

The Effectiveness of the Use of Traditional Medicine on COVID-19 in South-West Region of Nigeria

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Keywords: COVID-19 • Severe Acute Respiratory Syndrome Coronavirus 2 (SARS-CoV-2) • MER-CoV

Commentary

The occurrence of the novel coronavirus known as SARS-CoV-2 (Severe Acute Respiratory Syndrome Coronavirus 2) was first reported 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 a universal plague with 808,500 recorded cases, 39,706 deaths, and 174,455 recovered cases as of March 31, 2020 [1]. The published information of hospitalized patients in China have suggested that the age division of most case-patients were 30 to 79 years of age (87%), 1% were age nine years or younger, 1% were age 10-19 years and 3% were age 80 years or older.

The elevation of the case fatality in the midst of patients with preexisting comorbid conditions 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, diarrhea and abdominal pain [2]. 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 approve emergency need of hydroxychloroquine and chloroquine for the treatment of COVID-19. The emergency approval is 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 diarrhea.

Also, anecdotal evidence suggests that remdesivir (an antiviral drug) 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 investigated as a therapy for COVID-19 in China. Overall, more than 100 clinical trials are explored to test novel and repurposed compounds against SARS-CoV-2.

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Received 30 August 2020; **Accepted** 18 September 2020; **Published** 25 September 2020

Many low-income countries in Africa are not adequately prepared for the COVID-19 outbreak, making them highly vulnerable to the disease. The inadequate level of preparedness are attributed to insurgence, poor health, and nutrition, high prevalence of Human Immunodeficiency Virus (HIV) and tuberculosis, low influenza vaccination rates, poor quality of healthcare, and resource constraints. Besides, 30% of the medicines used in developing countries are substandard. The global outbreak of COVID-19 presents different challenges to develop and developing countries. Most developing countries have inadequate health systems coupled with inadequate epidemic response capacity. So far, Nigeria has successfully dealt with individual cases. Nigeria reported 33, 153 recorded cases, 18, 738 active cases, 13, 671 recovered cases, and 744 deaths from coronavirus infection as of July 14, 2020.

The government of Nigeria might easily be overwhelmed with uncontrolled 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 lacks adequate infrastructural capacity such as doctors, medical personnel, drugs, equipment, and space for the containment of COVID-19 outbreak. Considering the morbidity and mortality rate of the infection and, its effects on the 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 advanced countries such as the USA and Europe are battling with low testing equipment and space, Nigerians should turn to nature and explore the benefits of medicinal plants as immune boosters and anti-infective with a view to mitigate the spread of COVID-19 infection.

In the South-West Part of 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 learned 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 incidence of preceding public health troubles in the South-Western part of Nigeria attributed to low the socioeconomic status, lack of perceived risk, educational status, type of family, and religion.

In traditional medicine, the prevention of infectious diseases relies on the use of plant 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, a cough remedy, herbal analgesic, and medicinal plants with plausible therapeutic effects in respiratory tract infections could be useful in the prevention of COVID-19. Furthermore, the doctrine of signatures might play an outstanding role in the choice of botanicals for the prevention and management of COVID-19.

Plant detoxifiers

Two plants 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 the South-Western part of 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 receptor. Daily consumption of turmeric could prevent many degenerative diseases. Turmeric is bioavailable if prepared as a powder in combination with *Aframomum elegueta* (Guinea pepper).

Herbal immune boosters

Guava (*Psidium guajava*) leaf, mango (*Mangifera indica*) stem bark and leaf, lemon grass leaf, ginger 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 which have anticancer properties. Research has confirmed that eating a small amount of ginger 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 flavor. 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.

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 olitorius*), spinach (*Seneciobiferae*), African lettuce (*Launnaeataraxacifolia*), and pumpkin plant (*Telfaria occidentalis*). The message is let food be your medicine and medicine is your food.

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.

Antiviral botanicals

The indigenous people of South-West part of Nigeria are knowledgeable in the management of viral infections. *Cassia fistula* (purging cassia), *Phyllanthus amarus* (stonebreaker), *Lagenariabreviflorus* (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.

Antimalarial 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 antimalarial 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 analgesics in malaria, arthritis and rheumatism.

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 100 ml 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) is for the management and treatment of respiratory tract infections.

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

Doctrine of signatures

The doctrine of signatures 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 coronavirus (SARS-CoV-2), *Momordica charantia* (bitter melon), *Lagenaria breviflorus* (wild colocynth), *Citrullus colocynthis* (bitter apple), *Annona muricata* (soursop) and *Citrus aurantium bergamia* (bergamot orange) might be useful in combating COVID-19.

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 centers in the universities 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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How to cite this article: Abdullahi Tunde Aborode, Raheem Rafiu, and Nnopuschi Jennifer. "The Effectiveness of the Use of Traditional Medicine on COVID-19 in South-West Region of Nigeria." *Chem Sci J* 11 (2020): 214 doi: 10.37421/CSJ.2020.11.214