



Can herbal remedies combat COVID-19?

Coronaviruses first develop in animals before being transmitted to humans and so they are zoonotic. COVID-19 has not been definitively linked to a specific animal. It is believed that the virus may have been passed from bats to another animal either snakes or pangolins and then transmitted to humans. This transmission likely occurred in the open food market in Wuhan, China. Even though the virus can have severe effects on people now, experts opine that this can diminish over time as our immune systems adapt. As on date, India's total coronavirus cases near 50-lakh mark with nearly 80,000 fatalities, more than 37 lakh people have recovered after getting infected in the country.

The pneumonia-like COVID-19 caused by the novel coronavirus (SARS-CoV-2) remains a huge medical challenge worldwide. To provide a wholistic guide for developing clinical treatments, vaccines, and antiviral drugs, it is of great significance to study the interaction mechanisms between severe acute respiratory syndrome (SARS) coronaviruses and host molecules, while also exploring the pathogenic process of coronaviruses.

Health officials in China are recommending traditional herbal remedies for COVID-19, but many experts warn that we do not have enough data on COVID-19 to understand how different herbs may affect people's health. Though herbal remedies may seem harmless, if misused, they could increase a person's risk for COVID-19. We may find that certain herbs are effective in preventing and treating COVID-19 in some people, but there currently is not enough data regarding the use of herbal remedies for the new coronavirus. Risks and benefits of herbal medicines are not fully understood. Herbal remedies have long been used to treat infections and viruses, such as the common cold, influenza, fever, and even herpes.

Historically, there has been a major lack of evidence surrounding natural medicines. For one, it has been difficult to secure the necessary funding to study the health effects of plants and herbs. The United States is a very pharmaceutical-driven society, so that is where the priority has historically been. Research has also been somewhat inconsistent. There are so many parts of a plant - the root, stem, leaf, flower and it is hard to get studies that consistently analyse the same portion of a plant. Langland has been leading up a team of researchers who have been studying if and how certain herbs could potentially be used to treat COVID-19(1). His team is testing over 30 herbs, and looking at each plant's antiviral and immune-supportive properties. Langland is hopeful that they will find a treatment, but says it will take time to get the results and put the science behind botanicals. Even for those herbs they find effective, they want to go through and make sure they look at any sort of toxicity, and sort of side effects that may be associated with them, look at quality of extracts, and start to move that forward(1). Further, they are not going to jump and throw this out there for people to start using without regarding things like safety just like any pharmaceutical.

Some herbal remedies are thought to enhance the immune system and put the body in a healthier position to fight infections. Others are believed to be powerful antivirals that block certain viruses from replicating in the body. But just because it has seen some promise with other illnesses does not mean people should assume herbal remedies provide the same benefit with COVID-19. Every virus is unique in its structure and behaviour. The herbs that seem to work for other viral infections will need to be tested to see if they also hold up against COVID-19. This one is a little bit more of a dangerous virus said Langland.

How a botanical works in one person's body may be drastically different from how it behaves in another, depending on their health, age, and symptoms. With botanicals, one wants to treat people individually, Langland said (1), noting how the type of herb and dosage would likely vary from person to person. If people are curious about herbal remedies, it is best to consult a physician or naturopathic doctor who is well versed in various herbs and their properties. "I wouldn't advocate that people willy-nilly start taking all kinds of herbal products and not have a clue what is in it," Gersh said (2). One must have data, and be aware of any potential side effects before one takes herbal products for an infection as potentially life threatening as COVID-19. It is better not to experiment with herbal remedies if one has COVID 19. Just like any other medicine, herbal remedies could cause adverse side effects. Take licorice, one of the remedies that officials in China have recommended for COVID-19. According to Gersh, licorice is thought to be an effective treatment for herpes viruses. Licorice paste, when applied to a herpes sore, can prevent the virus from replicating and stop it in its tracks, says Gersh. But it also has a major downside. It can activate a hormone in the

body called aldosterone which causes fluids retention and can actually induce hypertension. Because hypertension is a huge risk factor for COVID-19 complications according to Gersh. She would be concerned about using licorice, especially in high quantities, in someone with coronavirus. St John's wort is a widely available supplement but it can cause issues if a person is on medication. It can interact with other medications that a patient's on and block their absorption in the body and prevent them from acting as per Langland. Furthermore, some people's immune systems are over reacting to COVID-19, triggering widespread inflammation that can be even more problematic than the infection itself. Certain herbs, if misused, could boost the immune system even more and lead to "a cytokine storm," or a fatal over reactive immune response, according to Gersh. One of the biggest problems, as per Langland (1), is that many herbal and natural remedies are low quality. There is so much herbal medicine that is adulterated, which means the product one is buying has been spiked with other botanicals or does not contain any of the botanicals that are labelled on the bottle. If one gets the product from a local health store, there is a good chance you are not getting a high quality product. One cannot assume every herb is safe. It may have some properties that could be potentially harmful as per Gersh (2).

Although some natural products as baicalein and baicalin were proved as the inhibitors of SARS-CoV-2 (3), there has been no published study on a single herb, its extract, and bioactive compound against SARS-CoV-2. Ding *et al.*, investigated Lianhuaqingwen, a Traditional Chinese Medicine formula composed of a combination of 13 herbs (4). Lianhuaqingwen suppressed SARS-CoV-2 replication, reduced pro-inflammatory cytokine production, and changed the morphology of SARS-CoV-2 cells (5). SARS-CoV-2 can cause dangerous and potentially lethal diseases through the respiratory route. Hence, studying the effect of a particular bioactive compound against SAR-CoV-2 requires a highly contained laboratory with inward directional airflow (6) posing challenges for most researchers. The literature carries strong evidence in support of dietary therapy and herbal medicine as potential effective antivirals against SARS-CoV-2 and preventive agents against COVID-19. For future studies, the authors believe there are 4 potential approaches for the application of dietary therapy and herbal medicine against COVID-19: (i) using foods and herbs as diet or supplement to prevent infection and strengthen immunity; (ii) use as an antiviral agent by coating on masks; (iii) use as an air-disinfectant (essential oil) to stop aerosol transmission; and (vi) use as a surface sanitizing agent to provide a disinfected environment.

Presently, there are a limited number of allopathic medicines considered effective against COVID-19. The design and development of drugs and vaccines require elucidation of the mechanism of SARS-CoV-2. Literature provides obvious evidence supporting dietary therapy and herbal medicine as potential effective antivirals against SARS-CoV-2 and as preventive agents against COVID-19. Thus, dietary therapy and herbal medicine could be a complementary preventive therapy for COVID-19. However, these hypotheses require experimental validation in SARS-Cov-2 infection models and COVID-19 patients.

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