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THE EXTENT OF USE OF HERBAL MEDICINE IN COVID-19 SYMPTOMS MANAGEMENT

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ABSTRACT

This ethno botanical survey is part of an on-going study in Nigeria investigating the healing systems and the herbal treatments using for COVID-19 symptoms in this pandemic time. There are many herbs, nutrients, and plant products that have been found to play a role in protecting or helping to heal respiratory related problems, immune booster, malaria and other COVID-19 symptoms. The present study was aimed to collect information on various herbs which are used in treating various symptoms in this pandemic condition. A total of 79 different plants belonging to 32 families were found. A 21 Sudorific Plants for Fever, Cold and detoxification Formulation (17 families), 5 expectorant plants, cough plants (5) having 5families. Remedies for Asthma contained 6 plants (7 families), antimalaria/ fever plants 10 (8 families in which Poaceae and Rubiaceae had the highest (2) species being used as anti-malaria while others had the least species (1), 4 respiratory plants (4 families, 8 blood booster plants (7 families). A total of 11antiviral plants were collated belonging to 8 families of which Apocynaceae had the highest species (3) followed by Menispermaceae and Caesalpinaceae (2) species while others had the least species (1). Immune booster plants: Securidaca longepedunculata, Calotropis procera, Allium sativum and mixtures of Antioxidant plants were also reported. In all, Alliaceae, Ceasalpiniaceae and Euphorbiaceae had the highest frequency of family species used. The use of plants for primary health care delivery cannot be over emphasized.

Keywords: Treatment, COVID-19, Symptoms, Survey, Herbal medicine

1. INTRODUCTION

Ethnobotany is part of human environmental science that defines the interface between people and plants, and provides clues needed for rural development based on sustainable yields from plants products (Focho et al., 2009). Plants found in open areas seem to have potentials to provide options for rural livelihoods and biodiversity conservation (Squeo et al., 2007). Etiologic study has been carried out in patients who applied to the hospital due to similar viral histories of these patients has strengthened the likelihood of an infection transmitted from animals to humans. Information on the virus is scarce at present. From news reports, novel CoV has been declared be originated from wild bats and belonged to Group 2 of beta-corona virus that contains Severe Acute Respiratory Syndrome Associated Coronavirus (SARS-CoV) Symptoms vary from person-to-person with COVID-19. It may produce few or no symptoms. However, it can also lead to severe illness and may be fatal. Common symptoms include: Fever, Breathlessness, Cough, flu, body pain, cold including Pneumonia, sneezing, runny nose, watery diarrhea, Sore throat and worsen asthma. It may take 2–14 days for a person to notice symptoms after infection. Owing to the lack of effective therapeutics or vaccines, the best measures to control human corona viruses remain a strong public health surveillance system coupled with rapid diagnostic testing and quarantine when necessary. Therefore, it is important to go back to the source on the use of herbs for health care delivery. Plants are a great source of medicine useful in the treatment of various diseases. Individual learnt to exploit plants for medicine almost as early as they cultivated them for food. Plant medicines have not only played a vital role in providing healing but has also contributed to the discovery of most pharmaceutically strong substances in plants which have been used in the commercial production of drugs. Although ethnobotanical surveys are necessary in providing fresh leads for pharmacological screenings (Polesna, et al., 2011). This paper seeks to document herbal solutions for COVID-19 a respiratory infection.

2. MATERIALS AND METHODS

The data collected were derived from oral interview of the herbal sellers, reports from people (sufferers and the carers) on what they used to get better, phytomedicine practitioners and literature consisted of common name, scientific name, uses, and part of plant, preparation, and administration. The plants often had multiple uses, but for this survey only the uses listed based on symptoms exhibited by different people.

3. RESULTS AND DISCUSSIONS

3.1 Sudorific Plants for Fever, Cold and detoxification Formulation.

Sudorific are groups of medical substances that are used to intensify sweating, for the purpose of increasing the body's emission of heat and excretion of water, salt and toxins. Also, Sudorific is any medicine that increases sweat in the body system. Usually, they are antipyretics, such as sodium sudorific. Often a brew of certain plants, including Linder, raspberry, marjoram, or coltsfoot is used as sudorific teas. A sandotific effect may also be sudorific fluids drinking substantial quantities of warm fluids, applying most wrapping, or taking baths.

Sudorific herbs induced involuntary perspiration that helps to reduce fever, cool the body and speed the elimination of toxins from the system. These herbs are useful in fever, cold and detoxification formulation (Table 1). Sudorific plants can also be used as Toxic, Stimulate, Astringent and Ulcers. A sudorific medicine is also called sudatory.

Table 1: Checklist of Plants for fever, cold and detoxification formulation

S/N	YORUBA NAME	ENGLISH NAME	SCIENTIFIC NAME	Family	Part used	Habit/life form/plant class
1.	Oruwo	Brimstone tree	*Morinda lucida*	Rubiaceae	Leaves, Bark and root	Tree
2.	Dongoyaro	Neem tree	*Azadirachta indica*	Meliaceae	Leaves, Bark and root k	Tree
3.	Sepeleba	Mexican sun flower	*Tithonia diversifolia*	Asteraceaae	Leaves	shrub
4.	Mangoro	Mango	*Mangifera indica*	Anacardiaceae	Leaves, Bark and root	Tree
5.	Tagiri	Wild colocynth	*Adenopus breviflorus*	Cucurbitaceae	Fruits	Climber
6.	Opon Oyinbo	Pineapple	*Ananas comosus*	Bromeliaceae	Unripe Fruit	Herb
7.	Ibepe	Pawpaw	*Caripa papaya*	Caricaceae	Unripe Fruit	Tree
8.	Akintola	Biter brush/ siam weed	*Chromolaena odorata*	Asteraceae	Leaves	Shrub
9.	Kooko oba	Lemon grass	*Cymbopogon citratus*	Poaceae	Leaves	Grass
10.	Lapalapa funfun	Barbados nut	*Jatropha curcas*	Euphorbiaceae	Leaves	Shrub
11.	Ejinrin	African cucumber	*Momordica charantia*	Lamiaceae	Leaves	Creeper
12.	Efirin nla	Mint	*Ocimum*	Lamiaceae	Leaves	shrub

			gratissimum			
13.	Kasia	Black-wood cassia	*Senna siamea*	Mimosaceae	Leaves bark,	Tree
14.	Igi owu	Cotton	*Gossypium arboretum*	Caesalpiniaceae	Leaves	shrub
15.	Ganin gannu	Sour orange	*Citrus aurantium*	Rutaceae	fruit	Tree
16.	Igi ahun	Stool wood/ patten wood	*Alstonia boonei*	Apocynaceae	Leaves bark	Tree
17.	Ewe olobe/ eyin olobe	Stone breakers	*Phyllanthus amarus*	Phyllantaceae	Whole plant	Herb
18.	Osan wewe	Lime orange	*Citrus aurantifolia*	Rutaceae	fruit	Tree
19.	Ewe pepe		*Alchornea laxiflora*	Euphorbiaceae	Leaves	Shrub
20.	Ewuro	Bitter leaf	*Vernonia amygdalina*	Asteraceae	Leaves bark	Shrub
21	Aayu	Garlic	*Allium sativum*	Alliaceae	clove	herb

PLANT USED IN THE TREATMENT OF COUGH AND OTHER DISEASES OF THE RESPIRATORY SYSTEM

a. Expectorants
b. Cough medicines
c. Asthma
d. Respiratory System Diseases

EXPECTORANTS: Are coughing remedies that encourage the coughing up of sputum.

(i)*Vernonia amygdalina* (bitter leaf) locally known as Ewuro. A decoction of the leaves is used in local medicine as an expectorant, antipyretic and laxative. The bark of roots and stems is astringent and is used against fever and diarrhoea. The root without the bark is taken as tonic and appetizer. Leaves juice relieve fever and feverish conditions,

(ii)Securidaca longepedunculata (Polygalaceae) Locally known as Ipeta. A decoction of the roots is used as an expectorant, diaphoretic and diuretics. In small doses it is a drastic purgative and the powdered root causes violent sneezing.

*(iii) Calotropics procera (*Asclepiadacae*)* Locally known as Bomubomu. The dried root bark is used as an expectorant, emetic and diaphoretic. Its action in amoebic dysentery treatment.

(iv) Acalypha indica (Euphorbiaceae). It contains the alkaloid acalyphine. It acts as an expectorant and emetic.

(v) Asclepias curassavica (Asclepidaceae). The root contains glycoside asclepiads and the decoction or

pulverize is used as an emetic, expectorant and as strong purgatives.

COUGH REMEDIES

Cough is a reflex action that occurs as an attempt to clear the airways of much sputum, a foreign body, or any other irritation or blockages. A cough is productive when it brings up mucus or sputum and unproductive or dry, when it does not. Many coughs are due to irritation of the airways by a smoke or vital infection of the upper respiratory tract. Coughing is a feature of bronchitis, asthma, and Pneumonia even lung cancer.

A total of 5 plants for treatment of Cough were collated belonging to 5 families namely: Clusiaceae/ Guttiferae, Costaceae, Zingiberaceae, Lamiaceae, Nymphacaceae, Euphorbiaceae.
(i)*Garcinia kola (*Bitter kola*)* Clusiaceae/ Guttiferae. *(ii)Costus afer (*Ginger lily*)* Costaceae, Zingiberaceae *(iii)Ocimum basilicum* (Lamiaceae) (iv) *Nymphaea lotus* (Nymphacaceae) (v) *Phyllanthus niruri* (Euphorbiaceae)

i. *Garcinia kola (*Bitter kola*)* Clusiaceae/ Guttiferae. The nuts are used to relieve coughs and hoarseness. It is also used for bronchitis and throat troubles.
ii. *Costus afer* (Ginger lily) Costaceae, Zingiberaceae. Locally called as Ireke omode. A decoction of the stems or of the pounded fruit of this species is widely used as a cough medicine and in the treatment of rheumatism.
iii. *Ocimum basilicum* (Lamiaceae) Labiatae. Locally known as Efirin. An infusion of the leaves is used in fumigations for coughs and headaches, it also used in baths for febrile patients.
iv. *Nymphaea lotus* (Nymphacaceae) Locally known as Osibata. A decoction of *N. lotus* is taken in local medicine for coughs and bronchitis. An infusion of stems and roots is used as an emollient and diuretic, a decoction of the flowers as sedative and narcotic, and an extract of the leaves as an eye lotion.
v. *Phyllanthus niruri* (Euphorbiaceae). It is used in local medicine for the treatment of cough (otitis) and jaundice, mild purgative, diuretic and febrifuge.

REMEDIES FOR ASTHMA

ASTHMA: - A lung disease in which there intermittent narrowing of the bronchi (airways), causing shortness of breath, wheezing and cough.

A total of 6 plants for treatment of Cough were collated belonging to 7 families namely: Euphorbiaceae, Bombacaceae, Asclepiadaceae Caesalpiniaceae, Solanaceae, Bignoniaceae, and Bombacaceae
(i)Calotropis procera (Asclepiadaceae).
(ii) *Euphorbia hirta* (Euphorbiaceae)
(iii) *Adansonia digitata* (Bombacaceae)
(iv) *Erythrophleum guineensis* (Caesalpiniaceae).
(v) *Hyposcyamus niger* (Solanaceae).

(vi) *Newbouldia laevis* (Bignoniaceae)

(i)*Calotropis procera* (Asclepiadaceae). Locally known as Bomubomu. The dried root bark is used as an expectorant, emetic and diaphoretic.

(i) *Euphorbia hirta* (Euphorbiaceae) Locally known as Emila. Extracts or decoctions of the plants collected in the flowering and fruiting condition are used in asthma and inflammations of the respiratory tract are cause relaxation of the bronchi by central action. (iii) *Adansonia digitata* (Bombacaceae), locally known as Ose. The leave powder has been suggested as an anti-asthmatic. The leaves have hypotensive and anti-hislamine properties. A decoction of the fibres lining the fruit is given for amenorrhoea in kidney and bladder diseases and for asthma.

(iv) *Erythrophleum guineensis* (Caesalpiniaceae). Epo Obo in Yoruba. This plant is said to be used in spasmodic asthma. It has a local anaesthetic action similar to cocaine but more powerful and lasting.

(v) *Hyposcyamus niger* (Solanaceae). The leaves, seeds and green tops are used for the treatment of asthma and sea-sickness. It is also used as a sedative and antispasmodic. (vi) *Newbouldia laevis* (Bignoniaceae) Igi akoko. The leaves of *Newbouldia laevis* burnt to be charred are taken with hot pap or leaked with palm oil.

PLANTS USED IN THE TREATMENT OF DISEASE OF THE RESPIRATORY SYSTEM.

A total of 4 respiratory plants were collated belonging to 4 families namely: Annonaceae, Caesalpiniaceae, Umbellferae and Zingiberaceae:

(i) *Xylopia aethiopica* (Annonaceae)
(ii) *Caesalpinia cristia* (Caesalpiniaceae
(iii) *Centella asiatica* (Umbellferae).
(iv) *Zingiber officinales* (Zingiberaceae

(i). Xylopia aethiopica (Annonaceae). The fruits are used locally as a spice and flavouring agent and in local medicine as a stimulant, carminative anthelmintic and cough medicine (based on their essential oil content)

(ii) *Caesalpinia cristia* (Caesalpiniaceae). The boiled leaves provide gargle for sore throat. The dried seeds are reputed as antipyretic (reduces fever) and tonic.

(iii) *Centella asiatica* (Umbellferae). The infusion of leaves and stems is used for the treatment of respiratory system diseases (antibiotics).

(iv) *Zingiber officinales* (Zingiberaceae) Ginger (Atale funfun). It is used for the treatment of catarrhal conditions, rheumatism, and toothache and as tonic.

PLANTS FOR BLOOD TONIC:

A total of 8 blood booster plants were collated belonging to 7 families namely: Anacardiaceae, Cucurbitaceae, Poaceae, Clusiaceae, Meliaceae, Tiliaceae, Euphorbiaceae.

1. Mangifera indica (Anacardiaceae) (bark.)
2. *Telfairia occidentalis* (Cucurbitaceae) (Ugwu) leaves
3. *Shorgum bicolor* (Poaceae)(stem)

4. *Harungana madagascariensis* (Clusiaceae)
5. *Khaya ivorensis* Mahogany (Meliaceae) oganwo
6.*Corchorus olitorius* (Tiliaceae) Jew fiber, Jews mallow
7. Jatropha (Euphorbiaceae) iyana ipaja
8. *Alchornea laxifolia* (Euphorbiaceae) pepe/ ijan

(i)Harungana madagascariensis (Clusiaceae). It is called Arunje/ Amuje. Decoction of the stem barks for blood and also for curing fever/typhoid.

(ii) *Khaya ivorensis* Mahogany (Meliaceae) oganwo, Ono boiled Stem Bark taken 60mks three times daily for Blood tonic

(iii) *Corchorus olitorius* (Tiliaceae) known as Jew fiber, Jews mallow. Locally called Ewedu, Ariraa/ulogburu, Lalo. Leaves as Blood purifier

(iv) Jatropha (Euphorbiaceae) Locally known as iyana ipaja. Leaves washed, squeezed with maltina, sieved with siever. The filterate is taken 10mls thrice daily

PLANTS FOR TREATMENT OF MALARIA/FEVER:

A total of 10 antimalaria/ fever plants were collated belonging to 8 families namely: Poaceae, Meliaceae, Apocynaceae, Asteraceae, Rubiaceae, Caricaceae, Annonaceae, and Anacardiaceae. In all Poaceae and Rubiaceae had the highest (2) species being used as anti-malaria while others had the least species (1).

1**.** *Azadiractha indica* (dongoyaro) (Meliaceae)
2.*Bambusa vulgaris* (Poaceae) Oparun
3. Alstonia boonei (Igi ahun) (Apocynaceae)
4.*Chromolaena odorata* (Asteraceae)Siamweed Akintola
5. *Cymbopogon citratus* (Poaceae) (Tealeaf/*Lemongrass*
6. Morinda lucida (oruwo) (Rubiaceae)
7. *Carica papaya* (Caricaceae)
8. *Nauclea laterifolia (*Rubiaceae) (egbesi)
9. *Xylopia aethiopica (*Annonaceae) clove
10. Mangifera indica (Anacardiaceae) mango

(i)The bark of *Alstonia boonei* and leaves of *Cymbopogon citratus* boiled and the filtrate taken 60mls three times daily.

(ii)The leaves of *Chromolaena odorata*, leaves and bark of *Mangifera indica, Nauclea laterifolia, Alstonia boonei* concorted and taken 60mls twice (morning and night) daily.

(iii) *Morinda lucida* (oruwo): Leaf extract in palmwine taken 60mls or Alcohol taken 10mls thrice daily

(iv) *Morinda lucida* infusions of the root, bark and leaves are recognized remedies against different types of fever, including yellow fever, malaria.

(v) *Carica papaya* (Caricaceae) Pawpaw leaves (cook and drink) taken 60mls thrice daily

(vi) *Bambusa vulgaris* (Poaceae). Locally called Oparun boiled leaves for 20minutes, 60mls taken thrice daily for Fever.

(vii) *Xylopia aethiopica* commonly called Ethiopian pepper from Annonaceae family. Locally called Eeru/

erunje, Uda, Kimba Analgesic/stimulant Fruit

ANTI VIRAL PLANTS:

A total of 11antiviral plants were collated belonging to 8 families namely: Malvaceae, Olacaceae, Caesalpinaceae, Menispermaceae,Apocynaceae, Cucurbitaceae and Papillionaceae. Apocynaceae had the highest species (3) followed by Menispermaceae and Caesalpinaceae (2) species while others had the least species (1).

(i) *Caesalpinia bonduc* (Caesalpinaceae) Seyo
(ii) *Gossypium basilicum (*Malvaceae)
(iii) *Olax latifolia (*Olacaceae) ifon
(iv) *Cassia fistula (*Caesalpinaceae)
(v) *Cocculus pendulus* (Menispermaceae)
(vi) *Cocculus indicum* (Menispermaceae)
(vii) *Allamanda catharica* (Apocynaceae)
(viii) *Plumeria rubra* (Apocynaceae)
(ix) *Desmodium gangeticum(*Papillionaceae)
(x) *Catharanthus roseus* (Apocynaceae)[17]
(xi) *Lagenaria breviflora* (Wild colocynth) Cucurbitaceae

IMMUNE BOOSTER PLANTS

(i) *Securidaca longepedunculata* (Polygalaceae) Ipeta (ii) *Calotropis procera* (Asclepiadaceae). Bomubomu (iii) *Allium sativum* (Alliaceae) Garlic for the use of the flu and colds

(i) Tincture of *Securidaca longepedunculata* (Polygalaceae) Locally known as Ipeta and the leaves of *Calotropis procera* (Asclepiadaceae). Locally known as Bomubomu taken orally with 10mls thrice daily

(ii) *Calotropis procera* (Asclepiadaceae): Tincture of the leaves serve as Immune booster Dosage: 10mls for adults

ANTIOXIDANT PLANTS

Plants that are capable of removing free radicals from the body.

(i)*Curcuma longa* (Zingiberaceae) Tumeric: anti-inflammatory and antioxidant.

(ii) Curcuma longa (Turmeric), *Citrus limon* (lemon), unripe pineapple (*Ananas comosus*) boiled together for 30minutes and steam inhalation

(iii) *Allium sativum* (Alliaceae) Garlic for the use of the flu and colds

(iv) *Allium cepa* (Onion) and *Nigella sativum* (Blackseed oil), blended together and mixed with pure honey) taken 1 teaspoon, morning and Night.

(v) *Zingiber officinales* (Ginger), *Allium sativum* (cloves of garlic) and lime (*Citrus aurantifolia)* blended together and made to paste. A scoop of the paste in a tea cup of boiling water taken 4hourly

Analgelsic plants like *Capsicum annum* will also do

Frequency of occurrence of plant Families used

The study revealed that 32 families were involved, Alliaceae, Caesalpiniaceae and Euphorbiaceae had the highest use of plants (5), followed by Apocynaceae, Poaceae, Rutaceae, Asteraceae and Zingiberaceae (4), Meliaceae, Rubiaceae, Anacardiaceae, and Lamiaceae (3), Bromeliaceae, Menispermaceae, Cucurbitaceae, Asclepiadaceae, Caricaceae, Solanaceae and Clusiaceae/ Guttiferae (2) while others had the least use of plants (1) (Table 2).

Table 2: Frequency of occurrence of plant Families used

S/N	*FAMILY*	OCCURENCE
1.	. Euphorbiaceae.	5
2.	Malvaceae	1
3.	Papillionaceae	1
4.	Olacaceae	1
5.	Tiliaceae	1
6.	. Meliaceae	3
7.	Cucurbitaceae	2
8.	Annonaceae	1
9	Menispermaceae	**2**
10	Rubiaceae	**3**
11	Umbellferae	**1**
12	Polygalaceae	**1**
13	Asclepiadaceae	**2**
14	Bombacaceae	**1**
15	Bignoniaceae	**1**
16	Caricaceae	**2**
17	Anacardiaceae	**3**
18	Apocynaceae	**4**
19	Bromeliaceae	**2**
20	Solanaceae	**2**
21	Poaceae	**4**
22	Caesalpiniaceae	**5**

23	Phyllantaceae	**1**
24	Rutaceae	**4**
25	Alliaceae	**5**
26	Mimosaceae	**1**
27	Clusiaceae/ Guttiferae	**2**
28	Nymphacaceae	**1**
29	Costaceae,	**1**
30	Asteraceae	**4**
31	Lamiaceae,	**3**
32	Zingiberaceae	**4**

CONCLUSION

Our nature is so rich to offer us everything needed among them is plants for health care delivery which are readily available, accessible and not expensive. This study revealed that we have 79 different plants belonging to 32 families. Alliaceae, Caesalpiniaceae and Euphorbiaceae had the highest frequency of family species used. There is need for proper documentation on medicinal plants used which is at verge of disappearance due to the loss of older generations resulting in knowledge gap and death of information and sustainable utilization of plants.

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