



A STUDY OF USE OF NATURAL PLANT PRODUCTS TO PREVENT COVID-19

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ABSTRACT

Coronavirus disease 2019(COVID-19) was discovered in China; On December 2019, several patients were admitted to hospitals of Wuhan China with pneumonia like symptoms which cause death of many patients. The severe acute respiratory syndrome related coronavirus 2 (SARS-CoV-2), has declared as a pandemic by World health organisation (WHO) in March 2020. Till now, there is no vaccine discovered; So, Expert suggested the use of different herbal medicine is the only option to prevent the infection and increase the immunity of our body.

KEYWORDS : COVID-19, pandemic, Infection, herbal products.

INTRODUCTION

The unexpected pandemic has caused severe panic among the people worldwide called as the novel coronavirus 2019 (COVID-19) . The severe acute respiratory syndrome related coronavirus 2 (SARS-CoV-2) or novel coronavirus(COVID-19) infection causing a worrisome number of deaths in 216 countries around the world. Countries are maximize their efforts to combat the virus and minimise the infection. However, most of the countries are not able to treat the condition efficiently.

Researches have compared COVID-19 to Spanish flu that occurred in 1918, which resulted more than 50 millions death around the world. Due to lack of vaccination and rapid transmission of the disease WHO and international health regulation(IHR) emergency committee announced it a public health emergency of international concern(PHEIC) on January 30, 2020. In May 2020, the number of cases globally reached about 4 million with about 3 lakh deaths.

COVID-19 spread through saliva; when coughing or sneezing aerosol droplets maybe inhaled and cause infection. Thus, the use of masks, eye protectors and gloves can be appropriate personal protective measure.

Although, COVID-19 is predominantly considered as an unavoidable pandemic, researchers are very curious about how to protect the public before vaccine can be made available. The lack of treatment option for covid-19 has raised many attempts to find the alternative option to prevent the transmission of the disease. Different traditional herbal medicines, natural products and herbal extract is used to increase the immunity and decrease the probability of getting infected. Most commonly used food supplement to increase immunity and reduce the chances of infection from COVID-19 is vitamin C.

Some active compounds produced by plants can block ACE2 receptor or the serine protease TMPRSS2 required by COVID-19 virus to infect human cells. Natural products inhibit the COVID-19 lifecycle related proteins such as papain like or chymotrypsin like proteases. So , natural products are an effective measure to treat /prevent COVID-19 infection. Plant metabolites are the source of several medicinal compounds which can treat serious diseases. Since the first days of the COVID-19 outbreak herbal traditional medicines have been used. These traditional medicines resulted the recovery of 90% of the 214 patients treated (Hong Zhi et al., 2020). To treat the disease the expert suggested the use of different herbal mixtures according to the disease stage.

Following are the list of plants which can be used for protection from COVID-19 by increasing immunity and production of active molecules against COVID-19:-

Medicinal plants	Chemical name	Pharmaceutical property
Punica granatum	Punicalagin	Inhibited viral glycoprotein & Anti-HSV-1
Allium sativum	Allicin	Proteolytic and hemagglutination activity and viral replication
Vitex trifolia	Casticin	Immunomodulatory and Abti-inflammatory effect on lungs
Strobilanthes cusia	Lupeol	Inhibitory action towards HCoV-NL63
Embelia ribes	1,4- benzoquinon	Inhibition of ACE
Andrographis paniculata	Andrographolide	Antiviral potential
Clitoria ternatea	Delphinidin-3-O-glucoside	Antiviral properties
Gymnema sylvestre	Tartaric acid	Inhibition of viral DNA synthesis
Ocimum kilimandscharicum	Camphor	Inhibitory action towards HIV-1
Sphaeranthus indicus	Tartaric acid	Inhibition of mouse corona virus and Herpes virus Bronchodilation
Eugenia jambolana	Ellagic acid	Protease inhibitor
Acacia nilotica	Quercetin	Inhibition HIV-PR
Hyoscyamus niger	Hyoscyamine	Viral inhibition and Bronchodilator
Euphorbia granulata	Gallic acid	HIV inhibitory
Vitex negundo	Sabinene	Inhibitory action against HIV
Cynara scolymus	Cynaratriol	ACE inhibitor

The Severe Acute Respiratory Syndrome related Coronavirus-2(SARS- CoV-2) or novel coronavirus (COVID-19) belongs to B-genus, Nidovirales order of the family Coronaviridae . It is enveloped, single stranded, positive sense RNA virus with symmetric helical nucleocapsid(Khan et al.,2020). 20 different proteins including four main structural protein (S- spike, E-envelope, M- membrane, N- nucleocapsid) and several nonstructural proteins such as RNA-dependent RNA polymerase(RdRp), coronavirus main protease (3CLpro) and papain like protease(PLpro) (Chen et al.,2020).

The key functional receptor for covid-19 is angiotensin converting enzyme II (ACE2), allowing its attachment to

human cells and therefore its replication (Walls et al,2020;Zhou et al.,2020). The spike proteins are most important to infect a human, which very effectively interacts with ACE2 receptor found in alveoli of the human lung. It also contains haemagglutinin,, acetylsterase, glycoprotein and membrane glycoprotein which collectively helps in spike protein to efficiently interact with its receptor. Small envelope glycoprotein is exist embedded in the viral membrane, providing stability to the viral structure. Once the virus enters into the respiratory track it effectively binds with ACE2 receptor. The viral membrane fuses with the host cell membrane, facilitating the entry of virus RNA to the host cell. This phenomenon makes the individual infected with covid-19. Immediately the host ribosomes confused with viral RNA with the host RNA and start translating the viral RNA. Once translated all these proteins are transported to the lumen of rough ER where they are glycosylated and then transported to Golgi apparatus through vesicular transport where the glycosylation process end and after that they polymerize to form structural proteins. Virions are assembled in the ER-Golgi intermediate complex, and then released via the secretory pathway(Fung and Liu,2020).

DISCUSSION:-

Till now, no vaccine for covid-19 have been developed, although extraordinary efforts are being made (Amanat & Krammer,2020). More than 200 clinical trials have been registered in clinicaltrials.gov. So, the use of natural products known to the only treatment method against COVID-19. In addition,ppp handwash, social distancing, wearing mask, gloves can prevent the infection from COVID-19. Educating the general people about COVID-19 transmission and the preventive measures plays a vital role in their protection from getting infected and reduce the disease to spread.

COVID-19 lifecycle related proteins are considered as the main target of antiviral drug. 64 natural molecules originated from 15 medicinal plant species were has inhibitory activity against COVID-19 helicase. Medicinal plants derived products are able to selectively block the ACE2 receptor and hence entry of virus to human body. Species belonging to Libiatae, Oleaceae, Magnoliaceae, Lauraceae & Nelumbonaceae exhibited the most important inhibitory effects.

CONCLUSION:-

The rapid spread of covid-19 pandemic and absence of an effective vaccine or treatment have elevated the fear, anger and panic among the general public (Liu et al.,2020, World health organization,2020a). Use of herbal product and food supplement reduce the risk of coronavirus and increase the immunity. So, the use of natural products and preventive measures like handwashing, social distancing, wearing mask and gloves in public place known to be the only preventive method against COVID-19.

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