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Letter to the Editor

Stay Safe: Helpful Herbal Remedies in COVID-19 infection

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Dear Editor,

The outbreak of the novel corona virus known SARS-CoV-2 (Severe Acute Respiratory Syndrome Coronavirus 2) was first recorded in Wuhan City and Hubei Province, China on December 8, 2019. COVID-19 epidemic rapidly spread from a single city to the entire country in 30 days and has since become pandemic globally with 808,500 recorded cases, 39,706 deaths and 174,455 recovered cases as of March 31, 2020 (Wu and McGoogan, 2020; WHO, 2020).

The published reports of hospitalised patient in China have suggested that the age distribution of most case patients were 30 to 79 years of age (87%), 1% were age 9 years or younger, 1% were age 10 – 19 years and 3% were age 80 years or older. The case fatality rate was elevated among patients with pre-existing comorbid condition such as cardiovascular disease (10.5%), diabetes (7.3%), chronic respiratory disease (6.3%), hypertension (6.0%), and cancer (5.6%). Men were most affected by the infection due to smoking and pre-existing lung disease. Generally, the symptoms of COVID-19 involved fever in 83% to 98% of patients, dry cough in 76% to 82%, and fatigue or myalgia in 11% to 44%. Other reported symptoms are sore throat, headache, diarrhoea and abdominal pain (Wu and McGoogan, 2020; Rio and Malani, 2020).

The lack of specific antiviral drugs and vaccines for the treatment of COVID-19 has overwhelmed the Chinese government despite the advanced healthcare system. China depended on traditional public health outbreak response tactics which include isolation, quarantine, social distancing and community containment. On Tuesday, March 31, 2020, the U. S. Food and Drug Administration gave emergency approval that hydroxychloroquine and chloroquine be used for the treatment of COVID-19. The approval was based on little evidence that the two antimalarial drugs can prevent or treat the infection. The literature is full of information on the side effects of the approved drugs. Common side effects of hydroxychloroquine may include nausea, vomiting, stomach pain, loss of appetite, weight loss, hair loss, headache, dizziness, and skin rash or itching. Chloroquine might cause blurred vision, nausea, vomiting, abdominal cramps, headache and diarrhoea. Also, anecdotal evidence suggests that remdesivir may be useful; lopinavir has also been tried based on its efficacy in animal models of MER-CoV. Avilavir an antiviral drug used for influenza is currently been investigated

as a therapy for COVID-19 in China. Overall, more than 100 clinical trials are currently been explored to test novel and repurposed compound against SARS-CoV-2 (Rio and Malani, 2020; USFDA, 2020).

Many low-income countries in Africa are not adequately prepared for COVID-19 outbreak, making them highly vulnerable to the disease. The poor level of preparedness could be attributed to insurgence, poor health and nutrition, high prevalence of Human Immunodeficiency Virus (HIV) and tuberculosis, inadequate influenza vaccination rates, poor quality of healthcare and resource constraints. Besides, 30% of the medicines used in developing countries are substandard (Lancet Editorial, 2020). The global outbreak of COVID-19 presents different challenges to develop and developing countries. Most developing countries have weak health system coupled with inadequate epidemic response capacity. So far, Nigeria has successfully dealt with individual cases, the country reported 139 recorded cases, 2 deaths and 9 discharged cases from coronavirus infection as of March 31, 2020. The government of Nigeria might easily be overwhelmed with a large outbreak of COVID-19 due to its peculiar challenges. Of significance are the challenges of COVID-19 outbreak or epidemic in Nigeria, a largely populated country with an inadequate distribution of health centers. The country also lack adequate infrastructural capacity such as doctors, medical personnel, drugs, equipment and space for the containment of COVID-19 outbreak. Considering morbidity and mortality rate of the infection and its effects on socioeconomic status of the citizens, the burden of the disease is too enormous for the government. A combination of government and citizens' initiative is required to combat COVID-19 infection. While the advance countries such as the USA and Europe are battling with insufficient testing equipment and space, Nigerians should turn to nature and explore the benefits of medicinal plants as immune boosters and anti-infectives with a view to mitigating the spread of COVID-19 infection.

In Nigeria, the use of herbs for the treatment and management of infections and diseases is part of their tradition and custom. The indigenous knowledge could be inherited or learnt in traditional religion. The dependency on botanicals has been attributed to the availability of a diversity of medicinal plants in the lowland rainforest vegetation,

presumed efficacy of herbal remedies in regimens with little or low side effect and affordability. The prevalence of previous public health problems in Nigeria has been attributed to low socioeconomic status, lack of perceived risk, educational status, type of family and religion (Gbadamosi and Egunyomi, 2014).

In traditional medicine, the prevention of infectious diseases relies on the use of botanical detoxifiers, immune boosting remedies, natural antioxidants, plant haematinics and spices. Based on the fact that COVID-19 is a viral infection, the use of antiviral medicinal plants might be useful in its prevention and management. Considering the symptoms of COVID-19 infection - fever, cough, body pain, flu, cold and shortness of breath, plants with antimalarial effect, cough remedy, herbal analgesic and medicinal plants with plausible therapeutic effects in respiratory tract infections could be useful in the prevention of COVID-19 infection. Furthermore, the doctrine of signatures might play an important role in the choice of botanicals for the prevention and management of COVID-19 infection (Gbadamosi, 2019).

Botanical detoxifiers: Two botanicals that are valuable detoxifiers are Neem (*Azadirachta indica*) and Turmeric (*Curcuma domestica*). Neem is a plant best known for its ability to cleanse the skin, the liver and controls blood sugar. It is readily available in Nigeria and it has a vast array of healing properties. It gently purifies the blood and promotes healthy blood circulation. Turmeric is the king of all spices with powerful antioxidant properties. It has an array of pharmacological effects in the treatment of arthritis, rheumatism, cancer, obesity, infections, etc. It contains curcuminoids and it is a free-radicals fighter. Daily consumption of turmeric could prevent many degenerative diseases. Turmeric could be made bioavailable if prepared as a powder in combination with *Aframomum melegueta* (Guinea pepper) (Gbadamosi, 2019).

Herbal immune boosters: Guava (*Psidium guajava*) leaf, mango (*Mangifera indica*) stem bark and leaf, lemon grass (*Cymbopogon citratus*) leaf, ginger (*Zingiber officinale*) rhizome, garlic (*Allium sativum*) bulb and cinnamon (*Cinnamomum zeylanicum*) stem bark are immune boosting herbs that can be prepared in powdered form or as a decoction for oral administration. Generally, spices other than pepper are rich in antioxidants, antimicrobials; they also have anticancer properties. Research has confirmed that eating a small amount of ginger (*Zingiber officinale*) daily for 11 days or more can reduce muscle pain and inflammation; ginger also aids digestion. Generally spicing food up a little adds more than just flavour. Other useful spices are onions (*Allium* species), black pepper (*Piper guineense*), guinea pepper, clove (*Syzygium aromaticum*) and green onions (*Allium ascalonicum*). As an example, an immune boosting recipe is as follows: Prepare a decoction of powdered turmeric (125 g), ginger (20 g), garlic (2 g), guinea pepper (a pinch), clove (a pinch), black pepper (a pinch) and coconut water (5 cups) by boiling for 20 minutes. Allow the extract to cool and filter using a fine sieve. Then add lemon (4 teaspoons) and honey (teaspoons) to the extract. Drink ½ teacup of the extract before breakfast or in between meals once daily. One preparation can last for a week if refrigerated (Gbadamosi *et al.*, 2012).

Natural antioxidants: Fruits and vegetables have antioxidant properties. In addition to vitamins A and C, they contain a polyphenol (quercetin) that have strong H⁺ donating activity. Phenolic acids generally act as antioxidants by trapping free radicals and some plant-derived compounds are better antioxidants than BHA (Butylated Hydroxyl Anisole). Consequently, natural antioxidants may be useful in the treatment and prevention of chronic infections and diseases. Some Nigerian vegetables are bitter leaf (*Vernonia amygdalina*), jute mallow (*Corchorus olerarius*), spinach (*Senecio bialfrae*), African lettuce (*Launnaea taraxacifolia*), and pumpkin plant (*Telfaria occidentalis*). The message is let food be your medicine and medicine be your food (Gbadamosi and Afolayan, 2016).

Plant haematinics: *Sorghum bicolor* leaf (red guinea corn) and *Theobroma cacao* stem bark (Cacao tree) are used in combination as haematinics for the treatment of anaemia, menstrual disorder and other blood-related infections and diseases. The tonic is prepared in the form of decoction, in which the two plant materials are washed thoroughly and boiled in clean water for 20 minutes. The extract can be taken orally after food (Gbadamosi *et al.*, 2012).

Antiviral botanicals: The indigenous people of Nigeria are knowledgeable in the management of viral infections. *Cassia fistula* (purging cassia), *Phyllanthus amarus* (stonebreaker), *Lagenaria breviflorus* (wild colocynth), *Citrullus colocynthis* (bitter apple) and *Syzygium aromaticum* (clove) are used for the management and treatment of viral diseases. Although there is a scarcity of information on scientific validation of antiviral activity of medicinal plants, information on the antiviral activity of some of the above named is available in literature. The plants are prepared as powder, decoction and infusion for therapeutic purposes (Gbadamosi, 2015).

Antimalaria and analgesic herbs: *Chincona officinalis* (red cinchona) stem bark, *Nauclea latifolia* (African peach) root, *Alstonia boonei* (stoolwood) root, and *Morinda lucida* (brimstone tree) root and leaf are used as antimalaria remedy. *Chincona officinalis* and other *Chincona* species contain quinine (hydroxychloroquine and chloroquine) and other alkaloids that are effective for the treatment of malaria fever. The remedy is usually prepared as decoction or tincture for oral administration. *Microdesmis puberula* and *Calliandra portoricensis* (powderpuff) are used as analgesic in malaria, arthritis and rheumatism (Gbadamosi *et al.*, 2011).

Herbal cough remedy: *Garcinia kola* (bitter kola) and *Bryophyllum pinnatum* (miracle leaf) are used traditionally for the treatment of cough. *G. kola* seeds are soaked in lemon juice in a bottle. One teaspoonful of the remedy is taken three times daily after food. The leaves of *B. pinnatum* are put in hot water to make tender and squeezed. Add honey to the leaf juice and drink 100ml of the remedy two times daily after food.

Herbs for respiratory tract infections: *Spondias mombin* (yellow mombin), *Garcinia kola*, *Calotropis procera* (apple of Sodom), *Nymphaea lotus* (water lily) and *Abrus precatorius* (water lily) are used for the management and treatment of respiratory tract infections.

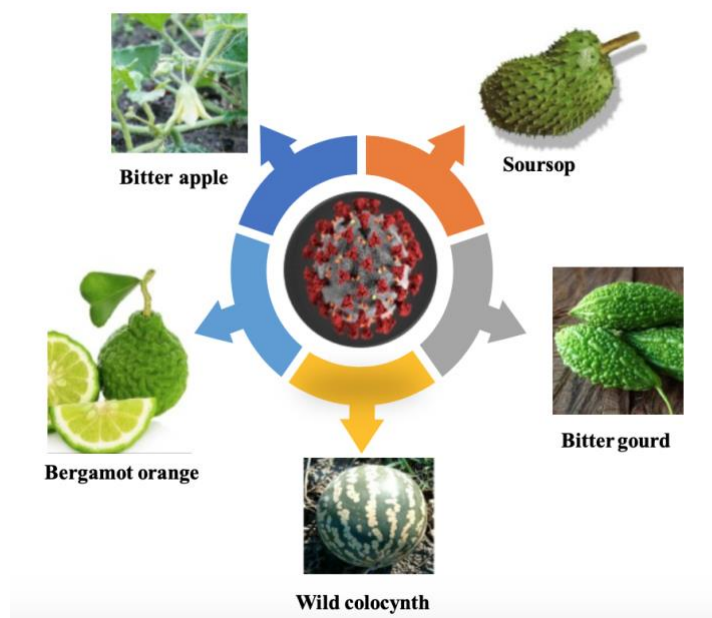


Figure 1:
The doctrine of signatures of some antiviral medicinal plants that might be helpful in corona virus infection

The remedies are prepared as leaf juice, infusion, decoction and traditional soup for therapeutic purpose. As an example, an infusion of bitter kola and garlic in clean water is used for the management of respiratory tract infections (Gbadamosi, 2019).

Doctrine of signatures:: The doctrine of signatures was based on the belief that since plants were created on earth for the good of mankind, the key to human use of the plant is hidden in the shape or form i.e. the signature of the plant itself. The basic idea is that the whole plant or its part looks like a human tissue, organ or disease for which it is remedial. Based on the structure of the corona virus (SARS-CoV-2), *Momordica charantia* (bitter gourd), *Lagenaria breviflorus* (wild colocyth), *Citrullus colocynthis* (bitter apple), *Annona muricata* (soursop) and *Citrus aurantium bergamia* (bergamot orange) might be useful in combating COVID-19 (Figure 1.) (Gbadamosi, 2019).

The Nigerian government is gradually losing its inheritance and economic strength by not paying attention to ethnobotanical medicine. Policies should be made on the preservation of indigenous knowledge, documentation of indigenous recipes, prevention of cultural loss and conservation of important plant species for research and medicine. The funding of research in ethnobotany by the federal and state governments and the establishment of ethnobotanical medicine centres in the universities will contribute immensely to the exploration of medicinal uses and economic importance of medicinal plants. Collaborative studies among scientists and indigenous people will promote drug discovery via production of herbal remedies, drug

precursors, drug prototypes, and active compounds through clinical trials.

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Note: This publication is targeted towards boosting your immune system to help fight the corona virus. It is not by any means a cure for COVID-19 infection. Please avoid self-medication. If you experience any obvious symptoms of the COVID-19, please self-isolate and contact the relevant authorities.

