Demand for Traditional Medication: Emerging Herbal Remedies and Natural Products as an alternative approach for Covid-19 Pandemic

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ABSTRACT

Coronavirus (CoViD-19) is a group of viruses that mostly causes respiratory infections in the respiratory system and lungs. Cough, cold, fever, and sore throat are some of its typical symptoms. Because there are less chemicals, preservatives, and excipients used in herbal medicine than in other types of medicine, it has fewer adverse effects. Before the development of antibiotics (many of which are derived from plants), herbal herbs, plant preparations, and phytoconstituents were the only treatments available for infectious diseases. They continue to be the leading cause of mortality for people throughout the world among infectious illnesses, particularly viral infections. To ascertain their antiviral action, several phytoconstituents produced from plants have been thoroughly investigated. On the basis of this argument, a search in the internet led to the discovery of a sizable number of plant species that contain antiviral chemicals. In a significant number of cited studies, these herbal sources have each been described singly or in combination. Research into the literature has uncovered antiviral efforts against not just the rabies virus but also the human immunodeficiency virus, the Chandipura virus, the Japanese encephalitis virus, the entervirus, and the influenza A/H1N1 virus. This review focuses on all plant species that have been shown to have antiviral properties. Many newly emerging and reemerging viral illnesses have no good drug prospects and are becoming more resistant to current pharmaceutical compounds, herbal sources provide researchers with plenty of area to investigate and provide effective alternatives against viral infections.

Keywords: Herbal, Allopathic, Coronavirus, Efficacy, Ethnopharmacology, Antiviral, Herbal preparations, Viral diseases, Emerging, Phyto-constituents.

INTRODUCTION

Coronavirus relies on other organisms for its growth and multiplies quickly by inserting your genome into another person's gene, it is more difficult to kill the disease-causing agent and is therefore a major area of research for drug developers, researchers, and scientists.\cite{1}

A variety of herbal plants are available as part of alternative medicine, and they may hold the key to understanding the secrets underlying diseases. Nearly 80% of the population in developing countries uses traditional plants to meet their health needs, according to a study by the World Health Organization. Plant extracts (such as those employed in Ayurveda, as detailed in Charaka and Susruta Samhita, or any other conventional medicine) are examples of natural therapies. Food supplements, nutraceuticals, and substances produced from plants (known as phytoconstituent components), isolated from particular plant parts (flowers, roots, fruits, stems, bark, and seeds), find extensive use in the treatment of prevalent and non-infectious illnesses. Drugs that are reportedly widely used include isolated plant components.\cite{2,3}
In order to change the dose as necessary depending on the results seen by the herbal doctor when a patient is being treated with a herbal medicine, continual observation of the treatment and its consequences becomes a must. There is no such scientific proof that any of these complementary treatments, including TCM and herbs, can prevent or treat the illness brought on by this virus. Guangdong reported a death rate of just 0.1% of infected persons following the epidemic, compared to Wuhan’s incidence of 2.6%, while none of the confirmed cases in Zhejiang had died. This is likely due to the fact that patients in Guangdong and Zhejiang got herbal beverages to ease symptoms even before they were positive. Less fatalities were recorded in regions where herbal therapy was observed than in areas where herbs were not used. Many studies have proven that herbs are efficient in treating viral infections, but it is challenging to identify how exactly herbs function because they are frequently used with current pharmaceuticals and sometimes even by critically ill patients. Combining traditional and contemporary therapies can significantly lower the severity of symptoms, mortality rate, and adverse effects observed in China. The initial patients who were admitted to a hospital in China recovered well from the virus and were given care that included both Western medication and traditional medicines. The China Institute has identified Shuanghuanglian oral liquid as a potential 2019-n-CoV inhibitor based on in vitro laboratory research.[3-4]

Infections that have previously existed and are now reemerging continue to threaten the human population. The life of humanity on our planet is threatened by a number of infectious illnesses, particularly viral infections that are brought on by several ancient and modern infectious viruses. Alternative therapies, particularly herbal ones, are being investigated again due to the rising resistance of microorganisms (viruses, bacteria, and parasites) to definitive antimicrobial therapy. It has been discovered that certain therapeutic herbs have the potential to cause fatal viral infections. Numerous therapeutic plants with broad-spectrum antiviral action are mentioned in the Etna-medical literature. With the advent and reemergence of extremely contagious viruses, the investigation of the potential antiviral activity of several medicinal plants has taken on a tremendous pace because to the advanced technical instruments available. Emetine, an isoquinoline alkaloid obtained from the underground part of Cephaelis ipecacuanha and related species, is a well-known example of a traditional herbal remedy that could be a candidate for an anti-infectious drug. Emetine is used both as an amoebicidal and to treat abscesses caused by Escherichia histolytica infection. Quinine, a significant plant-based medicine with a long history of usage, is extracted from the bark of the Cinchona tree. In addition to these, compounds derived from plant sources, such as Aspirin, Taxol, and morphine, have progressed into medicines.With the aid of this review, we tried to compile information on numerous plants with such antiviral potential. Herbal sources have been thoroughly studied for their antiviral function.[5]

**Structural assembly of SARS-CoV-2 virus:**
The SARS-CoV-2 virus is classified within the largest family of RNA viruses and possesses a genome ranging from 27 to 32 kilobases in size, measuring approximately 125 nanometers or 0.125 meters. The genome of single-stranded RNA (+) is distinguished by the presence of a 5'-cap and a 3'-poly-Â tail configuration. The RNA virus is a type of virus that possesses a single-stranded genetic material. SARS-CoV-2 exhibits several shared characteristics with other members of its viral family. The regulation of viral activity and morphology requires four essential structural proteins, namely the envelope protein (E), membrane protein (M), peak protein (S), and nucleocapsid protein (N). The two primary proteins, namely N and S, play a crucial role in facilitating viral attachment to host cells and in the
formation of the capsid and the overall viral architecture. Protein S is comprised of three fundamental components, namely a substantial ectodomain, a transmembrane anchor that occurs in a single step, and a concise intracellular tail. Securing host cells is of utmost importance. The ectodomain comprises of two subunits, namely the S1 receptor-binding subunit and the S2 membrane-fusion subunit, which are situated between the two aforementioned sections. The nomenclature of coronavirus is attributed to the presence of crown-like spikes on its trimeric structure, as reported in literature.\[6\]

According to reports, the viral genomes of SARS-CoV and SARS-CoV-2 contain a receptor binding domain (RBD) and a receptor binding motif (RBM) that exhibit affinity towards a comparable receptor type. In the presence of SARS, the protein S RBM connects to angiotension by introducing the transformed enzyme ACE2 into host or human cells. The lungs, kidneys, and intestines are the primary sites of coronavirus infection because they are rich in ACE2 expression. Acyl-CoA cleavage enzymes 1 and 2 (ACE1 and ACE2) have emerged as pivotal regulators of reproductive physiology and disease. Wuhan experts have speculated that the sickness would disrupt sperm production, resulting to a decrease in sperm count and the regulation of male sex hormones (low libido), while no research have directly linked the virus to a decrease in male fertility or sexual potency. Furthermore, SARS-CoV-2 causes immediate cardiac injury and longterm damage to the cardiovascular system by infection of the host cell via ACE2 receptors, which is associated with COVID-19-related pneumonia.

It’s interesting to note that the SARS-CoV-2 infection in humans may operate via a similar manner as SARS. According to research, the SARS-CoV-2 RBM has the important amino acid residue Gln493, which encourages the binding and fusion of the viral protein S with the virus into the human cell's ACE2 protein, especially the one that is now found in the lungs and causes respiratory infections. It has been demonstrated how protein S binds to ACE2 and how its structure works. Since it has been employed by other viruses of similar sort, preventing SARS-CoV-2 from accessing the cells would be the simplest and most straightforward method of combating it. The main benefit is that the host's ACE2 protein stays the same, so there is no worry about advantageous alterations that may impede medication development. These findings imply that the first step in developing a treatment for SARS-CoV-2 infection would be to have a thorough understanding of receptors, their functions, and the fundamentals of viral replication (Fig. 1).

**Proposed Mechanism of SARS-CoV-2:**

Despite their similarities, the spread and infectiousness of SARS-CoV-2 are far higher than those of SARS-CoV. This new virus is distinct from SARS-CoV due to its increased mutation rate, which may account for its rapid spread. SARS-CoV-2 has undergone changes in the absence of 8a, leading to longer 8b segments and shorter 3b segments, as well as modified Nsp 2 and 3 proteins. There is a mutation in SARS-CoV-2 Nsp 2 that is probably responsible for the virus's enhanced infectiousness. The orf8 and orf10 proteins are also unique to SARS-CoV-2. It could be helpful to learn the proteins’ biological function. Protein S in SARS-CoV lacks the furin-like cleavage site seen
in most pathogenic viruses but is present in SARS-CoV-2. This may explain why SARS-CoV-2 is more dangerous than previous strains. Further, SARS-CoV-2 connects to the ACE2 receptor, which is the same receptor as SARS-CoV, with a lot more force, which may account for the faster transmission speed and the ease with which it may spread to other species. The S1 and S2 subunits of protein S are found at the N and C termini, respectively, whereas the RBD is found in the S1 subunit. SARS-CoV-2 and SARS-CoV have similarities in their S2 domains of protein S, which include the fusion protein, a second proteolytic site (S2'), two heptad repeat domains, and an internal fusion peptide (FP). According to earlier research, SARS-CoV-2 could enter the host cell by a similar way to SARS-CoV.\[^6\]

Like other beta-coronaviruses, SARS-CoV-2 must complete a lengthy process before infecting a host cell. Both the respiratory epithelium and the alveoli of the lungs have the ACE2 receptor, which SARS-CoV-2 uses to infect its hosts. Once SARS-CoV has bound to its receptor, it triggers proteases, which in turn break the S protein at its S1 and S2 domains. This cleavage allows the virus to enter the cell by activating S2, introducing the FP into the membrane, and triggering a fusion of the two membranes. SARS-CoV-2 takes advantage of the same mechanism due to the presence of an RBD binding motif linked to ACE2. After the virus penetrates the cell, ACE2 divides, and ADAM17 sends the newly formed virus into the membrane's extra region.

Reduced ACE2 levels are known to harm alveoli and increase vascular permeability in the lungs. Angiotensin I is converted to angiotensin II by ACE2, a negative regulator of the renin-angiotensin pathway, which may explain this phenomenon. When ATIR is activated by angiotensin II, it leads to lung disease characterized by difficulty breathing. ORF3a is produced after viral proteins are translated within the cell; it encodes a Ca2+ ion channel identical to those expressed by SARS-CoV and SARS-CoV-2. The transcription of the pro-IL-1B gene is facilitated by interaction with TRAF3, which in turn activates the NF-kB pathway. ORF3a and TRAF3 are also attractive to the inflammasome complex. This complex consists of the components caspase 1, NLRP3, and ASC. Conversion of pro-IL-1B to IL-1B and subsequent cytokine synthesis requires a second signal such as Ca2+ influx, caspase activation, reactive oxygen species (ROS) generation, or mitochondrial damage. The second is that the SARS-CoV-2 enlarged ORF8b protein activates the immamasoma pathway, and that this activation involves NLRP3. More study is needed to ascertain whether or not the virus's supplemental nucleotides were useful. The ion channel-forming protein E, which is conserved in both viruses, is involved in the NLRP3 immamasoma pathway, which leads to an excess of cytokines. A cytokine storm, triggered by all four processes, results in respiratory distress, a hallmark of COVID-19.

ORF3a, ORF3b, and ORF7a may increase the production of proinflammatory factors and lung damage by activating the JNK pathway, which is also involved in SARS-CoV. Since SARS-CoV-2 and the JNK pathway contain similar proteins, any virus may be considered a target of this pathway. The virus's interaction with the host cell's nucleases is crucial for successful infection. Possible SARS-CoV-2 entry into cells involves peak protein breaking by SARS-CoV-like proteases such as Tmprss11a, Trypsin, Plasmin, Cathepsin L, and Furin. Since proteasome inhibitors are also utilized in the treatment of COVID-19, they may be employed as targets to alleviate COVID-19 symptoms. Understanding the role of the immune system in COVID-19 is important for clarifying the potential of designing particular vaccines against it, as shown in Fig. 2.

The purpose of this study is to compile and emphasize data on a variety of widely accessible
plants that have been shown to have antiviral activities in traditional medicine.

![Fig. 2: Possible Mechanism of Action of SARS-COV-2](image)

**Herbal Plants and CoV:**

Chinese herbal plants: Despite the WHO's statement that "To date, no specific drug has been recommended to prevent or treat the new coronavirus," methods of Chinese medicine (MC), including the oral administration of preventive herbal formulas, have always been advised for the prevention and treatment of infectious diseases, including during the current COVID-19 epidemic[7].

This study analyzed historical and human research data on CM in infection prevention and control to provide advice to Chinese health authorities on preventing COVID-19, SARS, and H1N1 flu. For the sake of this investigation, CM has a long history of usage in China, with documentation of its preventive benefits found in ancient Chinese medical literature such as Huangdi’s Inner Classic. Four H1N1 flu trials and three SARS studies all continued using CM after the results came in. In these studies, no CM users contracted SARS, however the CM group had a much lower incidence of H1N1 infection than the control group (relative risk 0.36, 95% confidence range 0.24-0.52; n = 4). 23 provinces in China have used this information to launch CM programs that use the following herbs to combat COVID-19:

**Radix Astragali** root (Huangqi) is used as an anti-inflammatory and immune-booster in traditional Chinese medicine. Astragalus may be given intravenously or by injection in the medical setting.

**Radix glycyrrhizae** One of the 50 essential herbs used in traditional Chinese medicine is (Gancao), sometimes known as licorice root.

**Radix Saposhnikoviae** (Fangfeng), Saposhnikovia Divaricata - The lone species of the genus Saposhnikovia (family Apiaceae) is known as fāngfng, which translates as "protect from the wind" in Chinese and "siler" in English. It is still often cited online in traditional Chinese medicine resources under the outmoded name Ledebouriella.

**Rhizoma Atractylodis Macrocephalae** (Baizhu), As "the most significant herb of qi tonifying and energising the spleen," it is lauded.

**Lonicerae Japonicae Flos** (Jinyinhua) it possesses biological, anti-tumor, antioxidant, anti-allergic, immunomodulating, antibacterial, and anti-inflammatory properties because it includes derivatives of caffeic acid, essential oils, flavonoids, glycosides, and terpenoids iridoids. One of the most well-known treatments of its kind in China.

**Fructus forsythia** (or Lian qiao in Chinese) possesses broad-spectrum antibacterial action (Staphylococcus aureus and Shigella) and some inhibitions of the flu virus, leptospira, and other pathogens, and has been used for a long time as a panacea for those with very sensitive skin. It also reduces inflammation and fever.

Based on historical records and human evidence for the prevention of H1N1 and SARS flu, the findings suggested that the Chinese herbal formula could be a different strategy to prevent COVID-19 in the high risk population. However, rigorous prospective population studies are required to confirm the potential preventive effect of CM. In
addition, the natural triterpene glycosides known as saikosaponins (A, B2, C, and D) have been reported to be isolated from a variety of medicinal plants, including:

*Bupleurum spp.* (Bupleurum is a genus of roughly 190 species of annual and perennial herbs and woody shrubs in the Apiaceae family). For example, "*Heteromorpha spp.*" (Heteromorpha is a genus of plants in the Apiaceae family, often known as the celery, carrot, and parsley family or simply as umbelliferae).

*Scrophularia scorodonis* (There are over 200 species of figworts, or Scrophularia species, in the family Scrophulariaceae).

All three of these compounds have antiviral efficacy against human coronavirus (HCoV)-22E9, a species of CoV that may infect both humans and bats and is a known causative agent of the common cold. In conclusion, HCoV-22E9 infection was halted in its early stages by saikosaponins (A, B2, C, and D), including viral insertion and penetration. It has also been reported that extracts from:

Among the Amaryllidaceae family of plants is *Lycoris Radiate*, also known as red spider lily, hell flower, magic red lily, and equinox flower. The plant family Asteraceae includes *Artemisia annual*, sometimes known as sweet wormwood. *Epiphytic fern* belonging to the Polypodiaceae family; its scientific name is Pyrrosia lingua.

Spiced woods, spice bushes, and Benjamin bush are all popular names for the plant species *Lindera aggregatata*. After a screening investigation of Chinese medicinal herbs, all show anti-SARS activity. In addition, natural inhibitors of SARS-causing enzymes, such as 3CL proteases and nsP13 helicase, have been discovered.

Myricetin is a polyphenolic flavonoid that may be found in foods including vegetables, fruits, nuts, berries, tea, and red wine; it has antioxidant characteristics. *Scutellarein* is a flavone that may be found in *Asplenium belangeri* and the hardy perennial plant *Scutellaria lateriflora*, both of which are in the mint family. *Isatis indigotica* and *Torreya nucifera* phenolic compounds.

Suppression of viral protease 3CL and suppression of viral RNA-dependent RNA polymerase activity are two of the antiviral mechanisms exhibited by *Houttuynia cordata* water extract against SARS. The plant known variously as fish mint, fish leaf, rainbow plant, chameleon plant, heart leaf, fish grass, Chinese lizard tail, and bishop is really *Houttuynia cordata*, one of only two species in the genus Houttuynia.

**In Silico Screening:**

The compound's potential for direct interaction with the COVID-2019 protein was then tested using a coupling study. The Chinese herb database was searched in the second phase to find plants that contained the chosen compounds, and plants that included two or more of these compounds were found on the screen and compared to the catalogue for the usage of traditional herbs. The next step was to employ network pharmacology analysis to forecast the overall in vivo effects of each chosen plant.

Betulinic acid, cumaroil-tramin, cryptotanshinone, desmethoxyreserpine, dihomo-linolenic acid, dihydrotanshinone, kaempferol, lignan, moupinamide, N-cis-feruloyltyramine, quercetin, sugiol, tansone, and tansone were the last of the natural chemicals standing. It was discovered that they may be acting in opposition to COVID-2019. Another 125 Chinese herbs were found to have two or more of these 13 compounds; 26 of these herbs are now licensed for the treatment of respiratory virus infections.

**Alternative Indian Medicines & CoV:**

Consuming AYUSH 64, a ministry-developed Ayurvedic antimalarial medication, as well as Tulsi, ginger, Guduchi (*Tinospora Cordifolia*), and turmeric in one's diet. Medical herbs like "Amalaki
or Amla (*Emblica Officinalis*), Guduchi / Glioy (*Tinospora Cordifolia*), Neem (*Azadirachta Indica*), Kutki (*Picrorhiza Kurroa*), and Tulsi (Basil) are some of the Ayurvedic herbs useful for the development of immunity and prevention of infection against the deadly virus.\[7-11\]

The use of Indian medicinal herbs has been recommended by AYUSH as a means of preventing and prophylactically addressing COVID-19. Furthermore, there is a limited amount of research on the utilization of medicinal plants for the treatment of coronaviruses in India. However, a study conducted in Tamil Nadu has demonstrated the anti-mouse activity against coronaviruses (an alternative for SARS-CoV) by various plants including *Indigofera tinctoria* (AO), *Vitex trifolia*, *Gymnema sylvestre*, *Abutilon indicum*, *Leucas aspera*, *Cassia alata*, *Sphaeranthus indicus*, *Clitoria ternatea*, *Clerodendrum inerme Gaertn*, *Pergularia daemi*, and *Evolvulus alsinoides*. Both *Vitex trifolia* and *Sphaeranthus indicus* were shown to reduce inflammatory cytokines through the NF-kB pathway, which has been associated to respiratory discomfort in SARS-CoV. With the discovery of *Clitoria ternatea* as a metalloproteinase inhibitor, it is possible to use this plant to target ADAM17, a metalloproteinase that is involved in the degradation of ACE-2.

Both *Glycyrrhiza glabra* and *Allium sativum* have been shown to limit SARS-CoV replication, giving them promising therapeutic options for the SARS-CoV-2 strain. It has been found that another plant may inhibit viral replication by inhibiting the ribosome, leaving *Clerodendrum defenceless Gaertn*. This can be investigated further to see whether it can be used as a medication to translate the SARS-CoV-2 protein. Similar to this, *Strobilanthes Cusia* produced papain-like protease activity targeted for HCoV and prevented the formation of the viral RNA genome. In Asia, the Himalayan woods have blossomed with a variety of medicinal plant species, and a study has confirmed the existence of plants used in traditional medicine to treat bronchitis. According to a study on the effects of bronchitis-treating herbs, *Hyoscyamus niger*, *Justicia adhatoda*, and *Verbascum thapsus* had a lower incidence of flu-related illnesses.

Studying the molecular mechanism by which these plants target the influenza virus may reveal whether or not they assault the molecules shared by SARS-CoV-2 and the influenza virus. *Hyoscyamus niger* was shown to act as a bronchodilator and to block the Ca\(^{2+}\) channel. The Ca\(^{2+}\) orph3a channels that set off several downstream pathways might be a potential target in the event of a viral infection. *Coriandrum sativum*, *Boerhaavia diffuse*, *Cynara scolymus*, *Coscinium fenestratum*, *Punica granatum*, *Cassia occidentalis*, and *Embeliaria* are only few of the medicinal plants that have been shown to have an inhibiting impact on ACE. The *Punicagranatum* was the only one with a competitive mechanism of action, whereas the other inhibitors just reduced activity. More study is needed to identify the true effects of these plants on SARS-CoV-2 entry into host cells.

In Ayurveda and other medicinal traditions, the tropical plant *Andrographis paniculata* (kalmegh) is used to treat viral respiratory infections. This plant is a member of the Acanthaceae family and is native to southern Asia. In response to *andrographis paniculata*, levels of caspase-1, interleukin-1, and NOD-like receptor 3 (NLRP3) molecules increased, all of which play important roles in the pathogenesis of SARS-VOC and possibly SARS-CoV. The angiotensin II, AT1 signal, which is associated with lung damage, was also inhibited by *Salacia oblonga*, another herb native to Tamil Nadu. Many plants have been shown to block HIV proteases, suggesting they may be useful as COVID-19 treatments. *Euphorbia granules*, *Eugenia jambolana*, and *Acacia nilotica* are the components. Several plants, such as *Ocimum sanctum*, *Ocimum kilim* and
scharicum, Solanum nigrum, and Vitex negundo, are known to influence HIV reverse transcriptase activity. These plants can also be investigated to see whether they have any anti-SARS-CoV-2 effects. In addition, Sambucus ebulus is capable of combating this virus and is known to impede the functioning of enveloped viruses. The symptoms of COVID-19 can be lessened by using these medicinal herbs. Despite the identification of several therapeutic plants, further research is still required to create particular SARS-CoV-2 medications. Therefore, it is crucial to investigate how these conventional medications affect SARS-CoV-2.[11]

Most Relevant Patent Information:

SARS coronavirus major proteinase inhibitor separation from Chinese medicine. CN101701245A filed October 21, 2009.

The method for removing a crucial SARS coronavirus proteinase inhibitor from conventional Chinese medicine is part of the innovation. The steps in the procedure are as follows: Various extracts of a single traditional Chinese medicine were measured for their exosomatic suppressive activities of the main coronavirus proteinase SARS inhibitors. Steps A, B, and C involved choosing the extract with the best exosomatic suppressive activity and separating and selecting the extracts chosen in step B at least once. The method's isolated chemical inhibits the major SARS coronavirus proteinase exosomatically, making it a potentially effective medication or potential prodrug for sale.[12]

Rabies–treating Chinese herbs. CN 2005100032451, filed November 23, 2005

The technique for preventing and treating rabies and its clinical symptoms without side effects is provided by the current invention. This herbal remedy for hydrophobia is made from Ulmus pumila root endodermis (5–10%), Winkl root endodermis from Betula luminifera (4–6%), and cleaned rice water (85–90%). It is advised to consume this dish up to three times every day for three days in a row.

The first day after taking this herbal remedy, the response includes decreasing waist discomfort, swelling, and returning to rationality, as well as getting rid of terror, dread of water, and fear of wind. The lack of hematuria on the second day provides the answers. Urine clarity within three days suggests that the rabies virus has been completely eradicated and that the patient has fully recovered without experiencing any future recurrence. The dose regimen for this medication is three times daily for seven days straight. It has also been demonstrated to be beneficial in the paralysis of fury phase. This herbal remedy is cheap, simple to make, free of chemical medications, has average characteristics, and has no toxicity or negative effects on human physiology. Clinical studies demonstrate the Detoxification is aided by peppermint. This medication encourages urine, which aids in the removal of the virus from the body. This herbal remedy's ingredients can be made into a tablet, pill, or capsule. Typically, the plant's constituent parts are boiled for a short period of time in 50–100 cc of alcohol in grains for the medicinal preparation. This remedy, known as Erwu, is extremely safe and trustworthy for intake and may be used for any kind of bite, including those from dogs and cats, whether or not they have rabies. To prevent rabies, a 25 ml dose over 5 days must be taken. Children and pregnant women should not utilize the current innovation.[13]
The efficacy of herbal medicine and its amazing curative impact.

**Rabies prevention and treatment using Chinese herbs. CN 200810030881, filed March 19, 2008**

The Chinese herbal medicinal preparation purportedly treats and prevents hydrophobia. It is composed of *Angelica sinensis* (6-20 parts), *Chinese rhubarb* (10-20 parts), bitter orange (10-25 parts), flower *chrysanthemum* (10-25 parts), *Costustoot* (10-25 parts), *saposhnikovia divaricata* root (6-10 parts), gold thread root (3-15 parts), and *Rehmannia* root (10-20 parts) by weight in parts. The following substances are used in another preparation technique in the following weight ratios: Thin Dutch root (15-30 parts), bitter orange (15-30 parts), Costustoot (15-20 parts), honeysuckle flower (10-20 parts), wild *chrysanthemum* flower (10-15 set off), *Asarum sieboldi* (15-10 parts), Bupleurum (10-15 parts), honeysuckle flower (10-20 parts), wild *chrysanthemum* flower (10-15 set off), *Chinese lobelia* herb (10-20 parts), sweet wormwood herb (15-20 parts), Japanese climbing fern spore. The advantages of this herbal medication are its stability at room temperature, lack of injectability, and lack of significant adverse effects.

**Chinese hydrophobia medication. CN200810054734, filed April 3, 2008**

The invention refers to a Chinese herbal remedy for rabies that is made from dried ginger and bitter almonds (1:1) as raw materials and is then dried, ground, and combined to create a formulation. This is an inherited secret recipe that hopes to heal hundreds of rabies victims each year. The cure rate can reach 100% since the active components of this herbal medication can quickly and immediately arrest and kill rabies viruses. Dried ginger and bitter almond are less toxic than other extremely poisonous components, such as *cantharis* and other compounds, found in herbs used to treat rabies, making herbal preparations non-toxic and free of side effects. Both topically and orally can be used with this medication. When taken orally, symptoms like discomfort, itching, and heat in the throat and lungs are lessened, the nerves are soothed, and the viral load is rapidly decreased, avoiding a profound invasion. With this herbal remedy, the fear of water and other characteristic rabies symptoms [difficulty breathing and swallowing] are reduced, leading to a quicker therapeutic response. This herbal medication may be given topically across a sizable portion of the bite, enhancing the rabies virus's quick reaction.

**Dioscorea Extracts, US 20090041803, filed September 2, 2008.**

An adjuvant agent in this extract's immunogenic composition incorporates an extract made from a Dioscorea plant tuber, in addition to an antigen agent and an adjuvant agent. This extract is derived from the tuber of any of the following Dioscorea species: *D. batatas, D. ecne, D. alata L., D. pseudojaponica,* or *D. alata L. var. purpurea.* The antigenic agent may be a nucleic acid that codes for a polypeptide, such as a viral protein or a tumor antigenic protein. The invention can be used to treat a variety of viral diseases, including those caused by adenoviruses, herpes simplex viruses (HSV-I, HSV-II, CMV, or VZV), poxviruses (like *variola, vaccinia,* or *molluscum contagiosum*), picornaviruses (like *rhinoviruses or enteroviruses*), orthomixoviruses (like influenza), paramyxovirus. To stop the immune system from decreasing, this herbal remedy can also be used as a healthy meal, healthy drink, or a food supplement. It is also used to treat a number of bacterial, fungal, and cancerous disorders.

**Antiviral Composition. Patent No. EP19850109500; Filed August 19, 1987**

The technique and composition of herbal preparations for reducing viral infectious activity by using lectins are described in the present invention. To stop the action of the enveloped
viruses, *Sambucus nigra*, *Sambucus racemosa*, and *Sambucus ebulus* lectins are present in this product. For the treatment of viral infections in both people and animals, pharmaceutical formulations containing *Sambucus nigra* agglutinin-I, a nontoxic lectin, have proven effective. Several mechanisms of action have been attributed to lectins, including (a) The prevention of virus entry into cells is achieved through the process of binding and agglutinating viral particles. (b) The binding of the cell surface is utilized to obstruct virus receptor sites present on the cell wall. (c) The modification of the cell wall surface is employed to hinder the release of viral replicas. (d) The interference with intracellular virus replication is a crucial step in the process. Liquid lectins may be given orally or intravenously. The lectin concentration in the formulation utilized might range from 0.2 to 20 mg/ml. The dose that can be administered to a patient is between 0.02 and 1 g per day. This formulation has been shown to be effective against the influenza virus in *In-vitro* and *In-vivo* models.\(^{[18]}\)

**Antiviral astragalus extract. Patent No. GB 0612025.7; Filed June 16, 2006**

The present invention pertains to a product with distinctive properties that exhibit antiviral effects against the hepatitis C virus (HCV). Specifically, the product demonstrates activity upon examination through replicon and polymerase (NS5B) tests, indicating potential efficacy against various Flaviviridae viruses.

In one scenario, the hepatitis C virus may be neutralized by administering a single dose of an astragalus herbal extract or an active part thereof. Dried milk thistle fruit extract, dried Chinese sage root extract, dried Schisandra fruit extract, and dried astragalus root extract are the four herbal extracts included in the product. The *Astragalus membraceus* plant has been discovered to be the source of the anti-HCV activity in this product, showing good activity and negligible cell cytotoxicity.

Astragalus I, formononetin-7-ObD-glucoside, and 30-hydroxyl-formononetin-7-ObD-glucoside were identified as marker chemicals in the astragalus extract during its characterisation as the active fraction and subfractions. may be in charge of polymerase inhibition and anti-HCV action.\(^{[19]}\)

**Herbal formulation. Patent No. US 20090208598; Filed January 31, 2006**

The technique to produce extract from *Rosa sp.*, *Urtica dioica*, and/or *Tanacetum vulgare* is described in the present invention, preferably using a high frequency pulsed electromagnetic field. The radiation of high frequency electromagnetic impulses is used three to four times, for two to five minutes each, in the synthesis of herbal extracts. The electrical power of the pulses (i.e., their real power) ranges from 20 to 100 watts, with 45 watts producing the optimum results.

The medication, which may also contain selenium and/or urea, is effective in treating diseases with immune system breakdown, such as HIV and AIDS infection. When compared between observations made on the first day and 80 days following treatment with herbal extracts, clinical trials of herbal extract in HIV-positive patients showed a statistically significant change (p < 0.01) in CD4, CD8 and CD95 levels in patients during the treatment regimen.\(^{[20]}\)

**CONCLUSION**

Many plants have been researched for their potential antiviral benefits. Herbal remedies boost the body's immune system since they take a holistic approach, which can aid in the body's ability to combat invading infectious diseases. Herbal antiviral compounds are emerging as promising options in today's climate of increasing resistance to antiviral medicine treatment since they are readily accessible and do not need costly and time-consuming pharmaceutical manufacture. Modern clinical investigations have proved the safety and efficacy of many herbal treatments for viral infections.
However, further research is needed to determine the most effective applications, dosages, and formulations of these herbal medicines. There is a lack of knowledge about the interactions between these medicinal plants and living creatures, despite the widespread use of herbal plant medicines across the globe.

Modern pharmaceutical discovery might benefit from a connection between scientific inquiry and the practice of traditional medicine, made possible by plant compounds. In order to organize and conduct larger randomized multicenter clinical investigations, researchers and decision-makers need access to scientific data on the exact pharmacokinetics and pharmacodynamics of medicinal plants and their preparations. Using such methods, the idea of integrating and using a particular herbal composition into regular medicine may become a reality.

- In addition to some probable allopathic medications and some life support systems that assist lung function, herbal therapy is now the sole option available to treat coronavirus infection for the reasons listed below.
- Few positive results observed by administering herbal drugs.
- Unavailability of an allopathic drug.
- Lack of knowledge of the viral strain responsible for causing infection.

Only when paired with modern medicine and the life support system while being properly monitored do herbs operate at their best. Prior to the administration of herbs to cure the illness and stop its spread while taking into consideration the adverse effects of the herbs, research must be done swiftly to understand the completely effective chemical component of the therapy of infection.

**Conflicts of Interest:** The authors declare no conflict of interest.

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