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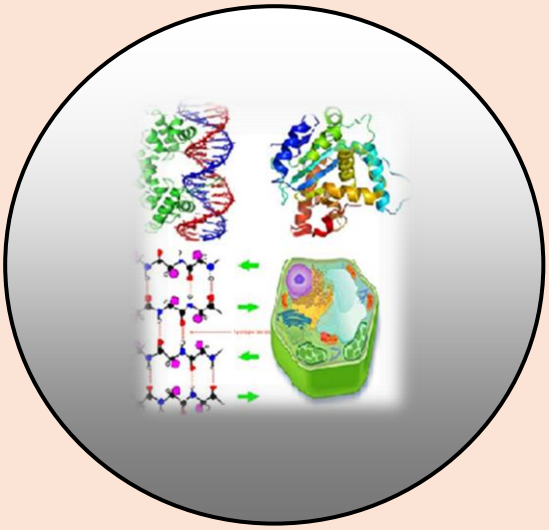

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Identification of Natural Chemical Inhibitors against SARS-Associated Coronavirus

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ABSTRACT

Severe Acute Respiratory Syndrome (SARS) is a respiratory illness caused by the Severe Acute Respiratory Syndrome coronavirus (SARS-CoV). CoVs are known to cause lot of potentially lethal human respiratory infectious diseases, such as severe acute respiratory syndrome (SARS), Middle East respiratory syndrome (MERS), and the very current spreading infection like coronavirus disease 2019 (COVID-19) outbreak. Regrettably, neither medicine nor vaccine has yet been identified to date to prevent and treat these diseases caused by CoVs. Therefore, effective prevention and treatment medications against human coronavirus are in urgent need. So far the aim of this study was to investigate the available natural drugs show in vitro anti SARS- CoV activity.

Keywords: SARAS-COV, Natural Durgs, Amino acids and Antiviral Mask.

INTRODUCTION

The Severe acute respiratory syndrome (SARS) is an infectious disease caused by a newly identified human coronavirus (SARS-CoV). The disease can produce severe pneumonia with a reported fatal outcome of 15% to 20%. Currently, no effective drug exists to treat SARS-CoV infection. The urgency of the outbreak has led to the empiric use of broad- spectrum antibiotics and antiviral agents in affected patients in several countries. Intensive efforts are under way to gain more insight into the mechanisms of viral replication, in order to develop targeted antiviral therapies and vaccines [Emily et al., 2004]. The some natural drugs can act as antiviral strategies are generally found direct antiviral effects, inhibition of viral entry and replication at the cellular level by targeting virus-related processes, and enhancement of host immune response [Driscoll, 2002]. This natural molecules extracted from livening organism can play an important role in the development of new drugs as they may have advantages over conformist chemical compound-based medications, such as fewer side effects, less long-term toxicity, variable bioavailability, and unidentified chemical structures and biological activities. Hence the present study to identification of some natural chemical inhibitors against coronavirus.

NATURAL DRUGS

1. Saikosaponins (Isolation from Plant Source)
It is more effective against COVID- 19

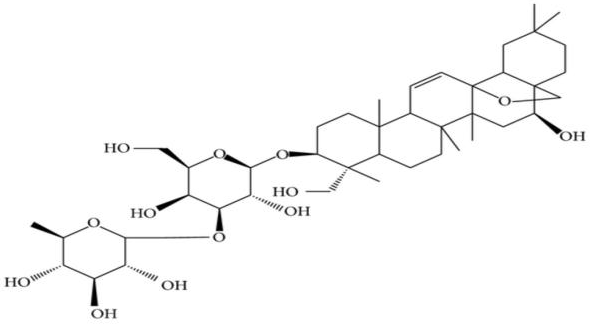

Figure. 1 Molecular formula $C_{42}H_{68}O_{13}$.

It is used in the treatment of VIRUS DISEASES and it may act include preventing viral replication by inhibiting viral DNA polymerase; binding to specific cell-surface receptors and inhibiting viral penetration or un-coating; inhibiting viral protein synthesis; or blocking late stages of virus assembly and also suppress immune function by one of several mechanisms of action. The others may act through activation of T-CELLS [Al-Jabri et al., 1996].This compound might enter in to the COVID-19 virus and will inhibit the viral replication and may prevent the further development. So far, this drug is more useful and active to development of viral infected peoples [Hao et al., 2012]. It is purely natural drug and obtained from only plant materials. There is no any side effected when some of chemical based drugs (Figure 1).

2. Amentoflavone (Isolation from Plant Source)
It is more effective against COVID- 19

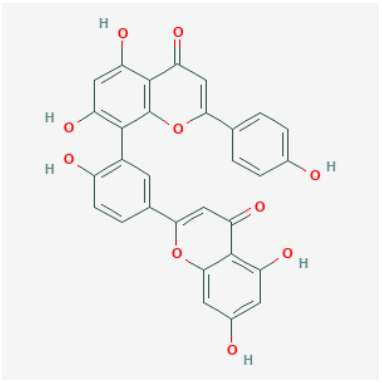

Figure. 2 Molecular formula $C_{30}H_{18}O_{10}$.

Amentoflavone or Biflavonoid with anti-inflammatory, anti-viral and cancer chemopreventive activity. It inhibits vascularization of tumors by blocking the activity of angiogenic VEGFs. Blocks the induction of COX-2 and up-regulates PPAR-γ. It is a negative modulator of the GABAA receptor at the benzodiazepine binding site [Chang et al., 2007]. These compounds have inhibited the SARS protease inhibiter, which is identified and inhibit the peptide DNA replication of this virus (Figure 2 and Figure 3).

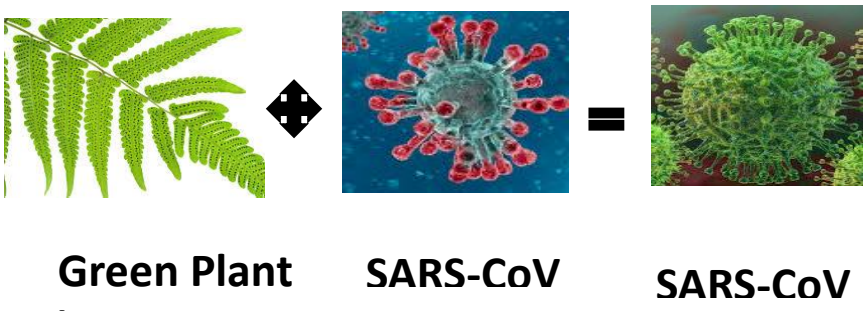

Figure 3. Mechanism of natural drug binds with SARS COV.

New Developing Product against COVID-19

Antimicrobial resistant Face Mask

This kind of mask will be prepared with natural drugs like Saikosaponins or Amentoflavone. It is a SARS-CoV Protease inhibitor. It more resistance to microbes and also SARS Virus and eco-friendly to human body. The following pharmacological activity has been reported of this compound.

- Antimicrobial properties
- It can protect against neuro-inflammation
- Anti-Oxidant and anti-Inflammatory Properties
- May prevent cancer formation
- Helps With Depression and Anxiety
- Protects against skin Aging, Inflammation, vascular system
- Protects the liver and metabolism, promotes bone growth and prevent the hair loss

Properties of Natural drugs

- It occurs in the divided solid state
- Melting range of these compounds is more than 400°F
- It is partially miscible in water. Its solubility is measured by gram per liter
- It is pale yellow powder, does not mix well with water

Note: The above mentioned information is more useful to preparation of mask against COVID-19. It is not soluble easily in water and melting point is also high, so we can prepare the mask and use it for long time.

3. L-Isoleucine –Essential amino acid (Vaccine for COVID-19)

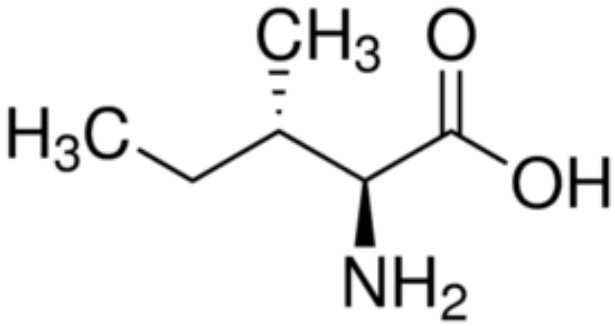

Figure. 4 Molecular Formula $C_6H_{13}NO_2$.

Isoleucine is a class of branched chain amino acid, which is essential for some physiological functions of humans and other vertebrates. The L- isoleucine will specifically be built into proteins of immune cells like lymphocytes [Zakaryan et al., 2017, Chuang et al., 1990]. They plays a critical role for immune functions, including maintaining the development of immune organs include cells and stimulating the secretion of immune molecules substances in human and other vertebrates. In recent clinical study, dietary L-isoleucine supplementation can relieve the acute diarrhoea and cardiovasualr diseases and other malfunction organs.

Which is related to the production of host defense peptides induced by isoleucine [Hale et al., 2004, Rivas-Santiago et al., 2001]. Thus, isoleucine has the capacity of preventing the invasion of pathogens *via* the increase of immunity. The L isoleucine is an essential peptide to break the surface protein of COVID -19 virus and also inhibit the DNA replication hence it may act as vaccine against CoV –virus.

Figure 5. Commercial drug of L-Isoleucine.

CONCLUSION

The article suggested that some natural drugs from plant extract and the compound of L- Isoleucine are candidates for the development of new anti-SARS-CoV drugs in the treatment of SARS. Moreover, research is needed on these molecules to exhibit the antiviral drug against COVID -19.

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