

COVID-19 AND AFRICAN TRADITIONAL MEDICINES

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[DOI: 10.13140/RG.2.2.34534.86085](https://doi.org/10.13140/RG.2.2.34534.86085)

Abstract

Any pandemic outbreak is a global health emergency that requires efficient and viable approaches to manage and contain. The usual scientific response to the health crisis is to search for scientific vaccines to combat a novel pandemic. The World Health Organization (WHO) has been in the front line of championing scientific solutions to the COVID-19 pandemic. Claims by some African countries to have discovered herbal remedies for COVID-19 have been met with scathing remarks by the WHO that is demanding scientific publications for causal explanations of alleged curative COVID-19 herbal drugs. But a developer/discoverer of a COVID-19 herbal remedy that has been clinically tested and certified to be effective in treating and managing COVID-19 may be unable to offer through publications scientific explanations of its causal efficacy at the time of its discovery. The aim of this paper is to argue for approval of COVID-19 herbal medicines by health authorities in African countries on pragmatic grounds. The method of analysis is employed to argue that some African traditional medicines have immune boosting capability. Research shows that though herbal drugs are no substitute for synthetic drugs/vaccines that are yet to be developed, they are effective in boosting the body's innate immune system which is necessary for combating the novel coronavirus at its early stage in the human system. This paper recommends that health authorities in African countries should develop and legitimize their own efficient validation systems for evaluating the safety and efficacy of African traditional medicines for management and treatment of COVID-19 and other virulent diseases in Africa, while waiting for the development of COVID-19 synthetic vaccines.

Keywords: Africa, African Traditional Medicines, COVID-19, Immune System

Introduction

Coronavirus disease 2019 (COVID-19) is caused by the novel coronavirus known as severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2) – one of the strains of coronavirus which comprises a large family of viruses that are prevalent in animals and human beings. It is a zoonotic disease and thus can be transmitted from animal-to-human and from human-to-human. It is primarily spread through droplets, close contact from person-to-person, and contact with fomites. COVID-19, whose outbreak first happened in Wuhan city China in December 2019, has killed off 38, 830 people in Africa and decimated 1, 093, 140 people globally as of 15 October 2020 (ECDC, 2020).

Presently, there is no officially approved drug or vaccine for the treatment of COVID-19. Any novel pandemic requires the development of scientifically proven drugs or vaccines for its treatment. The scientific process of verification and validation of new vaccines for the pandemic is usually rigorous and lengthy. It is standard practice that vaccines have to undergo animal tests which take at least two years before extensive clinical trials in healthy human volunteers to determine their safety and efficacy. Besides, scientific publications of clinically tested and certified efficacious herbal drugs as well as the validation of the results of the study by further research are required to gain global acceptability of the drugs. The COVID-19 pandemic is a global health emergency. The surging scourge and death toll of the virulent disease make it expedient to adopt a viable and efficient approach to managing and treating the pandemic at the early stage of the viral infection.

Innate (or natural) immune system with which every human person is born must be balanced and active to respond effectively to harmful alien antigens (substances) of the novel coronavirus at the initial encounter with the virus to ensure a quick recovery from the infection. Besides, a healthy immune response to the virus can trigger antibodies in the blood to enter the respiratory system where the virus resides and prevent the virus from using its spike protein to attach to human cells, thus making the virus unable to propagate and replicate (Sharif & Bridle, 2020). Traditional herbalists or health practitioners have advocated for centuries the value of using a combination of herbal medicines and single extracts and medicinal plants to boost innate immune system (Busia, 2005).

Clinical studies have shown that African herbal tonics and other traditional medicines have the capability to regulate immunity and boost immune response

to viral infections and other diseases (Ngcobo, Gqaleni, Vinny & Cele, 2017). African traditional medicines (ATMs) refer to African indigenous health knowledge, beliefs and practices which involve the use of herbs shrubs, fruits, vegetables, minerals, stems, roots, animals, and spiritual techniques for the treatment and prevention of diseases and illnesses, and for the maintenance of wellness (WHO, 2019). It is estimated that 60-80 percent of people living in African countries use ATMs as their primary source of health services (Mwambo et al., 2007; Payyappallimana, 2011; Kabyemela, 2020). For instance, a study conducted by Ateba, Kaya, Pitso and Ferim (2012) on Batswana (a major African indigenous ethnic group in the North-West Province of South Africa) indigenous plant species showed that Batswana people use plant species medicines, among other things, for the treatment of kinds of diseases and illnesses.

Traditional and alternative/complementary medicines often serve as the primary treatment and management of prevalent diseases in Africa such as malaria, typhoid, HIV/AIDS, diabetes, syphilis, gonorrhoea, high blood pressure, cancer, tuberculosis, arthritis, rheumatism, skin diseases, body weaknesses, insomnia, and so forth. According to Adodo (2020), for example, herbal medicines developed and produced by Pax Herbal Clinic and Research Laboratory at EWU in Edo State of Nigeria have been effectively used for years for the management and treatment of HIV, hepatitis B, Tuberculosis, hypertension, diabetes, malaria, asthma, male and female infertility, prostrate problems, and so forth. Reasons adduced to account for their use and preference are, inter alia, their efficacy or effectiveness, affordability, availability, accessibility, and the fact that they are natural remedies with little or no harmful side effects, compared to synthetic orthodox medicines (Romero-Daza, 2002; Mbwambo et al., 2007; Orisatoki & Oguntibeju, 2010; Payyappallimana, 2011; Gyasi et al., 2011; Kuuribe & Domanbau, 2012).

The aim of this paper is to argue that some African herbal tonics and other remedies are effective in balancing innate immune system needed to combat strange pathogens like the novel coronavirus. The rest of this paper will first explore pragmatism as framework for recommending the approval of ATMs for use in treating and managing COVID-19 and other prevalent diseases in Africa. Second, it will argue that some ATMs have immune boosting capability. Third, it will thereafter acknowledge that ATMs are no substitute for synthetic vaccines to show that COVID-19 vaccines are still needed to achieve herd immunity and prevent the spread of the virulent disease. Finally, the paper will conclude that ATMs that can improve innate immune system to fight the novel coronavirus

should be subjected for safety, toxicological and efficacy tests for approval and regulation for the treatment and management of COVID-19 at the early stage of the viral infection.

Theoretical Framework

Pragmatism serves as a framework in this paper for proposing the approval of African traditional medicines for use in treating and managing COVID-19 in Africa. Pragmatism, otherwise known as functionalism or instrumentalism, is a philosophical theory propounded by Charles Sanders Pierce but later developed and popularized by William James. Pragmatism holds that an idea, knowledge or belief is true only if it is functional, that is, if it yields a satisfactory result. Put differently, it is the practical consequences or usefulness (utility) of an idea or knowledge that makes it true and meaningful. Applying pragmatism to knowledge inquiry, Pierce (1988) states that our pragmatic approach to scientific philosophical or theological question should be: "Consider what effects, which might conceivably have practical bearings, we conceive the object of our conception to have. Then, our conception of those effects is the whole of our conception of the object" (p. 266).

James (1975) insists that only knowledge or ideas that practically useful are true and meaningful. In other words, true knowledge or concept finds expression in its practical consequences. He explicates thus:

The pragmatic method in such cases is to try to interpret each notion by tracing its respective practical consequences. What difference would it practically make to anyone if this notion rather than that notion were true? If no practical difference whatever can be traced, then the alternatives mean practically the same thing, and all dispute is idle. Whenever a dispute is serious, we ought to be able to show some practical differences that follow from one side or to the other's being right (p. 90).

James (1975) argues further that the truth of an idea is not a static quality that is intrinsic to the idea. What makes an idea or knowledge true is its ability to produce a satisfactory result or successfully meet our expectations. As he puts it:

True ideas are those that we can assimilate, validate, corroborate, verify. False ideas are those we cannot. That is the practical difference

it makes to us to have true ideas; that, therefore, is the meaning of truth, for it is all that truth is known as. This thesis is what I have to defend. The truth of an idea is not a stagnant property inherent in it. Truth happens to an idea. It becomes true, is made true by events, its verity is in fact an event, a process: the process namely of its verifying itself, its verification. Its validity is the process of its validation (p. 97).

Therefore, pragmatism accepts as true any proposition (scientific, philosophical or theological) that is practically successful or works satisfactorily. John Dewey, an influential pragmatist thinker, maintains that effective thinking and ideas are instrumental in solving practical human problems, for “our minds are fundamentally problem-solving instruments” (Stumpf & Fieser, 2003, p. 406). He insists that inquiry into any knowledge claim should be empirical in method and practically motivated (Ome & Amam, 2004). Another influential pragmatist thinker, Richard Rorty, holds that the function of the human mind is to produce practical ways of living and so truth is simply “what passes for good belief” (Misak, 2002, p. 13).

Pragmatism rejects fixed formula or principles, static knowledge and closed systems, and insists that there are many concrete successful actions in the truth process. Hence, James makes a distinction between what he calls tough-minded and tender-minded approaches to truth. A tough-minded approach would consider more scientific behaviour in the truth process, while a tender-minded approach would consider less scientific behaviour in the truth process (Stumpf & Fieser, 2003). Pragmatism adopts scientific attitude in seeking true knowledge in terms of verification. It differs from science in that it insists that our approach to knowledge should be multi-faceted, rather than being limited to rigid scientific verification and validation procedures. What determines true knowledge is its practical success or utility which can be obtained through different approaches. Utility, workability or successful result is therefore the test of truth, for the pragmatist (Eboh, 1990). The truth of an idea or knowledge is based on its experiential or practical usefulness. In the final analysis, truth is what works.

African Traditional Medicines and Immune System

The immune system (IS) is a complex network of interacting cells and proteins that defends the body against disease-causing viruses, bacteria and other organisms by identifying alien antigens (live or inactivated) and develop a defense (immune response) against them. It is therefore the body’s defensive system against

antigens and infections. It prevents or limits infections from potentially harmful pathogens like viruses and bacteria. The IS uses white blood cells, which consist primarily of macrophages, B-lymphocytes and T-lymphocytes to fight infections.

The IS recognizes and destroys or tries to destroy substances that contain antigens. It recognizes HLA antigens in the human body's cells as normal and does not usually react against them. But it reacts against strange antigens on the surface of viruses by identifying them as dangerous and stimulating antibodies to attack them. In responding to a novel pathogen like coronavirus, the innate immune system needs to be balanced and active to trigger symptoms like fever and mucus or a runny nose needed for body recovery, symptoms are a sign that the innate immune system is effectively working – that it is fighting back against the virus. For example, to have a fever means to have a very high temperature which makes one's body too hot and uncomfortable for the virus to replicate. A runny nose helps to flush out the pathogen, thus ensuring quick recovery from the viral infection.

Some ATMs have beneficial effects on the innate immune system in that they help to maintain healthy immune function or response to novel pathogens like SARS-CoV-2. Research has established that some African traditional or herbal medicines boost the body's immune and hormonal systems. Research carried out by Ngcobo, Gqaleni and Cele (2017) to evaluate the immune effects of African traditional energy tonics using peripheral blood mononuclear cells (PBMCs), THP-1 monocytes, and bacteria infected rat found that the tonics stimulate secretion of cytokines without any significant toxicity. Cytokines (proteins produced by cells) interact with cells of the IS to regulate immunity or the body's response to diseases and infections as well as various inflammatory responses.

Again, the result of a clinical study by Ngcobo and Gqaleni (2015) using *Phela*, a traditional South Africa immune booster formulated by traditional healers, which was conducted on 500 HIV positive and AIDS patients through controlled observation showed an increase in the overall quality of life of the patients, some from as low 30% to 100%, indicative of immune boosting properties. The study demonstrated that “the potential uses of immune boosters in clinical medicine does not only apply in treating immunodeficiency caused by HIV and AIDS but also can be useful in managing tuberculosis (TB), various forms of cancer and various other diseases that can be managed by modulating the immune response” (Ngcobo & Gqaleni 2015, p. 2).

Symbolismic Pharmaceutical Laboratories (SPL) founded by Rev. Fr. Professor Bona Uchenna Umeogu has been producing traditional drugs known as “Metaphysico-Communion Living Drugs” for the treatment of various diseases and illnesses. The SPL has herbal drugs known as Hirta Mentizoid and Clopizogyil syrup that are effective in managing and treating symptoms associated with COVID-19 such as catarrh, cough and sore throat (Umeogu, 2019). Hirta Mentizoid is made from plants: Mistletoe (*Viscum cruciatum*), lemon grass (*Cymbopogon citratus*), oada opue (*Bryophyllum pinnatum*), and sand paper tree (*Ficus exasperata*).

Clopizogyil syrup is produced from plants: lemon grass (*Cymbopogon citratus*), bitter kola (*Garcinia kola*), eucalyptus leaf/southern blue gum (*Eucalyptus globulus*), burdock plant (*Arctium lappa*), and shoe flower/shoeblackplant (*Hibiscus rosasinensis*). Besides, the SPL produces a herbal drug known as immune efficiency vaccine that is used for the management and treatment of HIV/AIDS and other kinds of infections (Umeogu, 2019). The vaccine is made from plants: Ede oku garlic wonderful kola nut (*Celocasia esculenta*), garlic (*Allium sativum* L.), ogbono/bush mango/African mango (*Irvingia gabonensis*), moringa/drumstick tree (*Moringa oleifera*), lemon grass (*Cymbopogon citratus*), and bitter kola (*Garcinia kola*).

A study by Institute of Africa and Diaspora Studies (IADS) and Nigeria Institute of Medical Research (NIMR) shows that Nigerians use ATMs as a preliminary to prevention of COVID-19. Common natural supplements used by Nigerians are lemon (Citrus lemon), ginger (*Zingiber officinale*), garlic (*Allium sativum* L.), and turmeric (*Curcuma longa*) (IADS, 2020). They are taken by either boiling or extracting active ingredients through blending and sieving of sediments. The active ingredients are usually warmed daily or refrigerated to prolong the use of them. Other herbs used by Nigerians are neem leaf (*Azadirachia indica*), paw paw leaf (*Carica papaya*), guava leaf (*Psidium guajava*), lemon grass (*Cymbopogon citratus*), scent leaf (*Ocimum gratissimum*), bitter leaf (*Vernonia amygdalina*), dextox-tea, anisea (*Pimpinella anisum*), and wormwood leaf (*Artemisia absinthium*) (AIDS, 2020).

Some of these ATMs have strong antiseptic qualities. For instance, lemon juice contains carboxylic acid (R-COOH) that can regulate blood circulation and high blood pressure, reduce blood clotting, and protect narrow arteries. Drinking plenty of lemon tea helps to stimulate human body to produce IS cells – antibodies. A sliced lemon taken with warm water can effectively kill malignant or cancerous cells without affecting healthy cells. This can eliminate the coronavirus at its early stage before it reaches lungs. A COVID-19 patient/victim can therefore recover

from the viral infection, especially when its symptoms are mild, when treated with this lemon extract at the early stage of the infection in the human system.

Pax Herbal Clinic and Research Laboratories at EWU in Edo State of Nigeria has developed a COVID-19 herbal drug known as PAX HERBAL CUGZIN for the management and treatment of symptoms associated with COVID-19 (Anetor, 2020). The herbal drug contains rich African plants and herbs such as *Garcinia kola* (bitter kola), *Curcuma longa* (turmeric), and *Zingiber officianale* (ginger). These herbs and plants have antiviral and immunodulatory agents that help to stimulate antibodies. The director of the clinic and laboratories, Rev. Fr. Anselm Adodo, recently claims that the herbal remedy has been approved by the National Agency for Food and Drug Administration and Control (NAFDAC) as immune booster against COVID-19 (Anetor, 2020).

What is more, the Malagasy Institutes of Applied Research has developed and produced a herbal drink called COVID-Organics (CVO) from a medicinal plant known as sweet wormwood (*Artemisia annua*) for the treatment and management of COVID-19. The herbal remedy, which has been clinically tested and certified to be effective in treating and managing COVID-19 by the Madagascan health authority using its own efficient knowledge and validation system, has been ordered by presidents of some other African countries like Equatorial Guinea, Uganda, Tanzania, Senegal, and Guinea Bissau for the treatment and management of COVID-19 cases in their respective countries. The development of a COVID-19 herbal remedy by tiny Madagascar is a shining example of African ingenuity and rich natural endowments which need an enabling environment and support of the African governments to thrive.

What each African country needs to do is to develop its own system of validating and legitimizing the use of herbal medicines for the treatment and management of COVID-19 and other common diseases in Africa without compromising standards of clinical trials to determine the efficacy and safety of herbal remedies. The problem with the scientific validation procedures is that scientific publications of clinically tested herbal tonics as well as the validation of the results of the study by further research are required before the World Health Organization (WHO) can endorse them for global use. For instance, the WHO demanded a scientific publication of Madagascar's curative herbal tonics even after the herbal remedy had been tested and certified by the Madagascan government to be efficacious against COVID-19.

The necessity of scientific publications of COVID-19 herbal remedies is to show their causal efficacy and offer causal explanations for their efficacy. However, herbal medicines may prove to be effective in treating and managing diseases, while discoverers/developers may not be able to offer scientific explanations (the whys and the wherefores) of their effectiveness. For instance, Africans' progenitors used neem (*Azadirachta indica*) leaves to treat malaria, but did not know the causal agent responsible for curing malaria and thus could not offer any scientific explanations for the efficacy of neem leaves. But, today, we know that the neem plant contains quinine that cures malaria caused by malaria parasites that are carried by female anopheles mosquitoes.

So, scientific explanations of immune-boosting herbal medicines that have been clinically tested and certified to be effective against COVID-19 may not be provided at the time of discovery and development of them. Such herbal remedies that have successfully undergone clinical trials should be endorsed for use on pragmatic grounds – the fact that it has shown to be practically effective in balancing or improving innate immune system for the treatment and management of COVID-19. It therefore behoves national health authority in each African country to subject any alleged COVID-19 curative herbal drugs or tonics to clinical examinations to determine and confirm their efficacy and safety for the treatment and management of COVID-19 in Africa.

Synthetic Vaccines and Immune Boosting of ATMs

ATMs that have immune boosting capability against COVID-19 are no substitute for COVID-19 synthetic vaccines. Unlike immune boosting herbal remedies for COVID-19, development of COVID-19 vaccines will help to achieve herd immunity – the point at which a population is sufficiently immune to a disease to prevent its circulation (Krisch, 2020). Humans need synthetic COVID-19 vaccines to be vaccinated or immunized against the pandemic to attain herd immunity to the pandemic. A population achieves herd immunity to COVID-19 when it develops adaptive immunity through immunization or vaccination against the novel coronavirus or the viral infection (COVID-19) itself. COVID-19 vaccines that are immunogenic (produce a robust immune response), protective and safe are required for Africans to be immune to the viral infection to forestall further spread of the novel coronavirus across African countries.

Development of highly effective vaccines for a novel pandemic requires characterization on the antigenicity and immunogenicity of the causal agent of the

pandemic. Coronaviruses contain large polyproteins that may serve as antigens that trigger immune responses in infected humans. Accordingly, structural proteins of a virus which are capable of inducing antibody responses in virus-infected humans as well as neutralizing antibodies against a virus in the infected humans serve as antigens and immunogens for developing vaccines for the treatment and prevention of a viral infection. For instance, a coronavirus (SARS-CoV) identified as the causal agent of Severe Acute Respiratory Syndrome (SARS) contains four structural proteins which include spike (S), nucleocapsid (N), membrane (M), and envelope (E) proteins encoded in RNA genome (He & Jiang, 2005) for virus replication.

These proteins cause virus replication by modifying cell processes of the host and “may induce humoral and cellular immune responses during viral infections” (He & Jiang, p. 21). Coronavirus spike protein is generally “the major antigen for a subunit vaccine design, as it can induce neutralizing antibodies and protective immunity.” Vaccines help human IS to develop immunity by imitating an infection which, rather than causes an illness, prompts the IS to produce protein molecules (antibodies or immunoglobins) through B-lymphocytes, and T-lymphocytes (cell-mediated immunity that facilitates the elimination of foreign substances - antigens. Vaccines (live or killed) for viral infections are basically made by attenuating disease-causing viruses in a laboratory, or inactivating the viruses (whole or fragment) during the process of producing the vaccines.

Live viral vaccines produced from attenuated virus strains are capable of replicating in the human host and inducing a protective immune response or producing immunity, but do not usually cause illnesses. Inactivated (killed) vaccines are non-replicating vaccines. They do not contain live components of pathogens and thus the vaccines’ antigens cannot replicate in the host humans. Replicating vaccines can be made by purifying and identifying viral antigens after identifying the peptide sites encompassing the major antiseptic sites of viral antigens. Non-replicating vaccines produced in this way are called subunit vaccines. What we are driving at is that a vaccine is specifically designed to fight off a particular pathogen. It does not only boost humans’ immune response, but also protect humans from a specific strain of virus. This is because weakening (or reducing) mutations of or the virulence of pathogens, or inactivating viral antigens capable of producing an immune response ensures the suppression of excessive immune reactions and the treatment of viral infections. In the final analysis,

immune boosting herbal remedies for COVID-19 are not alternatives to COVID-19 vaccines.

Conclusion

In this paper, we have argued that the innate immune system needs to be improved or balanced to maintain a healthy immune response to novel pathogens like the new coronavirus. We have shown some ATMs that are capable of stimulating and boosting innate body's defence force against disease-causing viruses, bacteria and other organisms. Though immune boosting herbal medicines are no substitute for COVID-19 synthetic vaccines that are yet to be developed, they are effective in managing and treating COVID-19 symptoms at the early stage of the viral infection. Research has shown that African herbal tonics and drugs are effective in boosting the innate immune system to combat viral infections like COVID-19 at their early stage in the human system. It is on pragmatic grounds that this paper recommends that African traditional medicines that are claimed to be potent in boosting innate immune system should be subjected to clinical examinations by the national health authority in each African country for possible validation, approval and regulation for use in Africa for the treatment and management of COVID-19 and other viral infections.

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