

*Original article*

# Ethnomedicinal values of some selected plant species in Federal College of Wildlife Management

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## Abstract

**Objective:** The objective of this study was to identify the ethno-medicinal values of some selected plant species in Federal College of Wildlife Management, New Bussa, Niger state, Nigeria. **Methods:** Three methods of data collection were employed: (1) reconnaissance survey of the College Estate was carried out to identify some selected medicinal plants found within the area; (2) field observations alongside personal recognition of some of these plant species were carried out and (3) interview was also carried out in three villages around the College Estate to determine the plants being utilized by the villagers. The villages were Kere, Labararu and Poppoi. The various uses of the identified plants and their parts used for the said purposes were recorded. One hundred people were interviewed altogether in these villages. Recorded information gathered on the medicinal uses of plants includes the type of plants, the part used to cure sickness, preparation of concoction, and the type of sickness cured. The data gathered were presented and analyzed using tables. **Results:** The results revealed that the identified plant species were being used in curing various diseases such as dysentery, fever, stomach pains, cough, malaria, yellow fever, diarrhea, gonorrhoea, pile, body pains and other diseases. **Conclusion:** The study concluded that since the vast numbers of species in the study area possess medicinal values, there is need to conserve and protect the vegetation of the area from unsustainable exploitations which are the common features of vegetation in the surrounding land uses.

**Keywords:** Ethnomedicinal values; Plant species; New Bussa; Nigeria

## INTRODUCTION

The need to study medicinal plants cannot be over-emphasized for a number of reasons including international widespread use of plants in folk medicine, rescuing traditional medicinal plants and knowledge

about them from imminent loss as well as the need for health for all<sup>[1]</sup>. Ethnobotanical studies are often significant in revealing locally important plant species especially for the discovery of crude drugs<sup>[2]</sup>. The documentation of traditional knowledge, especially on the medicinal uses of plants, has provided many important drugs of modern day<sup>[3,4]</sup>.

Since ancient times plants have been indispensable sources of both preventive and curative traditional medicine preparations for human beings and livestock<sup>[5]</sup>. Historical accounts of traditionally used medicinal plants depict that different medicinal

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plants were in use as early as 5 000 to 4 000 BC in China, and 1 600 BC by Syrians, Babylonians, Hebrews and Egyptians<sup>[6]</sup>. Much of an indigenous knowledge system, from the earliest times, is also found linked with the use of traditional medicine in different countries<sup>[7]</sup>. Traditional medicine refers to any ancient, culturally based healthcare practice different from scientific medicine and it is commonly regarded as indigenous, unorthodox, alternative or folk and largely orally transmitted practice used by communities with different cultures<sup>[8]</sup>. Beside their use in fighting various ailments at local level, different medicinal plants are used as export commodities, which generate considerable income<sup>[9]</sup>. These plants are normally traded in dried or freshly preserved form as whole<sup>[10]</sup>; and their global markets are found in China, India, Germany, France, Italy, Japan, England and USA<sup>[11]</sup>. Currently, large number of medicinal plants has found their way as raw materials of modern bio-pharmaceutical industry. Out of the total flowering plants reported from the world, more than 50 000 are used for medicinal purposes<sup>[12,13]</sup>.

Traditional medicine practice has being in existence in Africa and other cultures for centuries since man came into being, but until recently, has been neglected or even outlawed in some cases due to undue pressure from practitioners of modern medical practice and the unscientific background of its method of operations. In traditional African society, phytotherapy is valued more than orthodox medicine; there was the disruption of this practice with the coming of the colonialists who considered it crude, ineffective and barbaric<sup>[14]</sup>. Across the continent, even with the renewed interest in them, many of the medicinal plants have gone into extinction before they are documented. Worldwide renewed interest in traditional medicine derives from the realisation that modern or orthodox medicine is not widespread in poor countries whereas health care has virtually been sustained by these cultural alternatives<sup>[15]</sup>. Also, the growing public interest and awareness of natural medicines have led the pharmaceutical industry and academic researchers to pay more attention to medicinal plants<sup>[16]</sup>. The apparent reversal of trend from western to herbal medicine is partly due to the fact that synthetic drugs have always shown adverse reactions and other undesirable effects<sup>[17]</sup>. This has led to the belief that natural products are safe because they are more harmonious with biological systems<sup>[18,19]</sup>.

Since the earth summit in Rio de Janeiro in 1978,

there has been a sustained global awareness of the biodiversity and natural resources from tropical forest for several purposes. This stem not only from ecotourism potentials, but also from the ethnobotanical and ethnomedicinal uses attached to the plant genetic resources obtained from the forest. Over-exploitation of wild populations and lack of conservation programmes are two interlocking problems leading to unsustainable management of plant resources in Nigeria. The pressure from degradation, unsustainable arable land use, urbanization and industrialization has resulted in rapid depletion of biodiversity in Nigeria<sup>[20]</sup>. There is a mounting pressure on tree species as source of wood, food, medicine and fuel wood as many people trade in their products. Considering the rate at which the vegetation is getting depleted in this part of the world, there is need to document the precious knowledge of these plants<sup>[17]</sup>.

## MATERIALS AND METHODS

### The study area

The study area was Federal College of Wildlife Management, New Bussa, Niger State. New Bussa is within the northern Guinea savanna. Federal College of Wildlife Management is located between Kainji Dam and New Bussa, about 2 kilometres along Awuru road and lies between latitude 7° 80' and 10° 00' N and longitude 4° 30' and 4° 33' E. The College has an area of 2.56 km<sup>2</sup>. The average monthly minimum temperature is 34 °C, the highest value being 41 °C with a mean annual relative humidity of 60 percent and mean annual rainfall of 104.45 mm<sup>[21]</sup>.

The vegetation of the area was described as wooded Savanna which consists of three distinct subtypes, *Anogeisus leiocarpus*, *Ptericarpus erinaceus* wood land to the north -west, *Burkea africana*, *Acacia spp.* *Detarium macrocarpum*, *Combretum spp.* mixture wood dominating the southern boundary<sup>[22]</sup>. Animal species found in Federal College of Wildlife Management are Red-flanked Duiker-*Cephalophus rufilatus*, Grimm's duiker *Sylvicapra grimmia*, Olive Baboon *Papio anubis*. The area is rich in bird species life. Migratory bird include spotted Cuckoo *Clamator glandour*, and little African swift *Abus affinis*, Yellow wagtail (*Motacillaflora*). Resident birds include Clappertorns francolin (*Francolinus clappertoni*), West African little sparrow hawk (*Accipiter erythopies*) and ground hornbill (*Tockus nasutus*). Fulanis initially used the area as a grazing land for cattle. Hunting and firewood collection were

also predominant. At present, the northern side is dominantly farmland. Cattle rearers usually surround the area and practice shifting settlement during dry season. Some engage themselves in semi-subsistence hunting, which is probably a threat to wildlife especially where individual families do not possess any ultimate source of protein. This is always a problem to the number of rural people under low or non-income earning who cannot afford any alternative form of animal protein<sup>[21]</sup>.

Survey of College Estate was carried out to identify some selected medicinal plants found within the area. Field observations alongside personal recognition of some of these plant species was carried out. Interview was also carried out in three villages around the College Estate to determine the plants being utilized by the villagers. The villages are Kere, Labararu and Poppoi. The various uses of the identified plants and their parts used for the said purposes were recorded. One hundred people were interviewed altogether in these villages. Recorded information gathered on the medicinal uses of plants includes the type of plants, the part used to cure sickness, preparation of concoction, and the type of sickness cured. The data gathered were presented and analyzed using descriptive statistics such as tables.

## RESULTS

Table 1 shows the species, their botanical names, family names and indigenous names (Hausa, Igbo and Yoruba) of the identified plants. Thirty-eight species of plants in twenty-one families of Angiosperms were identified. Among the families represented, Combretaceae and Caesalpiniodeae provided the highest proportion of medicinal plants with 5 species. This was followed by Mimosioideae with 3 species while the rest range between 2 and 1 species.

Table 2 shows the common names, botanical names, parts used, types of ailment cured, preparations and administrations of identified plant species. The information obtained revealed that all native species of plants are used for the treatment of one ailment or another. The study shows that bark of these trees constitutes the highest part used with 22 uses; this was followed by leaves and roots with 14 uses respectively. The methods of preparation and administration of plant parts and medicines vary from cooking, grinding and pounding as well as drinking, che-

wing, addition to food as spices and rubbing on the affected part of the body.

## DISCUSSION

From the result, the medicinal plants identified belong to the family of angiosperms. It has been pointed out that medicinal plants are generally scattered in various families of angiosperms, gymnosperms, pteridophytes, bryophytes and thallophytes<sup>[23]</sup>. Furthermore, there is wide spread application of medicinal plants by the inhabitants of the villages surrounding the study area. The use of herbal decoctions and extracts of medicinal plants for treatment of ailments have been reported by several researchers<sup>[24, 23]</sup>. Various parts of plants are used for healing purposes. All plant forms and parts are used for traditional medicine; these include leaves, flowers, fruits, seeds, nuts, and tubers, roots, seedlings, latex and forest litter<sup>[25]</sup>. Within the same plants, the uses of parts vary in the treatment of ailment. This may be due to mystical belief but it is known that differences exist in the drug or nutrient contents of plants according to the species, types, age of plant, the part of plant used, the time of the day and season of the plant<sup>[26]</sup>. Four major types of plant processing existing in traditional medical preparation have been identified<sup>[26]</sup>. These are (1) blending, squeezing and grinding of flesh plants, (2) indoor and outdoor drying of plants, (3) boiling of plants to extract the drugs, (4) pounding of plants so as to add the materials into food. The use and application of traditional medicine is generally based on ancestral belief in African societies.

The need to document the ethno-medicinal uses of plants is more than ever before of high importance. This will certainly form a basis of articulate programme on conservation and involving the local people on the need to protect and conserve these medicinal plant species. Although many people see medicines extracted and prepared locally from plants species in different perspectives, some believe that it is effective in curing sickness while some neglect it based on religion, it is shown here that it is extensively being utilized for medicinal purposes. Propagation techniques of medicinal plant species should be introduced to the local people around the study area; this will help to counteract the unsustainable

**Table 1** List of the identified medicinal plants, common, botanical and their local names.

S/N	Common name	Botanical name	Family name	Hausa name	Igbo name	Yoruba name
1	Mango	<i>Mangifera indica</i>	Anacardiaceae	Mangoro	Ukpokpa	Mangoro
2	Shea nut tree	<i>Vitellaria paradoxa</i>	Sapotaceae	Kadai	Osisi	Emi or Emi-mi
3	Fringed wing	<i>Crossopteryx febrifuga</i>	Rubiaceae	Kasfiya, Kashinawaki		Ayeye
4	Guava	<i>Psidium guajava</i>	Myrtaceae	Gwaiba		Igi goifa
5	Neem	<i>Azadirachta indica</i>	Meliaceae	Dogon yaro		Ponkan or Kasia
6	Leaves being borne	<i>Terminalia glaucescens</i>	Combretaceae	Baushe	Edo	Idi odan
7	Haitian	<i>Annona senegalensis</i>	Annonaceae	Gwanar daji	Uburu-ocha	Abo
8	Cap stigma	<i>Pilostigma thonningii</i>	Caesalpinoideae	Kalgo	Okpo atu	Abafe
9	John Boswell	<i>Boswellia dalzielii</i>	Burseraceae	Itano		
10	Senegambia	<i>Lannea schimperi</i>	Anacardiaceae	Farun doya	Erinwan	
11	Scale like fruiting head	<i>Anogeissus leiocarpa</i>	Combretaceae	Marke	Atara	Orin-odan
12	Little ship	<i>Nuclea latifolia</i>	Caesalpinoideae	Kokia	Obiakhe	
13	Wing fruit	<i>Pterocarpus erinaceus</i>	Papilionoideae	Madobiya	Aze egu	Osun dudu
14	Silk	<i>Bombax costatum</i>	Bombacaceae	Kurya	Akpu	
15	Destroyed	<i>Detarium microcarpum</i>	Caesalpinoideae	Taura	Ofo	
16	Locus beans	<i>Parkia biglobosa</i>	Verbenaceae	Dorawa	Ogirili	Igba
17	Almond	<i>Terminalia catappa</i>	Combretaceae	Baushe	Eghoin- nofwaledo	
18	Cochlospermum	<i>Cochlospermum planchonii</i>	Cochospermaceae	Kwata/ Zunzuna		Owu cotton
19	Baobab	<i>Adansonia digitata</i>	Bombaceae	Kuka/ Bumbu	Usi	Igi ose
20	Molina	<i>Prosopis africana</i>	Leguminosaeae	Kiryia	Ubwa	Ayan
21	Strychnos	<i>Strychnos spinosa</i>	Loganiaceae	Kokiya		Angboroko, atako
22	Membraneous heart	<i>Hymenocardia acida</i>	Hymenocardiceae	Jan yaro	Ikanlaga	Orupa
23	Leaf	<i>Combretum molle</i>	Combretaceae	Wuyan damo		Aragba
24	Indian date	<i>Tamarindus indica</i>	Caesalpinoideae	Isamiya	Icheku oyibo	Ajagbon
25	An axe	<i>Securidaca longepedunculata</i>	Polygalaceae	Uwarma-gunguna		Epata
26	Mayten	<i>Maytenus senegalensis</i>	Celastraceae	Namijin tsada		Sepolohun
27	Adans	<i>Entada Africana</i>	Mimosoideae	Tawatsa	Angaramiri	Ogurobe
28	Nehemiah Grew	<i>Grewia molle</i>	Tiliceae	Marke	Evbare	Afoforo-igbo or Ora-igbo
29	Leaf	<i>Combretum nigerican</i>	Combretaceae	Faratuaramia		
30	Savannah Mahogany	<i>Khaya senegalensis</i>	Meliaceae	Madaci	Ono	
31	Daniell	<i>Daniellia oliveri</i>	Caesalpinoideae	Maje	Ozabwa	Igi-iya
32	Thorn	<i>Acacia seyal</i>	Mimosoideae	Dushe		
33	Bushtea	<i>Hyptis saueolens point</i>	Lamiaceae	Magamin sauro		
34	Hewittia	<i>Hewittia sublobata linn</i>	Convolvulaceae			
35	Garden spurge	<i>Euphorbia hirta linn</i>	Euphorbiaceae			
36	Broom weed	<i>Sida acuta</i>	Malvaceae	Miyantsanya		
37	Wandering jew	<i>Commelina benghar lensis</i>				
38	Phyllanthus	<i>Phyllanthus amarus</i>	Euphorbiaceae			

**Table 2** Medicinal values of the identified plant species, parts used, ailment cured, preparation and methods of administration.

S/N	Common name	Botanical name	Part used	Types of Ailment cured	Preparation	Administration
1	Mango	<i>Mangifera indica</i>	Leaf/Bark	Typhoid Fever/Malaria	Leaves are boiled and bark grounded and mixed with other concoction	The water from the boiled leaf is drunk for malaria & the bark soaked is taken thrice daily for typhoid fever
2	Shea nut tree	<i>Vitellaria paradoxa</i>	Bark/Root	Gonorhea Diarrhea	The bark and root are cooked as concoction	By drinking the concoction
3	Fringed wing	<i>Crossopteryx febrifugal</i>	Fruit/Bark	Cow reviving	The fruit is grounded & mixed with potash. The bark is cooked with potash.	The concoction is used to revive a dying animal. By drinking the water
4	Guava	<i>Psidium guajava</i>	Bark/Root/ Leaf	Diarrhea, Dysentery	The leaves, bark and the root are soaked in one litre of water, a decoction of 50 g	It should be taken a glass every hour to cure diarrhea & Dysentery
5	Neem	<i>Azadirachta indica</i>	Root/Leaf	Malaria fever	Filtrate from leaves cooked in water	Solution is drunk for malaria fever
6	Leaves being borne	<i>Terminalia glaucescens</i>	Root/Bark	Stomach upset Diarrhea	The root is cooked with water or dried & grounded to powder, the leaves is cooked with water	The powder is taken with pap and the cooked leaves is drunk or mixed with pap with the cooked leaves
7	Haitian	<i>Annona senegalensis</i>	Leaf/Bark	Snake bite Fresh wound, Diarrhea	The bark and the leaves are either grounded fresh or allowed to dry separately	The powder is mixed with water and drunk by the patient or the powder is put directly to the fresh wound
8	Cap stigma	<i>Pilostigma thonningii</i>	Root/Leaf	Backache, Dysentery, Cough, Pile	The leave and root are cooked alongside with ginger and alligator pepper	By bathing & drinking the water, the person with pile will seat inside the water from the prepared concoction
9	John Boswell	<i>Boswellia dalzielii</i>	Leaf/Bark	Stomach upset, Diarrhea, Pile & Worm	The bark is dried & pounded and then soaked in water or by boiling the leaf and bark together	By drinking and bathing with the water twice a day
10	Senegambia	<i>Lannea schimperi</i>	Bark	Diarrhea, Dysentery	The bark is boiled with water or pounded, dried and soaked in water	Drinking and bathing or make pap with the boiled one or mixed the dried one with pap
11	Scale like fruiting head	<i>Anogeissus leiocarpa</i>	Leaf/Bark	Yellow fever	The leaves and bark are dried and grounded, then boiled with water	By drinking or bathing with the boiled water
12	Little ship	<i>Nuclea latifolia</i>	Root/Leaf	Waist pain Back pain	The root is prepared with water by boiling.	The water is used to bath and drink
13	Wing fruit	<i>Pterocarpus erinaceus</i>	Bark	Blood tonic	The bark is soaked in water.	To be drunk daily

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S/N	Common name	Botanical name	Part used	Types of Ailment cured	Preparation	Administration
14	Silk	<i>Bombax costatum</i>	Bark	Pile	The bark is soaked inside water or boiled with water	The person with pile will seat inside the water from the prepared concoction or drink the water
15	Detarium	<i>Detarium microcarpum</i>	Root Leaf/Bark	Dysentery/ Diarrhea	The bark& root are cooked together. The leaves are also cooked	By bathing with root. By drinking the water
16	Locus beans	<i>Parkia biglobosa</i>	Root	Diarrhea, Yellow fever, Dysentery	The root is cooked alongside with potash.	By dinking the water
17	Cochlospermum	<i>Cochlospermum planchonii</i>	Root	Yellow fever	The root grounded and allowed to dry up, and is grounded to powder again.	Cooked with soup or soaked with water & drink, or taken in the soup
18	Baobab	<i>Adansomia digitata</i>	Leaf Bark/Root	Asthma, Cough, Toothache, Yellow fever	The root and the bark are soaked in water, the young leaves are dried& grounded & added to hot pap.	By drinking & bathing with water for toothaches & cough. Added to pap for asthma & yellow fever
19	Molina	<i>Prosopis africana</i>	Leaf Stem,/Bark	Wound/ Tooth ache	The leave & stem cooked together or chewing of the cut stem & ground the bark.	By drinking the water and chewing the stem. Apply the grounded bark to the wound
20	Strychnos	<i>Strychnos spinosa</i>	Root	Hernia	The root is dried and grounded into powder	Mixed with pap and drink
21	Membraneous heart	<i>Hymenocardia acida</i>	Bark	Body strength, Spills	The bark grounded	Added to food for body strength & spices
22	Leaf	<i>Combretum molle</i>	Bark	Blood tonic 4 children, Stomach upset	The bark is dried and grounded to powder or soaked in water.	The powder is added to pap or water and the soaked are drunk
23	Indian date	<i>Tamarindus indica</i>	Seed/Bark	Stomach upset or Diarrhea	The seed is soaked in water and the bark is boiled with water.	The water is drunk or mixed with pap. The seed can be taken directly
24	An axe	<i>Securidaca longepedunculata</i>	Leaf/Root	Fracture/other diseases	The leaf & root are grounded to powder & added with hen fat or boiled with water.	Rub the affected part with mixture and drink or make pap with the boiled one for the other diseases
25	Mayten	<i>Maytenus senegalensis</i>	Leaf/Root	Tooth ache	The root and leaves are cooked together	The water is used to wash mouth both morning and night
26	Adams	<i>Entada africana</i>	Root/Bark	Gonorrhea, Pile, Cough & Worm	The root is cooked alone for gonorrhoea, pile & worm and soaked in water for cough	By drinking

S/N	Common name	Botanical name	Part used	Types of Ailment cured	Preparation	Administration
27	Nehemiah Grew	<i>Grewia molle</i>	Bark	Fresh wound	The bark is grounded either fresh or dried to powder	Applied to the fresh wound
28	Thorn	<i>Acacia seyal</i>	Bark	Tooth ache Body pain	The bark is cooked	By drinking
29	Leofl	<i>Combretum nigerican</i>	Root	Rheumatism	The root is grounded and add with potash	Applied on affected area
30	Savanna Mahogany	<i>Khaya senegalensis</i>	Bark	Pile Stomach pain	The bark is pound and soaked in water	By drinking
31	Daniella	<i>Daniellia oliveri</i>	Bark	High blood pressure	Bark soaked in water	By drinking
32	Almond	<i>Terminalia catappa</i>	Leaf	Typhoid	The leaves is boiled with water	By bathing and drinking
33	Bushtea	<i>Hyptis saweolens</i>	Leaf	Fever/Dislocation	Boiling, put in the fire to give smoke.	Drink the boiled water. When it is put into fire the smoke coming out drive away mosquito
34	Hewittia	<i>Hewittia sublobata linn</i>	Leaf	Body scratching	Boiling/Squeeze	Bathing with the boiled water or rub the squeezed leaf on the body
35	Garden spurge	<i>Euphorbia hirta</i>	White liquid/latex	Scorpion sting or dislocation	By breaking the stem	The liquid or latex should be apply on the area affected
36	Broom weed	<i>Sida acuta</i>	Leaf	Boil	Add with grounded beans or potassium	To be applied on the boil to burst
37	Wandering jew	<i>Commelina bengharlensis</i>	Leaf	Scorpion sting	Squeeze the leaf	To be rub bed on the affected area
38	Phyllanthus	<i>Phyllanthus amarus</i>	Leaf	Ulcer/ kidney lever cancer	Boiled and add with honey	To be taken orally

exploitation of these medicinal plant species. In conclusion, since the vast numbers of species in the study area possess medicinal values, there is need to conserve and protect the vegetation of the area from unsustainable exploitations which are the common features of vegetation in the surrounding land uses.

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