



Review article

Wandering through southwestern Nigeria: An inventory of Yoruba useful angiosperm plants

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ABSTRACT

This paper is a compilation of all known uses of angiosperm plants by the Yoruba people of southwestern Nigeria. Information was gathered from the past experiences of authors and surveys of books, journal articles, dissertations (published and unpublished) and theses using online databases. The review presents 493 angiosperm species (65 monocots and 428 dicots) belonging to 99 families, of which Fabaceae contributed the highest number of useful plants (72 spp.), followed by Euphorbiaceae (31 spp.), Malvaceae (30 spp.), and Asteraceae (25 spp.). Generally, of the identified plants, 418 species are for medicinal purposes, 85 species are utilized as food and beverages, 65 species for other uses including games, food packaging, and arts and crafts while 22 species are used for magical purposes such as success charm, enhancing disappearance, protection from witches and escaping from the repercussion of an act. This study provides baseline ethnobotanical data for future quantitative analyses of useful plants in the region, as indigenous plant knowledge has not been properly explored and documented among the Yoruba people.

1. Introduction

Despite the rich cultural heritage of the Yoruba people and the floristic diversity of the southwestern region and Nigeria at large, studies focusing on indigenous use of plants in the region have suffered neglect and are underreported [1]. The Yoruba people constitute about 21% (40 million) of the total population of Nigeria and are distributed across six states, including Ekiti, Lagos (Eko), Ogun, Ondo, Osun, and Oyo [2]. Major towns and cities in the region include Abeokuta, Ede, Ibadan, Ikire, Lagos, Ogbomoso, Osogbo and Ile-Ife, with the latter generally accepted as the origin of the Yorubas [3]. It is noteworthy that, there has never been a systematic account of indigenous use of plants in the region as most of the previous studies have focused on medicinal uses of plants and few on other uses of plants in towns and villages which does not encompass the whole region. For example, Abimbola [4] and Thomas and Ajani [5] reported some recipes used for the treatment of sickle cell anaemia in the region. Gbadamosi and Oloyede [6] documented plants used for the treatment of arthritis in Ibadan, while others reported plants employed in the treatment of breast cancers [7] and diabetes mellitus [8] in Abeokuta as well as sexually transmitted diseases (STDs) in Ibadan [9]. Additionally, Obata and Aigbokan [10] documented general uses of

plants in Oka-Akoko, while Adediwura et al. [11] documented several plants used as cosmetics in some parts of Yoruba land.

The need for a systematic inventory of traditional uses of the plant has been reported by Van Wyk [12] and supported by Shenzhen's proclamation that accentuates the need to document, value, and protect indigenous knowledge about plants [13]. Significant efforts are being geared towards this direction in recent times [14], with the inventory of indigenous use of plants by the Basotho people of Lesotho and Vhavenda of South Africa [15, 16] as well as food plants of southern Africa [17], being notable examples. In view of the foregoing, we hereby present, for the first time (as we are not aware of any study), a comprehensive inventory of known uses of angiosperm plants by the Yoruba people in southwestern Nigeria. This was undertaken with a view to provide invaluable data on the pristine value and indigenous knowledge systems of botanicals in the region with a focus on plants used as medicine, food, beverages, clothing, cosmetics, arts and crafts, musical and those used for magical purposes.

2. Results and discussion

Table 1 (dicots) and Table 2 (monocots) contain a comprehensive list of the angiosperm plants used by the Yoruba people of southwestern Nigeria

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Table 1. List of dicots used by the Yoruba people of southwestern Nigeria, their habits, vernacular names and uses.

Plant Families, species and their habits	Vernacular names (Yoruba)	Uses	References
Acanthaceae			
<i>Acanthus montanus</i> (Nees) T. Anderson; H	<i>Iru nmu arugbo</i>	Medicinal (syphilis, boils, emetic, anthelmintic, female infertility, menstrual cramps, arthritis, and urinary disorder)	[23, 24, 25]
<i>Asystasia gangetica</i> (L.) T. Anderson; H	<i>Lobiiri</i>	Medicinal (pile, astringent)	[26]
<i>Elytraria marginata</i> Vahl.; H	<i>Eso</i>	Medicinal (Stomach ache, chest pain, wounds, and measles)	[26, 27]
<i>Hygrophila auriculata</i> (Schumach) Heine; H	<i>Ogbigbo</i>	Cosmetics (body cream)	[11]
<i>Phalopsis ciliata</i> (Willd.) Hepper; H	<i>Apa-Ogbe</i>	Medicinal (wounds and laxatives)	[26]
Amaranthaceae			
<i>Achryanthes aspera</i> L.; H	<i>Aboro</i>	Cosmetics (body cream)	[11]
<i>Aerva lanata</i> (L.) Juss. ex Schult.; H	<i>Efun ile</i> <i>Eweowo</i>	Medicinal (ulcer, wound, snake bites, diuretic, diabetes)	[9, 23, 28]
<i>Alternanthera sessilis</i> (L.) R.Br. ex DC.; H	<i>Reku-reku</i> <i>Dagunro</i>	Medicinal (boil, snakebite, astringent, headache)	[23, 26]
<i>Amaranthus hybridus</i> L.; H	<i>Efo tete</i>	Food (vegetable); medicinal (blood tonic)	[29, 30]
<i>Amaranthus spinosus</i> L.; H	<i>Dagunro</i>	Medicinal (snake bite, gonorrhoea, hemorrhoid, diabetes, female infertility)	[10, 24, 28, 31]
<i>Amaranthus viridis</i> L.	<i>Tete abalaye</i>	Food (vegetable); medicinal (hemorrhoid, blood tonic)	[30, 31]
<i>Celosia argentea</i> L.; H	<i>Ajefawo</i> <i>Sokoyokoto</i>	Food (vegetable); medicinal (diuretic, gonorrhoea, diarrhea, hemorrhoid, blood tonic), and cosmetics (body cream)	[11, 26, 30, 31, 32]
<i>Chenopodium ambrosioides</i> L.; H	<i>Arunpale</i>	Medicinal (anticancer, diabetes, Guinea worm infections)	[28, 33, 34]
<i>Cyathula achyranthoides</i> (Kunth) Moq.; H	<i>Opapara</i> <i>Esupupa</i>	Medicinal (female infertility)	[24]
<i>Cyathula prostrata</i> (L.) Blume; H	<i>Sawerepepe</i>	Medicinal (diabetes)	[28]
<i>Pupalia lappacea</i> (L.) A. Juss; H	<i>Ima agbo</i>	Medicinal (headache); cosmetics (body cream)	[10, 11]
Anacardiaceae			
<i>Anacardium occidentale</i> L.; T	<i>Kashu</i>	Food (fruit and nut); medicinal (malaria, elephantiasis, ringworms, warts, typhoid fever, cough, fresh severe wounds, hemorrhoid, female infertility, ulcer)	[10, 23, 24, 26, 31, 32, 35, 37]
<i>Lannea acida</i> A. Juss; T	<i>Agbelepot</i>	Medicinal (stomach upset)	[10]
<i>Lannea barteri</i> (Oliv.) Engl.; T	<i>Ekika</i>	Veterinary uses	[38]
<i>Lannea egregia</i> (Hiern) Engl.; T	<i>Ekudan</i>	Medicinal (anticancer)	[33]
<i>Lannea nigritana</i> (Scott-Elliot) Keay; T	<i>Oyinyin</i>	Cosmetics (body cream)	[11]
<i>Lannea welwitschii</i> (Hiern) Engl.; T	<i>Orira</i>	Medicinal (antisickling, skin infections)	[11, 39]
<i>Mangifera indica</i> L.; T	<i>Mongoro</i>	Food (fruit); medicinal (malaria, asthma, yellow fever, jaundice, cough, insanity, purgative, typhoid fever, hemorrhoid, anticancer, diabetes, female infertility, antisickling); cosmetics (face cleanser); firewood	[10, 11, 23, 24, 27, 28, 31, 32, 37, 39, 40] (unpublished)
<i>Spondias mombin</i> L.; T	<i>Iyeye</i>	Food (fruit); medicinal (fibroid, cataract, diuretic, fever, cold, gonorrhoea, hemorrhoid, aphrodisiac, ulcer, diabetes, female infertility); forage	[24, 25, 26, 28, 31, 41]
<i>Pseudospondias microcarpa</i> (A. Juss) Engl.; T	<i>Okikan</i>	Medicinal (chest pain); miscellaneous (used for coronation)	[10]
Annonaceae			
<i>Annona mannii</i> Oliv.; T	<i>Ewuro igbo</i>	Local dye	[41]
<i>Annona muricata</i> L. <i>Annona senegalensis</i> L.; T	<i>Abo</i> <i>Epon oyinbo</i> <i>Shap-shap</i>	Food (fruit); medicinal (skin diseases, dysentery, female infertility, anticancer, diabetes), anti snake venom	[10, 28, 32, 42]
<i>Annona squamosa</i> L.; T	<i>Shap-shap</i>	Food (Fruit) and mosquito repellent	[43]
<i>Enantia chlorantha</i> Oliv.; T	<i>Awopa</i> <i>Osopa</i> <i>Dokita igbo</i>	Medicinal (typhoid fever, ulcer, jaundice, hemorrhoid, diabetes, malaria)	[23, 28, 31, 37]
<i>Monodora myristica</i> (Garetn.) Dunal; T	<i>Sasangbaku</i>	Medicinal (constipation, arthritis, hemorrhoid)	[26, 31]
<i>Uvaria afzelii</i> SC. Elliot; S	<i>Gbongbose</i> <i>Awogba-arun</i> <i>Gbogana</i>	Medicinal (bladder infection, fever, cough, hemorrhoid, anticancer, female infertility, antisickling, skin diseases); cosmetics (body cream)	[11, 23, 24, 33, 39]
<i>Uvaria chamae</i> P. Beauv; S	<i>Eruju</i> <i>Gbogbonse</i>	Medicinal (jaundice, yellow fever, sores, febrifuge, anticancer, diabetes, antisickling, ulcer)	[23, 28, 33, 36, 39]
<i>Xylopiya aethiopica</i> (Dunal.) A. Rich; T	<i>Eru-alamo</i> <i>Eru-awonka</i>	Medicinal (stomach ache, breast cancer, cough, neuralgia, mental disorder, amenorrhoea, boil mix with white chalk, skin infections, hemorrhoid, scalp infection of children, abscess, cold shivers, menstrual disorders, diabetes, snake bite, female infertility, malaria, antisickling); cosmetics (hair growth); chewing stick;	[7, 11, 23, 24, 28, 31, 33, 35, 37, 39, 42, 44, 45]

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Table 1 (continued)

Plant Families, species and their habits	Vernacular names (Yoruba)	Uses	References
Apiaceae			
<i>Centella asiatica</i> L.; H	Atare obuko	Medicinal (hemorrhoid)	[31]
Apocynaceae			
<i>Alafia barteri</i> Oliv.; S	Agbari etu	Medicinal (antisickling, rheumatism, diabetes, toothache, anticancer)	[7, 23, 28, 31]
<i>Alstonia boonei</i> De Wild.; T	Ahun Alatapara	Medicinal (toothache, malaria, tuberculosis, astringent, fever, candidiasis, gonorrhoea, anticancer, skin infections, mental disorder, hemorrhoid, diabetes, female infertility, antisickling, anticancer, ulcer); timber	[7, 9, 10, 23, 24, 26, 28, 33, 36, 37, 39, 40, 44, 45, 46]
<i>Calotropis procera</i> R.B.; S	Bomubomu	Medicinal (elephantiasis, leprosy, ringworm, diaphoretic, convulsion, antipyretic, anticancer, hemorrhoid, insomnia, diabetes, female infertility, Guinea worm infections); cheese making (leaf juice)	[10, 23, 24, 28, 33, 34, 44]
<i>Catharanthus roseus</i> (L.) G. Don; H	Apabida pupa	Medicinal (diabetes, menorrhagia, antitumor)	[23]
<i>Funtumia elastica</i> (Preuss) Stapf.; T	Ire	Medicinal (pile, hemorrhoid, jaundice, malaria); timber	[26, 31, 37, 40]
<i>Gongronema latifolium</i> Benth.; S	Madumaro	Medicinal (candidiasis, vaginitis, hemorrhoid, diabetes, female infertility, antisickling)	[9, 24, 28, 31, 39]
<i>Holarrhena floribunda</i> T. Durand & Schinz; T	Irena	Medicinal (malaria, gonorrhoea, dysentery, jaundice)	[26]
<i>Hunteria umbellata</i> (K. Schum) Haller. F.; S	Erin	Medicinal (hemorrhoid)	[31]
<i>Landolphia owariensis</i> P. Beauv.; S	Panukuru	Food (the pulp is eaten directly, also used as spice); medicinal (stimulant)	[32]
<i>Mondia whitei</i> (Hook. F.) Skeels; C	Isirigun	Food (spice); Medicinal (hemorrhoid, antisickling, malaria)	[9, 31, 37, 39]
<i>Nerium oleander</i> L.; S	Adodo	Cosmetics (body cream)	[11]
<i>Pergularia daemia</i> (Forssk.) Chiov.; C	Kuleri-ogba Kole oro Atufa	Medicinal (fever, diabetes, female infertility, malaria), anti-snake venom	[24, 27, 28, 37, 47]
<i>Picralima nitida</i> (Stapf) T Dur & H. Dur; T	Eso Abere Erin	Medicinal (hemorrhoid, scalp infection in children, diabetes, psychosis)	[28, 31, 35, 48]
<i>Rauvolfia vomitoria</i> Afzel.; S	Asofeyeje	Medicinal (pile, convulsion, jaundice, measles, herpes, mental disorder, yellow fever, hemorrhoid, diabetes, antisickling, malaria); fish poison	[10, 26, 28, 31, 37, 39, 41, 44]
<i>Secamone afzelli</i> (Schult.) K. Schum; S	Ailu Arilu	Medicinal (measles, anticancer, cough, fibroids, female infertility)	[24, 27, 33, 42]
<i>Strophanthus hispidus</i> DC.; S	Sagbere	Medicinal (hemorrhoid, anticancer, diabetes, ulcer)	[9, 28, 33, 36]
<i>Tylophora sylvatica</i> Decne.; C	Isigun	Medicinal (female infertility)	[24]
<i>Tylophora urceolata</i> Meve; C	Olubara	Medicinal (anticancer, diabetes)	[28, 33]
<i>Voacanga africana</i> Stapf.; S	Ako-dodo	Medicinal (toothache, sores, hypertension)	[23]
Aristolochiaceae			
<i>Aristolochia albida</i> Duch.; C	Paran funfun	Medicinal (diabetes)	[28]
<i>Aristolochia bracteolata</i> Lam.; C	Akogun	Medicinal (gonorrhoea, vaginitis, candidiasis, hemorrhoid, Scalp infection of children, female infertility, cancer); cosmetics (body cream)	[9, 11, 24, 31, 33, 35]
Asteraceae			
<i>Acanthospermum hispidum</i> D.C.; H	Dagunro-gogoro Egun arugbo	Medicinal (yellow fever, tuberculosis, cough, migraine, hemorrhoid, malaria)	[23, 31, 37]
<i>Acmella uliginosa</i> (Sw.) Cass.; H	Awerepepe	Medicinal (diabetes)	[28]
<i>Aedesia glabra</i> (Klatt) O. Hoffm.; H	Ope-kaua	Medicinal (female infertility)	[24]
<i>Ageratum conyzoides</i> (L.) L.; H	Imi esu Pakududu	Medicinal (wounds, skin diseases, eye wash, emetic, skin infections, gonorrhoea, vaginitis, diabetes, conjunctivitis, diarrhea, syphilis, abortifacients, astringent, HIV/AIDS, ulcer); magical (fortification against spiritual attack); cosmetics (body cream); mosquito repellent	[9, 10, 11, 23, 28, 36, 42, 43, 44]
<i>Aspilia africana</i> (Pers.) C.D. Adams; H	Yunyun Yanyan	Medicinal (hemostatic, cleaning sores, stomach disorders, tuberculosis, nervous disorders, skin diseases, dysentery, hemorrhoid, abortifacients, ulcer)	[10, 23, 26, 31, 36, 42]
<i>Biden pilosa</i> L.; H	Ewe abere Abere oloko	Medicinal (epilepsy and hemorrhoid)	[10, 31]
<i>Calendula officinalis</i> L.; H	Ododo-maria	Medicinal (ulcer, astringent)	[23]
<i>Centaurea perrottettii</i> D.C.; H	Danyi	Cosmetics (body cream)	[11]
<i>Chromolaena odorata</i> (L.) R.M. King & H. Rob.; H	Akintola Ominira	Medicinal (malaria, toothache, skin disease, hemostatic, diarrhoea, headache, hemorrhoid, and fresh wounds); cosmetics (body cream)	[10, 23, 26, 31, 37, 44]
<i>Crassocephalum rubens</i> (Juss) S. Moore	Ebolo	Food (vegetables)	[29]
<i>Crassocephalum crepidioides</i> (Benth.) S. Moore; H			
<i>Echinops longifolius</i> A. Rich.; T	Agbe	Timber; firewood	[40]
<i>Eclipta prostrata</i> L.; H	Abikole Abirkolo	Cosmetics (body cream)	[11]
<i>Lactuca capensis</i> Thunb.; H	Yanrin	Food (vegetables); medicinal (diuretic, anticonstipation)	[23]
<i>Melanthera scandens</i> (Schumach. & Thonn.) Roberty; H	Abo yunrinyun Agbugbo	Medicinal (inflammation, skin irritations, purgative, cough); rabbit food	[26]

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Table 1 (continued)

Plant Families, species and their habits	Vernacular names (Yoruba)	Uses	References
<i>Senecio abyssinicus</i> Sch. Bip.; H	<i>Amuninuye</i>	Magical (charm used to paralyse enemy's memory); medicinal (Guinea worm infections)	[34, 50]
<i>Senecio biafrae</i> Oliv. & Hiern.; H	<i>Woorowo</i> <i>Bologi</i>	Cosmetics (body cream); Food (vegetable); medicinal (blood supplement)	[11, 30]
<i>Spilanthes filicaulis</i> (Schum & Thonn.) C. D. Adams; H	<i>Awerepepe</i>	Medicinal (Guinea worm infections)	[34]
<i>Struchium sparganophora</i> (L.) Kuntze; H	<i>Ewuro-odo</i>	Medicinal (headache, gonorrhea)	[26]
<i>Synedrella nodiflora</i> (L.) Gaertn.; H	<i>Apawofa</i>	Medicinal (sores, skin infections)	[26]
<i>Taraxacum officinale</i> (L.) Weber ex F. H. Wigg; H	<i>Efo yanrin</i>	Food (vegetable); medicinal (blood tonic)	[30, 32]
<i>Tithonia diversifolia</i> (Hemsl.) A. Gray; S	<i>Jogbo</i> <i>Agale</i>	Medicinal (malaria; wound dressing)	[37, 48]
<i>Tridax procumbens</i> L.; H	<i>Iyalode</i> <i>Muwagun</i>	Medicinal (antipyretic, hemostatic, backache, stomachache); mosquito repellent)	[23, 26, 43]
<i>Vernonia amygdalina</i> Delile; H	<i>Ewuro</i>	Food (vegetables); medicinal (measles, hypertension, stomachache, hepatoprotection diabetes, ringworm, malaria, gonorrhea, vaginitis, candidiasis, fever, hemorrhoid, anticancer, menstrual disorders, joints inflammation, antisickling); cosmetics (body cream); chewing stick	[9, 10, 11, 23, 27, 28, 33, 37, 39, 42, 44]
<i>Vernonia colorata</i> (willd.) Drake; H	<i>Eriro ijebu</i>	Medicinal (antipyretic, astringent, anemia, poison antidote)	[23]
<i>Vernonia guineensis</i> Benth.; T	<i>Olopa kan</i>	Timber	[40]
Basellaceae			
<i>Basella alba</i> L.; H	<i>Amunututu</i> <i>Toromoganna</i>	Food (vegetables); medicinal (blood tonic)	[29, 30]
Bignoniaceae			
<i>Cordia millenii</i> Bak.; T	<i>Omo</i> <i>Erinmodo</i>	Timber and Craft (for making drums)	[40, 51]
<i>Crescentia cujete</i> L.; T	<i>Igi igba</i>	Craft (for making calabash)	[41]
<i>Kigelia africana</i> (Lam.) Benth.; T	<i>Pandoro</i>	Medicinal (anticancer, syphilis, gonorrhea, chest pain, diabetes, female infertility); magical (to increase breast size)	[7, 10, 24, 28, 33, 44]
<i>Markhamia tomentosa</i> Schum (Benth.) K; H	<i>Oruru</i>	Medicinal (diabetes, female infertility)	[24, 28]
<i>Newbouldia laevis</i> (P. Beauv.) Seem. ex Bureau; S	<i>Akoko</i>	Cultural (to decorate the head of a newly installed chief); medicinal (cough, hemorrhoid, hypertension, yellow fever, jaundice, eye defect, antisickling, measles, diabetes); magical (protection against witches and evil spirits); forage	[10, 26, 27, 28, 31, 39, 39, 44]
<i>Spathodea campanulata</i> P.beauv; T	<i>Orudu</i>	Medicinal (anticancer)	[33]
Bixaceae			
<i>Bixa orellana</i> L.; S	<i>Osun buke</i> <i>Aje</i>	Cosmetics (body cream); local dye	[11, 41]
<i>Cochlospermum tinctorium</i> A. Rich.; H	<i>Sewuru</i> <i>Rapo</i>	Medicinal (ulcer)	[36]
Bombacaceae			
<i>Bombax buonopozense</i> P. Beauv.; T	<i>Ponpola</i> <i>Ewe eso</i>	Medicinal (skin infections, stomachache, hemorrhoid, scalp infection of children, abscess, diabetes); cosmetics (shiny skin)	[11, 26, 28, 31, 35]
<i>Ceiba pentandra</i> (L.) Gaertn.; T	<i>Araba</i>	Medicinal (diabetes, asthma, gonorrhea, menorrhagia, emetic, emollient, laxative, rheumatism, headache, fever, malaria); timber and fire wood; forage	[10, 23, 26, 37, 40, 41]
Boraginaceae			
<i>Heliotropium indicum</i> L.; H	<i>Origun</i> <i>Ogberi-akuko</i>	Medicinal (hemorrhoid, malaria, ulcer)	[31, 36, 37]
Brassicaceae			
<i>Brassica oleracea</i> L.; H	<i>Gbegi</i>	Food (vegetable); medicinal (ulcer)	[36]
Bursaceae			
<i>Canarium schweinfurthii</i> Engl.; T	<i>Origbo</i> <i>Paapo</i> <i>Awogbaarun</i>	Medicinal (black tongue, round worm, gonorrhea, diabetes)	[23, 28]
<i>Dacryodes edulis</i> (G. Don) H.J. Lam; T	<i>Pia kekere</i>	Food (fruit)	[32]
Calophyllaceae			
<i>Mammea africana</i> Sab.; T	<i>Ologbojo</i>	Medicinal (Guinea worm) infections	[34]
Cannabaceae			
<i>Cannabis sativa</i> L.; H	<i>Igbo</i>	Social (Stimulant)	[53]
Capparaceae			
<i>Cleome gynandra</i> L.; H	<i>Epiya</i>	Cosmetics (body cream)	[11]
<i>Crateva adansonii</i> DC.; T	<i>Taniya ewe</i>	Medicinal (diabetes)	[28]

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Table 1 (continued)

Plant Families, species and their habits	Vernacular names (Yoruba)	Uses	References
Caricaceae			
<i>Carica papaya</i> L.; T	<i>Ibepe</i>	Food (fruit); medicinal (malaria, syphilis, convulsion, mental disorder, asthma, hypertension, typhoid, purgative, hemorrhoid, gonorrhea, diabetes, ulcer); cosmetics (body cream); cigarette and snuff	[10, 11, 23, 26, 28, 31, 32, 36, 37, 42, 44]
Celastraceae			
<i>Celastrus indica</i> L.; T	<i>Ponju-owivi</i>	Medicinal (asthma, malaria, anthelmintic, anticancer)	[23, 33]
<i>Salacia pallescens</i> Oliv.; S	<i>Elewekan</i>	Medicinal (scalp infection of children)	[35]
Chrysobalanaceae			
<i>Parinari congensis</i> F. Didr.; T	<i>Epo papa</i>	Medicinal (Guinea worm infections)	[34]
<i>Parinari excelsa</i> Sabine; T	<i>Yinrinyin nla</i>	Medicinal (candidiasis, vaginitis)	[9]
<i>Parinari macrophylla</i> Sabine; T	<i>Abere</i>	Medicinal (gonorrhea, diabetes)	[28, 52]
Clusiaceae			
<i>Allanblackia floribunda</i> Oliv.; T	<i>Ekú</i> <i>Eso roro</i>	Medicinal (malaria, dysentery, small pox, chickenpox)	[23]
<i>Garcinia kola</i> Heckel; T	<i>Orogbo</i>	Food, medicinal (dysentery, headache, stimulant, cough, sore throat, anti asthma, cancer, tuberculosis, rheumatism, malaria, cancer, fever, diabetes, infertility, antisickling)	[23, 24, 28, 32, 33, 39, 42, 44, 47]
<i>Psorospermum febrifugum</i> Spach; T	<i>Legun-oko</i>	Medicinal (anticancer); cosmetics (body cream)	[11, 33]
<i>Symphonia globulifera</i> (L.) F.; T	<i>Ogolo</i>	Medicinal (aphrodisiac, watery sperm)	[52]
Combretaceae			
<i>Anogeissus leiocarpus</i> (DC.) Guill. & Perr.; T	<i>Aayin</i> <i>Orin odan</i>	Miscellaneous (chewing stick); medicinal (antisickling, hemorrhoid); timber; firewood; forage	[31, 39, 40, 41, 54, 55]
<i>Combretum bracteosum</i> (Hochst.) Brandis; S	<i>Ogan dudu</i> <i>Okán</i>	Medicinal (rheumatism, scalp infection in children)	[35, 44]
<i>Combretum hispidum</i> Laws.; S	<i>Ogan</i>	Medicinal (eye defects)	[10]
<i>Combretum platypterum</i> (Welw.) Hutch. & Dalziel; S	<i>Oganbule</i>	Medicinal (febrifuge)	[26]
<i>Combretum sordidum</i> Exell.; S	<i>Apoka pupa</i>	Medicinal (scalp infection of children)	[35]
<i>Combretum tomentosum</i> G. Don; T	<i>Ayoka</i>	Medicinal (scalp infection of children)	[35]
<i>Pteleiopsis suberosa</i> Engl. & Diels; T	<i>Okuku</i>	Medicinal (hemorrhoid)	[31]
<i>Terminalia avicennioides</i> Gull et Perr.; T	<i>Idin</i>	Medicinal (anticancer, female infertility)	[24, 33]
<i>Terminalia catappa</i> L.; T	<i>Furutu</i>	Food (fruit); medicinal (diabetes, hemorrhoid, antisickling)	[28, 31, 39, 44]
<i>Terminalia macroptera</i> Guill. & Perr.; T	<i>Ponpola</i>	Medicinal (skin infections)	[11]
<i>Terminalia schimperiana</i> Hochst. ex Engl. & Diels; T	<i>Idi</i>	Medicinal (candidiasis, vaginitis); miscellaneous (chewing stick)	[9, 54]
<i>Terminalia superba</i> L.; T	<i>Afara</i>	Medicinal (scalp infection of children, antisickling); timber	[35, 39, 40]
Connaraceae			
<i>Byrsocarpus coccineus</i> (Schumach. & Thonn.) Benth; S	<i>Amuje wewe</i> <i>Amuje</i>	Medicinal (jaundice, pile, gonorrhea, impotence, tumors, hemorrhoids, malaria, anticancer)	[23, 26, 31, 33, 37]
<i>Cnestis ferruginea</i> D.C.; S	<i>Omu-aja</i>	Medicinal (laxative, toothache, hemorrhoids, diabetes)	[26, 28, 31]
Convolvulaceae			
<i>Cuscuta australis</i> R.Br.; C	<i>Omisinmisin</i>	Cosmetics (body cream)	[11]
<i>Ipomea batatas</i> L.; C	<i>Odunkun</i> <i>Anomo</i> <i>Kukunduku</i>	Food, medicinal (severe headache, hypertension, diabetes, blood supplement)	[10, 28, 32]
<i>Ipomea involucreta</i> P. Beauv.; C	<i>Ododo-odo</i>	Medicinal (asthma)	[26]
<i>Ipomea pileata</i> Roxb.; C	<i>Alukere</i>	Medicinal (female infertility)	[24]
<i>Ipomea sarifolia</i> ; C	<i>Odoko</i>	Veterinary uses	[38]
<i>Merremia tridentata</i> (L.) Hallier f.; H	<i>Atewogbore</i>	Medicinal (gonorrhea)	[26]
Crassulaceae			
<i>Bryophyllum pinnatum</i> (Lam) Oken; H	<i>Abamoda</i>	Medicinal (epilepsy, cough, to heal babies' navel and other wounds, hemorrhoid, Guinea worm infections, anticancer, ulcer, psychosis)	[10, 23, 33, 34, 36, 44, 48]
<i>Kalanchoe pinnata</i> (Lam.) Pers; H	<i>Odundun</i>	Medicinal (diuretic)	[26]
Cucurbitaceae			
<i>Adenopus breviflorus</i> Benth; C	<i>Taagiri</i>	Medicinal (diabetes); Magical (To bring fortune to the house)	[28]
<i>Citrullus colocynthis</i> (L.) Schard; C	<i>Taagiri</i>	Medicinal (purgative, bladder stone, contraceptive, head lice, hemorrhoid, measles, diabetes, female infertility)	[23, 24, 27, 28, 31]
<i>Citrullus lanatus</i> (Thunb.) Matsum. & Nakai; C	<i>Egusi Baara</i>	Food (fruit); medicinal (gonorrhea, vaginitis, candidiasis, syphilis, malaria, stomach disorders, diabetes)	[9, 28, 42]

(continued on next page)

Table 1 (continued)

Plant Families, species and their habits	Vernacular names (Yoruba)	Uses	References
<i>Coccinia grandis</i> L. (Voigt); C	<i>Ewe ero</i>	Cosmetics (body cream)	[11]
<i>Coccinia barteri</i> (Hook. f.) Keay; C	<i>Ewe oju</i>	Medicinal (venereal diseases); cosmetics (body cream)	[27]
<i>Cucumis melo</i> L. Var. <i>catalupensis</i> ; C	<i>Egusi</i>	Food, medicinal (diabetes, female infertility, Guinea worm infections)	[24, 28, 32, 34]
<i>Cucumis sativus</i> L.; C	<i>Cucumber</i>	Food (fruit)	[33]
<i>Curcubita pepo</i> L. pumpkins; C	<i>Elegede</i>	Food (fruit); medicinal (blood supplement)	[30, 32]
<i>Lagenaria breviflora</i> (Benth.) Roberty; C	<i>Taagiri</i>	Medicinal (gonorrhoea, syphilis, female infertility)	[9, 24]
<i>Lagenaria siceraria</i> (Molina) Standl.; C	<i>Itakun ado Seere</i>	Craft (gourd for water and medicines)	[33]
<i>Luffa cylindrical</i> (L.) M.J. Roem; C	<i>Kankan ayaba Ara oyinbo</i>	Medicinal (hemorrhoid, Guinea worm infections, blood supplement); sponge for bathing and washing dishes	[30, 31, 34, 56]
<i>Momordica augustisepala</i> L.; C	<i>Kankan</i>	Medicinal (measles)	[27]
<i>Momordica balsamina</i> L.; C	<i>Ejinrin igbo Alo-ese</i>	Medicinal (blood tonic)	[30]
<i>Momordica charantia</i> L.; C	<i>Ejinrin wewe Igbole aja</i>	Medicinal (malaria, diabetes, pile, ringworm, ulcer, burns, skin infections, anthelmintics, candidiasis, vaginitis, diarrhea, abscess, measles, diabetes, infertility); Cosmetics (body cream)	[9, 10, 24, 26, 27, 28, 35, 42, 44]
<i>Momordica foetida</i> Schum. And Thorn; C	<i>Ako ejinrin</i>	Medicinal (blood tonic)	[30]
<i>Telfaria occidentalis</i> Hook. F.; C	<i>Apiroko</i>	Food (vegetables); medicinal (blood tonic, anemia, gastrointestinal disorders, convulsion, infertility)	[10, 23, 24, 26, 30]
Dilleniaceae			
<i>Tetracera alnifolia</i> Willd.; C	<i>Opon</i>	Medicinal (arthritis, anticancer); cosmetics (hair growth)	[6, 7, 11]
Ebenaceae			
<i>Diospyros mespiliformis</i> Hochst. Ex A. DC.; T	<i>Igi dudu</i>	Medicinal (malaria)	[37]
<i>Diospyros suaveolens</i> Gürke; T	<i>Esunsun</i>	Medicinal (female infertility)	[24]
Euphorbiaceae			
<i>Acalypha fimbriata</i> Schum. & Thonn.; H	<i>Jinwinni</i>	Medicinal (ulcer, rheumatism, asthma)	[57]
<i>Acalypha wilkesiana</i> Mull. Arg; S	<i>Jiwini Larapupa</i>	Medicinal (flatulence, constipation); cosmetics (skin rashes, body cream)	[11, 23]
<i>Alchornea cordifolia</i> (Schumach. & Thonn.) Müll. Arg.; S	<i>Ipa Epo Eresin Igi pepe</i>	Medicinal (fever, rheumatism, toothache, hemorrhoid, diabetes, Guinea worm infections, blood supplement)	[23, 26, 28, 30, 31]
<i>Alchornea laxiflora</i> (Benth.) Pax & K. Hoffm.; S	<i>Ijan Ewe iya Ijun</i>	Medicinal (typhoid fever, venereal diseases, female infertility)	[24, 26, 42]
<i>Bridelia ferruginea</i> Benth; T	<i>Ira Ira odan</i>	Medicinal (hemorrhoid, cancer, diabetes, malaria); cosmetics (body wash when mixed with soap)	[11, 28, 33, 37]
<i>Bridelia micrantha</i> (Hochst.) Baill.; T	<i>Isa</i>	Medicinal (headache, migraine)	[26]
<i>Cnidoscolus aconitifolius</i> (Mill.) I.M.Johnst.; S	<i>Iyana ipaja</i>	Medicinal (blood tonic)	[30]
<i>Croton lobatus</i> L.; S	<i>Eru</i>	Medicinal (diabetes); cosmetics (body cream)	[11, 28]
<i>Croton penduliflorus</i> Hutch.; T	<i>Aworoso</i>	Magical (thunderbolt)	[9]
<i>Croton zambesicus</i> Müll. Arg.; T	<i>Ajekofole Ajekobale</i>	Magical (strength and agility, to chase away evil spirits and witches); medicinal (hemorrhoid)	[3, 9, 10, 31]
<i>Euphorbia convolvuloides</i> Hochst. ex Benth.; H	<i>Emile</i>	Medicinal (female infertility)	[24]
<i>Euphorbia drupifera</i> Stapf.; S	<i>Oroonyi Oroigi</i>	Cosmetics (body cream)	[11]
<i>Euphorbia heterophylla</i> L.; H	<i>Egele</i>	Medicinal (skin infections, purgative); cosmetics (body cream)	[26, 44]
<i>Euphorbia hirta</i> L.; H	<i>Ewe emile</i>	Medicinal (cough, constipation, scorpion sting, dysentery, anti asthma, antibiotics, improve lactation in nursing mothers)	[10, 25, 44]
<i>Euphorbia lateriflora</i> Schum. & Thonn.; H	<i>Enu opiri</i>	Medicinal (gonorrhoea, syphilis, candidiasis, abscess, antisickling, Guinea worm infections)	[9, 34, 35, 39]
<i>Euphorbia unispina</i> N.E.Br. <i>Euphorbia poissonii</i> Pax; S	<i>Oro adete</i>	Medicinal (anticancer); cosmetics (body cream)	[11, 33]
<i>Flueggea virosa</i> (Roxb. ex Willd.) Voigt; S	<i>Iranje</i>	Medicinal (anticancer, psychosis dysentery)	[26]
<i>Hevea brasiliensis</i> Mull. Arg.; T	<i>Ewe roba</i>	Medicinal (diabetes)	[28]
<i>Jatropha curcas</i> L.; S			[10, 23, 28, 31, 42, 44]

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Table 1 (continued)

Plant Families, species and their habits	Vernacular names (Yoruba)	Uses	References
	<i>Botuje lapalapa funfun</i>	Medicinal (small pox, ring worm, eczema, irregular menses, syphilis, antidote for snake poison, hemorrhoid, menstrual disorders, fever, diabetes, ulcer)	
<i>Jatropha gossypifolia</i> L.; S	<i>Botuje</i> <i>Lapalapa pupa</i>	Medicinal (ringworm, ascariasis, dysentery, hemorrhoid, infertility)	[23, 24, 31]
<i>Jatropha multifida</i> L.; S	<i>Ogege</i>	Medicinal (coated tongue, hemorrhoid)	[23, 31]
<i>Macaranga barteri</i> Mull. Arg.; T	<i>Asasa</i>	Medicinal (breast cancer, diabetes)	[7, 28]
<i>Mallotus oppositifolius</i> (Geiseler) Müll. Arg.; S	<i>Orogoro</i>	Medicinal (astringent, ringworm, scalp infection of children)	[26, 35]
<i>Manihot esculenta</i> Crantz.; S	<i>Paki</i> <i>Gbaguda</i>	Food (Starch); medicinal (hemorrhoid, diabetes)	[28, 31, 32]
<i>Opuntia</i> sp Mill.; H	<i>Oro agogo</i>	Medicinal (abscess)	[38]
<i>Phyllanthus amarum</i> Schum. & Thonn.; H	<i>Eyin olobe</i> <i>Atayinso</i>	Medicinal (fever, diabetes, gonorrhoea, arthritis, hypertension, dysentery)	[6, 10, 23, 57]
<i>Phyllanthus floribundus</i> L.; S	<i>Gbigan</i> <i>Arunje eran</i>	Medicinal (dysentery)	[10]
<i>Phyllanthus muellerianus</i> (Kuntze) Exell; S	<i>Egungun eja</i>	Cosmetics (body cream)	[11]
<i>Phyllanthus niruri</i> L.; H	<i>Fehinsowo</i>	Medicinal (diabetes)	[28]
<i>Riciodendron heudelotti</i> (Baill.) Pierre; T	<i>Putu</i>	Timber	[40]
<i>Ricinus communis</i> L.; H	<i>Laa</i>	Medicinal (hemorrhoid, female infertility)	[24, 31]
<i>Tetracarpidium conophorum</i> (Mull.-Arg.) Hutch. & Dalz.; S	<i>Awusa</i> <i>Asala</i>	Food (fruit); medicinal (masticatory, giddiness, snake bite antidote, dysentery, diabetes)	[23, 28, 32]
Fabaceae			
<i>Abrus precatorius</i> L.; C	<i>Oju ologbo</i>	Medicinal (cold, cough, convulsion, tuberculosis, conjunctivitis, jaundice, yellow fever, hemorrhoid, diabetes)	[23, 28, 31, 44]
<i>Azelia africana</i> Pers.; T	<i>Apa-igbo</i>	Medicinal (stomach disorders, hernia, febrifuge, skin infections, psychosis); forage	[23, 41, 45, 48]
<i>Albizia adianthifolia</i> (Schumach.) W. Wight; T	<i>Bonabona</i>	Medicinal (diabetes)	[28]
<i>Albizia ferruginea</i> (Guill. & Perr.) Benth.; T	<i>Ayinre</i>	Medicinal (dysentery, constipation); fish poison	[26, 41]
<i>Albizia lebeck</i> L.; T	<i>Igbagbo</i>	Medicinal (hemorrhoid)	[31]
<i>Albizia zygia</i> (DC.) J.F. Macbr.; T	<i>Ayinre</i>	Medicinal (astringent); forage; timber and firewood	[26, 40, 41]
<i>Andira inermis</i> (Wright) DC.; T		Cosmetics (body cream)	[11]
<i>Arachis hypogaea</i> L.; H	<i>Epa</i>	Food; oil; beverage (groundnut milk); medicinal (insomnia, tuberculosis)	[23, 32, 44]
<i>Baphia nitida</i> Lodd.; T	<i>Irosun osun</i> <i>Iyerusun</i>	Medicinal (constipation, skin diseases, venereal diseases, small pox, flatulence, abortifacients); cosmetics (body cream); dye	[10, 11, 23, 26, 41]
<i>Berlinia grandiflora</i> (Vahl) Hutch. & Dalziel; S	<i>Apado</i>	Medicinal (anticancer)	[33]
<i>Brachystegia eurycoma</i> Harms; T	<i>Itipase eku nla</i>	Medicinal (diabetes)	[28]
<i>Caesalpinia bonduc</i> (L.) Roxb.; C	<i>Ayoo</i>	Medicinal (hemorrhoid, measles, diabetes); miscellaneous (seeds are used as counters board game)	[27, 28, 31]
<i>Caesalpinia pulcherrima</i> L.; S	<i>Eko omode</i>	Medicinal (purgative, emollient, abortifacient, emenagogue, poisoning, malaria fever)	[10, 23]
<i>Cajanus cajan</i> (L.) Millsp.; H	<i>Sese</i> <i>Otili</i>	Medicinal (yellow fever, Hemorrhoid); food (Seed)	[10, 31]
<i>Calliandra haematocephala</i> Hassk; S	<i>Apalofa</i> <i>Tude</i>	Cosmetics (body cream)	[11]
<i>Canvalia ensiformis</i> (L.) DC.; H	<i>Sese-nla</i>	Medicinal (used to deter snakes around homes)	[23]
<i>Cassia fistula</i> L.; T	<i>Asunwon</i>	Medicinal (female infertility, antisickling, ulcer)	[24, 36, 39]
<i>Cassia mimosoides</i> L.; T	<i>Kiniefimise</i>	Medicinal (Guinea worm infections)	[34]
<i>Cassia siamea</i> Lam.; T	<i>Kasia</i>	Medicinal (malaria fever)	[10, 37]
<i>Centrosema pubescens</i> Benth.; H	<i>Ewa-ahun</i>	Medicinal (skin disease); Food for rabbit and goat	[26]
<i>Crotolaria retusa</i> L.; H	<i>Kopo</i> <i>Koropo</i>	Medicinal (hemorrhoid, diabetes)	[28, 31]
<i>Cylicodiscus gabunensis</i> Harms.; T	<i>Olosan</i>	Medicinal (diabetes)	[28]
<i>Dalbergia lactea</i> Vatke; S	<i>Ojiji</i>	Cosmetics (face cleanser)	[11]
<i>Dalbergiella welwitschii</i> (Baker) Baker f.; T	<i>Paran</i>	Medicinal (purgatives, anthelmintics, menstrual disorder, hemorrhoid, diabetes)	[26, 28, 31]
<i>Daniellia oliveri</i> Hutch & Dalz.; T	<i>Uya</i>	Medicinal (convulsions); forage	[10, 41]
<i>Delonix regia</i> (Bojer) Raf; T	<i>Sekemene</i>	Cosmetics (smooth/fresh skin)	[11]
<i>Desmodium adscendens</i> G. Don.; H	<i>Epakun</i>	Medicinal (Guinea worm infections)	[34]
<i>Detarium microcarpum</i> Guill. & Perr; T	<i>Ogbogbo</i>	Medicinal (hemorrhoid, antisickling)	[31, 39]

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Table 1 (continued)

Plant Families, species and their habits	Vernacular names (Yoruba)	Uses	References
<i>Dialium guineense</i> Willd.; T	Awin	Food (Fruits); medicinal (hemorrhoid, Guinea worm infections); wood for mortar pestle	[31, 32, 34, 41]
<i>Dioclea reflexa</i> Hook. f.; C	Agbarin Epe aarin	Medicinal (dandruff, headlice, stimulant)	[23, 35]
<i>Dioclea scandens</i> Kunth; C	Dasa	Medicinal (fever)	[23]
<i>Distemonanthus benthamianus</i> Baill.; T	Eyan Ayan	Miscellaneous (chewing stick); for making drums	[51, 54]
<i>Erythrina senegalensis</i> DC.; T	Ologbosere	Cosmetics (body cream)	[11]
<i>Erythrina suaveolens</i> (Guill. & Perr) Brenan; T	Ero obo	Cosmetics (body cream)	[11]
<i>Erythrophleum suaveolens</i> (Guill. & Perr.) Brenan; T	Erun obo Obo	Medicinal (chickenpox, snake bites, skin diseases, wounds, anticancer, abscess, Guinea worm infections); for carving mortar and pestle; magical (chase away witchcrafts)	[3, 7, 9, 23, 34, 35, 41]
<i>Gliricidia sepium</i> (Jacq.) Kunth ex walp.; T	Ewe rere Agunmaniye	For darkening boards	[33]
<i>Glycyrrhiza glabra</i> L.; H		Medicinal (ulcer)	[36]
<i>Griffonia simplicifolia</i> Baill.; C	Tapara	Medicinal (scalp infection of children); cosmetics (body cream)	[11, 35]
<i>Hymenostegia afzelii</i> (Oliv.) Harms; T	Arigbodigbo	Medicinal (hemorrhoid)	[31]
<i>Indigofera macrophylla</i> Schumacher; S	Eniseara	Cosmetics (body cream)	[11]
<i>Lonchocarpus cyanescens</i> (Schum. & Thonn.) Benth.; S	Elu Talaaki	Local dye	[41]
<i>Lonchocarpus sericeus</i> (Poir.) Kunth ex DC.; S	Ipapo	Cosmetics (body cream)	[11]
<i>Mezoneuron benthamianum</i> (Bailli) Her. and Za; C	Amuranju	Medicinal (breast cancer)	[42]
<i>Mimosa pudica</i> L.; H	Patanmo Padimo	Medicinal (fibroid, deworming, hemorrhoid)	[10, 31]
<i>Mucuna pruriens</i> (L.) DC.; H	Ewe-ina Yerepe	Medicinal (intestinal worms, genito-urinary problems, female infertility, anti snake venom); roots for darkening black boards	[23, 24]
<i>Mucuna sloanei</i> Fawcett & Rendle; H	Esisi	Medicinal (hemorrhoids, skin disease, diuretics)	[23]
<i>Parkia biglobosa</i> (Jacq.) R.Br. ex G.Don.; T	Iru Irugba	Food (The seed can be licked like sweet or used as spices for vegetables); medicinal (hemorrhoid, abscess, diabetes, blood supplement); cosmetics (skin infections and burns)	[10, 30, 31, 32, 35, 42]
<i>Phaseolus vulgaris</i> L.; C	Ewa	Food (seed); cosmetics (body cream)	[11, 32]
<i>Ptilostigma thonningii</i> (Schum.) Milne Readhead; T	Abafe	Medicinal (jaundice, yellow fever, diabetes, malaria)	[28, 44, 46]
<i>Prosopis africana</i> (Guill. & Perr.) Taub.; T	Ayan	Medicinal (diarrhoea); (chewing stick)	[44, 54]
<i>Pterocarpus erinaceus</i> Poir.; T	Agbelosun Apepo	Medicinal (insomnia, dysentery, diarrhea); dye	[23, 41]
<i>Pterocarpus midbraedii</i> Harms; T	Ure Ire	Medicinal (anemia)	[30]
<i>Pterocarpus osun</i> W. G. Craib; T	Osun	Medicinal (asthma, candidiasis, antipyretic, eczema, skin infections, blood supplement, anti-sickling) Cosmetics (face powder); dye	[11, 23, 26, 30, 41]
<i>Pterocarpus santalinoides</i> DC.; T	Gbengbe	Medicinal (skin disease, astringent)	[23]
<i>Pterocarpus soyauxii</i> Taub.; T	Osun pupa Orosun	Local dye, medicinal (blood supplement)	[30, 41]
<i>Senna absus</i> L.; T	Akorere	Medicinal (hemorrhoid)	[31]
<i>Senna alata</i> (L.) Roxb.; T	Opako Asunwon oyinbo Asunran egbe	Medicinal (dysentery, skin diseases, anthelmintics, eye problems, skin infections, gonorrhoea, anticancer, vaginal discharge, painful menstruation, diabetes, Guinea worm infections); cosmetics (body cream)	[9, 10, 11, 26, 28, 33, 34, 42, 44, 45]
<i>Senna fistula</i> L.; T	Aidan tooro	Medicinal (diabetes, liver disorders, purgatives, rheumatism, hemorrhoid, cancer, fever, fibroid, dysentery)	[23, 33, 42, 44]
<i>Senna hirsuta</i> (L.) H.S. Irwin & Barneby; S	Sese orisa	Medicinal (skin infection, purgative)	[10, 26]
<i>Senna obtusifolia</i> (L.) H.S. Irwin & Barneby; H	Epa-ikun	Cosmetics (body cream)	[11]
<i>Senna occidentalis</i> (L.) Link.; T	Uyun Rere	Medicinal (typhoid fever, hemorrhoid, hypertension, measles); timber	[10, 27, 31, 40]
<i>Senna podocarpa</i> Guil. & Perr.; T	Asunwon ibile	Medicinal (hemorrhoid, malaria, venereal diseases, vaginal discharge)	[31, 37, 42]
<i>Senna tora</i> L.; H	Eru-asan-undegbe	Medicinal (hemorrhoid)	[31]
<i>Tamarindus indica</i> L.; T	Ajagbon Awin	Food (fruits)	[9, 32]
<i>Tephrosia vogelli</i> L.; S	Oronbeje	Medicinal (breast cancer)	[7]

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Table 1 (continued)

Plant Families, species and their habits	Vernacular names (Yoruba)	Uses	References
<i>Tetrapleura tetraptera</i> (Schum & Thonn (Taub.); T	<i>Aidan</i> <i>Aridan</i> <i>Oridan</i>	Medicinal (convulsion, poison antidotes, stomach problems, skin infections, insomnia, hemorrhoid, abscess, scalp infection of children, cancer, bone inflammation, female infertility, diabetes, antisking, breast cancer, Guinea worm infections); magical (chase away witches, evil spirits and snakes); cosmetics (body cream)	[7, 10, 11, 23, 24, 28, 33, 34, 35, 39, 42]
<i>Uraria picta</i> (Jacq) DC.; H	<i>Alupayida</i>	Medicinal (snakebite antidote, repositioning foetus, aphrodisiac, fibroid, female infertility); magical (whatever one says will come to pass)	[10, 23, 24, 42]
<i>Vachellia ataxacantha</i> DC.; T	<i>Ihu</i> <i>Ewon adele</i>	Medicinal (dysentery, backache); miscellaneous (rope)	[23]
<i>Vachellia nilotica</i> (L.) Wild ex. Del.; T	<i>Baani</i> <i>Booni</i>	Medicinal (skin diseases, insomnia, emollient, female infertility, hemorrhoid, scalp infection of children, abscess); cosmetics (body cream); forage	[11, 23, 24, 31, 35, 41]
<i>Vachellia sieberiana</i> DC.; T	<i>Sie</i>	Medicinal (hemorrhoid)	[34]
<i>Vigna unguiculata</i> (L.) Walp; C	<i>Eree</i>	Food; medicinal (Guinea worm infections)	[34]
<i>Zapoteca portoricensis</i> (Jacq.) H.M.Hern. <i>Calliandra haematocephala</i> (Jacq) Benth; T	<i>Tude</i>	Medicinal (candidiasis, vaginitis, anticancer, arthritis, hemorrhoid, antisking)	[6, 7, 9, 33, 39]
Gentianaceae			
<i>Anthocleista vogelii</i> Planch. <i>Anthocleista nobilis</i> G.Don <i>Anthocleista djalonenis</i> A. Chev <i>Anthocleista liebrechtsiana</i> De Wild & T Durand; T	<i>Sapo-sapo</i>	Medicinal (rashes, eczema, impotence, abdominal pain purgative, anticancer, hemorrhoid, diabetes, infertility, breast cancer, ulcer); cosmetics (body cream)	[7, 11, 23, 24, 26, 28, 33, 36]
Hypericaceae			
<i>Harungana madagascariensis</i> Lam. ex Poir.; T	<i>Amuje</i> <i>Elepo</i> <i>Aroje</i>	Medicinal (candidiasis, vaginitis, hemorrhoid, anticancer, dysentery, easy delivery); dye	[9, 33, 41, 42]
Icacinaeae			
<i>Icacina trichantha</i> Oliv; S	<i>Gbegbe</i>	Medicinal (rheumatism, toothache, abortifcent, purgative, abscess, diabetes)	[26, 28, 35]
<i>Pyrenacantha staudii</i> Engl; C	<i>Arukuna</i>	Medicinal (anticancer)	[33]
Lamiaceae			
<i>Celtis integrifolia</i> Lam.; T	<i>Lita</i> <i>Ape</i>	Timber	[40]
<i>Hoslundia opposita</i> L.; H	<i>Efinrin odo</i>	Medicinal (diabetes, scalp infection of children)	[11, 28, 35]
<i>Hyptis suaveolens</i> Poit.; H	<i>Sanmurin</i> <i>Jogbo</i>	Medicinal (malaria); mosquito repellent	[10, 37, 43]
<i>Leonotis nepetifolia</i> (L.) R. Br; H	<i>Agberulori</i>	Cosmetics (body cream)	[11]
<i>Ocimum basilicum</i> L.; H	<i>Arunbaba</i> <i>Efinrin wewe</i>	Medicinal (fever, cough, hemorrhoid, anticancer, diabetes, epistasis, ulcer)	[10, 28, 33, 36]
<i>Ocimum gratissimum</i> L.; H	<i>Efinrin nla</i>	Food (Spices); medicinal (insect repellent, antibacterial, pile, diabetes, typhoid, convulsion, diarrhoea, cold, gonorrhoea, vaginitis, hemorrhoid, measles, female infertility, malaria), mosquito repellent	[9, 23, 24, 27, 28, 31, 36, 43, 44]
<i>Solenostemon monostachyus</i> (P. Beauv) Briq.; H	<i>Olojongbodu</i> <i>Agogoigun</i>	Medicinal (convulsion, stomachache, diabetes)	[26, 28]
<i>Tectona grandis</i> L. F.; T	<i>Igi oba</i>	Timber; firewood; for wrapping food	[40]
Lauraceae			
<i>Cassytha filiformis</i> L.; H	<i>Omoniginigini</i> <i>Omonigelegele</i>	Medicinal (hypertension)	[43]
<i>Persea americana</i> Mill.; T	<i>Pia nla</i>	Food (fruit, oil); medicinal (blood tonic, ulcer)	[30, 36]
Lecythidaceae			
<i>Napoleonaea vogelii</i> Bak.f; S	<i>Ito</i>	Medicinal (anticancer)	[33]
Loranthaceae			
<i>Loranthus</i> L. sp.; H	<i>Etu</i>	Medicinal (measles)	[27]
<i>Viscum album</i> L.; C	<i>Afomo</i>	Medicinal (anemia, HBP, stroke, hemorrhoid, diabetes)	[23, 28, 31]
<i>Viscum rotundifolium</i> L.F.; C	<i>Afomo osan</i>	Medicinal (diabetes)	[28]
Lytheraceae			
<i>Lagerstroemia speciosa</i> (L.) Pers.; T	<i>Abere</i>	Medicinal (diabetes, stimulant)	[26, 28]
<i>Lawsonia inermis</i> L.; S	<i>Laali</i>	Medicinal (jaundice, gonorrhoea, ulcer, astringent, hemorrhoid, diabetes, infertility); cosmetics (temporary tattoo, nail coloring, henna); dye	[11, 23, 24, 28, 31, 41]
Malvaceae			
<i>Abelmoschus esculentus</i> (L) Moench; H	<i>Ila</i>	Food (vegetable); medicinal (antispasmodic, fever, gonorrhoea, diabetes, anti snake venom)	[23, 28, 32]
<i>Abutilon mauritianum</i> (Jacq.) Meidic.; S	<i>Furu</i>	Medicinal (pile, diarrhoea, cough, hemorrhoid)	[23, 31]
<i>Adansonia digitata</i> (L.) Gaertn.; T	<i>Igi ose</i>		[10, 11, 23, 28, 31, 32, 41, 46]

(continued on next page)

Table 1 (continued)

Plant Families, species and their habits	Vernacular names (Yoruba)	Uses	References
		Food (fruits); medicinal (malaria, hemorrhoid, asthma, kidney and bladder diseases, diabetes); Cosmetics (body cream); forage; for making ropes	
<i>Cola acuminata</i> (P. Beauv.) Shott and Endl.; T	<i>Obi abata</i>	Stimulant; medicinal (wounds, hemorrhoid, fever, breast cancer, diabetes, anemia); magical (to appease the gods so leaves could be active, used for divination)	[10, 28, 30, 32, 33, 42]
<i>Cola millenii</i> K.Schum.; T	<i>Obi edun</i>	Food (fruit); timber; firewood	[32, 40]
<i>Cola nitida</i> (Vent.) Schott. & Endl.; T	<i>Obi gbanja</i>	Stimulant; medicinal (hemorrhoid, anemia); timber, firewood, for wrapping food	[30, 31, 32, 40, 41]
<i>Corchorus olitorus</i> L.; H	<i>Ewedu</i> <i>Ooyo</i>	Food (vegetable); medicinal (safe delivery, asthma, diarrhea, fever, measles, diabetes, female infertility, blood supplement); magical (to curb infant killer diseases)	[10, 24, 26, 27, 28, 30, 32, 44]
<i>Glyphaea brevis</i> (Spreng.) Monach.; S	<i>Atori</i>	Medicinal (gonorrhoea, vaginitis, diabetes, fever, diarrhoea, toothache, female infertility); magical (a woman who desires a male child)	[9, 10, 24, 26, 28]
<i>Gossypium barbadense</i> L.; S	<i>Owu akese</i>	Medicinal (female infertility, malaria, wound dressing, ulcer)	[24, 37]
<i>Gossypium hirsutum</i> L.; S	<i>Owu</i>	Medicinal (dysentery, gonorrhoea, hemorrhoid, scalp infection of children, asthma, ulcer, dysentery, menstrual disorders, malaria); miscellaneous (used for adornment, for lighting)	[10, 31, 35, 37, 42]
<i>Grewia flavescens</i> Juss.; S	<i>Okere</i>	Medicinal (anticancer)	[7]
<i>Grewia mollis</i> Juss.; S	<i>Ogbolo</i>	medicinal (scalp infection of children)	[35]
<i>Grewia pubescens</i> P. Beauv.; S	<i>Afoforo igbo</i> <i>Ora igbo</i>	Medicinal (hemorrhoid, diabetes)	[28, 31]
<i>Grewia venusta</i> Fresen; S	<i>Oragbo</i>	Cosmetics (toilet soap)	[11]
<i>Hibiscus cannabinus</i> L.; S	<i>Oja koko</i>	Medicinal (Guinea worm infections)	[34]
<i>Hibiscus rosa-sinensis</i> L.; S	<i>Ododo pupa</i>	Medicinal (stomach upsets, boils, keloids)	[10]
<i>Hibiscus sabdariffa</i> L.; S	<i>Isapa</i> <i>Ewe zobo</i>	Medicinal (hemorrhoid, hypertension); beverage (zobo)	[31, 58]
<i>Hibiscus surattensis</i> L.; C	<i>Akonimora</i> <i>Ewe emu</i> <i>Sirikimindi</i>	Medicinal (blood tonic)	[30]
<i>Mansonia altissima</i> A. Chev.; T	<i>Otutu</i>	Timber	[40]
<i>Sida acuta</i> Burm. F.; H	<i>Osepotu</i> <i>Esoketu</i> <i>Isisanran</i>	Medicinal (boil, malaria, ulcer, analgesic, gonorrhoea, tuberculosis, diabetes, infertility)	[10, 23, 24, 28, 44]
<i>Sida cordifolia</i> L.; H	<i>Iso-obo</i>	Medicinal (hay fever, pile, rheumatism, gonorrhoea)	[23]
<i>Sida pilosa</i> Retz.; H	<i>Eesinle</i>	Medicinal (cuts, wounds)	[23]
<i>Sida rhombifolia</i> L.; H	<i>Iseketu pupa</i>	Medicinal (wounds, emollient)	[23]
<i>Sida veronicifolia</i> Lam.; H	<i>Eesin ile</i>	Medicinal (diabetes, aphrodisiac)	[28, 57]
<i>Sterculia tragacantha</i> Lindl.; T	<i>Owun</i>	Medicinal (stomachache, diarrhea, dysentery); timber	[26, 40]
<i>Theobroma cacao</i> L.; S	<i>koko</i>	Beverage; medicinal (gingivitis, toothache, stimulant, gonorrhoea, candidiasis, vaginitis, blood supplement); Preservation (dry leaves are used to preserve colanuts)	[9, 10, 26, 30]
<i>Triplochiton scleroxylon</i> k.Schum.; T	<i>Arere</i>	Timber	[40]
<i>Triumfetta cordifolia</i> A.Rich; S	<i>Etido</i> <i>Akeenii</i>	Medicinal (stomach upsets, diabetes)	[10, 28]
<i>Urena lobata</i> L.; H	<i>Ilasa-agborin</i> <i>Ilasa-omode</i>	Medicinal (dysentery, expectorant, emollient)	[23]
<i>Waltheria indica</i> L.; H	<i>Ewe-eje</i>	Medicinal (cough, fever, external hemorrhage, eyedrop, dysentery, blood tonic)	[23, 30, 31]
Melastomataceae			
<i>Heterotis buettneriana</i> (Cogn. ex Büttner) Jacq. Fél.; S	<i>Dogunrasin</i>	Medicinal (venereal diseases, cough)	[26]
<i>Heterotis rotundifolia</i> (SM) Jac-fel; S	<i>Dogunrasin</i>	Medicinal (venereal diseases, cough)	[57]
Meliaceae			
<i>Azadirachta indica</i> A. Juss.; T	<i>Dogoyaro</i>	Medicinal (malaria, eczema, jaundice, laxative, sore throat, hemorrhoid, diabetes, skin infections, ulcer); cosmetics (body cream); mosquito repellent; chewing stick	[10, 11, 23, 26, 28, 31, 36, 37, 43, 44, 45]
<i>Carapa procera</i> DC.; T	<i>Abo-oganwo</i>	Medicinal (carminative, purgative, ringworm, boils)	[23]
<i>Entandrophragma angolense</i> D.C. <i>Entandrophragma candollei</i> Harms.; T	<i>Jebo</i> <i>Ijebo</i> <i>Owura</i>	Medicinal (scalp infection of children, diabetes, black tongue, cough, blood tonic); fish poison	[28, 35, 41, 42]
<i>Entandrophragma cylindricum</i> Sprague <i>Entandrophragma macrophylla</i> A. Chev.; T	<i>Arunje</i> <i>Ijebo</i>	Medicinal (hemorrhoid, diabetes, blood supplement, ulcer)	[28, 31, 36]
<i>Khaya cylindricum</i> (Descr.) A Juss.; T	<i>Ijebo</i>	Medicinal (hemorrhoid)	[31]

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Table 1 (continued)

Plant Families, species and their habits	Vernacular names (Yoruba)	Uses	References
<i>Khaya grandifolia</i> C. DC. <i>Khaya senegalensis</i> (Descr.) A. Juss; T	Oganwo	Medicinal (convulsion, rheumatism, hemorrhoid, breast cancer, malaria, yellow fever, scalp infection of children, abscess, diabetes, female infertility, antisickling, skin infections); cosmetics (body cream); forage	[7, 10, 11, 23, 24, 26, 28, 33, 35, 37, 39, 41, 45, 46, 60]
<i>Pseudocedrela kotschy</i> (Schweinf.) Harms; T	Emi gbegiri Akodinrin	Medicinal (abscess, anticancer, female infertility, scalp infection of children); cosmetics (body cream)	[9, 11, 24, 33, 35]
<i>Tricalysia macrophylla</i> K. Schum; H	Oloja ebano	Medicinal (anticancer)	[33]
Menispermaceae			
<i>Chasmanthera dependens</i> Hochst; C	Ato Agba-ato	Medicinal (hemorrhoids, diuretics, convulsion, abscess, female infertility, antisickling, diabetes, ulcer)	[9, 23, 26, 28, 31, 35, 36, 39]
<i>Cissampelos mucronata</i> A. Rich; C	Jenjoko	Medicinal (hemorrhoid)	[31]
<i>Cissampelos owariensis</i> P. Beauv. Ex DC.; C	Ewe jokojee	Medicinal (blood tonic, lung disease, skin disease, diuretic, emmenagogue, tuberculosis, female infertility)	[23, 24, 44]
<i>Jateorhiza palmata</i> (Lam.) Miers.; C	Wowo	Medicinal (anticancer)	[33]
<i>Rhigiocarya racemifera</i> Miers; C	Lagbo-lagbo	Medicinal (Sedative, insomnia, aphrodisiac)	[26]
<i>Sphenocentrum jollyanum</i> Pierr.; S	Akerejupon	Medicinal (HBP, breast swelling related to menstrual cycle, cough, fever, jaundice, aphrodisiac, aphrodisiac, cancer, infertility, malaria)	[23, 24, 26, 33, 37]
<i>Stephania abyssinica</i> (Quart.-Dill. & A.Rich.) Walp.; C	Gbejedi	Medicinal (hemorrhoid, female infertility)	[24, 31]
<i>Triclisia subcordata</i> Oliv.; C	Alugbonran	Medicinal (breast cancer)	[7]
Moraceae			
<i>Antiaris africana</i> Engl.; T	Ooro	Medicinal (hemorrhoid, anticancer, purgatives, skin diseases, infertility, Guinea worm infections); timber, firewood	[24, 26, 31, 34, 40]
<i>Artocarpus altilis</i> (Parkinson) Fosberg; T	Berefurutu	Food, medicinal (fever, astringent, insomnia, sedative)	[23, 32]
<i>Ficus asperifolia</i> Miq.; S	Ipin	Medicinal (wounds, cough, diabetes)	[23, 28]
<i>Ficus capensis</i> Thunb; S	Opoto	Medicinal (oedema, leprosy, epilepsy, increase lactation, hemorrhoid, diabetes; blood tonic); forage	[23, 28, 30, 31, 41]
<i>Ficus exasperata</i> Vahl; S	Ewe Ipin	Medicinal (boil, scabies, stomach disorders, hemorrhoid, antipyretic, skin infections, ringworm fibroids, diabetes, female infertility, ulcer); miscellaneous (washing)	[23, 24, 28, 31, 36, 42, 44, 45]
<i>Ficus mucoso</i> Welw. ex Ficalho; T	Odan afomo	Medicinal (insomnia)	[23, 26]
<i>Ficus padana</i> Burm. f; T	Asoro	Medicinal (diarrhoea, pile, constipation, rashes)	[23]
<i>Ficus platyphylla</i> Del.; T	Igbagba ewe Afomo	Veterinary, Medicinal (diabetes)	[28]
<i>Ficus sycomorus</i> L.; S	Opeya	Medicinal (Skin irritations, gonorrhoea, urinary ailments, hemorrhoids, bone fracture)	[26]
<i>Ficus syncamore</i> L.; T	Sikamore	Medicinal (dysentery, sore throat)	[10]
<i>Ficus thonningii</i> Blume; T	Odan-abaa Roro-odan Odan	Medicinal (wounds, fever, dysentery, female infertility); magical (goodwill, success, promotion and seduction); firewood	[10, 23, 40]
<i>Ficus vallis-choudae</i> Del.; T	Ogunro	Medicinal (gastro-intestinal disorders, skin disease)	[23]
<i>Milicia excelsa</i> (Welw.) C.C. Berg; T	Iroko	Medicinal (nausea, malaria, abdominal pain, insomnia, diabetes, leprosy, malaria); Magical (protection against evil spirit); timber and firewood	[10, 26, 28, 37, 40]
<i>Morus mesozygia</i> Stapf; T	Agbagba	Medicinal (sedative, insomnia)	[26]
<i>Musanga cecropioides</i> R. Br. ex Tedlie; T	Aga Agbawo	Medicinal (dysentery, cough, anthelmintics, hypertension)	[26, 58]
<i>Myrianthus arboreus</i> P. Beauv.; T	Obisere Ewe-ade	Medicinal (dysentery, cough, anthelmintics)	[26]
<i>Treulia africana</i> Decne.; T	Afon	Medicinal (hemorrhoid, ulcer, cough, venereal diseases, anemia, malaria, Guinea worm infections)	[26, 31, 34, 36]
<i>Trilepisium madagascariense</i> DC.; T	Iwin eran	Medicinal (black tongue, diarrhoea)	[10]
Moringaceae			
<i>Moringa oleifera</i> Lam.; T	Gbogbonise Ewe igbale Idagba molye	Food; medicinal (malaria, hysteria, ease labour, diabetes, hemorrhoid, stomach pain, hypertension, blood supplement, stimulant)	[28, 30, 31, 61, 62]
Myrtaceae			
<i>Psidium guajava</i> L.; T	Goroba, goloba	Food (fruit), medicinal (hemorrhoid, fever, dysentery, diarrhea, malaria, stomachache, breastpain, infertility) Firewood	[10, 24, 26, 31, 32, 37, 40]
<i>Syzygium aromaticum</i> (L.) Merrill & Perry; T	Kannafuru	Medicinal (Pile, backache, scalp infection in children, diabetes, malaria, hemorrhoid, ulcer); mosquito repellants, cosmetics (hair growth)	[11, 28, 31, 35, 36, 46, 52]
<i>Syzygium samarangense</i> L.; T	Apu	Food (fruit)	[33]
Nyctaginaceae			
<i>Boerhavia diffusa</i> L.; H	Etiponla Olowojeja	Medicinal (skin diseases, smallpox, cough, scabies, antipyretic, hemorrhoid, ulcer)	[23, 31, 36]
Nymphaeaceae			

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Table 1 (continued)

Plant Families, species and their habits	Vernacular names (Yoruba)	Uses	References
<i>Nymphaea lotus</i> L.; H	<i>Osibata</i>	Medicinal (anticancer, arthritis, diabetes, female infertility, Guinea worm infections)	[6, 24, 28, 33, 34, 44]
Ochnaceae			
<i>Lophira alata</i> Banks ex C.F. Gaertn.; T	<i>Owo</i> <i>Pahan</i>	Medicinal (breast cancer, antisickling); cosmetics (body cream)	[7, 9, 11, 39]
Olacaceae			
<i>Olax gambecola</i> Baill.; T		Fish poison	[41]
<i>Olax subscorpioidea</i> Oliv.; T	<i>Ifan</i> <i>Ifon</i>	Medicinal (yellow fever, jaundice, mental disorders, breast cancer, hemorrhoid, scalp infection of children, abscess, diabetes, antisickling)	[7, 23, 28, 31, 35, 39]
<i>Schrebera arborea</i> A. Chev; T	<i>Opele</i>	Medicinal (scalp infection of children)	[35]
Pandaceae			
<i>Microdesmis keayana</i> J. Leonard; T	<i>Aringi</i>	Medicinal (antisickling)	[39]
<i>Microdesmis puberula</i> Hook. f. ex Planch.; T	<i>Apata</i> <i>Aringo</i>	Medicinal (dysentery, impotence, diarrhea, wound, female infertility)	[24, 26]
Papaveraceae			
<i>Argemone mexicana</i> L.; S	<i>Egun arugbo</i> <i>Ikan-ekun</i> <i>Mafowo kan omo mi</i>	Medicinal (jaundice, gonorrhea, diuretic, blenorrhoea, abscesses, taeniacide, Fresh wounds, measles, diabetes)	[10, 23, 27, 28]
Passifloraceae			
<i>Barteria nigritiana</i> Hook. F.; T	<i>Oko ofe</i>	Medicinal (abscess)	[35]
Pedaliaceae			
<i>Ceratotheca sesamoides</i> Endl; H	<i>Ekuku-ile</i>	Medicinal (to relief pains after circumcision)	[57]
<i>Sesamum indicum</i> L.; H	<i>Eluru</i>	Medicinal (female infertility)	[24]
Periplocaceae			
<i>Parquetina nigrescens</i> (Afzel.) Bullock; C	<i>Ogbo</i>	Medicinal (anticancer, blood tonic, hemorrhoids, malaria, ulcer)	[26, 30, 33, 36, 37, 44]
Petiveriaceae			
<i>Petiveria alliacea</i> L.; H	<i>Awogba</i>	Medicinal (anticancer, Guinea worm infections)	[31, 34]
Phyllanthaceae			
<i>Margaritaria discoidea</i> (Baill.) G.L.Webster; T	<i>Awe arunkuna</i>	Medicinal (ulcer)	[36]
Piperaceae			
<i>Peperomia pellucida</i> (L.) H.B & K.; H	<i>Renren</i> <i>Rinrin</i>	Medicinal (boils, keloid, hemorrhoid, measles, diabetes, hypertension, convulsion, bone fracture, Guinea worm infections)	[10, 26, 27, 28, 31, 34]
<i>Piper guineense</i> Schumach. & Thonn.; C	<i>Iyere</i>	Food (spice); medicinal (hemorrhoid, measles, anticancer, fever, pile, stomach disorders, diabetes, female infertility, blood tonic, anti-sickling)	[24, 26, 28, 30, 31, 32, 42]
Plantaginaceae			
<i>Scoparia dulcis</i> L.; H	<i>Ipa</i>	Medicinal (Keloids)	[10]
Plumbaginaceae			
<i>Plumbago zeylanica</i> L.; H	<i>Inabiri</i>	Medicinal (gonorrhea, candidiasis, vaginitis, breast cancer, infertility, antisickling, anti snake venom)	[7, 9, 24, 33, 39]
Polygalaceae			
<i>Carpolobia lutea</i> G. Don; H	<i>Osunsun</i>	Medicinal (rheumatism, toothache, arthritis, aphrodisiac, hemorrhoid)	[6, 23, 26, 31]
<i>Polygala arenaria</i> Oliv.; H	<i>Ose</i>	Medicinal (female infertility)	[24]
<i>Securidaca longipedunculata</i> Fresen.; T	<i>Ipeta</i>	Medicinal (candidiasis, vaginitis, gonorrhea, hemorrhoid, abscess, anticancer, diabetes, antisickling)	[9, 28, 33, 35, 39]
Portulacaceae			
<i>Portulaca oleracea</i> L.; H	<i>Papasan</i>	Medicinal (fever, skin disease, astringent, diabetes)	[26, 28]
<i>Talinum triangulare</i> (Jacq.) Willd.; H	<i>Gbure</i>	Food (vegetable); medicinal (boil, high fever, hemorrhoid, HBP, blood supplement)	[10, 31, 42, 44]
Rubiaceae			
<i>Canthium subcordatum</i> D.C; T	<i>Igi-elere</i>	Medicinal (hemorrhoid)	[31]
<i>Chassalia kolly</i> (Schumach.) Hepper; S	<i>Isepe agbe</i>	Medicinal (gonorrhea, vaginitis)	[9]
<i>Coffea canephora</i> pierre ex A. Froehner; T	<i>Kafi-igbo</i>	Stimulant	[47, 62]
<i>Fleroya stipulosa</i> (DC.) Y.F.Deng; T	<i>Opepe</i>	Timber	[40]
<i>Gardenia ternifolia</i> Schumach; S	<i>Oruwon</i>	Cosmetics (body cream)	[11]
<i>Macrosphyra longistyla</i> (DC.) Hook.F.; S	<i>Efun</i>	Medicinal (ulcer)	[36]
<i>Massularia acuminata</i> (G. Don) Bullock ex Hoyl; T	<i>Orin ijebu</i> <i>Pako-ijebu</i>	Chewing stick	[64]
<i>Mitracarpus villosus</i> (S.W.)D.C.; H	<i>Ewe ifo</i>	Medicinal (skin infections especially eczema)	[10]

(continued on next page)

Table 1 (continued)

Plant Families, species and their habits	Vernacular names (Yoruba)	Uses	References
<i>Mitragyna ciliata</i> Aubrev. & Pellegr.; T		Thatching and wrapping food	[41]
<i>Morinda lucida</i> Benth.; T	Oruwo	Medicinal (anticancer, malaria, candidiasis, vaginitis, diabetes, female infertility)	[9, 24, 28, 33, 37, 44, 46]
<i>Nauclea diderrichii</i> (De Wild.) Merr; T	Opepe	Medicinal (Gonorrhoea, malaria, dysentery, pile, Guinea worm infections)	[26, 34]
<i>Nauclea orientalis</i> (L.) L.; T	Egbesi Gberesi	Medicinal (cough, measles, menstrual disorders, stomach aches, jaundice, hemorrhoid, yellow fever, scalp infection of children, abscess, anticancer, diabetes, female infertility, malaria); forage	[23, 24, 28, 33, 35, 37, 41, 44]
<i>Rothmannia hispida</i> (K. Schum.) Fagerl.; S	Buje	Local dye	[41]
<i>Spermacoce verticillata</i> (L.) G. Mey. <i>Spermacoce ocyroides</i> (Burm. F.) DC.; H	Irawo-ile	Medicinal (gonorrhoea, antibilharzia, antileprosy, abortifacient, diuretic); cosmetics (body cream)	[11, 23]
Rutaceae			
<i>Citrus aurantifolia</i> (Christm.) Swingle.; T	Oronbo wewe, Osan wewe	Food (Fruit); Medicinal (whitlow, anticancer, toothache, ulcer, fever, diabetes, female infertility, malaria, vomiting); mosquito repellent, cosmetics (body cream)	[10, 11, 24, 28, 32, 33, 37, 42]
<i>Citrus sinensis</i> L.; T	Osan	Food (fruit); medicinal (cough, sore throat, malaria, carminative, typhoid fever, mosquito repellent, anticancer, diabetes); firewood	[10, 23, 28, 32, 33, 37, 40, 43, 47]
<i>Citrus limon</i> L.; T	Oronbo	Food (fruit); medicinal (boil, cancer, pain relief, abortion, hemorrhoid, diabetes, antisickling, malaria); mosquito repellent	[10, 25, 28, 29, 34, 36, 41]
<i>Citrus paradisi</i> Macfad.; T	Osan paya	Food (fruit); medicinal (malaria); mosquito repellent	[37, 47]
<i>Clauseana anisata</i> (Willd) Hook f. ex Benth; T	Atapari oboku	Medicinal (anticancer, hemorrhoid, scalp infection of children); firewood	[7, 30, 35, 40]
<i>Harrisonia abyssinica</i> Oliv.; T	Arunje eran	Medicinal (scalp infection of children)	[35]
<i>Zanthoxylum gillettii</i> (De Wild.) P.G. Waterman <i>Zanthoxylum leprieurii</i> Guill and Perr. <i>Zanthoxylum rubescens</i> Planch ex Hook F.; T	Igi ata	Medicinal (antisickling)	[30]
<i>Zanthoxylum zanthoxyloides</i> (Lam.) Zepern. & Timler.; T	Orin ata	Medicinal (tuberculosis, arthritis, urinary disorders, antisickling, rheumatism); miscellaneous (chewing stick)	[23, 39, 53]
Salicaceae			
<i>Oncoba spinosa</i> Forssk.; T	Gbonsere	Medicinal (arthritis, ulcer)	[6, 36]
Santalaceae			
<i>Okoubaka aubrevillei</i> Pellegr and Normand; T	Asorin Oba igi	Medicinal (blood tonic); for making drums	[33, 51]
Sapindaceae			
<i>Allophylus africanus</i> P. Beauv; T	Ekan ehoro	Medicinal (hemorrhoid)	[31]
<i>Blighia sapida</i> K.D. Koenig.; T	Isin	Food, medicinal (fibroid, abnormal pregnancy, diabetes); timber	[10, 28, 32, 40]
<i>Cardiospermum halicacabum</i> L.; C	Shaworo	Medicinal (skin eruption, piles, rheumatism, syphilitic sores, amenorrhea, hemorrhoid)	[23, 31]
<i>Deinbollia pinnata</i> (Poir.) Schumach. & Thonn; H	Ogiri Ekun	Medicinal (measles, Guinea worm infections)	[27, 34]
<i>Lecaniodiscus cupanioides</i> Planch. Ex Benth.; T	Akika Opon Aaka	Medicinal (fever, burns, aphrodisiac, purgative, typhoid, jaundice, arthritis, cough, scalp infection of children)	[6, 23, 26, 35, 37]
<i>Paullinia pinnata</i> L.; C	Kankansela Alalamodin	Medicinal (Jaundice, leprosy, aphrodisiac, dysentery, anticancer, scalp infection in children, dysentery, stomach pains)	[10, 26, 33, 35]
Sapotaceae			
<i>Chrysophyllum albidum</i> G. Don; T	Agbalumo	Food (fruit); medicinal (stomach disorder, fever, hemorrhoid, nausea, vomiting, diabetes, malaria); timber; seed as educational aid (counter for addition and subtraction in elementary mathematics)	[23, 26, 28, 31, 32, 37, 40]
<i>Synsepalum dulcificum</i> (Radlk.) Engl.; S	Agbayun	Food (fruit), medicinal (hemorrhoid)	[31, 32]
<i>Vitellaria paradoxa</i> Gaertn. F.; T	Igi oori Emi gidi	Food (oil); Medicinal (nasal decongestion, anthelmintic, scalp infection of children, abscess, measles, antisickling, body pains); cosmetics (moisturiser, emollient); miscellaneous (for making mortar and pestle); soap making	[11, 23, 27, 32, 35, 39, 41]
Simaroubaceae			
<i>Hannoa undulata</i> Guill & Perr; T	Orij	Magical (escaping repercussions of an act)	[34]
Solanaceae			
<i>Capsicum annum</i> L.; H	Ata ijosi	Food (spice); medicinal (hemorrhoid, female infertility)	[24, 31, 32]
<i>Capsicum frutescens</i> L.; H	Ata were Ata wewe	Food (spices); medicinal (fever, dysentery, stimulant, anticancer, severe sometimes spiritual skin infection, measles, diabetes, breast cancer, antisickling)	[7, 10, 23, 27, 28, 32, 33, 37, 39]
<i>Datura metel</i> L.; H	Gegemu Apikan	Medicinal (Asthma, rheumatism); Stimulant	[47]

(continued on next page)

Table 1 (continued)

Plant Families, species and their habits	Vernacular names (Yoruba)	Uses	References
<i>Nicotiana tabacum</i> L.; H	<i>Taba</i>	Medicinal (HIV/AIDS, gonorrhoea, candidiasis, epistaxis, typhoid fever, hemorrhoid, cancer, diabetes); cosmetics (body cream and lotion or for hair growth); Local cigar and snuff (leaves); snake repellent; anti-snake venom	[9, 10, 11, 28, 31]
<i>Physalis angulata</i> L.; H	<i>Koropo</i>	Medicinal (fever, malaria, female infertility)	[24, 37, 42]
<i>Solanum aethiopicum</i> L.; H	<i>Igba Ikan</i>	Food (fruit, vegetable, soup); medicinal (arthritis, Guinea worm infections)	[6, 32, 34]
<i>Solanum lycopersicum</i> Dunal; H	<i>Tomati</i>	Food (vegetable)	[32]
<i>Solanum macrocarpon</i> L.; H	<i>Igbagba</i>	Food (vegetable)	[21]
<i>Solanum nigrum</i> L.; H	<i>Odu</i>	Food (vegetable); mosquito repellent; medicinal (eye problems, blood tonic, and malaria); anti snake venom	[10, 30, 37, 43]
<i>Solanum scabrum</i> Mill.; H	<i>Ogunmo</i>	Food (vegetables)	[65]
<i>Solanum torvum</i> Sw.; H	<i>Igbayanrin-elegun</i>	Medicinal (hemorrhoid)	[31]
Ulmaceae			
<i>Celtis zenkeri</i> Engl.; T	<i>Itagidi</i>	Medicinal (Guinea worm infections)	[34]
<i>Trema orientalis</i> (L.) Blume; T	<i>Ofe Afefe</i>	Medicinal (hemorrhoid, fever, cough, dysentery, pneumonia, jaundice, malaria); magical (to make babies walk on time, for appearing and disappearing)	[10, 26, 31, 37]
Urticaceae			
<i>Laportea aestuans</i> (L.) Chew; H	<i>Ojongbodu</i>	Medicinal (piles, burns, astringent, Guinea worm infections); Cosmetics (body cream)	[11, 26, 34]
<i>Laportea ovalifolia</i> (Schum.) Chew; H	<i>Ewe esinsin</i>	Medicinal (asthma, bleeding, kidney disorder, diarrhea)	[25]
<i>Urtica dioica</i> L.; H	<i>Fuya-fuya</i>	Medicinal (hemorrhoid)	[31]
Verbenaceae			
<i>Clerodendrum volubile</i> P. Beauv; H	<i>Efo dagba</i>	Food (vegetable); medicinal (gout rheumatism, abortifacients, pregnancy tonic, oedema, hemorrhoid)	[31, 66, 67, 68]
<i>Lantana camara</i> L.; H	<i>Ewon-agogo Ewon-adele</i>	Medicinal (epilepsy, hypertension, nervous disorder, mosquito repellent)	[25, 43]
<i>Lippia multiflora</i> Moldenke; H	<i>Efirin oko Efirin Odan</i>	Medicinal (antipyretic, malaria, sleeping sickness)	[23]
<i>Stachytarpheta indica</i> (L.) Vahl; H	<i>Panle</i>	Medicinal (cough, malaria, low blood pressure, epilepsy, dental problem)	[25]
<i>Stachytarpheta jamaicensis</i> (L.) Vahl; H	<i>Apari-igun</i>	Medicinal (diabetes)	[28]
<i>Vitex doniana</i> Sweet.; T	<i>Oori-nla</i>	Food, Medicinal (cough, stomachache, hypertension, hemorrhoid, ringworm, bad breathe, inflammatory swelling of joints, catarrh, gonorrhoea)	[10, 23, 31, 32]
Violaceae			
<i>Hybanthus enneaspermus</i> (L.) F. Muell.; H	<i>Abiwere</i>	Medicinal (easy delivery, female infertility)	[24, 42]
<i>Rinorea welwitschii</i> (Oliv.) Kuntze; T	<i>Iparoko Orinkase</i>	Medicinal (Guinea worm infections)	[34]
Vitaceae			
<i>Cissus populnea</i> Guill. & Perr.; C	<i>Ogbole Ajawa</i>	Medicinal (female infertility, Guinea worm infections)	[24, 34]
<i>Cissus quadrangularis</i> L.; C	<i>Ogbakiiki</i>	Medicinal (bone fractures)	[3]

(T: Trees; S: Shrub; H: Herb; C: Climber.

with the authors' citations. From the data gathered, 493 angiosperm species from 99 families used for a variety of purposes were identified in the region. Of these, only 65 species (13.2%) from 23 families were monocots, while 428 species (86.8%) from 76 families were dicots. The family Fabaceae provided the highest number of useful botanicals (72 species), followed by Euphorbiaceae (32 species), Malvaceae (30 species), and Asteraceae (25 species). Among the monocots, the number of useful plants in Poaceae, Arecaceae, Araceae, Dioscoreaceae, Asparagaceae and Marantaceae, were 12, 7, 6, 5, 4 and 4, respectively. Similar studies [18, 19] have also recorded Fabaceae as the most used plant family. The abundance of plants in the Fabaceae family in this study may be an indication of being the largest plant family in Nigeria followed by Poaceae [20]. Fabaceae has also been described as the second most important plant family in the world [15]. Based on habit, 180 species were identified as trees, while 82, 167 and 64 species occurred as shrubs, herbs, and climbers, respectively. The number of species used for medicinal purposes such as stomach disorders, ulcers, arthritis, STDs, hemorrhoids, sickle cell disorder, and cosmetics were the

highest (418; 71%), followed by 85 species (14%) used as food and drinks, 65 species (11%) for other uses while 22 species (4%) were used for magic and witchcraft (Figure 1).

2.1. Food and drinks

Of the recorded plants, 85 were identified as food with most of the parts eaten being leaves, roots, fruits, and seeds. Some plants are fermented and taken as intoxicants; the sap of some others are consumed directly for the same purpose. The various categories of plants used as edibles include:

2.1.1. Carbohydrate

Nine (9) of the recorded plants including *Artocarpus altilis*, *Dioscorea dumetorum*, *Dioscorea alata*, *Ipomea batata*, *Manihot esculenta*, *Oryza sativa*, *Sorghum bicolor*, *Xanthosoma sagittifolium* and *Zea mays*, are important sources of carbohydrates. Species of *Dioscorea* and *Xanthosoma*

Table 2. List of monocots used by the Yoruba people of southwestern Nigeria, their habits, vernacular names and uses.

Plant Families, species and their habits	Vernacular names (Yoruba)	Uses	References
Amaryllidaceae			
<i>Crinum jagus</i> (Thompson) Dandy <i>Crinum glaucum</i> A. Chev.; H	<i>Ogede odo</i> <i>Isu meri</i>	Medicinal (anthelmintics, purgative, abscess, anti-cancer, ulcer)	[26, 33, 35, 36]
Araceae			
<i>Anchomanes difformis</i> (Blume) Eng; H	<i>Isu ogirisako</i> <i>Eego</i>	Medicinal (cold shivers)	[31, 35]
<i>Caladium bicolor</i> Vent.; H	<i>Eje-jesu</i>	Medicinal (ulcer)	[36]
<i>Colocasia esculenta</i> (L.) Schott; H	<i>Koko pupa</i> <i>Isu baka</i>	Magical (to stop rainfall); medicinal (hemorrhoid, abscess, Guinea worm infections, strengthen premature babies)	[10, 31, 34, 35]
<i>Culcasia scandens</i> P. Beauv.; C	<i>Agunmona</i>	Medicinal (stomach ache, anticancer); cosmetics (body cream)	[11, 26, 33]
<i>Pistia stratiotes</i> L.; H	<i>Oju oro</i>	Medicinal (anticancer, Guinea worm infections)	[33, 34, 44]
<i>Xanthosoma sagittifolium</i> L. Schott; H	<i>Koko</i>	Food (leaves and tubers)	[32]
Arecaceae			
<i>Cocos nusifera</i> L.; T	<i>Agbon</i>	Food (Fruit, spice); cosmetics (body cream); medicinal (tuberculosis, liver ailments, migraine, dysentery, toothache, hemorrhoid, diabetes, blood tonic); construction (roofing)	[11, 26, 28, 30, 31, 32, 44]
<i>Elaeis guineensis</i> Jacq.; T	<i>Ope-eyin</i>	Food (palm oil); alcoholic beverage (emu); medicinal (ulcer, hemorrhoid, menstrual pains, measles, anticancer, diabetes, female infertility, Guinea worm infections); magical (immunity against demonic and spiritual attacks, for divination); cosmetics (body cream and local soap); construction	[10, 11, 24, 27, 28, 32, 33, 34, 36]
<i>Eremospatha wendladiana</i> Dammer ex Becc.; C	<i>Ukan</i> <i>Egbee</i>	Thatching	[41]
<i>Laccosperma secundiflorum</i> (G.Mann & H.Wendl.) Kuntze; C	<i>Okuku</i> <i>Iko</i>	crafts (for making cane and cane chairs)	[41]
<i>Raphia hookeri</i> Mann. & Wended; T	<i>Apako</i> <i>Iko</i> <i>Ope oguro</i>	Alcoholic beverage (emu); medicinal (hemorrhoid, measles); rope	[26, 31, 32]
<i>Raphia mambillensis</i> Otedoh; S	<i>Alugbanko</i>	Medicinal (female infertility)	[24]
<i>Raphia regalis</i> Becc.; S	<i>Eriko</i>	Thatching	[41]
Asparagaceae			
<i>Agave sisalana</i> Perrine; H		For making rope	[49]
<i>Asparagus africanus</i> Lam.; C	<i>Aluki</i>	Medicinal (diabetes)	[28]
<i>Dracaena manni</i> Baker; T	<i>Peregun</i>	Cosmetics (body cream)	[11]
<i>Sansevieria liberica</i> Ger. & Labr.; H	<i>Oja ikoko</i> <i>Itakun</i>	Medicinal (scalp infection of children, diabetes, Guinea worm infections)	[28, 34, 35]
Asphodelaceae			
<i>Aloe barteri</i> (baker); H	<i>Eti erin</i> <i>Ida egun</i> <i>Ida orisa</i>	Medicinal (ringworm, pile, skin infection, aphrodisiac, and anticancer)	[23, 33]
<i>Aloe vera</i> (L.) Burm F.; H	<i>Ahon erin</i>	Medicinal (skin diseases, wounds, Guinea worm, hemorrhoid, ulcer) and cosmetics (body cream)	[11, 23, 31, 36]
Bromeliaceae			
<i>Ananas comosus</i> (L.) Merr.; H	<i>Ope oyinbo</i>	Food (fruit); beverage (adoyo); medicinal (asthma, purgative, gonorrhoea, hemorrhoid, cancer, digestive problem, cough, typhoid, malaria, diabetes)	[9, 26, 28, 32, 33, 37, 44]
Cannaceae			
<i>Canna indica</i> L.; H	<i>Ido</i>	Medicinal (malaria, Guinea worm infections); seeds used for children games	[34, 37]
Commelinaceae			
<i>Aneilema beniniense</i> (P. Beauv.) Kunth; H	<i>Godobo</i>	Medicinal (laxatives, skin diseases)	[26]
Costaceae			
<i>Costus afer</i> Ker-Gawl.; H	<i>Ireke-omode</i> <i>Tete-egungun</i>	Medicinal (Nausea, stomachache, aphrodisiac)	[26]
Cyanastraceae			
<i>Cyanastrum cordifolium</i> Oliv.; H		Local dye	[41]
Cyperaceae			
<i>Cyperus articulatus</i> L.; H	<i>Eni-oore</i>	Veterinary uses	[38]
<i>Mariscus flabelliformis</i> Kunth; H	<i>Ikeregun</i>	Food (spice)	[56]
<i>Scleria depressa</i> (C.B. Clarke) Nelmes; H	<i>Labe-labe</i>	Medicinal (pain relief)	[26]
Dioscoreaceae			
<i>Dioscorea alata</i> L.; C	<i>Isu</i> <i>Usu</i>	Food (Starch); medicinal (hemorrhoid)	[31, 32]
<i>Dioscorea bulbifera</i> L.; C	<i>Isu-emina</i>	Medicinal (boils, fever)	[26]

(continued on next page)

Table 2 (continued)

Plant Families, species and their habits	Vernacular names (Yoruba)	Uses	References
<i>Dioscorea dumetorum</i> (Knuth) Pax.; C	Esuru	Food, medicinal (pain relief, malaria, abdominal pain, analgesic, skin diseases, antibilharzia)	[10, 23, 26, 32]
<i>Dioscorea rotunda</i> Poir.; C	Isu-igo	Medicinal (measles)	[27]
<i>Tacca leontopetaloides</i> (L.) Kuntze; C	Adosu	Medicinal (female infertility)	[24]
Hydroxylaceae			
<i>Curculigo pilosa</i> (Schum & Thonn) Engl.; H	Epakun	Medicinal (hemorrhoid, abscess, diabetes, female infertility)	[24, 28, 31, 35]
Iridaceae			
<i>Gladiolus dalenii</i> Van Geel; H	Baka	Medicinal (gonorrhoea, vulvovaginal candidiasis, hemorrhoid, diabetes)	[9, 28, 31]
Irvingiaceae			
<i>Irvingia gabonensis</i> (AubryLecomte ex O'Rorke) Baill.; T	Oro Iro	Food, Medicinal (diarrhoea, stomach pains associated with menstruation)	[10, 26, 32]
<i>Irvingia grandifolia</i> (Engl.) Engl.; T	Karakoro	Medicinal (ulcer), Timber	[36, 40]
<i>Klainedoxa gabonensis</i> Pierre; T	Kanakoru	Cosmetics (body cream)	[11]
Liliaceae			
<i>Allium ascalonicum</i> L.; H	Alubosa elewe	Food (spice); medicinal (convulsion, dysentery, anticancer, hemorrhoid, scalp infection in children, abscess, female infertility, diabetes, Guinea worm infections); cosmetics (body cream)	[7, 11, 23, 24, 28, 31, 32, 33, 34, 35, 42]
<i>Allium cepa</i> L.; H	Alubosa onisu	Food (spice); medicinal (anticancer, diabetes)	[28, 32, 33]
<i>Allium sativum</i> L.; H	Ayuu	Food (spice); medicinal (anti asthma, hypertension, cough, rheumatism, pile, hemorrhoid, anticancer, aphrodisiac, diabetes, Guinea worm infections, malaria, ulcer); cosmetics (body and hair cream); mosquito repellent	[11, 23, 28, 31, 32, 33, 34, 36, 37, 42, 44, 57]
Marantaceae			
<i>Maratanchloa cuspidata</i> (Roscoe) Milne-Redh; H	Toto Ido	Crafts (mat weaving)	[41]
<i>Megaphrynium macrostachyum</i> (K.Schum.) Milne-Redh; H	Gbodogi	For wrapping food	[41]
<i>Sarcophrynium brachystachyum</i> (Benth.) K. Schum.; H	Ewe-iran	Crafts (mat weaving); for wrapping food	[41]
<i>Thaumatococcus daniellii</i> (Benn.) Benth. & Hook. f.; H	Ewe moimoi Ewe iran	Medicinal (diabetes, emetic, skin infection); craft (mat weaving); food (sweetener); for wrapping food	[23, 26, 59]
Musaceae			
<i>Musa acuminata</i> L.; H	Ogede paranta	Food (Fruit); medicinal (eczema, hemorrhoid, diabetes, diarrhea, dysentery, epilepsy, goiter, gonorrhoea, anemia, infertility); magical (breast enlargement); soap making	[10, 24, 26, 28, 32, 44]
<i>Musa paradisiaca</i> L.; H	Ogede agbagba	Food (Vegetable); medicinal (low sperm count, heart problems, blood tonic, convulsion, pile, burns, hemorrhoid, anticancer, diabetes, malaria, ulcer); magical (resistance against attacks "madarikan"); soap making	[25, 28, 30, 33, 36, 37, 44]
Myristicaceae			
<i>Pycnanthus angolensis</i> (Welw.) Warb.; T	Akomu	Medicinal (black tongue, cough, fever, skin infections, anti cancer, malaria)	[26, 33, 37]
Pandaneaceae			
<i>Pandanus candelabrum</i> P. Beauv.; S		Crafts (mat weaving)	[41]
Poaceae			
<i>Axonopus compressus</i> Engl. & Diels; H	Idi	Medicinal (hemorrhoid)	[31]
<i>Bambusa vulgaris</i> Schrad. ex J.C. Wendl.; S	Oparun	Medicinal (gonorrhoea, syphilis, abortifacient, measles, hemorrhoid, anthelmintics, emmenagogue, diabetes); firewood, construction	[23, 26, 27, 28, 31, 40, 44]
<i>Cymbopogon citratus</i> (D.C) Stapf; H	Koriko oba Ewe tii	Medicinal (malaria, rheumatism, nervous disorder, yellow fever, jaundice, cough, strains, diaphoretic, mosquito repellent, typhoid fever, hemorrhoid, scalp infection of children, ulcer); beverage	[10, 23, 25, 31, 35, 36, 37, 43, 44]
<i>Cynodon dactylon</i> (L.) Pers.; H	Koriko bamubu	Medicinal (hemorrhoid)	[31]
<i>Echinochloa pyramidallis</i> (Lam.) Hitchc. And Chase; H	Sabe	Veterinary	[47, 63]
<i>Eleusine indica</i> Gaertn.; H	Gbagi	Medicinal (poison and snakebite antidote)	[10]
<i>Oryza sativa</i> L.; H	Iresi	Food (starch)	[32]
<i>Oxytenanthera abyssinica</i> (A. Rich.) Munro; S	Parun pupa Parun funfun	Medicinal (scalp infections in children)	[35]
<i>Pennisetum purpureum</i> Schum.; H	Esun	Medicinal (hemorrhoid); Forage (sheep and goat)	[31]
<i>Saccharum officinarum</i> L.; H	Ireke	Food (stem); medicinal (cancer, headache, joint pains, diabetes)	[28, 32, 33, 42, 44]
<i>Sorghum bicolor</i> (L.) Moench; H	Poroporo baba Oka baba	Food (grain); food colorant (leaf); medicinal (malaria, fever, skin infections, blood tonic, gonorrhoea, syphilis, diabetes, anti-sickling, female infertility); for making broom	[9, 23, 24, 28, 30, 32, 44]
<i>Zea mays</i> L.; H	Agbado Igbado	Food (seed for starch); alcoholic beverage, making fire (husk); medicinal (hemorrhoid, urinary troubles, diabetes, ulcer)	[28, 31, 32, 36, 42]

(continued on next page)

Table 2 (continued)

Plant Families, species and their habits	Vernacular names (Yoruba)	Uses	References
Smilacaceae			
<i>Smilax anceps</i> Willd; C	<i>Kaasan</i> <i>Ewo</i>	Medicinal (scalp infection of children); cosmetics (body cream)	[11, 35]
Zingiberaceae			
<i>Aframomum melegueta</i> K. Schum.; H	<i>Ataare</i>	Food (spice); medicinal (stimulant, smallpox, wound, cough, measles, anti-sickling, anticancer, pile, malaria, hemorrhoid, abscess, toothache, irregular menstrual flow, female infertility, diabetes, ulcer); magical (for thunderbolt)	[10, 23, 24, 27, 28, 32, 33, 35, 36, 42, 44, 46]
<i>Curcuma longa</i> L.; H	<i>Atale pupa</i>	Medicinal (anticancer, anti snake venom, malaria, ulcer); cosmetics (body cream);	[11, 33, 36, 37]
<i>Zingiber officinale</i> Roscoe; H	<i>Atale funfun</i>	Food (spices); medicinal (digestive disorders, typhoid, asthma, hemorrhoid, anticancer, diabetes, infertility, malaria, ulcer)	[23, 24, 28, 32, 33, 36, 37, 44]

T: Trees; S: Shrub; H: Herb; C: Climber.

sagittifolium are cooked and pounded to make one of the most important Yoruba delicacies called 'iyán', which can be eaten with varieties of soups and is generally regarded as an energy-rich food. They can also be roasted and eaten as a snack or cooked and eaten directly with the oil from *Elaeis guineensis* fruits. They are also sometimes cooked with the seeds of *Phaseolus vulgaris*. *Artocarpus altilis* is also used to prepare 'iyán' in the same manner, but it is less popular. *Manihot esculenta* is mashed, dried and roasted to make one of the most popular and widely eaten Yoruba food called 'garri'. It can also be fermented to make 'fufu', another food delicacy among the Yorubas. *Zea mays* is one of the most important in this category as it is used to make pap (ogi), while the waste product from the process (*eeri*) is used to feed livestock especially, goats and sheep. *Sorghum bicolor* is also used for this same purpose though less desirable. *Zea mays* is blended and cooked in leaves of *Thaumatococcus daniellii* to make maize pudding known as 'abari' and can be roasted and sprinkled with sugar and fried to make maize fries (Monsa), a type of snack in the western and northern part of Nigeria. It is also roasted with the cob and eaten as snacks, cooked with the seeds of *Phaseolus vulgaris* or roasted off the cob to make popcorn. It may also be fermented to make local gin. *Oryza sativa* is one of the most widely consumed staples food among the Yorubas, though it was introduced more recently. It is used to make different local and intercontinental dishes.

2.1.2. Vegetables

Even though vegetables are an integral part of meals in southwestern Nigeria, a substantial number of vegetables are not cultivated but growing in the wild making them unavailable to many people [21]. This menace has led to the underutilization of many of these indigenous vegetables. Ajao et al. [22] have reported the invaluable health advantage of *Clerodendrum volubile*, and significant antioxidant properties of other indigenous vegetables such as *Crassocephalum crepidoides*, *Solanum macrocarpon*, and *Trichosanthes cucumerina* have also been reported

[21]. Twenty-two (22) species spread across 13 families are eaten as vegetables in Yoruba land.

T: Trees; S: Shrub; H: Herb; C: Climber.

The family Asteraceae is represented with five species, Solanaceae with four species while Amaranthaceae, and Cucurbitaceae are represented with three species each, Malvaceae and Solanaceae with two species each, while each of Arecaceae, Basellaceae, Brassicaceae, Cucurbitaceae, Portulacaceae, Poaceae, and Verbanaceae are represented with one species. All the recorded species are consumed as leafy vegetables except *Saccharum officinale* where the stem is consumed and *Telfaria occidentalis* (both the seeds and leaves are consumed). The consumption of the leaves of *Telfaria occidentalis* was copied from the Igbo culture as Yorubas primarily eat the seeds. It is noteworthy that only the young leaves of *Xanthosoma sagittifolium* (root is consumed as starch) are deemed good enough to be consumed as vegetables and older leaves are never eaten. Among all the species, *Solanum scabrum* is the most underutilized according to a survey by Adewoyin et al. [65] where only 9.2% of respondents consume the vegetable. *Abelmoschus esculentus* and *Solanum lycopersicum* are used in the preparation of different soups. Virtually all the species are cooked along with ground seeds of *Cucumis melo*. *Daucus carota* L. is a popular root vegetable among the Yorubas but are not indigenous and rarely cultivated in the region, as most of it is brought in from the northern part of the country. Others in this category include *Brassica oleracea* and *Lactuca sativa* which were introduced more recently.

2.1.3. Fruits

Thirty-two species from 20 families are embraced by the Yorubas as fruits. Fabaceae with 6 species, provides the highest species in this category, followed by Cucurbitaceae (5), Rutaceae (4) and Anacardiaceae (3). Many of these fruits have great commercial value as they are cultivated in orchards around the region and sold to other parts of the country or exported. The commercial importance of the fruit of *Anacardium occidentale* has drastically reduced in the South-west due to the more lucrative sales of its seed used in the production of cashew nut shell liquid (CNSL), an important additive in the petroleum industry. It is important to note that *Citrus aurantifolia* is only used for medicinal purposes. Some of the fruits are consumed directly while others are processed before consumption, for example, *Synsepalum dulcificum* is well known for its characteristic sweet berries which are consumed directly while the fruits of *Irvingia gabonensis* are used for making soup.

2.1.4. Seeds

Of the recorded plants, the seeds of only 6 species are eaten which are *Anacardium occidentale* (Anacardiaceae), *Phaseolus vulgaris* (Fabaceae), *Cucumis melo* (Cucurbitaceae), *Blighia sapida* (Sapindaceae), *Vigna unguiculata* (Fabaceae) and *Curcubita pepo* (Cucurbitaceae). Seeds of *Cucumis melo* and *Curcubita pepo* are used in the same manner; seeds are ground and used to cook soup with or without varieties of leafy vegetables, but the former is more popular and of more commercial

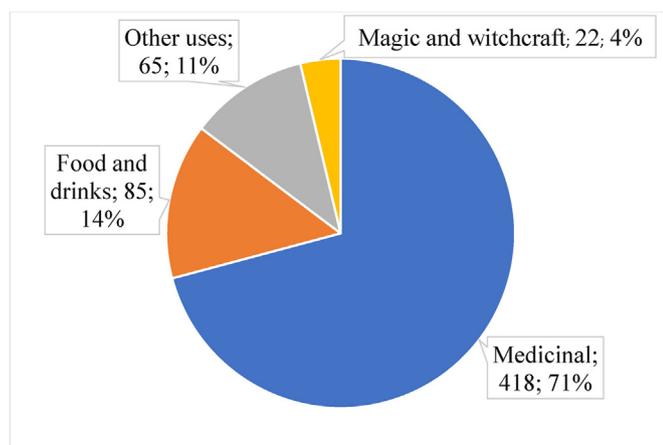


Figure 1. Category of plants used by Yoruba people.

importance. The seeds of *Anacardium occidentale* are roasted, cracked and the inner succulent part eaten as nuts, a viable rival of the nuts of *Arachis hypogea*. Among all these, species representing the Fabaceae family are of the greatest commercial importance, which of course is expected because Fabaceae is the second most economically important plant family in the world [15].

2.1.5. Spices and food colorant

Spices are used to describe plant parts used as condiments, sweetener, and colorant or to garnish food. There are 22 species in this category belonging to 14 families with Liliaceae (3) having the highest representation though all the three species belong to the genera *Allium*. Even though some of these species are rarely used because of the advent of synthetic spices, many of them are still very much in use, for example, *Parkia biglobosa*. The use of the oil of *Elaeis guineensis*, *Cocos nucifera* and *Arachis hypogea* is common to every household while no food is considered good enough without adding fruits of *Allium cepa*. The two species of Solanaceae *Capsicum frutescens* and *Capsicum annum* are integral parts of the Yoruba soups which is sometimes regarded as peculiar to only the Yorubas. The seeds of *Aframomum melegueta* are rarely used as spices as they are more useful for medicinal purposes while *Sorghum bicolor* is a common food colorant that is added to beans and maize in making pap (*Ogi*) to give it an attractive brownish color. *Laurus nobilis* is another very common plant used as a spice to garnish jollof rice.

2.1.6. Beverages

Alcoholic and non-alcoholic beverages are prepared from 7 species across 5 families. The most popular among alcoholic beverages is palm wine (*emu*), common to all southern parts of the country and it is the sap collected from the stem of *Elaeis guineensis* and *Raphia hookeri*. It is allowed to ferment in some cases to increase its intoxication while youths add fruits of *Datura metel* to further increase its intoxication. The other popular alcoholic beverage is prepared by fermentation of the seeds of *Zea mays*. *Ananas comosus* is also macerated in water to produce a refreshing non-alcoholic beverage (*adoyo*) which is sold in marketplaces, while leaves of *Cymbopogon citratus* are cooked in hot water to prepare local tea. The tea is mostly taken for medicinal purposes. *Arachis hypogea* is mashed and squeezed to produce milk, which is diluted and sold as a beverage. The most commercially important plant in this category is *Theobroma cacao* which is used for the production of chocolates and allied products. It is also an important cash crop for foreign exchange earnings.

2.2. Medicinal plants

A total of 418 species from 96 families are used as medicinal plants in southwestern Nigeria. This figure partly shows a wide usage of plants as medicine in the region since the ethnobotanical research in southwestern Nigeria has focused mainly on medicinal uses of the plant. Kunle et al. [68] had concluded from their study that Yoruba ancestors stumbled upon the use of plants as medicine through trial and error. However, Temitope and Ibrahim [3] identified various means through which informants claimed to have derived their knowledge which included vision and dreams, animals and contacts with supernatural beings. It is important to note that superstitious beliefs are attached to some of the medicines. For example, Temitope and Ibrahim [3] reported that some plants must be collected at certain times of the day for them to be potent while Mukaila et al. [69] reported that some herbal preparations are said to lose their potency once their containers touch the floor, therefore must be suspended. The usage of plants as medicine in this review is grouped into the following categories of diseases and treated accordingly: digestive, respiratory, reproductive and urinary, circulatory, degenerative, nervous, dermatological and veterinary uses. Other ailments were treated separately including hemorrhoids, toothache, sickle cell, etc.

2.2.1. Digestive diseases

The digestive ailment represents diseases such as colic, constipation, diarrhea, dysentery, heartburn, indigestion, vomiting and ulcers. For these groups of illnesses, 141 of the recorded plant species are used as remedies. Given this vast amount of natural remedy for diseases in this category, it is surprising that they still remain one of the major killer diseases in Nigeria. For example, diarrhea is ranked 4th among the top 10 causes of death in Nigeria [70], and about 70–90% of the Nigerian population live with various ulcers [71]. Although *Aloe vera* is well known for its use as a cure for skin diseases in southwestern Nigeria, a decoction of its leaves is also taken twice a day for various ulcers. Lawrence et al. [72] have reported high antimicrobial activity for the ethanolic and methanolic extract of *Aloe vera* supporting its folkloric use. The use of *Aloe vera* for purposes other than skin problems is not peculiar to only the Yorubas as three *Aloe* species were reported to be used as remedies for digestive problems by the Basotho people of South Africa [15].

Similarly, the anti-ulcerative potential of *Spondias mombin*, *Ficus exasperata* and *Gossypium barbadense* have also been reported [73, 74]. Another important plant in this category is *Elytraria marginata* which has been reported to have substantial antimicrobial activity against ten different regular hospital microbes [75]. Noticeably, many of the plants eaten as leafy vegetables are used as remedies for minor stomach disorders and indigestion. Some other plants in this category include *Celastrus indica*, *Costus afer*, *Crinum jagus*, *Holarrhena floribunda*, *Lansea acida*, *Kalanchoe pinnata*, and *Tridax procumbens*.

2.2.2. Respiratory diseases

Respiratory diseases include chest pains, colds, sore throats, coughs, malaria, and typhoid fevers. 132 plant species are used in this category and only a few of them have been analyzed pharmacologically despite the fact that respiratory diseases account for 39% of Nigerian deaths [70]. Some of the plants in this category that have been tested pharmacologically include *Anacardium occidentale*, *Mangifera indica*, *Enantia chlorantha*, *Azadirachta indica*, *Khaya senegalensis* and all the three *Citrus* spp. present in the region [76, 77, 78, 79, 80]. They were all found to be effective against the tested microbes.

2.2.3. Reproductive and urinary tract infections

The reproductive and urinary tract infections (UTIs) are grouped together in this review. This is because, in the process of collecting information on the survey, virtually the same set of plants are used for treating both ailments. Reproductive problems include difficult labour, infertility, miscarriages, menstrual pains, impotence, low sperm count and sexually transmitted diseases (STDs), while urinary tract infections are used to refer to as kidney and bladder problems. A total of 138 plant species are used as remedies, with the majority used for female reproductive problems. This is as a result of the general believe that infertility is said to be associated with women-folk in African traditional medicine [15]. *Corchorus olitorus* is popularly taken either cooked or macerated with water to ease child labor while *Cassia fistula*, *Moringa oleifera* and *Zingiber officinale* have been reported to have substantial anti-inflammatory activities, thus supporting their folkloric uses as remedies for pains associated with menstruation in women [81]. Among the plant species that are used for male reproductive problems, *Anthocleista djalonenis*, *Byrsocarpus coccineus*, and *Microdesmis puberula* are embraced for male impotence while *Musa paradisiaca* is used to boost low sperm count. Out of the plants in this category, more than 50% (82) are used for STDs, which might be as a result of the prevalence of the diseases among adults in the region. *Adansonia digitata*, *Citrullus colocynthis*, *Laportea ovalifolia*, and *Uvaria afzelli* are used for bladder diseases and kidney stones.

2.2.4. Circulatory diseases

Sixty-four (64) plants are used to treat circulatory problems such as those related to improving blood circulation, blood cleansing, increment

in blood iron content, anemia, hypertension and problems associated with the heart. This list does not include plants used as anti-sickling agents which will be treated separately. The use of herbs for diseases in this category is one of the commonest because diseases in this category require continuous treatments making orthodox treatments extremely expensive. Even patients who begin treatments in hospitals sometimes return home to continue with herbs [58, 69]. For example, orthodox hypertension treatments might require nonstop use of some expensive drugs, and chronic anemia requires transfusion of several pints of blood. Popular among plants in this category are *Waltheria indica* and *Telfaria occidentalis*. The latter is macerated with water or malt drinks and mixed with milk to be taken as many times as possible while the decoction of the former is taken to rapidly improve blood level. In fact, *Waltheria indica* is called 'ewe eje' translating to blood leaf. A decoction of the stem bark of *Theobroma cacao* is also used for the same purpose. Some plants consumed as leafy vegetables are also used here including *Corchorus oleratus*, *Cucurbita pepo*, *Solanaceo biafrae*, *Solanum nigrum*, and *Taraxacum officinale*. Apart from these plants, one striking similarity of other plants in this category is their wine or red color (blood-like color) after preparation which could be one of the reasons guiding the choice of use. Though their effectiveness cannot be doubted there has been very little scientific evidence to prove the activity of plants in this category. The following plants used in the treatment of hypertension have been reported to exhibit hypotensive properties by various researchers thus supporting their folkloric uses as anti-hypertensive agents; *Hibiscus sabdariffa* [82, 83], *Allium sativum* [84], *Musanga cecropioides* [85] and *Phyllanthus amarus* [86].

2.2.5. Degenerative diseases

Degenerative diseases include arthritis, rheumatism, diabetes, and cancer. 182 plants species are used as remedies for diseases in this category. Diabetes and cancer (mainly breast cancer) are the most common diseases in this category, of which some of the plants implicated have been scientifically proven. Ethanolic extracts of *Allium sativum*, *Aristolochia ringens* and aqueous extract of the bark and root of *Azadirachta indica* elicited significant antidiabetic potentials [87, 88, 89, 90]. The seed extract of *Caesalpinia bonduc* also showed significant anti-hyperglycemic activities as it was reported to block glucose absorption in rats [91]. The antitumor activity of allicin, the active metabolite in *Allium sativum* on breast and prostate cancer has also been supported with pharmacological data [92]. Furthermore, *Curcuma longa* is also found to be effective in abating various cancers [93], as well as genetic damages caused by the exposure of the human body to radioactive substances [94]. The anti-arthritis activity of the aqueous extract of *Phyllanthus amarus*, one of the major plants used by the Yorubas in the treatment of arthritis has also been supported with pharmacological data [95]. Interestingly, the plant is also used for the same purpose by the indigenes of Amazonia and Brazil [96].

2.2.6. Nervous system disorders

Diseases in this category include nausea, giddiness, epilepsy, convulsion, headaches, psychosis, insomnia, and mental illnesses. Fourty (40) plants are used for this purpose, these include *Alstonia boonei*, *Carica papaya*, *Oxalis scorpoides*, *Rauwolfia vomitoria* (also used for the same purpose in Ghana [97]) and *Xylophia aethiopica* are used for mental disorders. While 9 plants are used for headaches, insomnia is treated with 10 plants, though 3 of them (*Artocarpus altilis*, *Morus mesozygia* and *Rhigiocarya racemifera*) are said to be too strong as a sedative, as such they are only used to sedate people suffering from mental disorder. Twenty (20) plants are used to treat convulsion and epilepsy and unsurprisingly 5 of the plants are *Bidens pilosa*, *Bryophyllum pinnatum*, *Danielli oliveri*, *Khaya senegalensis* and *Tetrapleura tetraptera* are also used in Cameroon for the same purpose [98]. The 5 medicinal plants were also shown to protect 50%–75% of tested mice against pentylenetetrazol (PTZ) and single-twitch-response (STR) induced convulsions [98]. Cooked fruits of *Tetracarpidium conophorum* are eaten to prevent giddiness.

2.2.7. Dermatological uses

This includes various skin problems like blisters, boils, bruises, burns, cracked skin, eczema, leprosy, pimples, snake-bite, sores, swellings, warts, wounds, hemostatic and Guinea worm. This list also includes plants used as cosmetics. A total of 234 plants are used in this category representing the largest number probably because skin diseases are numerous and can be very persistent that people tend to try out varieties of remedies. Just like in many other ethnic groups *Aloe* spp. are one of the most important in this group and its gel has been proven to help the skin survive frostbite injury [99] and reduce skin damage due to radiation treatment [100]. In the same manner, the leaf extract of *Azadirachta indica* was found to be very effective for boils and blisters [101]. Other plants mentioned here which have been scientifically proven include *Curcuma longa* [102], *Momordica charantia* [103] and *Portulaca oleracea* (used for boils in Ghana) [104, 105]. Several plants are used as cosmetics and some of them are age-specific, for example, the oil of *Pterocarpus osun* is used as a body cream for newborn babies, so important to the Yorubas that it is used as means of praying for barren women. Oils commonly used amongst the Yoruba for skin adornment include 'adin eyan', 'adin agbon', and 'ori' which are made from the fruits of *Elaeis guineensis*, *Cocos nucifera*, and *Vitellaria paradoxa* respectively [106]. The ground fruits of *Eugenia caryophyllata* are mixed with hair cream to induce rapid hair growth.

2.2.8. Hemorrhoid, pile, backache, and aphrodisiacs

These are grouped together because they are generally treated with the same herbs by Yoruba people. In fact, it is very common in southwestern Nigeria to use the same herbal concoction for all these complaints. A total of 149 plants are used for this purpose. The wide array of plants in this category is due to the fact that it is very rare to use orthodox drugs for these ailments, especially hemorrhoids, which might require a surgery called hemorrhoidectomy. Herbal concoctions for these ailments are sold at every nook and cranny in southwestern Nigeria. Some plants listed here as an aphrodisiac are said to increase the level of testosterone in test organisms in various studies, for example, *Spondias mombin* has had its folkloric uses supported with pharmacological data [107] and *Sphenocentrum jollyanum* [108]. In a previous study [18], 209 medicinal plants are reported to be used as an aphrodisiac and sexual dysfunction in sub-Saharan Africa, of which 28 species are from Nigeria. It is noteworthy that despite the lack of scientific support for most of the plants used for the treatment of hemorrhoids, 6 of them are used for the same purpose by the medieval Persians [109]. The plants are *Aloe vera*, *Citrullus colocynthis*, *Citrus medica*, *Occimum basilicum*, *Ricinus communis*, and *Senna tora*.

2.2.9. Sickle cell disorder

Though there are presently public campaigns and awareness aimed at educating the public on how to eradicate sickle cell disease in the Nigerian population, there are still a large number of people living with sickle cell in southwestern Nigeria. People suffering from the ailments depend mostly on herbal medicine to manage the disease because the orthodox drugs such as hydroxyurea are expensive and also elicits toxic effects on continuous usage. Thirty-eight (38) plants are currently used to manage this disease by the Yorubas. Plant species such as *Zanthoxylum zanthoxyloides* have been proven to have considerable anti-sickling activity by reducing sickling of red blood cells [110] and also found to be safe in the toxicity studies carried out by [111], thus lending credence to its folkloric usage. Sunday et al. [112] reported that a polyherbal formula containing extracts from *Eugenia caryophyllata*, *Piper guineense*, *Pterocarpus osun* and *Sorghum bicolor* is used to develop a drug (NICOSAN) used for the same purpose. Other plants in this category include *Alstonia boonei*, *Anogeissus leiocarpus*, *Newbouldia laevis*, *Rauwolfia vomitoria*, *Uvaria Chamae* and *Xylophia aethiopica*.

2.2.10. Other medicinal uses

Nine (9) plants are used to treat eye problems; prominent among them is *Ageratum conyzoides* which leaf juice is applied directly to the eyes for conjunctivitis. A decoction of *Ficus capensis* is taken to increase

lactation in nursing mothers. While thirteen (13) plants are used in the treatment of toothache, a decoction of one or more of *Cissampelos grandularis*, *Ficus sycomorus*, and *Peperomia pellucida* is taken after bone fracture. Additionally, in order to relieve circumcision pain in little children, a decoction of *Ceratothera sesamoides* is administered. *Lippia multiflora* is used to cure sleeping sickness and the leaf of *Nicotiana tabacum* or *Ocimum basilicum* is gently squeezed and stuffed in the nose to control epistaxis. The leaf stalk of *Jatropha multifida* is used to wash off the coated tongue, and a decoction of *Colocasia esculenta* leaf is used to bath premature babies in order to strengthen them.

Similarly, 13 species belonging to 10 families are taken as stimulants, and these include some of the most commercially important crops in Yoruba land such as *Cola* spp. and *Theobroma cacao* of the family Sterculiaceae. The leaves of *Carica papaya* and *Nicotiana tabacum* are dried and ground for sniffing or to make cigarettes. *Carica papaya* is an adulterant of *Nicotiana tabacum* for this purpose. *Coffea canephora* is the most cultivated species of coffee in southwestern Nigeria. The unripe fruits of *Coffea canephora*, when boiled with herb and dried in the sun, are used as a masticatory and stimulant. The coffee produced from the seeds is consumed as a stimulant, although the taste is considered inferior to the widely used *Coffea arabica* [62]. Despite the restrictions on the use of *Cannabis sativa* in Nigeria, it remains very popular, widely used and cultivated in a large scale. Its leaves are dried, wrapped and smoked; in some cases, the dried leaves are either eaten raw or cooked with regular food. *Datura metel* is another stimulant in wide use. Its fruit is soaked in local palm wine or other alcoholic drinks to increase intoxication or sometimes cut into pieces and cooked with food.

In the face of the growing malaria parasite resistance to varieties of remedies, measures aimed at prevention have been advocated and seem to be better than cure. Plants provide an environmentally friendly alternative as side effects like irritation of the eyes, nose, and throat are consistent with the chemical mosquito repellants. Fifteen plant species are reported to be used as mosquito repellants among Yoruba people. The most common of them is *Cymbopogon citratus* which is planted in the surroundings to deter mosquitoes. *Ocimum gratissimum* has been proven to have significant mosquito repellent activity when its juice is topically administered [113]. Other plants in this category are *Ageratum conyzoides*, *Allium sativum*, *Annona squamosa*, *Azadirachta indica*, *Hyptis suaveolens*, *Lantana camara*, *Moringa oleifera*, *Syzygium aromaticum*, *Tridax procumbens* and all the species of *Citrus* available in the region.

2.2.11. Veterinary uses

Seventy-five (75) plant species are used in treating various animal diseases. Several methods of application are also used, for example, *Ficus exasperata* is simply used as beddings for animals that are disturbed by mites while the water extract of *Amaranthus spinosus* is used to dress the wound of animals. Fresh leaves of *Spondias mombin* are given to ruminant animals to expel retained placenta while mouth ulcer is treated with ground fruits of *Capsicum frutescens* [114]. Noticeably, the same plants are used for diseases that are common to man and animals. For example, formulations of *Vernonia amygdalina*, *Ocimum gratissimum* and *Telfaira occidentalis* are used for the treatment diarrhea as well as constipation and hepatoprotection, respectively in sheep and human beings [115]. To cure Newcastle disease in poultry animals, powdered fruits of *Capsicum frutescens* and *Capsicum annum* are added to drinking water while fruits of *Adansonia digitata* are ground to powder and added to feeds to cure fowl cholera [38]. Burnt ash of *Nicotiana tabacum* leaves is rubbed into the feathers of poultry birds affected by lice while fruit juice of *Citrus medica* is used to treat worm infestation also in poultry birds [116].

2.3. Other uses

These refer to general uses of plants that are neither medicinal nor food.

2.3.1. Clothing and dyes

The basic plant species used for clothing in southwestern Nigeria is *Gossypium hirsutum*. The dried fruit of the plant is popped open, spurned and thinned with local implements to make fabric and the fabric made into clothing. There are two special clothing peculiar to the Yorubas which are 'aso-oke' and 'adire' meaning 'tie and dye' and they have remained relevant till today even in the face of trending western clothes. In fact, the former is presently used for very important occasions like weddings and coronations of Chiefs and Obas (kings). To increase the market value of these clothing materials, plant-based dyes are used to make attractive designs on them. Nine (9) plant species used for this purpose include *Annona mannii*, *Bixa orellana*, *Baphia nitida*, *Cyanostrum cordifolium*, *Harungana madagascariensis*, *Lawsonia inermis*, *Lonchocarpus cyanescens*, *Pterocarpus erinaceus*, *Pterocarpus osun*, *Pterocarpus soyauxii* and *Rothmannia hispida*. The most important ingredient in the making of 'adire' are the dyes, and the most frequently used plant as dye is *Lonchocarpus cyanescens*.

2.3.2. Soap and oral hygiene

The leaves and skins of *Musa* spp. are burnt into ash and the oil of *Vitellaria paradoxum* is added to produce local soap (Ose dudu), a multipurpose soap used for washing and bathing. The oil from the kernel of *Elaeis guineensis* is also used to produce soap in industries. Dried fruits of *Luffa cylindrica* is used as an organic sponge for bathing and washing kitchen utensils. Husks of *Cocos nucifera* and leaves of *Ficus exasperata* are strictly used for washing kitchen wares most especially cooking pots. Despite the wide acceptance of toothbrushes for oral hygiene, the use of chewing sticks is still very common among the Yorubas. Ten (10) plant species are used as chewing sticks for oral hygiene and sore throat which are: *Azadirachta indica*, *Distemonanthus benthamianus*, *Massularia acuminata*, *Prosopis africana*, *Terminalia schimperiana*, *Vernonia amygdalina*, *Xylopia aethiopicana*, and *Zanthoxylum zanthoxyloides*. *Massularia acuminata* is most popularly used and come with significant commercial importance as it is hawked and sold in markets. It is important to note that extract from *Azadirachta indica* has been proven to inhibit the growth of *Streptococcus* attached to the tooth surface as well as bacteria associated with saliva [117].

2.3.3. Brooms and ropes

The midribs of palm fronds (*Raphia hookeri*) and the stems of *Sorghum bicolor* var. *technicum* are the major plant species used in the production of brooms in southwestern Nigeria [118]. The long brooms called 'igbale' are used in sweeping and removing cobwebs, while there are short brooms called 'ijabe' specifically made for the preparation of one of the most popular Yoruba soup 'ewedu' (*Corchorus olitorus*). *Acacia ataxacantha*, *Adansonia digitata*, *Agave sisalana*, and *Raphia hookeri* are used in making ropes for purposes such as tying brooms and firewood and sometimes as emergency fishing lines. Ropes are made by twisting or plaiting plant parts which could be leaves as in *Agave sisalana* and *Raphia hookeri* [118] or inner barks as in *Adansonia digitata*. Though most species of plants used to make mats are also used as ropes. However, they are rarely used due to their commercial importance in mat making. Apart from the use of *Raphia hookeri* in making ropes, the medicinal uses of the plant for the treatment of ailments, most especially diabetes, has been reported [118].

2.3.4. Mats, hats and bags

The long leaf stalks of *Maratochloa cuspidata*, *Pandanus candelabrum*, *Sarcophrynium brachystachyum*, and *Thaumatococcus daniellii* are used in making mats. The most widely used is *Thaumatococcus daniellii*. The mats are of different sizes, colors, and qualities as some are used to cover small outdoor huts in houses and hotels, while others are used for decorating traditional wedding receptions and for sleeping. The materials are also made into hats and bags and have seen increasing patronage over the years.

2.3.5. Mortar and pestle

Bascom [32] reported pounded yam to be one of the most important Yoruba foods and it still remains the same to date. Wooden mortar and pestle are required for the preparation of this dish. It is also used for grinding and chopping food materials and woody or hard herbal materials. They are made from the stem of tree species including *Dialium guineense*, *Erythrophleum suaveolens*, and *Vitellaria paradoxum*. The stems are cut down, dried and shaped into the form of a mortar and pestle.

2.3.6. Cane

Only *Laccosperma secundiflorum* is recorded for this purpose, and it is mainly used as canes in schools and homes for corporal punishment.

2.3.7. Local containers

Of great importance is *Crescentia cujete* and *Lagenaria siceraria* used as calabash and gourd respectively [119]. Their dried fruits are harvested and processed by experts called 'afingba'. Small fruits of *Crescentia cujete* are used in holding water or the alcoholic wine obtained from the sap of *Raphia hookeri* (palm wine) while larger ones can be used to fetch water and wash clothes. Large fruits of *Lagenaria siceraria* serve as big containers for holding a large quantity of water or palm wine while the small fruits are used for holding medicine prepared as powders.

2.3.8. Musical instrument

Though the leaf stalk of *Carica papaya* is used as flute by children producing rough musical sounds, the major Yoruba musical instruments are the drums made from tree trunks. Oladosu [51] opined that drums are an integral part of the Yoruba culture and the drums are said to be spiritual as much as cultural in nature, therefore specific trees are used to produce specific drums. In general, three plants are used to produce the majority of the drums namely; *Cordia millenii*, *Okoubaka aubrevillei* and *Distemonanthus benthamianus*. The trees are cut, and the trunks made into a cylindrical shape opened at both ends, and the ends are covered with dried and tanned animal hides. The drumsticks are made from *Laccosperma secundiflorum* but sometimes they are made from rubber. Another important musical instrument (*Sekere*) is made by tying several cowries around the dried medium-sized fruit of *Lagenaria siceraria*. Shaking this instrument produces a special sound and is considered very important in the Yoruba music world.

2.3.9. Construction

Almost all tree species are cut and sawed to be used as timbers for the purpose of construction and making furniture. Notwithstanding, *Bambusa vulgaris* is very important in this category because it is a cheap means of scaffold in construction works in rural areas in southwestern Nigeria, it can be obtained for use in nearby bushes at no cost. For roofing, the trunks of *Cocos nucifera* and *Elaeis guineensis* are used and said to be more durable than most other alternatives. The leaves of *Eremospatha wendlandiana* and *Raphia regalis* are used for thatching temporary huts or shades and also for installing temporary outdoor bathrooms.

2.3.10. Coronation

In the process of installation of kings and other dignitaries in Yoruba land, the leaves of *Newbouldia laevis* are a compulsory part of the ceremony, a branch holding few leaves is cut and hanged on the ear during the coronation. In some places, the leaves of *Pseudosporandias microcarpa* are substituted for it, while in some other places like Egba land (Abeokuta), a specific *Newbouldia laevis* plant must be used during the traditional rite for the installation of the king. Still, some others can be used for other dignitaries.

2.3.11. Paints

The roots of *Mucuna pruriens* are macerated in water for few days to give a black solution that is used for darkening blackboards in schools.

Leaves of *Gliricidia sepium* and *Momordica charantia* are also used for the same purpose when ground with charcoal. *Lawsonia inermis* is used with chalk to design palaces of kings, though this practice is outdated.

2.3.12. Educational aid

The seeds of *Chrysophyllum albidum* are used as instructional materials in elementary mathematics of addition and subtraction.

2.3.13. Fuel

Virtually all the species of plants are used in making domestic fires for cooking. Shrubs and trees are mostly used with the exception of palm plants such as *Cocos nucifera*, *Elaeis guineense* and *Raphia hookeri* which are known to produce excessive smoke which may be hazardous. A by-product of the production of kernel oil from *Elaeis guineense* called 'oguso' is added to the fire to make the wood burn efficiently. The shaft of *Cocos nucifera* and the dry husk of *Zea mays* are used for the same purpose. Though the use of firewood for domestic cooking has reduced drastically over the years, the consumption of firewood did not reduce due to the fact that the majority of commercial bread bakeries still make use of it in large quantities. Wool from *Gossypium hirsutum* is rolled to make a short wick which is placed in small clay material called 'atupa' and fueled with the oil of *Elaeis guineense* to light up the room, though this is no more in practice, it is still used for ritual purposes among the people of Osogbo in Osun State during the annual Osun Osogbo festival.

2.3.14. Games

The dried seeds of *Canna indica* and *Caesalpinia bonduc* are used for gaming purposes, where the former is used by children and the latter by adults. *Caesalpinia bonduc* is used also in one of the most popular indigenous Yoruba games (*ayo olopon*). The game has become a symbol of the Yoruba people making the seeds of the plant of commercial importance. The dried fruits of *Citrus sinensis* are used to play football by children.

2.3.15. Food packaging

Species with large leaves including *Cola nitida*, *Megaphrynium macrostachyum*, *Tectona grandis*, and *Thaumatococcus daniellii* are used for the wrapping of food. Among these, *Thaumatococcus daniellii* is the most popular and is recently planted for commercial purposes. It is popularly used in foods such as 'moimoi' made from ground seeds of *Phaseolus vulgaris*, 'eko' made from *Zea mays* and a type of local rice called 'ofada'.

2.3.16. Preservation

The dried leaves of *Theobroma cacao* are used to preserve *Cola* spp. meant to be transported through long distances. Various *Musa* spp. are planted with young *Theobroma cacao* plants for the purpose of protecting the young plants, though they are later uprooted when the cocoa reaches maturity.

2.3.17. Fish poison

Entandrophragma angolense, *Olax gambecola*, and *Rauvolfia vomitoria* are used by fishermen to poison fishes so they float and are easily caught. It is a popular belief among the fishermen that the plants are not poisonous to humans though it has not been proven scientifically.

2.3.18. Cheese making

The leaf juice of *Calotropis procera* is the major coagulant used in cheese making. Ibhaze et al. [120] reported other natural extracts that could replace *Calotropis procera* for this purpose to include unripe pawpaw fruit extract (*Carica papaya*), *Moringa* seed extract (*Moringa oleifera*) and Soursop fruit extract (*Annona muricata*) but these have not been explored.

2.3.19. Religious

Mature stems of *Musa* spp. are placed in front of churches during harvest celebrations or Bazaars. Also, the fronds of *Raphia hookeri* are used to decorate churches and make cross necklaces on palm Sundays. The tree itself is wrapped with white clothes and surrounded by its fronds by traditional worshipers in the region as recognition and symbol of the *Orumila* deity by its devotees.

2.4. Magic and witchcraft

A very little work has been done on the use of plants for magic by the Yoruba people. A total of twenty-two (22) plants belonging to fourteen (14) families have been recorded to be used for magic. Seeds of *Croton penduliflorus* are used as atonement for a man who fell during sexual intercourse with a woman who is trickily spelt with the strange illness to curb promiscuity. Although the seeds are poisonous when ingested in large quantity, it is alternatively, ground seeds of *Aframomum melegueta* is poured in dry gin and taken. A common Yoruba practice is visiting traditional oracle custodians for divination, and for this purpose, the custodian uses split fruits of *Cola acuminata* or 16 seeds of *Elaeis guineensis* called 'ikin'. In order to stop rainfall, the leaves of *Colocasia esculenta* are burnt with other non-plant materials and blown into the atmosphere. Dry leaves of *Adenopus breviflorus* and *Ficus thonningii* are ground, mixed with local soap and used to bath twice a day for goodwill, success, promotion, and seduction. A woman who desires a male child is given soup made from ground fruits of *Glyphae brevis*.

In contrast, leaves and fruits of *Trema orientalis* are boiled in water with some other non-plant material to facilitate the disappearance of people. For escaping the repercussion of an act, burnt leaves of *Hannoa undulata* is mixed with cold pap and drunk. The fruits of *Kigelia africana* are used to rub the breast to increase breast size, while *Senecio abyssinicus* is used in wars to paralyze enemies. It is cultural in Yorubaland to belief that setbacks and deaths are caused by witches and demonic spirits and the following plants: *Ageratum conyzoides*, *Croton zambesicus*, *Elaeis guineensis*, *Erythrophleum suaveolens*, *Milicia excels*, *Musa paradisiaca*, *Newbouldia laevis*, and *Tetrapleura tetraptera* are used as protection against such occurrences. *Erythrophleum suaveolens* is especially important in this category as it is believed that witches are allergic to every part of its fruit. An equal number of seeds of *Ageratum conyzoides* and *Aframomum melegueta* (9 for male, 7 for female) are swallowed without water for protection against spiritual attacks. Dry pods of *Tetrapleura tetraptera* are burnt and the powder poured on burning coal, it is believed that the smoke will chase witches and evil spirits away.

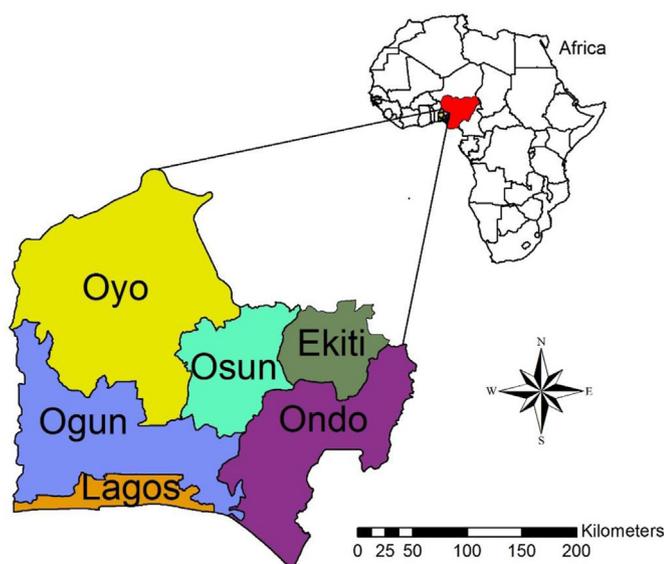


Figure 2. A map of southwestern Nigeria. Compiled by Abdulwakeel Ajao.

3. Materials and method

3.1. Study area

Yoruba is an ethnic group occupying the southwestern part of Nigeria (Figure 2), and with reasonable presence in other nations such as the Republic of Benin, Togo, Cuba, and few Caribbean countries [121]. The total population of the Yorubas is estimated at 40 million with over 90% in Nigeria, and their language is basically Yoruba with different locality within the region speaking variants of the language [2]. Their culture of sculpture, pottery, beadwork, blacksmith, and wood carving was well discussed by Phoebe [122]. In Nigeria, they are found around the rain-forest region with some derived savannah and are bordered in the south by the Atlantic Ocean. Due to this, there are a vast diversity of plant species in the region for different usages as reported in this study.

3.2. Methods

The information used in this review was based on published and unpublished academic resources including research articles, books, on-line media, theses (published and unpublished) and dissertations. The published information was retrieved and downloaded from online databases including Google Scholar, Science Direct, Scopus and PubMed. Search words and phrases used include "food plants", "Yoruba plants", "medicinal plants", "plants used in southwestern Nigeria", "Nigerian useful plants" in articles published up to April 2021. The search identified 206 literature references 27 of which were duplicates. The remaining 179 literature references were subjected to eligibility tests and 31 were removed because the plant uses recorded were not peculiar to the area under review. Therefore 141 published literatures and one unpublished dissertation were used in this review. Plant families were quoted according to APG IV family circumscription [123] and plant names were listed following the International Code of Nomenclature for algae, fungi, and plants (ICN) using the plant list website (www.theplantlist.org). Plant uses are categorized as previously reported [15]. The uses are grouped into four categories including (i) medicinal; (ii) food and drinks; (iii) magic and witchcraft, and (iv) other uses. Author citations of the plants listed are included in the Tables of results and are not repeated elsewhere.

4. Conclusion

This review presents for the first time, all known uses of plants by the Yoruba people of southwestern Nigeria. A total of 493 species from 99 families of angiosperm comprising 65 monocots and 428 dicots are used for purposes such as medicine, clothing, food, crafts, etc. Fabaceae is the family with the highest number of species with 72, other well-represented families include Euphorbiaceae (32), Malvaceae (30) and Asteraceae (25). As expected of a rainforest region, trees are the most prevalent plant habit making up 36.5% of the habit of all recorded plant species, followed by herbs (34.1%). A substantial number (418) of these species are used for medicine, suggesting that most studies have focused more on the use of plants as medicine in the region.

Interestingly, some of the remedies mentioned in this write-up have been verified scientifically for medicinal purposes, while many others await verification though there is very little information on the toxicity studies on a number of them. Superstitious beliefs are attached to some of the medicines which, when violated, the medicine is said to become impotent. Most of the food plants recorded in this review are still very important as means of nutrition for communities, notwithstanding, many unpopular and underutilized vegetables have been scientifically proven to be very nutritional and should be harnessed. There are several functional uses of plants ranging from clothing to building, games to preservation, fuel to paint, etc. The use of plants for magic is a common phenomenon in the region. Still, very few research works have been carried out on this aspect as only 22 plants were found to be used for

magical purposes like divination, success charm, escaping the repercussion of an act, protection against witches, etc.

Consequently, efforts need to be geared towards documenting other plants embraced for magical purposes, religion and witchcraft. In addition, there is also a need to carry out the biological activities of many of these plant species in a bid to join the search for bioactive compounds and carry out toxicity studies to understand the negative side effects that may accompany the use of these herbs. Overall, the paper will provide baseline ethnobotanical data for future quantitative analyses of useful plants used by the Yorubas residing in southwestern Nigeria, as indigenous plant knowledge has not been properly explored and documented among the Yoruba people.

Declarations

Author contribution statement

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Data included in article/supplementary material/referenced in article.

Declaration of interests statement

The authors declare no conflict of interest.

Additional information

No additional information is available for this paper.

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