In view of this, The Community and Welfare Society, Faculty of Pharmacy, Ziauddin University, conducted ration drives from home, with the aim to help daily wagers, who have been affected with the current COVID-19 pandemic. In our efforts to help those in need, two independent registered NGOs collaborated in our cause; "Together We Can" and "Muskurahat Nagar"

The Sindh government has created a mobile app named "Sindh Relief Initiative", which can be used by every registered organization in order to track the individuals with the help of their CNIC details, who can benefit with various ration drives taking place around the province. It also helps to eliminate the individuals who have already received ration bags from other welfare organizations or NGOs. AoBhookMitayen campaign used this app to track deserving individuals.

Our campaign took place in 2 phases; during the first phase, donations of PKR 75,000/= were collected and 30 ration bags, each costing PKR 2500/= were distributed along with fresh vegetables. During the second phase PKR 67,500/= were collected and 27 ration bags along with fresh vegetables were distributed to the under privileged daily

wagers in various areas of Karachi by the students of Faculty of Pharmacy, Ziauddin University.

Giving charity correctly is crucial to both the well-being of the needy as well as the ultimate happiness of the wealthy. It is our hope that we are able to fulfill our charitable duty correctly and do our part in easing the difficulties of those who we can.



COVID-19: HISTORY AND THE WAY FORWARD

DR. ARIF SABAH DEPT OF PHARMACY PRACTICE, FACULTY OF PHARMACY, ZU

The disease caused by the novel corona virus first identified in Wuhan, China, was initially referred to as '2019 novel corona virus' or '2019-nCoV', but has been named finally as Corona virus Disease 2019 (COVID-19).

The COVID-19 virus is a new virus linked to the same family of viruses which comprised of Severe Acute Respiratory Syndrome (SARS) and certain other types of common cold. The virus is transmitted through direct contact with respiratory droplets of an infected person (generated through coughing and sneezing), and touching contaminated surfaces. The symptoms can include fever, cough, muscles pain, chills, sore throat and shortness of breath. In more severe cases, infection can cause pneumonia or breathing difficulties, rarely, the disease can be fatal. According to the WHO, about 80% of people recover from the illness without ever needing formal treatment in a hospital setting. However, it has been observed that approximately 1 in every 5 person afflicted with COVID-19, becomes seriously ill and may develop breathing difficulties. Adults aged 50 years and above with pre existing health issues like chronic respiratory condition, hypertension, cardiovascular diseases, diabetes, cancer or renal disease are at higher risk of

developing the severe symptoms of COVID-19. Since till date, there is no approved standard treatment and cure for COVID-19, people can protect themselves and help prevent the spread of this so-called novel corona virus by following precautions

Even though we lack standardized protocols for cure and treatment of COVID-19, treatments and vaccines are currently under study. Currently the practiced treatment focuses on managing symptoms as the virus runs its course. Examples of therapies used currently include:

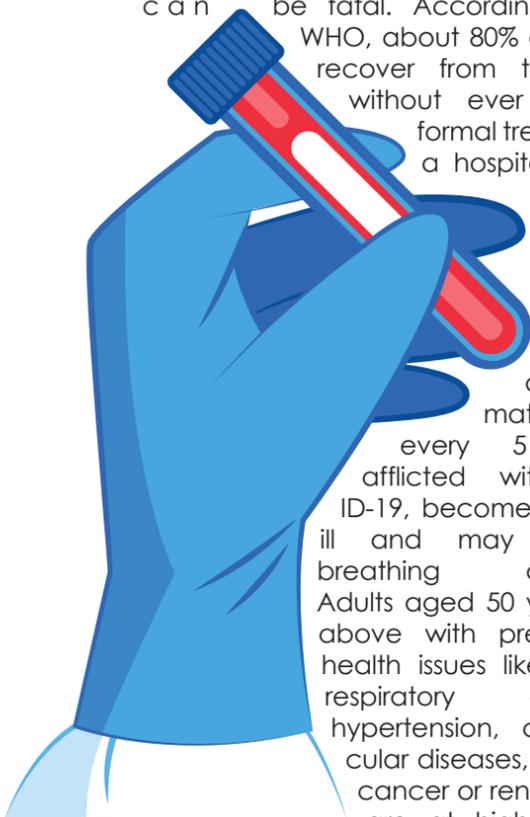
- Antiviral or Retroviral medications
- Breathing support, such as mechanical ventilation
- Steroids to reduce lung swelling
- Blood plasma transfusions

However, with ever rising number of patients' world over several Pharmaceutical companies and research organizations are diligently working on developing a treatment through judicious use of antiviral drugs, some of which are already available and used in treatment of other illnesses. Other companies are working on developing tailored vaccines that could be used as a preventive measure against COVID-19. Number of trials has been conducted from March 2020 till May 2020 on different antiviral, all showing contradictory results. Dr. Anthony Fauci, reported that a trial conducted on Remdesivir produced positive effects in diminishing recovery times in COVID-19 patients to 11 days when compared to 15 days in people who didn't take Remdesivir. At the same time, another study published in The Lancet, reported that participants in a clinical trial who took Remdesivir showed no benefits. Journal of the American Medical Association (JAMA) reported that a clinical study on Chloroquine had been ended because some participants had developed irregu-

lar heartbeats, and nearly around 24 to 25 participants had died after taking daily doses of the medication. European Union also reported no evidence of efficacy of hydroxychloroquine effective treatment of COVID-19.

Alternatively, scientists and researchers all over the world are also looking at other ways to target the virus or treat the complications of COVID-19. One such example is use of Monoclonal antibodies which trigger the immune system to attack the virus. Vir Biotechnology has isolated antibodies from recovered patients of SARS, and in collaboration with a Chinese firm WuXi Biologics are testing them as a probable treatment for COVID-19. Along the same lines, the FDA has announced to conduct trials on an experimental treatment that uses blood plasma from recovered patients of COVID-19, with the belief that their plasma contains antibodies that will attack this particular corona virus. Several immune suppressants are also being tested in clinical trials because in some people with COVID-19, the immune system releases huge amounts of a small protein called cytokines. Scientists think this "cytokine storm" may be the reason certain people develop Acute Respiratory Distress Syndrome (ARDS) and need to be put on a ventilator.

There are currently around 120 projects all over the world centered on the development of a corona vaccine. However, keeping in mind the current time line being proposed by the agencies world over, we still have to rely on social distancing, self-isolation, and other precautionary measures and must believe that after every storm there will be a rainbow, for every disease there is a healing, for every problem there is a solution, and the soul's indefeasible duty is to be of good cheer.



CURE FOR COVID-19: THE SEARCH BEGINS

DR. SHAZMA BASHIR DEPT OF PHARMACY PRACTICE, FACULTY OF PHARMACY, ZU

As the Corona virus disease 2019 (COVID-19) pandemic continues to cause thousands of deaths daily forcing health care systems around the world to breaking point, millions of lives and economies remain in lockdown. In response, researchers are racing for a cure against the severe acute respiratory syndrome corona virus 2 (SARS-CoV-2) that causes COVID-19. According to the World Health Organization (WHO) estimates, 80% of patients experience mild or no symptoms, 15% are severely infected, and 5% are critically ill. With true mortality of COVID-19 not fully established, the crude mortality rate is between 3-4%. In the search of COVID-19 cure, there have been two main approaches. Firstly, investigating the potential of currently available drugs approved for other uses or experimental drugs that weren't previously effective in other diseases for the treatment of severe COVID-19 cases. This

is a relatively quicker option to win this race against time.

Hundreds of clinical trials are either ongoing or about to be initiated globally. However, some drugs are also getting tested under regulations for compassionate use to treat the severe cases. Another approach involves looking at ways to develop vaccines, a longer but essential step to provide protection against infection rather than the treatment. As far as the drugs are concerned, antiviral, anti malarial drugs that have an impact on immune system and antibodies have been a centre of attention for the researchers. The drug that has been outstanding so far is remdesivir, an antiviral drug that was initially developed by Gilead Sciences as a potential Ebola treatment targeting the copying mechanism of virus. Recent findings of clinical trials of this drug conducted by National

Institute of Allergy and Infectious Diseases (NIAID), US have been promising as it has shown to reduce the duration of COVID-19 symptoms, thus improving the recovery time by about 31% [1]. This has led to an emergency use authorization of this drug from Food and Drug Administration (FDA) in the US and Japanese approval for the treatment of patients with severe COVID-19. Remdesivir is also included in the Solidarity trial launched by the WHO whereas early results of the Chinese trial were inconclusive. Combination of antiretroviral drugs lopinavir and ritonavir approved treatment for Human Immunodeficiency Virus (HIV) by blocking viral proteins have demonstrated some activity in lab studies but not in patients with severe COVID-19 [2], possibly due to the introduction of drugs at the advanced stage of the disease. Anti malarial such as chloroquine and hydroxychloroquine have been considered as

potential treatments due to their proposed antiviral action and impact on immune system but their effectiveness is still not established yet with preliminary studies are not encouraging [3] and associated side effects raising concerns. Certain drugs such as interferon beta, dexamethasone has gathered some attention due to their effects on reducing inflammation which if not addressed could lead to excessive damage and a major cause of death from COVID-19. A new possibility of an old viable option is plasma-based therapy. This involves using the blood plasma from COVID-19 survivors to treat patients as the antibodies contained in the plasma would help

to fight the infection. Considering the ongoing active research, it is reasonable to say that this will be over. While the world is waiting for a vaccine to control COVID-19 pandemic, an effective treatment could change the game altogether.

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COVID 19: A DILEMMA

DR. ADEEL ARSALAN

DEPT OF PHARMACEUTICS, FACULTY OF PHARMACY, ZU

A virus is a submicroscopic infectious agent that replicates only inside the living cells of an organism. Viruses can infect all types of life forms, from animals and plants to microorganisms, including bacteria and archaea. Now days, there is much curiosity regarding Corona virus. The virulence of this pandemic was reported by BBC future as "Throughout history, nothing has killed more human beings than infectious disease. COVID-19 shows how vulnerable we remain – and how we can avoid similar pandemics in the future." According to guidelines issued by WHO, it is better that everyone should keep a healthy lifestyle at home. Maintain a healthy diet, sleep, stay active, and make social contact with loved ones through the phone or internet. Stick to regular routines and schedules as much as possible.

An antiviral drug must be able to target the specific part of a virus's life cycle that is necessary for it to reproduce. In addition, an antiviral drug must be able to kill a virus without killing the human cell it occupies. Viruses are highly adaptive, because they reproduce rapidly, thus having plenty of opportunity to mutate (change their genetic information) with each new generation, potentially developing resistance to whatever drugs or vaccines we develop.

The blessing by THE ALMIGHTY ALLAH is that COVID-19 is not airborne and its wall is made of lipids, hence can be easily washed by soap, detergent or solvents

like alcohol, spirit, aftershave, even by vinegar. The major problem is no trusted vaccine and even antiviral is available to treat the infection. Scientists are working hard to develop effective treatments. Therapies that are under investigation include drugs that have been used to treat malaria and autoimmune diseases; antiviral drugs that were developed for other viruses, and antibodies from people who have recovered from COVID-19.

In Pakistan, recently, Dr. Shamsi had proposed the treatment of corona virus patients through passive immunization and sought government approval to infuse Covid-19 patients with blood plasma of those who had recovered from the illness in a bid to save lives of corona virus patients. The Sindh Health Department allowed Dr. Ruth Pfau Civil Hospital Karachi, the National Institute of Blood Diseases (NIBD) and Liaquat University Hospital, Hyderabad for the trials. Dr. Tahir Shamsi, Head of the National Institute of Blood Diseases acclaimed that the first corona virus patient treated through passive immunization recovered, and was discharged from the hospital. Several COVID-19 patients were undergoing the plasma therapy as the authorities had set a target of 350 patients to undergo the clinical trial.

What is convalescent plasma? How could it help people with COVID-19?

People who have recovered from COV-

ID-19, their blood contain antibodies that their bodies had produced to fight the corona virus and that had helped them to recover. Antibodies are found in plasma, a component of blood. It has been used for more than 100 years to treat a variety of illnesses from measles to polio, chickenpox, and SARS. In the current situation, antibody-containing plasma from a recovered patient is given by transfusion to a patient who is suffering from COVID-19. The donor's antibodies help the patient fight the illness, possibly shortening the length or reducing the severity of the disease. On March 24th 2020, the FDA began allowing convalescent plasma to be used in patients with serious or immediately life-threatening COVID-19 infections. This treatment is still considered experimental.

Who can donate plasma for COVID-19?

In order to donate plasma, a person must meet several criteria. They have to have tested positive for COVID-19, recovered, have no symptoms for 14 days after recovery, currently test negative for COVID-19, and have high enough antibody levels in their plasma. A donor and the patient must also have compatible blood types. Once plasma is donated, it is screened for other infectious diseases, such as HIV. Each donor produces enough plasma to treat one to three patients. Donating plasma should not weaken the donor's immune system nor make the donor more susceptible to getting re-infected with the virus.