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Full Length Research Paper

Ethnobotanical survey of medicinal plants used in treating viral infections among Yoruba tribe of South Western Nigeria

Oladunmoye, M. K.* and Kehinde, F. Y.

Department of Microbiology, School of Sciences, Federal University of Technology, P. M. B. 704, Akure, Nigeria.

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Ethnobotanical survey of plants used to treat some common viral diseases, such as chicken pox, poliomyelitis, influenza, hepatitis, measles and jaundice was carried out in Ekiti, Ondo, Osun and Oyo States in South Western Nigeria. Questionnaires were distributed among the participants and oral discussions were employed. Two hundred and eight (208) data were collected and tabulated. The Yoruba names, botanical names, methods of preparation and mode of administration of the plants were considered. The research work showed that members of the family Annonaceae (10.3%) were most frequently used, followed by members of Leguminosae (9.9%), and Zingiberaceae (7.9%), for treating chickenpox and measles infections, although all other plants play prominent roles in peoples` health care. Also, knowledge of medicinal herbs was being left in the hands of the elders between the age range of 51-70 years and 71-80 years. The leaves of the plants (45.5%) were mostly used in treating viral infections, followed by the use of stem bark (13.5%). All other parts were less commonly used to treat viral diseases. Mono-prescription was rare in the data collected. Oral application had the highest mode of administration (83.7%), while the combination of both oral and external applications (12.5%) closely followed. Decoction (90.4%) was the most frequently used method of anti-viral herbal preparation, while concoction (0.9%) was least used. Herb sellers (72.6%) constituted the major source of information about the use of anti-viral medicinal herbs, followed by traders, civil servants and herbalists with 17.31, 6.25 and 3.85 respectively. Many plants in the studied area may be a good source of lead molecules needed in viral chemotherapy after extraction of the bioactive components as well as removal of toxic residue following toxicological studies.

Key words: *Leguminosae,* mono-prescription, chickenpox, decoction.

INTRODUCTION

Indigenous medicine is now recognized worldwide both by the rural populace and the urban elite as an important healthcare resource. The World Health Organization (WHO) has pointed out that traditional medicine is an important contribution to its health goals. There are considerable economic benefits in the development of indigenous medicine and in the use of medicinal plants for the treatment of various diseases (WHO, 2003).

Medicinal plants have also been of importance in the health care system of local communities as the main source of medicine for the majority of the rural population. Plants have not only nutritional value but also, in the eyes of the local people, they have medicinal and ritual or magical values (Adewunmi et al., 2001).

Plants have been a major source of medicine for human kind. According to available information, a total of at least 35000 plants species are widely used for medicinal purposes. The demand for traditional herbs is increasing very rapidly, mainly because of the harmful effects of synthetic chemical drugs. The global clamor for more herbal ingredients creates possibilities for the local cultivation of medicinal and aromatic crops as well as for

*Corresponding author. E-mail: chourlar@yahoo.com.

the regulated and sustainable harvest of wild plants. Such endeavors could help raise rural employment in the developing countries, boost commerce around the world and perhaps contribute to the health of millions (Anita, 2004).

Nigeria is endowed with an enormous diversity of animals and plants, both domesticated and wild, and an impressive variety of habitats and ecosystems. This heritage sustains the food, medicinal, clothing, shelter, spiritual, recreational, and other needs of her population (Odugbemi and Akinsulire, 2006).

This biodiversity also ensures the essential ecological functions on which life depends, including a steady supply of clean water, nutrient cycling, and soil maintenance. It is the treasure house from which future food needs, cures diseases, and elements for knowledge and technology will be found. Plants have provided the basis for traditional treatment for different types of diseases and still offer an enormous potential source of new chemotherapeutic agent (Adewunmi et al., 2001). This however require extraction of the bioactive molecules of pharmacological importance present following purification and identification procedures as well as toxicological studies.

Therefore it is essential for drugs discovery to preserve and record traditional know –how on medicinal plants and in most cases, this depends on local practitioner and field survey (Anita, 2004).

Even though pharmacological industries have produced a number of new antiviral drugs in the last three decades, resistance to these drugs by microorganisms has increased. The use of plant extracts and phytochemicals being of great significance in therapeutic treatments can however be explored in ameliorating this problem (Erdogrul, 2002; Acharya and Shrivastava, 2008).

The components of ethnomedicine have long been ignored by many biomedical practitioners for various reasons. For example, the chemical composition, dosages and toxicity of the plants used in ethnomedicine are not clearly defined (Lowe et al., 2000). However, it is interesting to note that the ethnomedicinal uses of plants is one of the most successful criteria used by the pharmaceutical industry in finding new therapeutic agents for the various fields of biomedicine (Cox and Balick,1994).

Medicinal plants play a key role in the developed and advancement of modern studies on them has important contributions in the healthcare system of local communities as the main source of medicine for the majority of the rural population. However, there have been dearths of information on the various medicinal plants that are available for treating specifically infections of viral etiology.

The aims and objective of this project is therefore to find medicinal herbs and plants used to treat viral diseases which are cheap and easily accessible since viral infections can be one of the biggest nightmares for Medical Practitioners and patients.

METHODOLOGY

Study area

The study areas consist of Ekiti, Ondo, Osun, and Oyo states of Southwestern Nigeria. The areas consist of residents that are civil servants, traders, and farmers. Southwestern Nigeria lies within longitude 3°E and 5.8°E and latitude 6.4°N and 9.5°N Tropical with variations governed by interaction of moist South-West monsoon and dry North-East winds with mean maximum temperatures of 30-32°C. Annual rainfall decreases northward; about 2,000 mm in coastal zone.

Mode of survey

The methods utilized in obtaining the information on plants used in the treatment of viral diseases in the study include-consulting herbalist, herb sellers, enquiry from villagers about plants/recipes used in the areas, and enquiry from relations. Advocacy visits involving field trips were embarked upon to collect information majorly from herb sellers, traders and few individuals in the states to solicit their support in the study areas.

Data collected as questionnaires were administered through person to person contact in order to identify the plants and to ask major question such as the preparation, mode of administration, and dosage of each plant depending on each state. The informants, majority being illiterate can only communicate through their dialect. Literatures on medicinal plants, vernacular and botanical names were consulted to corroborate the claims by the healers (Sofowora, 1982; Odugbemi and Akinsulire, 2006).

The objectives of the study were explained to the informants. The informed consent was obtained from each of the participants, although among the herb sellers' permission was granted from the head of the herb seller with certain amount of money before information could be unfolded nearly in all the study areas.

RESULTS

The indigenous name is a reflection of the culture and trade name of area where the plants are mostly found. The name given was sometime indicative of the appearance of and use of the plants. The various plants used in treating some common viral diseases, their local names, botanical names and common names are presented in Table 1.

The occurrences of the various families of the plants used are on Table 2. The families Annonaceae, Leguminosae are the most abundant while families such as Compositae, Euphorbiaceae, Zingiberaceae frequency of occurrence was in the intermediate range. However, some in the families, Liliaceae, Poaceae and Curcurbitaceae has low frequency of occurrence. The various plant part utilized are represented on Table 3. The leaf, stem, bark are the most commonly used parts, while fruit, roots are seldomly used.

The age distribution of the informants showed that the elderly in the age range 51 – 70 and 71 – 80 were the ones that reported information of recipes, while others showed little or no response. This is shown on Table 4. The sources of information in the research are from herbalist, herb sellers, trader and civil servants. The

Table 1. Plants used in the treatment of viral diseases.

S/N	Local name	Botanical name	Family name	Common name	Parts use	Medicinal use(s)
1	Jaoke	*Ehretia cymosa*	Boraginaceae	Puzzle bush	Leaves	Measles
2	Otili	*Cajanus cajan*	Leguminosae	pegeon pea	Leaves	Measles
3	Arira	*Deterium microcarpum*			Stem bark	Hepatitis
4	Pandoro	*Kigelia Africana*	Bignoniaceae	Sausage tree	Leaves	Poliomylitis
5	Pandoro	*Kigelia Africana*	Bignoniaceae	Sausage tree	Leaves	Poliomylitis
6	Osan jagan	*Citrus aurantifolia*	Rutaceae	Bitter orange	Leaves,Fruit	Measles
7	Otili	*Cajanus cajan*	Leguminosae	pegeon pea	Leaves	Chickenpox
8	Buba awodi	*Capparis thonningii*	Cappararaceae	Capper bush	Leaves	Chickenpox,Measles
9	Eeru	*Xylopia aethiopica*	Annonaceae	Ethiopia pepper	Leaves	Measles
10	Odundun	*Bryophylum pinnatum*	Crassulceae	Life plant	Leaves	Measles
11	Odundun (abamoda)	*Bryophylum pinnatum*	Crassulceae	Tassel flower	Leaves	Measles
12	Bomubomunn	*Calotropis procera*	Asclepiadeceae	Giant milk weed	Leaves	Measles
13	Atare	*Aframomum melegueta*	Zingiberaceae	Alligator pepper	Leaves	Measles
14	Mafowokanmilomo	*Argemona Mexicana*		Mexican poppy	Leaves	Hepatitis
15	Emiyemi	*Psuedocera kotschyi*	Meliaceae	Pseudocedrala	Stem bark	Hepatitst
16	Asangba (feregede)	*Clerodendrum Capitalum*	Verbenaceae	Hollow stem	Leaves	Measles
17	Odundun	*Bryophylum pinnatum*	Crassulceae	Life plant	Leaves	Hepatitis
18	Ata	*Capsicum annuum*	Solanaceae	Bell pepper	Stem bark	Hepatitis
19	Ira	*Bridelia ferrugineae*	Euphorbiaceae	Ira	Stem Bark	Hepatitis
20	Arira	*Deterium microcarpum*			Stem bark	Hepatitis
21	Okuuku	*Ancistropphyllum secundi*			Roots	Measles
22	Pia	*Persea Americana*	Lauraceae	Avocado Pear	Fruits	Poliomylitis
23	Isigun	*Mondia whitei*	Periplocaceae	Mondi	Fruit epicarp	Measles
24	Osanlakuregbe	*Jatropha curcas*	Euphorbiaceae	Physic nut	Leaves	Poliomylitis
25	Epo Agbon	*Cocos nucifera*	Palmae	Coconut palm	Leaves	Poliomylitis, Measles
26	Opoto	*Alchornea laxiflora*	Euphorbiaceae	Three veined bead string	Leaves	Poliomylitis, Measles
27	Apasa (Imi-esu)	*Ageratum conyzoides*	Compositae	Goat weed	Leaves	Poliomylitis, Measles
28	Gbegiojude	*Eleusine indica*	Poaceae	Wire grass	Leaves	Chickenpox
29	Laali	*Lawsonia inermis*	Lythraceae	Hennaplant	Leaves	Poliomylitis, Measles
30	Aparan	*Spigelia anthelmia*	Leguniaceae	Worm weed, Pink root	Roots	Measles
31	Pia	*Persea Americana*	Lauraceae	Avocado Pear	Leaves	Chickenpox, Measles
32	Pandoro	*Kigelia Africana*	Bignoniaceae	Sausage tree	Leaves	Chickenpox
33	Ijan, Pepe	*Alcohorneae laxiflora*	Euphorbiaceae	Christmas bush	Leaves	Chickenpox
34	Koko	*Theobroama cacao*	Sterculiaceae	Cocoa	Leaves	Measles
35	Oruru	*Spathodea campanulata*	Bignoniacea	Sausage tree	Leaves	Measles
36	Eeru	*Xylopia aethipaca*	Annonaceae	Ethopia pepper	Fruits	Measles

Table 1. Contd.

37	Odundun (abamoda)	*Bryophylum pinnatum*	Crassulceae	Tassel flower	Leaves	Poliomylitis
38	Ayu	*Allium sativa*	Lilacaee	Garlic	Bulb	Poliomylitis
39	Ginger	*Zinger officinale*	Ginger	Atale	Rhizome	Poliomylitis, Measles
40	Yanrin	*Lactucal tarazacflora*	Compositae	Wild lettuce	Stem Bark	Poliomylitis
41	Igba	*Parkia clappertoniana*	Leguminosae	Neoul iol	Stem bark	Chickenpox, Measles
42	Rerinkomi	*Argyreia nervsa*	Convulvulaceae	Elephant creeper	Leaves	Chickenpox
43	Eeru	*Xylopia aethipaca*	Annonaceae	Ethopia pepper	Fruit	Chickenpox, Measles
44	Iyeye	*Spondias mombin*	Anacardiaceae	Yellow mombin	Stem bark	Chickenpox, Jaundice
45	Osan jagan	*Citrus aurantifolia*	Rutaceae	Lime	Leaves, Fruit	Measles
46	Osun	*Ptercrapus osun*	Leguminosae	Blood wood	Stem bark	Poliomulitis
47	Ahun	*Alstonia congesis*	Apocynaceae	Stool wood	Stem bark	Chickenpox
48	Oganwo	*Khaya ivorensis*	Mellceae	African mahogany	Stem bark	Chickenpox
49	Tude	*Calliandra*	Leguminosaes	Powder puff	Leaves, Roots	Measles
50	Arunje	*Xylopia aethipaca*	Annonaceae	Ethopia pepper	Fruit	Chickenpox
51	Seyo,Ayo	*Caelsalpinia bonduc*	Leguminosae	Yellow nicker	Leaves	Chickenpox, Measles
52	Atare	*Aframomum melegueta*	Zingiberaceae	Alligator pepper	Whole plant	Chickenpox
53	Awopa,Osopupa	*Enanatia chlorantha*	Annonaceae	African yellow wood	Stem bark	Jaundice
54	Oruwo	*Morinda lucida*	Rubiaceae	Brimstone tree	Leaves	Jaundice
55	Ibepe	*Carica papaya*	Caricaceae	Pawpaw	Leaves	Jaundice
56	Atare	*Aframomum melegueta*	Zingiberaceae	Alligator pepper	Whole plant	Chickenpox
57	Aparan(pupaati funfun)	*Spigelia anthelmia*	Loganiaceae	Worm weed	Roots	Hepatitis
58	Aridan	*Tetraplera tetraptera*	Leguminosaee	Aridan	Pods	Hepatitis
59	Aridan	*Tetraplera tetraptera*	Leguminosaee	Aridan	Pods	Poliomyliyis
60	Itaye	*Aframomum melegueta*	Zingiberaceae	Alligator pepper	Leaves	Poliomylitis
61	Ewuro	*Vernonia amygdalina*	Compoositae	Biter leaf	Leaves	Measles
62	Eeru	*Xylopia aethipaca*	Annonaceae	Ethopia pepper	Fruit	Chickenpox, Measles
63	Gbersi	*Nauclea latifolia*	Rubiaceae	Nauclea	Roots, stem bark	Measles
64	Odu	*Solanum americanus*	Solanaceae	Wonder berry	Whole plant	Jaundice
65	Atare	*Aframomum melegueta*	Zingiberaceae	Alligator pepper	Whole plant	Chickenpox
66	Ewuro	*Vernonia amygdalina*	Compoositae	Biter leaf	Leaves	Measles
67	Korowu	*Gossypium arboreum*	Malvaceae	Western idian cotton	Seeds	Hepatitis
68	Oruwo	*Morinda lucida*	Rubiaceae	Brimstone tree	Roots	Jaundice, Yellow fever
69	Paran	*Dabergia sxatilis*	Leguminosaea	Flat bean	Roots	Smallpox, hepatitis
70	Pandoro	*Kigelia Africana*	Bignoniaceae	Sausage tree	Leaves	Poliomylitis
71	Epinpin	*Acacia ataxacantha*	Mimosae	Acacia	Stem bark sap	Chickenpox
72	Obo	*Erythrophleum suaveolens*	Leguminosae	Saaswood	Stem bark	Chickenpox
73	Ogoro	*Raphia farinifera*	Palmae	Raffia palm	Leaves	Measles

Table 1. Contd.

74	Tagiri	*Laganaria breviflorus*	Cucurbitaceae	Pseudclocyth	Fruits	Smallpox, Chickenpox,
75	Owu	*Gossypium arboreum*	Malvaceae	Western idian cotton	Leaves	Hepatitis
76	Ibepe	*Carica papaya*	Caricae	Pawpaw	Leaves	Jaundice
77	Ato	*Chasmanthera dependens*	Menispermae	Chasmanthera	Leaves	Poliomylitis
78	Osan wewe	*Citrus aurantifolia*	Rutaceae	Lime	Leaves, Fruit	Measles
79	Tagiri	*Adenopus breviflorus*	Cucurbitaceae	Pseudclocyth	Fruits	Measles
80	Ayuu	*Allium sativa*	Liliacea	Garlic	Bulb	Measles
81	Ira	*Bridelia atrviridis*	Euphorbiacea	Ira	Leavse	Jaundice
82	Uja	*Ehretia cymosa*	Boraginaceae	Puzzle bush	Leaves	Poliomylitis, Measles
83	Afomo	*Crudia klainei*	Loranthecеae	Mistletoe	Leaves	Measles
84	Feregede	*Cjanus cajan*	Leguminosae	Pigeonpea	Flower	Measles
85	Akomu	*Pycanathus angolensis*	Myristiaceae	Wild nutmeg	Roots	Chickenpox
86	Ayinyin,Afefe	*Trema orientalis*	Ulmaceae	Charcoal tree	Leaves	Chickenpox
87	Ojere agbado	*Zea mays*	Poaceae	Maize	Flower	Chickenpox
88	Owu	*Gossypium arboreum*	Malvaceae	Western idian cotton	Leaves	Jaundice
89	Arunje	*Harungana madagascariasis*	Hypericaea	Dragons blood tree	Stem bark	Jaundice
90	Iyere	*Perper guinensise*	Pepereceae	Clinbing balack pepper	Leaves	Chickenpox
91	Aluro	*Mimosa pigra*	Mimosaea	Catclaw mimosa	Leaves	Poliomylitis
92	Eriru	*Xylopia aethipaca*	Annonaceae	Ethopia pepper	Fruits	Chickenpox, Measles
93	Itaye	*Aframomum melegueta*	Zingiberaceae	Alligator pepper	Leaves	Measles
94	Casu	*Anacardium occidentale*	Anacardiaceae	Cashew	Leaves, stem bark	Jaundice
95	Oparun	*Banbusa vulgaris*	Poaceae	Bamboo	Leaves	Measles
96	Akerjupon,Ajo	*Sphenocenturm jollyanum*	Menispertmaer	Sphenocentum	Fruits	Jaundice
97	Alubosa elewe	*Allium ascalonicum*	Liliaceae	Shallt spring	Leaves	Chickenpox
98	Erinje	*Xylopia aethipaca*	Annonaceae	Ethopia pepper	Fruit	Chickenpox, Measles
99	Gbaguda,ege	*Manihot esculata*	Euphorbiaceae	Cassava	Leaves	Jaundice
100	Idahe	*Banbusa vulgaris*	Poaceae	Bamboo	Leaves	Measles
101	Arunpale	*Chenopodium ambrosiodes*	Chenopodiaceae	Worm wood	Roots	Chickenpox
102	Ewuro	*Vernonia amygdalina*	Compoositae	Biter leaf	Leaves	Measles
103	Ayuu	*Allium sativa*	Liliacea	Garlic	Bulb	Measles
104	Koko	*Theobroma cacao*	Sterculiaceae	Cocoa	Bark	Measles
105	Epoara	*Waltheria lucida*	Sterculiaceae	Sleeping morning	Whole plant	Poliomylitis
106	Orunpa	*Hymnocardia acida*	Euphorbiaceae	Hymenocardia	Leaves	Measles, Jaundice
107	Ope	*Elaeis guinensis*	Palmea	Red oil pal	Roots	Chickenpox ,Measles
108	Ipeta	*Securidaca longepedunculata*	Polygalaceae	Violet tree	Stem bark	Jaundice
109	Ibepe	*Carica papaya*	Caricaceae	Pawpaw	Leaves	Poliomylitis
110	Yanrin	*Lactuca capensis*	Compositae	Wild lettuce	Whole plant	Light Chickenpox

Table 1. Contd.

111	Gbersi	*Nauclea latifolia*	Rubiaceae	Nauclea	Roots, stem bark	Measles
112	Oparun	*Banbusa vulgaris*	Poaceae	Bamboo	Leaves	Measles
113	Eriru	*Xylopia aethipaca*	Annonaceae	Ethopia pepper	Fruits	Measles
114	Gbure	*Tanum trianuglae*	Portulacaceae	Weter lettuce	Leaves	Measles
115	Eriru	*Xylopia aethipaca*	Annonaceae	Ethopia pepper	Fruits	Measles
116	Oganwo	*Khaya ivorensis*	Meliacea	African mahogany	Stem bark	Jaundice
117	Oruwo	*Morinda lucida*	Rubiaceae	Brimstone tree	Roots	J aundice
118	Ose	*Adenopus digitata*	Bombacaceae	Lemonoda tree	Leaves	Poliomylitis
119	Osopa	*Enantia chlorantha*	Annonaceae	African yellow wood	Roots	Poliomylitis
120	Gberesi	*Nauclea latifolia*	Rubiaceae	Nauclea	Roots	Measles
121	Gbogbonise	*Uvaria afzelii*	Annonaceae	Cluster pear	Roots	Measles
122	Ogbooriakuko	*Helitropium indiucm*	Boraginuceae	Heliotrope	Leaves	Measles
123	Ifon	*Olax-subscorpioidea*	Olacaceae	Olax, Stinkant forest	Roots	Poliomylitis
124	Amuje	*Brysocarpus coccineus*	Conniraceae	Crimson thyme	Leaves	Measles
125	Osan wewe	*Citrus aurantifolia*	Rutaceae	Lime, Swing	Fruits	Measles, Jaundice
126	Ahun	*Alstomia boonel*	Apocynaceae	Stool wood, Pattern wood	Leaves	Jaundice
127	Atare	*Aframomum melegueta*	Zingiberaceae	Alligator pepper	Leaves	Measles
128	Erinje/Eekugogo	*Xylopia aethiopiae*	Annonaceae	Ethopia pepper	Seeds	Measles
129	Atare	*Aframomum melegueta*	Zingiberaceae	Alligator pepper	Leaves	Measles
130	Otili	*Cajanus cajan*	Leguminosae	Pigeon pea	Leaves	Measles
131	Erinje/Eekugogo	*Xylopia aethiopiae*	Annonaceae	Ethopia pepper	Seeds	Chicken pox
132	Yanrin	*Lactuca capensis*	Compositae	Wild lettuce	Whole plant	Measles, Chickenpox
133	Poporobaba	*Sorghum bicolor*	Poaceae	Millet	Leaves	Chicken pox
134	Ayo	*Caelsalpinia bonduc*	Leguminosae	Bonduc nut	Leaves	Chickenpox
135	Atare	*Aframomum melegueta*	Zingiberaceae	Alligator pepper	Leaves	Measles
136	Iru, Erinje, Eeru	*Xylopia aethipaca*	Annonaceae	Ethopia pepper	Fruits	Jaundice
137	Mafowokanmilomo	*Argemone Mexicana*		Mexican poppy	Whole plant	Jaundice
138	Erinje	*Xylopia aethipaca*	Annonaceae	Ethopia pepper	Seeds	Jaundice
139	Ewuro	*Vernonia amygdalina*	Compositae	Bitter leaf	Leaves	Jaundice
140	Osan wewe	*Citrus aurantifolia*	Rutaceae	Lime	Leaves,Fruit	Jaundice
141	Osan mimu	*Citrus sinensis*	Rutaceae	Sweet orange	Fruits	Jaundice
142	Ataile	*Zingiber officinale*	Zingiberaceae	Ginger	Roots	Jaundice
143	Odan	*Ficus thonninguii*	Moraceae	Umbrella thorn	Leaves	Chickenpox
144	Erinje	*Xylopia aethipaca*	Annonaceae	Ethopia pepper	Seeds	Poliomylitis, chicken pox
145	Orombo wewe	*Citrus aurantifolia*	Rutaceae	Lime, Swing	Leaves	Chickenpox
146	Otili	*Cajanus cajan*	Leguminosae	Pigeon pea	Leaves	Chickenpox
147	Ewuro	*Vernonia amygdalina*	Compositae	Bitter leaf	Leaves	Chickenpox

Table 1. Contd.

148	Ojere agbado	*Zea maize*	Poaceae	Maize	Flower	Measles
149	Egbesi	*Nauclea latifolia*	Rubiaceae	Nuclea	Roots	Chickenpox
150	Odan	*Ficus thonningii*	Moraceae	Umbrella thorn	Leaves	Chickenpox
151	Koko	*Theobroma cacao*	Sterculiaceae	Cocoa	Stem bark	Chickenpox
152	Atare	*Aframomum melegueta*	Zingiberaceae	Alligator pepper	Seeds	Measles
153	Eso itagiri	*Laganaria breviflorus*	Cucurbitaceae	Pseudoclocynth	Roots, fruits	Small pox, Chicken pox
154	Efinrin	*Hoslundia opposite*	Labiatae	Hoshindia	Wholeplant	Jaundice
155	Amiye	*Brysocarous coccineus*	Connaraceae	Crimson thyme	Stem bark	Measles, Jaundice
156	Paran, Ogudu	*Belbergia saxatilis*	Leguminosae	Flat bean	Stem bark, Leaves	Small pox, Measles
157	Ewe were, Erinje were	*Momordica charantia*	Curbitaceae	Bitter cucumber	Whole plant	Jaundice, Yellow fever
158	Ataile	*Zingiber officinale*	Zingiberaceae	Ginger	Rhizome	Jaundice, Yellow fever
159	Gilofa	*Psidium guajava*	Myrtaceae	Guava	Stem bark	Jaundice
160	Mangoro	*Magnifera indica*	Anacardaceae	Mango	Stem bark	Jaundice
161	Dongoyaro	*Azadirachata indica*	Melcaceae	Neem tree	Stem bark	Jaundice
162	Ahun	*Alstomia boonei*	Apocynaceae	Stool wood, pattern wood	Stem bark, Leaves	Jaundice
163	Egbesi	*Naudeae latifolia*	Rubiaceae	Naucleae	Roots	Jaundice
164	Opon	*Tetracera pototoria*	Dilleniaceae	Cup of water	Stem bark	Jaundice
165	Ponhan	*Lophira alata*	Onchnaceae	Meni oil tree, Iron wood	Stem bark	Jaundice
166	Oganwo	*Khaya ivorensis*	Meliaceae	African mahogany	Stem bark	Jaundice
167	Iyeye	*Spondias mombin*	Anacardiaceae	Yellow mombin	Stem bark	Jaundice
168	Odan	*Ficus thonningii*	Moraceae	Umbrella thorn	Leaves	Jaundice, Measles
169	Efinrin	*Ocimum cannum*	Lubiateae	Tea bush, buslam	Leaves	Jaundice
170	Roro	*Allanblackia floribunba*	Guttiferacae	Fallow tree	Leaves	Chickenpox, Measles,
171	Odundun, eti	*Kalanchoe crenata*	Crassulaceae	Nerver die	Leaves	Poliomylitis, Small pox
172	Igbere	*Dennattia tripetata*	Annonaceae	Pepper fruit	Leaves	Measles
173	Iranje	*Securinega Virosa*	Euphorbiaceae	Securinega	Leaves	Poliomylitis, Jaundice
174	Afara	*Terminalia superb*	Cobretaceae	Korina, frake	Stem bark	Yellow fever
175	Owu	*Gossypium barbadense*	Malvaceae	West Indian Cotton	Leaves	Hepatitis
176	Egele	*Euphophia Spp*	Euphorbiaceae		Leaves	Chickenpox
177	Saposapo	*Anthocleista nobilis*	Loganiaceae		Roots	Jaundice
178	Tagiri	*Laganaria breviflorus*	Cucurbitceae	Psuedoclocynth	Whole plant	Measles
179	Agbado	*Zea maize*	Poaceae	Maize	Seeds	Chickenpox
180	Dongoyaro	*Azdirachta indica*	Meliaceae	Nemm tree	Roots, bark	Jaundice
181	Erinje	*Xylopia aethiopica*	Annonaceae	Ethopia pepper	Seeds	Measles
182	Atare	*Aframomum melegueta*	Zingiberaceae	Alligator pepper	Leaves	Measles
183	Ayo	*Caesalpinia bonduc*	Leguminosaea	Bonduc nut	Leaves	Measles
184	Oparun	*Banbusa vulgaris*	Poaceae	Bamboo	Leaves	Measles

Table 1. Contd.

185	Feregede	*Cajanus cajan*	Legumioseae	Pigeon pea	Leaves	Measles,Chickenpox
186	Orogbo	*Garcia cola*	Guttiferae	Bitter cola	Roots	Smallpox
187	Odundun owo	*Emilia cocciea*	Compositeae	Tassel flower	Leaves	Measles
188	Tee	*Cymbopoqon citratus*	Theceaea	Tea	Leaves	Jaundice
189	Kaju	*Anacardium occidentale*	Anacardiaceae	Cashew	Leaves	Jaundice
190	Mangoro	*Magnifer indica*	Anacardiaceae	Mango	Leaves	Jaundice
191	Imi-esu	*Agerantum conyzoides*	Compositae	Goat weed	Whole plant	Poliomylitis, Measles, yellow fever
192	Atare	*Aframomum melegueta*	Zingiberaceae	Alligator pepper	Leaves	Measles
193	Iyere	*Perper guinensise*	Pepereceae	Clinbing balack pepper	Leaves	Measles
194	Alubosa elewe	*Allium ascalonicum*	Liliaceae	Shallt spring	Leaves	Chickenpox
195	Erinje	*Xylopia aethiopica*	Annonaceae	Ethopia pepper	Seeds	Chickenpox
196	Ewedu	*Corchorus olitorius*	Tiliaceae	Jute plant	Whole plant	Measles
197	Atare	*Aframomum melegueta*	Zingiberaceae	Alligator pepper	Leaves	Measles Poliomylitis
198	Erinje	*Xylopia aethiopica*	Annonaceae	Ethopia pepper	Seeds	Chickenpox
199	Tagiri	*Laganaria breviflorus*	Cucurbitceae	Psuedoclocynth	Whole plant	Measles
200	Rere	*Senna occidentalis*	Leguminosae	Affrica coffee	Leaves	Measles
201	Oruwo	*Morinda lucida*	Rubiaceae	Brimstone tree	Roots	Yellow fever
202	Mangoro	*Magnifera indica*	Anacardaceae	Mango	Stem bark	Yellow fever
203	Taba	*Nicotiana tabacum*	Solanaceae	Tobacco	Leaves	Poliomylitis
204	Atare	*Aframomum melegueta*	Zingiberaceae	Alligator pepper	Seeds	Poliomylitis
205	Jogbo	*Hiptis pectinata*	Labiatae	Hiptis	Leaves	Poliomylitis
206	Aba	*Sympolia globulifera*	Gutiferae	Hog gum tree	Roots	Poliomylitis
207	Arin	*Dioclea reflexa*	Leguminosae	Bull's eye	Seeds	Measles
208	Alubosa elewe	*Allium ascalonicum*	Liliaceae	Shallt spring	Leaves	Chickenpox

herb sellers are the major source of the information, while the herbalist and civil servant gave less information as depicted by Table 5.

The mode of preparation as presented on Figure 1 indicated that decoction was the most common way of preparing these herbs while other methods are less commonly employed. The mode of administration as shown on Figure 2 revealed that drinking was found to be the most preferred mode of administration while rubbing and bathing were less frequently employed. The majority of the people in the study area preferred combination of herbs and modern drugs. However, the uses of herbs alone are not well employed (Table 6). The generality of the populace does not take any precaution in the use of the recipe. However, plants should be washed before taken them. Although using of herbs and drugs at the same time was discouraged as repre-sentedon Table 7. The side effects commonly associated with the use of herbal recipe were vomiting and stooling. However, most informants opined that there is not much side effect in taking herbal recipes as shown on Table 8.

DISCUSSION

In the ethnobotanical survey conducted in Ekiti, Ondo, Osun and Oyo States of South Western Nigeria (Figure 3), a number of (208) reported medicinal plants species and their uses in treating some common viral diseases by the rural populace demonstrates the depth of their local indigenous knowledge on medicinal plants and their application. Similar study undertaken in Belvia came up with 129 plant species of medicinal importance. In general, various studies

Table 2. Occurrence of various families of medicinal plants surveyed.

Family name	Frequency	% Occurrence
Anacardaceae	7	3.4
Annonaceae	21	10.3
Apocynaceae	3	1.5
Asclepiadeceae	1	0.5
Bignoniaceae	5	2.5
Bombacaceae	1	0.5
Boraginaceae	3	1.5
Cappararaceae	1	0.5
Caricaceae	3	1.5
Chenopodiaceae	1	0.5
Cobretaceae	1	0.5
Compositae	11	5.4
Connaraceae	2	1.0
Convulvulaceae	1	0.5
Crassulaceae	5	2.5
Cucurbitaceae	6	3.0
Dilleniaceae	1	0.5
Euphorbiaceae	9	4.4
Ginger	1	0.5
Guttiferae	3	1.5
Hypericaea	1	0.5
Labiatae	2	1.0
Lauraceae	2	1.0
Leguminosae	20	9.9
Liliaceae	6	3.0
Loganiaceae	2	1.0
Loranthecеae	1	0.5
Lubiateae	1	0.5
Lythraceae	1	0.5
Malvaceae	5	2.5
Meliaceae	5	2.5
Menispermae	2	1.0
Mimosaceae	2	1.0
Moraceae	3	1.5
Myristicaceae	2	1.0
Olacaceae	1	0.5
Onchnaceae	1	0.5
Palmae	3	1.5
Piperaceae	2	1.0
Periplocaceae	1	0.5
Poaceae	9	4.4
Polygalaceae	1	0.5
Portulacaceae	1	0.5
Rubiaceae	9	4.4
Rutaceae	7	3.4
Solanaceae	3	1.5
Sterculiaceae	4	2.0
Theaceae	1	0.5
Liliaceae	1	0.5
Ulmaceae	1	0.5
Verbenaceae	1	0.5
Zingiberaceae	16	7.9
	203	100.0

Table 3. Plant parts used for treating viral infections.

Parts used	Frequency	% Occurrence
Bulb	3	1.4
Flower	3	1.4
Fruit epicarp	1	0.5
Fruits	15	7.2
Leaves	95	45.7
Leaves, fruit	4	1.9
Leaves, root	1	0.5
Leaves, stem bark	1	0.5
Pods	2	1.0
Rhizome	2	1.0
Roots	20	9.6
Roots, bark	1	0.5
Roots, fruit	1	0.5
Roots, stem bark	2	1.0
Seeds	12	5.8
Stem bark	28	13.5
Stem bark sap	1	0.5
Stem bark, leaves	2	1.0
Wholeplant	14	6.7
	208	100.0

Table 4. The distribution of informants in age –classes.

Age class	Frequency	Percentage
21-30	11	5.29
31-54	49	23.56
51-70	83	39.90
71-80	65	31.25
	208	100.00

have shown that different areas in different parts of the world demonstrated the existence of considerable amount of indigenous ethnomedicinal knowledge (Tesfaye and Zemede, 2009).

The study also revealed that Family Annonaceae (10.3%) took the leading, followed by family Legiminosae, Zingiberaceae, Compositae, Liliaceae, Anarcadaceae, Rabiaceae, Poaceaes and Rutaceae, were most commonly mentioned in the study areas. Although recent research in Ogun State showed that Cucurbitaceae is highly effective against Measles (Sonibare et al., 2009). The fact that some of the reported plants are having similar uses in the area elsewhere can be taken as an indication of their pharmacological effectiveness having been tested in different areas by different culture. The emphasis of the synergism of more than one medicinal plant was emphasized by the informants (Wassihun et al., 2003).

Leaf was most commonly used for medicinal purpose than the other plant parts in the study areas. This was followed by the use of stem bark, root, fruit and whole plant, while fruit epicarp, stem bark sap and a combination of leaf and root were least used. Many studies conducted in different parts in Ethiopia and many parts of the world showed that plant leaves are used more than the other parts of a plant. This practice helps to reduce the rate of threat on plant species (Giday et al., 2003).

This study reveals that, most knowledge on herbal remedies is handled down the older members of the community between 51-70 and 71-80 years of age. This hits at the fact that ethnomedicinal knowledge is concentrated in, and relative difficulty in its transfer from the elderly to the younger generation. This might be related to the waning of interest of the young generation on indigenous knowledge. Different studies in different areas showed that medicinal plant knowledge and transfer of knowledge to the young generation have been affected by modernization (having access to modern education and health service) and environmental change (Hillenbrand, 2006).

Table 5. Sources of information.

Respondents	Frequency	Percentage
Herbalist	8	3.85
Herb seller	151	72.60
Trader	36	17.31
Civil servants	13	6.25
	208	100.00

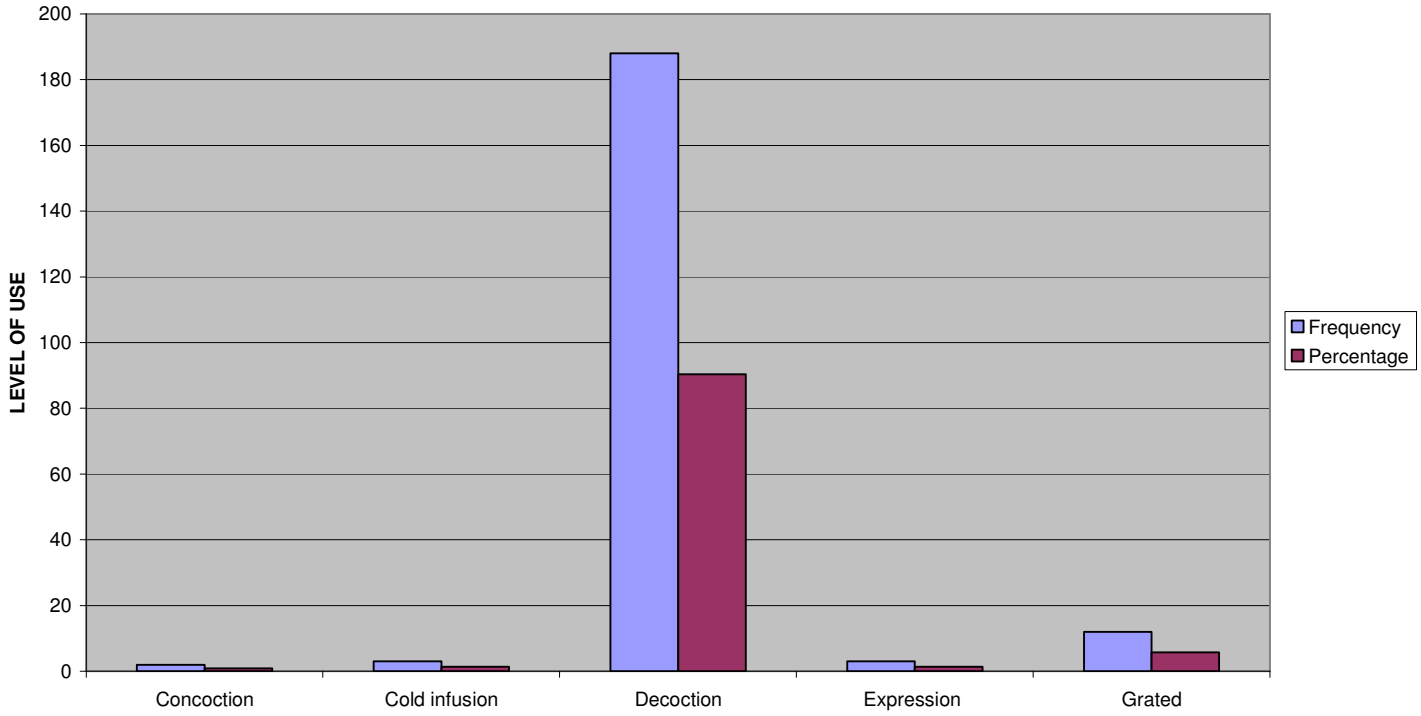

Figure 1. Mode of preparation.

Responses from the informants showed that herbal preparation was up-held only by the herb sellers. Other respondents such as, traders and civil servants showed little or no response. This was due to lack of interest from the community people as a result of easy access to modern drugs and health education.

The study revealed that decoction was the mostly employed method of preparation in the study areas for viral treatment. The results of this study also showed that the use of concoction was not a common practice for some viral treatment in the areas. Some other viral medicinal plants were only prepared on special prescription. Similar studies among the Kani's tribe in India are said to usually prepare medicines from a combination of several plants as they believed that combinations of several plant parts cure diseases rapidly (Ayyanar and Iguacinathu, 2005).

It was observed from the research that there were some disagreements among the informants on the dosage of certain remedies prescribed. The dosage depended on the informant that prescribed the herbs for medicinal purpose. Lack of standardization and precision on dosage and quality control is seen as one of the main disadvantages of traditional medicine as summarized from various sources (Sofowora, 1982).

Also in the study areas, oral applications took the upper hand, followed by a combination of both external and oral administration, depending of the type of viral infection and informant's prescription. This is similar to a study conducted in Bolivia which shows that, the most frequently used route of administration is oral ingestion (Hunde et al., 2004).

The toxicity of some medicinal plants and their potentials to cause harm were a common complaint among those who would like traditional medicine to be standardized. It is commonly believed that traditional

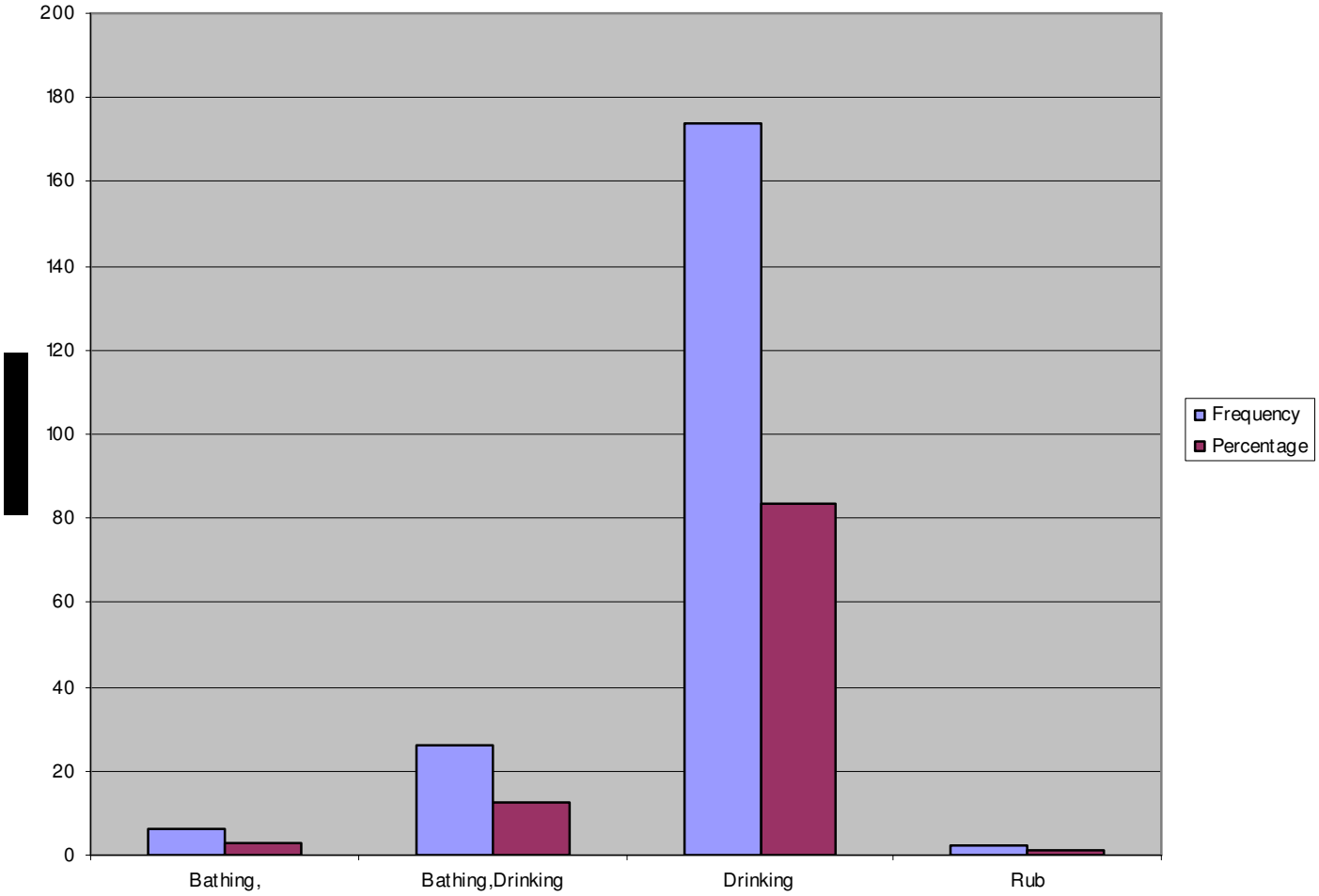

Figure 2. Mode of administration.

Table 6. Preference for the use of herbs or modern drugs.

Parameters	Frequency	Percentage
Combination of herbs and modern drug is more effective and gives better result	85	40.87
Herbal preparation is very credible and effective because it has been used for time immemorial	64	30.77
Modern drug is faster acting than herbs and has definite quantity to be used	18	8.65
Herbs used alone to prevent side effects	65	31.25
	208	100.00

Table 7. Precautions for the use of herbal recipe.

Parameters	Frequency	Percentage
Use before meal	13	6.25
Use after meal	10	4.81
Specified dose should be used	7	3.37
Preparation should be cooked before use	53	25.48
Plants should be washed before taken them	44	21.15
Drugs and herbs should not be used at the same time	19	9.13
None	62	29.81
	208	100.00

Table 8. Side effects in the use of herbal recipes.

Parameters	Frequency	Percentage
Too much causes vomiting	55	26.44
Excess intake causes stooling	35	16.83
Stomach upset	15	7.21
None	103	49.52
	208	100.00

Figure 3. Map of Nigeria indicating study area.

practitioners either do not know the strength of their own medicines or do not bother to fix doses to the size or body weight of the patients (Tesfaye and Zemede, 2009).

Conclusion

The result of the study revealed that there was high diversity of medicinal plants and traditional knowledge about the use, preparation, and application of which is still maintained in the South western Nigeria. However, the knowledge of herbal medicine was held by elders. The decline in the use of plants by the younger generation may gradually lead to the fading away of indigenous knowledge associated with the plants.

RECOMMENDATIONS

There is a need for validation and standardization of phytomedicines and traditional medical practices so that this sector can be accorded it rightful place in the health care system. Government should provide a global forum for growers, traders, manufacturer of herbal medicine and professionals in the field of traditional and alternative therapies to share knowledge, experiences and ideas. Scientists, therefore should rise to get the knowledge from the elders and encourage the herb sellers to register with the government agency and make them available so that herbal medicine could easily be accessible and cheap for the less privileged.

Further research should be carried out to confirm the

efficacy of some of the most commonly used anti-viral herbs against bacterial infections.

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