



Since January 2020 Elsevier has created a COVID-19 resource centre with free information in English and Mandarin on the novel coronavirus COVID-19. The COVID-19 resource centre is hosted on Elsevier Connect, the company's public news and information website.

Elsevier hereby grants permission to make all its COVID-19-related research that is available on the COVID-19 resource centre - including this research content - immediately available in PubMed Central and other publicly funded repositories, such as the WHO COVID database with rights for unrestricted research re-use and analyses in any form or by any means with acknowledgement of the original source. These permissions are granted for free by Elsevier for as long as the COVID-19 resource centre remains active.



# Coronavirus disease (COVID-19) and Africa: Acclaimed home remedies

Orish E. Orisakwe<sup>a,b,\*</sup>, Chinna N. Orish<sup>c</sup>, Eudora O. Nwanaforo<sup>d</sup>

<sup>a</sup> Dept of Experimental Pharmacology & Toxicology, Faculty of Pharmacy, University of Port Harcourt, PMB, 5323 Port Harcourt, Choba, Nigeria

<sup>b</sup> African Centre of Excellence for Public Health and Toxicological Research (ACE-PUTOR), University of Port Harcourt, PMB, 5323 Port Harcourt, Choba, Nigeria

<sup>c</sup> Faculty of Basic Medical Sciences, College of Health Sciences, University of Port Harcourt, PMB, 5323 Port Harcourt, Choba, Nigeria

<sup>d</sup> Department of Environmental Health Science, School of Health Technology, Federal University of Technology PMB, 1526, Owerri, Nigeria

## ARTICLE INFO

### Article history:

Received 26 May 2020

Revised 21 July 2020

Accepted 28 October 2020

### Keywords:

Viral infection

Covid-19

Home remedies

Natural products

Public health

## ABSTRACT

At last the WHO declared the severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2) now known as COVID-19 a pandemic. Amidst uncertainty both in the pathophysiology and the management of COVID-19, many African countries in the face of either overstretched or non-existent healthcare infrastructure resorted to home remedies as immediate alternative or first line of action. The present study is a synoptic capture of these home remedies with an attempt to understand the pharmacological basis on which these choices are predicated. Literature was compiled from google, social media, Radio and Television commentaries and news with stringent inclusion and exclusion criteria. Natural spices (turmeric, ginger, garlic etc.) and leaves (neem, paw, guava, etc.) with notable antioxidant and anti-inflammatory properties were found to be beneficial. These home remedies may hold promise in the prophylaxis and cure of COVID-19 infection.

© 2020 The Authors. Published by Elsevier B.V. on behalf of African Institute of Mathematical Sciences / Next Einstein Initiative.

This is an open access article under the CC BY license (<http://creativecommons.org/licenses/by/4.0/>)

## Introduction

Coronaviruses (family Coronaviridae and subfamily Orthocoronaviridae) are non-segmented positive-sense RNA viruses or (+) ssRNA virus which are distributed in humans [19]. COVID19 uses positive sense single stranded RNA as its genetic material. Novel coronavirus disease 2019 (COVID-19) which took its root in Wuhan, China in December 2019 is caused by the corona virus that can spread between animals and humans. COVID-19 is a present crisis whose clinical and epidemiological characteristics are currently being documented [6,20].

Hitherto, the primary source of infection remain pneumonia patients infected with COVID-19. Transmission of respiratory droplets is the main transmission route, which can also be transmitted by contact [5]. The most common symptoms of Coronavirus disease COVID-19 are fever, tiredness, and dry cough. It may be accompanied by aches and pains, nasal congestion, runny nose, sore throat or diarrhea in some people. At the moment, effective treatments modalities that target the

\* Corresponding author.

E-mail address: [orishebere@gmail.com](mailto:orishebere@gmail.com) (O.E. Orisakwe).

coronavirus remain elusive and largely unknown. The therapeutic regimens and treatment modalities may require a while to be realised. This gap in knowledge and the quest for immediate credible solution has compelled governments and scientists to search for anti-COVID-19 remedies. Panicky developing nations including Africa in the phase of this wide spread and the predicted humanity and economic disasters resorted to home treatment of contacts and COVID-19 cases.

In Africa, the orientation has skewed towards exploring natural spices and natural compounds [2]. It has been reported that traditional remedies may alleviate the symptoms of COVID-19. This is a synoptic capture of acclaimed home remedies with proven efficacy employed in various countries of Africa within the first four months of the COVID-19 pandemic.

## Methodology

Information from google, newspapers, magazines, different social media namely: facebook, twitter, whatsapp, testimonies of survivors through radios and televisions were gathered from February-May 2020. Sources that emphasised hospital treatment with orthodox medicines were excluded. Claims without dates and verifiable locations and identities were also excluded. Suspected postings by herbalists and traditional medical practitioners TMPs which could be viewed as promotional adverts were excluded. Socioeconomic status (education, employment etc.) of all claimants were also recorded.

## Results & discussion

Table 1 is a summary of acclaimed remedies for the management of COVID-19. The following underlisted barks, leaves and roots of plant materials used as aqueous decoctions were the acclaimed anti-COVID –19 remedies. Decoctions of bark, leaves and root of Neem tree (*Azadirachta indica* also called *Dogoyaro*). *Tetrapleura tetraptera* (Schumach. And Thonn) Taub, Mimosaceae, commonly known as Aridan (fruit). The plant is called Prekese in the Twi language of Ghana. It is also called Uhio in the Igbo Language of Nigeria. *Heliotropium indicum* roots also called Indian Heliotrope belonging to the plant family *Boraginaceae* is a sweet-scented plant. (*egbo agogo igun* in Yoruba). *Khaya grandifoliola* bark. *Khaya grandifoliola* is also called African mahogany, Benin mahogany, large-leaved mahogany, or Senegal mahogany, is a species of plant in the family *Meliaceae*. *Opuntia dillenii*, a well-known member of the *Cactaceae* family, is used as a medicinal plant in various countries and grows in the desert, semi-desert, tropical and sub-tropical areas. Bird pepper or *Capsicum frutescens* (also called *Ata Ijosi* in Yoruba) is a tropical solanaceous plant. Turmeric root is a bright yellow-orange spice commonly used in curries and sauces. Ginger is a flowering plant whose rhizome, ginger root or ginger, is widely used as a spice. Garlic is a plant in the *Allium* (onion) family. The lemon is citrus like and a specie of small evergreen tree in the flowering plant family *Rutaceae*. Paw-paw, *Asimina triloba*, is a small deciduous tree. Other remedies include unripe pineapple and blackseed oil, black pepper, mango and guava leaves. The aqueous decoctions of these remedies especially the leaves were either taken orally or by steam inhalation. Since most of the home remedies are classified as 'generally regarded as safe' GRAS and in fact already used as food, dosing was not problematic. Generally, one teaspoonful of the powdered spices in 240–250 ml of warm water to be taken three times a day constituted daily routine throughout the period of treatment.

About three months after it was officially recognised as a pandemic, the spread of the COVID-19 virus has continued, that urgent strong remedy is required, notwithstanding the paucity of knowledge on the life cycle of the virus and its mechanistic considerations (WHO 2019, [3,16]). Currently there is no ideal anti-COVID-19 medications. An ideal anti-COVID-19 medication (or a combination of agents) should be safe for such patients while conferring three basic therapeutic effects (and/or preventive health benefits): enhancing the antiviral immunity, tissue-protection (and tissue repair) and exerting potent antiviral effects [4]. COVID-19 presents a vast public health challenge both in developed and developing nations.

The striking feature of most of the COVID-19 home remedies in Nigeria is their ability to restore physiological and psychological functions. Phenolic compounds and antioxidant properties of these remedies are known to contribute to their therapeutic effects. Consumption of these Nigerian home remedies increase the anti-oxidant molecules and enzymes in the body and protect the cells and its membrane from being damaged by the toxic substances [1,18]. Phenolic moieties boost the body's immunity and defense against the threatening virus [17]. Scientists from the academia and Research Institutes have also supported the use of these home remedies as anti-COVID agents. In Madagascar a combination of artemisia, neem leaves, paw leaves, garlic, ginger, lime and oranges has been adopted as a notable anti-COVID agent. This combination is boiled for 30 min and steam-inhaled. Expectedly the steam inhalation clears the lungs of the virus. In fact, the Madagascar Institute of Applied Research has branded this decoction which can be also be taken orally as Covid-19 Organics CVO. Similar decoctions have been used in Nigeria and even by Nigerians who live in the diaspora. At inception COVID-19 was thought to be a lung disease but later evidence from autopsy reports tended to implicate Disseminated Intravascular Coagulation (DIC, Thrombosis). Regardless of the pathology, the African home remedies with their inherent antioxidant and anti-inflammatory properties may explain at least in part, the acclaimed protection, remission in symptoms, seroconversion and cure of COVID-19 in many parts of Africa.

## Author contributions

OEO &CNO conceptualization, reviewed the draft manuscript and certified final manuscript.  
EON conducted the search, data extraction, drafting of manuscript.

**Table 1**  
 Acclaimed remedies for the management of COVID-19.

Place claim was made. City/Country	Socioeconomic status of claimant: Education/Employment	Recipe/constituents /preparation of remedy. Include dose if specified	Outcome/number of days to achieve remission	References
Ibadan, Nigeria	Chief Medical Director, University College Hospital	Vitamin C-1000 mg, chloroquine, turmeric, lemon, unripe pineapple and steam inhalation plus prayer	7 days	[14] <a href="https://www.uchealth.org/today/jbs-worker-with-covid-19-goes-home-after-son-prayed-outside-hospital-for-days/">https://www.uchealth.org/today/jbs-worker-with-covid-19-goes-home-after-son-prayed-outside-hospital-for-days/</a>
Ekiti State, Nigeria	Governor	Onion and blackseed oil, blended together and mixed with pure honey. One tablespoon morning and night plus one tablet of vitamin C (1000 mg) daily	7–10 days	[13] <a href="https://www.lindaikejisblog.com/2020/4/i-fought-covid-19-with-carrots-blackseed-oil-honey-vitamin-c-governor-makinde.html">https://www.lindaikejisblog.com/2020/4/i-fought-covid-19-with-carrots-blackseed-oil-honey-vitamin-c-governor-makinde.html</a>
United Kingdom	Old Nigerian woman	Ginger, 20 cloves of garlic and lime blended together and made to paste. A scoop of the paste was put in a teacup of boiled water with lipton tea and 1000 mg of grounded paracetamol. She took it every 4 h	3 days	[12] <a href="https://www.detectuniverse.com.ng/2020/04/corona-virus-extra.html">https://www.detectuniverse.com.ng/2020/04/corona-virus-extra.html</a>
USA	Nigerian family	Turmeric powder, ginger, garlic and lemon cooked together with the steam inhaled by covering head with blanket while inhaling the steam from the hot pot	3 days	[12] <a href="https://www.detectuniverse.com.ng/2020/04/corona-virus-extra.html">https://www.detectuniverse.com.ng/2020/04/corona-virus-extra.html</a>
Anambra state, Nigeria	A former governor	Lemon (two or three), ground ginger (one teaspoon), ground turmeric (one teaspoon), ground black pepper (half teaspoon), ground garlic (half teaspoon) are mixed in hot water and taken. The person draw (breath) in the steam through the nose for 20–30 min. Among the herbal elements in the steam are usually neem (dogoyaro), lemon grass, ginger, mango leaves and guava leaves. If people take the herbal mixture every morning, steam every four days and take vitamin c (1000 mg).		[15] <a href="https://www.vanguardngr.com/2020/04/covid-19-people-treated-with-herbal-cure-recovers-faster-%E2%80%95zeife/">https://www.vanguardngr.com/2020/04/covid-19-people-treated-with-herbal-cure-recovers-faster-%E2%80%95zeife/</a>
Madagascar	Madagascar Institute of Applied Research	Artemisia, Neem leaf (dogoyaro leaves), paw leaf, small garlic and ginger, lime and oranges. Cook them together for 30 minutes for effective treatment. Inhale as it is being boiled, it clears your lungs	7–14 days	[10] <a href="https://www.africanews.com/2020/04/22/covid-organics-madagascar-launches-africa-s-first-cure-for-virus/">https://www.africanews.com/2020/04/22/covid-organics-madagascar-launches-africa-s-first-cure-for-virus/</a>

(continued on next page)

Table 1 (continued)

Place claim was made. City/Country	Socioeconomic status of claimant: Education/Employment	Recipe/constituents /preparation of remedy. Include dose if specified	Outcome/number of days to achieve remission	References
Nigeria	Organic Chemistry Researcher	<ul style="list-style-type: none"> <li>• Bark, Leaves and Root of Neem tree (Azadirachta indica also called Dogoyaro in Yoruba)</li> <li>•10 pieces fresh Tetrapleura tetraptera (also called AIDAN in Yoruba)</li> <li>•10 handful of Heliotropium indicum roots (also called egbo agogo igun in Yoruba)</li> <li>•10 handful of Khaya grandifoliola Bark (also called eepo Oganwo in Yoruba)</li> <li>•A handful of Opuntia dillenii (also called oro agogo in Yoruba)</li> <li>•Two handful of Bird pepper or Capsicum frutescens (also called Ata Ijosin in Yoruba)</li> <li>•A handful of Turmeric (also called Atale in Yoruba)</li> <li>•A handful of Garlic or Allium sativum (also called alubosa aayu in Yoruba)</li> <li>•5 L of original honey (also called Oyin Igan in Yoruba)</li> <li>•Some bottles of Schnapps</li> </ul> <p><u>Preparation Steps</u></p> <ul style="list-style-type: none"> <li>•Cut the hard parts of the plant materials into small pieces</li> <li>•Arrange them into a new cooking pot</li> <li>•Add 5 L of original honey and Schnapps that will be enough to bring it to boil</li> <li>•Place the pot on fire and boil for 45 min</li> <li>• Allow it to cool</li> </ul> <p><u>Dosage</u></p> <p>After it has been warmed on fire, drink in this order:</p> <ul style="list-style-type: none"> <li>•Children: 5 ml morning and night</li> <li>•Adults: 10 ml morning and night.</li> </ul> <p>It is to be taken 45 min before breakfast and 45 min before bed time for two weeks</p> <p>Medicinal plants</p>	7–14 days	[9] <a href="https://theeagleonline.com.ng/nigerian-researcher-provides-details-of-herbs-to-cure-covid-19/">https://theeagleonline.com.ng/nigerian-researcher-provides-details-of-herbs-to-cure-covid-19/</a>
Jigawa State, Nigeria	Head of the research team of Federal University of Jigawa	Medicinal plants	Toxicity evaluation is in progress	[11] <a href="https://www.channelstv.com/2020/04/24/federal-varsity-in-jigawa-commences-clinical-trial-of-plant-based-covid-19-medicine/">https://www.channelstv.com/2020/04/24/federal-varsity-in-jigawa-commences-clinical-trial-of-plant-based-covid-19-medicine/</a>
Yobe State	President, College of Traditional Medicine and Acupuncture LTD	Four seeds and plants	Certification in progress	[7] <a href="https://aynaijang.com/2020/05/nigeria-doctor-discovers-another-cure-for-coronavirus-reveals-seeds-to-improve-the-lungs.html">https://aynaijang.com/2020/05/nigeria-doctor-discovers-another-cure-for-coronavirus-reveals-seeds-to-improve-the-lungs.html</a>
Edo state	Joint effort of University of Lagos and University of Benin	CVD PLUS	NAFDAC approval is ongoing	[8] <a href="https://fadakay.org/ewu-monastery-develops-cvd-plus-for-the-treatment-of-covid-19/">https://fadakay.org/ewu-monastery-develops-cvd-plus-for-the-treatment-of-covid-19/</a>

## Declaration of Competing Interest

The authors declare that the research was conducted in the absence of any commercial or financial relationships that could be construed as a potential conflict of interest.

## Acknowledgements

This work received no funding. No funding is available for open access publications from our institution or other sources.

## References

- [1] C.N. Amadi, S.J. Ofori, C. Frazzoli, O.E. Orisakwe, Natural antidotes and management of metal toxicity, *Environ. Sci. Pollut. Res.* (2019) 1–21.
- [2] Z. Chen, T. Nakamura, Statistical evidence for the usefulness of Chinese medicine in the treatment of SARS, *Phytother. Res.: Int. J. Devoted to Pharmacol. Toxicol. Eval. Nat. Prod. Deriv.* 18 (7) (2004) 592–594.
- [3] World Health Organization, 2020. Coronavirus disease 2019 (COVID-19): situation report, 51.
- [4] S.M. El Sayed, H.H. Almaramhy, Y.T. Aljehani, A.M. Okashah, M.E. El-Anzi, M.B. AlHarbi, R. El-Tahlawi, M.M. Helmy11, M. Aboonq12, O. Hamouda, Alhadramy, TaibUIDV for minimizing COVID-19 fatalities and morbidity: an evidence-based approach for better outcomes (a treatment protocol), *Am J Public Health* 8 (2) (2020) 54–60.
- [5] General Office of National Health Committee, 2020. Office of state administration of traditional Chinese medicine. *Notice on the issuance of a program for the diagnosis and treatment of novel coronavirus (2019-nCoV) infected pneumonia (trial version 6) text in Chinese.*
- [6] W.J. Guan, Z.Y. Ni, Y. Hu, et al., China medical treatment expert group for Covid-19. clinical characteristics of coronavirus disease 2019 in China, *N Engl J Med* (2020), doi:10.1056/NEJMoa200203232109013.
- [7] <https://aynaijang.com/2020/05/nigeria-doctor-discovers-another-cure-for-coronavirus-reveals-seeds-to-improve-the-lungs.html> (2020).
- [8] <https://fadakay.org/ewu-monastery-develops-cvd-plus-for-the-treatment-of-covid-19/> (2020).
- [9] <https://theeagleonline.com.ng/nigerian-researcher-provides-details-of-herbs-to-cure-covid-19/> (2020).
- [10] <https://www.africanews.com/2020/04/22/covid-organics-madagascar-launches-africa-s-first-cure-for-virus/> (2020).
- [11] <https://www.channelstv.com/2020/04/24/federal-varsity-in-jigawa-commences-clinical-trial-of-plant-based-covid-19-medicine/> (2020).
- [12] <https://www.detectuniverse.com.ng/2020/04/corona-virus-extra.html> (2020).
- [13] <https://www.lindaikejisblog.com/2020/4/i-fought-covid-19-with-carrots-black-seed-oil-honey-vitamin-c-governor-makinde.html> (2020).
- [14] <https://www.uchealth.org/today/jbs-worker-with-covid-19-goes-home-after-son-prayed-outside-hospital-for-days/> (2020).
- [15] <https://www.vanguardngr.com/2020/04/covid-19-people-treated-with-herbal-cure-recovers-faster-%E2%80%95eizeife/> (2020).
- [16] Y. Liu, A.A. Gayle, A. Wilder-Smith, J. Rocklöv, The reproductive number of COVID-19 is higher compared to SARS coronavirus, *J. Travel Med.* (2020).
- [17] S. Mondal, B.R. Mirdha, M. S, The science behind sacredness of Tulsi (*Ocimum sanctum* Linn.), *Indian J. Physiol. Pharmacol.* 53 (2009) 291–306.
- [18] O.E. Orisakwe, C.N. Amadi, C. Frazzoli, A. Dokubo, Nigerian foods of probiotics relevance and chronic metal exposure: a systematic review, *Environ. Sci. Pollut. Res.* (2020) 1–13.
- [19] D.D. Richman, R.J. Whitley, F.G. Hayden (Eds.), *Clinical Virology*, John Wiley & Sons, 2016.
- [20] Z. Wu, J.M. McGoogan, Characteristics of and important lessons from the coronavirus disease 2019 (COVID-19) outbreak in China: summary of a report of 72 314 cases from the Chinese Center for Disease Control and Prevention, *JAMA* (2020) 32091533, doi:10.1001/jama.2020.2648.