

## Folk Medicinal Values of Plant Folia among the Ijaw Tribal Community of Bayelsa State, Nigeria

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### Abstract:

The study examined plant folia used in folk medicine by the Ijaw tribe of Bayelsa State, Nigeria. Plant species whose leaves were valued for folk medicine were identified through field visits and interviews of relevant stakeholders. The interviews were conducted through the use of a semi-structured questionnaire matrix. They were focused, conversational and two-way in communication. The diseases they cure and / or prevent were identified as well as their mode of administration. The results obtained revealed that 44 plant species that belonged to 31 families have their leaves valued for medicine and health maintenance in the study area. These consisted of 19 herbs, 8 shrubs and 17 trees. Field observation revealed that leaf harvesting in the identified shrubs and trees were not annihilative as the number of leaves harvested were substantially low compared to the number of leaves possessed by these plants hence harvesting was non-predatory to the mother plants. However, leaf harvesting in herbs could be annihilative and predatory, especially in species with less number of individuals in the study area. The examination of the respondents' indigenous knowledge on these species revealed that the species would thrive in the study area. Also, the species have multiple utilities values in the study area that could serve as incentives for their cultivation. Strategies that would enhance sustainable supply of the identified species were proposed.

**Keywords:** Folk medicine, plant folia, conservation, Ijaw tribe, Nigeria

## INTRODUCTION

The use of plants for health maintenance among the indigenous communities in Nigeria is receiving unprecedented attention in the recent times. Chigozie (2018) revealed that Nigeria has one of the largest aggregations of ethnic groups in Africa, each of which has distinct culture thus contributing to cultural diversity in the country. However, a distinct uniformity among the various ethnic groups is the transmission of their cultures from one generation to another.

The Ijaw is one of the major ethnic groups in Nigeria. The tribe is found inhabiting the coastal region of Akwa Ibom, Bayelsa, Edo, Delta, Ondo, and Rivers States of Nigeria. Many Ijaw are found as migrant fishermen in camps as far west as Sierra Leone and as far east as Gabon in Africa (Appiah *et al.* 2010).

The present rate of biodiversity erosion in Nigeria environment is unprecedented despite the dependency of the population on the environment for their survival. The country has the world's highest deforestation rate (Butler 2005) coupled with the crude oil pollution in the mangrove that constituted the vegetation of the coastal zone of the country (Zabbey *et al.* 2017). The need to conserve species with ecological and economic values in the environment is now imperative. Recent initiative aimed at achieving this goal now consider the determination of the ethnobotanical values of plant species based on the culture of the varying ethnic communities in the country.

Consequent on the above, a plethora of ethnobotanical studies abounds in the country but were concentrated on the three major ethnic compositions, of Hausa, Igbo and Yoruba. A gross dearth of such studies abounds on other ethnic groups such as the Ijaw. Ethnobotanical studies reported on Ijaws were those of Obute and Ebiare (2008), Ubom (2010), Ajibesin, *et al.* (2011), Kayode *et al.* (2016a and b). and Adedeji (2018), most of which examined bark extrativism and health maintenance among Ijaw tribal community of Bayelsa State, Nigeria. The study being reported here examined the folk medicinal values of plants folia in Bayelsa State of Nigeria.

## MATERIALS AND METHODS

Kayode *et al.* (2016) gave the detailed description of the study area while Adedeji *et al.* (2018) described the delineation of the state into three zones of Bayelsa Central, Bayelsa West and Bayelsa East. Adedeji *et al.* (2018) also provided the details of the identification and the interviews of the respondents in this study. A semi-structured questionnaire matrix was used to conduct the interviews which were focused, conversational and two-way in communication. Plant species whose leaves were valued for folk medicine were identified. The diseases they cure and / or prevent were identified as well as their mode of administration.

Similarly, medicinal plants vendors, groups of respondents and key informants were identified and interviewed as stated by Adedeji *et al.* (2018). Voucher specimens of the identified plant species were obtained and treated as stated in Adedeji *et al.* (2018).

## RESULTS AND DISCUSSION

The results obtained revealed that 44 plant species that belonged to 31 families have their leaves valued for medicine and health maintenance in the study area (Table 1). 4 of the identified species were members of the family Rutaceae, 3 each of these species were members of Anacardiaceae and Asteraceae, 2 each of the species were members of Annonaceae, Apocynaceae, Malvaceae, Poaceae and Piperaceae. All other families have a species each. The leaves of these species were found to be effective in managing many diseases in the study area. Field observation revealed that the extracts of the species were easy to prepare. Study by Kayode *et al.* (2017) revealed that the preparation of plant medicine requires no technology thus enhancing their acceptability by the various classes of indigenous people.

Most of the identified plant species were found growing in the study area. This observation tends to explain the reasons why plant medicine has been described to be readily available, economical and effective with little or no side effects (Verpoorte 2012, Kayode *et al.* (2015). Kayode *et al.* (2017) had earlier asserted that the preference for plant medicine by the indigenous tribal groups in Nigeria are further enhanced by the extremely poor modern medical infrastructures in the rural areas (villages) and urban slums and the current economic recession in the country that made the cost of modern medicine to soar beyond the reach of most citizens.

19 of the identified species were herbs, 8 were shrubs and 17 were trees. Field observation revealed that leaf harvesting in the identified shrubs and trees were not annihilative as the number of leaves harvested were substantially low compared to the number of leaves possessed by these plants hence harvesting was often non-predatory to the mother plants. However, leaf harvesting in herbs could be annihilative and predatory, especially in smaller herbs that possessed limited number of leaves as well as in species with less number of individuals in an environment.

The identified herbs in this study were classified into three groups (Table 2) as: (A) species that grow naturally in the study area as weeds. These include *A. conyzoides*, *A. spinosus*, *B. alba*, *B. oleracea*, *C. bengalensis*, *D. sandens*, *E. crassipes*, *K. pinnata*, *O. gratissimum*, *P. pellucida*, *P. stratiotes* and *P. leracele*. (B) Species cultivated in the study area. These are *P. guineense* and *T. occidentalis* and (c) Species that neither grow naturally nor cultivated in appreciable quantities in the study area. These include *A. cepa*, *G. max*, *P. maximum*, *S. vulgare* and *T. danielli*. Though considerable proportions of the identified species in this study were readily available in the study area yet the need to domesticate the few uncultivated species is highly imperative.

The determination of the respondents' indigenous knowledge on the identified uncultivated species in the study area (Table 3) revealed that the species would thrive in the study area. Also, the species have multiple utilities values in the study area. Thus their utilities could serve as incentives to their cultivation. The cultivation of these species in either small or large scale will enhance their conservation in the study area. Field observation revealed that though the naturally occurring species were available for most parts of the year yet occasionally scarcities were often experienced in the dry season hence intensive harvest of their leaves during the raining season are encouraged. The collected foliar should be air-dried rather than sun-dry that was observed to be the present trend in the study area.

The residents of the Bayelsa State were observed to depend mostly on their environment for their livelihood hence rapid and unprecedented deforestation rate is being experienced. Bisong (2001) had earlier made similar observation in study area. The deforestation is further complicated by degradation brought about by the crude oil exploration and exploitation (Mmom and Arokoyu 2010). The mangrove forest of the study area is now recognized as the most exploited vegetation in the world (WRI 1986). This unprecedented depletion may be attributed to high human population and economic activities (Mmom 2007), social and political factors (Mmom and Arokoyu 2010). Most of the trees and shrubs identified in this study were indigenous species. Previous study by Adu- Agyem *et al.* (2014) revealed that these species reproduced poorly, as most of them are often high light demanders and poorly represented in the sapling stage. Thus, further biodiversity erosion is imminent in the study area (Bisong 2001).

In conclusion, previous efforts aimed at ameliorating species losses in the region have been met with little or no success. For example, Mmom and Arokoyu (2010) reported the designation of protected areas (parks and reserves), listing and protection of some species, enactment of laws and regulations in the state. There is the need to have an accurate inventory of the ethno botanical values of the species in the region determine their vulnerability to extinction and propose appropriate conservation measures that would enhance their availabilities to the present and future generations. This would circumvent the traditional 'top-down approach' and enhance the utilization of the ecological knowledge of the aboriginal community thus elicit peoples' participation in the conservation efforts. A number of authors, such as Berkes *et. al.* (2000), Anoliefo *et. al.* (2003), McDermott (2009) and Rim-Rukeh *et. al.* (2013) have equally advocated similar positions. Public enlightenment on the dangers inherent in biodiversity loss is now desirable. Domestication of the identified vulnerable species should be encouraged. Efforts should be intensified at establishing standardized dosage for the medicine prepared from the folia of the species indentified.

Table 1: Identifies plant species with valued medicinal folia in Bayelsa State, Nigeria

S/N	Local name	Scientific name	Disease(s) cured	Method of Preparation	Method of Utilization	Availability	Family	Habit
1	Abogointa	<i>Pistia stratiotes</i>	Stomach problem, gonorrhoea, skin infections	Infusion in water	It is use externally to bath, oral administration.	Abundant	Araceae	Herb
2	Ayou, yabasi	<i>Allium cepa</i>	Jaundice, intestinal parasite, diabetes, scabies	Cook as vegetables, eat raw	Eaten as vegetable	Abundant	Amaryllidaceae	Herb
3	Bau	<i>Mitragyna stipulosa</i>	Cough, headache and colic	Decoction of the leaves	Oral administration	Frequent	Rubiaceae	Tree
4	(a).Beke- ogboin (b). Bou- Ogboin (c) Beke- pir	<i>Magnifera indica</i>	(a). Malaria (b). Fever	The leaves are boiled in water and the extract is allowed to cool	They are administered orally	Frequent	Anacardiaceae	Tree
5	Bibibilemo tin	<i>Thaumatococcus danielli</i>	Infections from venoms, stings and bites	The extract of the leaves is applied on the surface of the bite	Oral administration	Frequent	Marantaceae	Herb
6	Biefro	<i>Sida cordifolia</i>	(a). Bone dislocation (b). Fever, treatment of bone fracture	(a). The whole plant is pounded and the extract is removed (b). infusion of the whole plant (c). The leaves are blended to paste and applied on the bone fracture and dislocation.	(a).The extract is applied or rub over the dislocated bone joint. (b). Oral administration	Abundant	Malvaceae	Shrub
7	Buopulo	<i>Harungana madagascariensis</i>	Scabies, malaria	Decoction of the leaves and roots are used in the treatment of malaria	It is applied externally on the skin infection and administered orally to treat malaria.	Frequent	Clusiaceae	Tree
8	Coco tin	<i>Theobroma cacao</i>	Diarrhoea, high blood pressure	Infusion of the dry pods and leaves	Oral administration	Abundant	Malvaceae	Tree
9	Dongoyaro	<i>Azadirachta indica</i>	(a). Malaria (b). Hypertension (c). Fever	(a). Soak in water or alcohol (b). Decoction of the leaves	Oral administration	Frequent	Meliaceae	Tree
10	Egena	<i>Murraya koenigii</i>	Dysentery, Diarrhea fever and herpes	The leaves are boiled in water and sometimes soak in water for administration	Oral administration	Abundant	Rutaceae	Tree

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S/N	Local name	Scientific name	Disease(s) cured	Method of Preparation	Method of Utilization	Availability	Family	Habit
11	Egwein	<i>Glycine max</i>	Colds, fever , headache, blurredness of the eyes	The leaves extract are applied to the eyes directly to treat blindness and blurredness of the eyes, the fermented seeds are eaten to cure colds and fever.	The extract is applied directly on the injured surface	Frequent	Fabaceae	Herb
12	Eke-beri	<i>Portulacac leracea</i>	Stomach aches, headache, weakness	The seeds are chewed as source of tonic, the leaves are infused in water to treat stomach ache and headache	Oral administration	Frequent	Portulacaceae	Herb
13	Ekpesekpese	<i>Commelina benghalensis</i>	Malaria and fever	Decoction of the leaves	Oral administration	Abundant	Commelinaceae	Herb
14	(a).Ere ininain (b).Iyoro-ininain	<i>Amaranthus spinosus</i>	(a). Recurrent miscarriage, habitual abortion (b) Fever in children and malaria in adult	Pound the whole plant to remove the extract (b). decoction of the plant	Oral administration of the extract.	Abundant	Amaranthaceae	Herb
15	Etitiri	<i>Diodia sandens</i>	Hypertension	Decoction of the plant	Oral administration	Frequent	Rutaceae	Herb
16	Flaba	<i>Thevetia nerifolia</i>	Snake bites, toothache, jaundice, fever, chronic sores and ulcers	Decoction of the leaves and stem bark	Oral administration	Frequent	Apocynaceae	Shrub
17	Frutu tin	<i>Terminalia catappa</i>	Cough, jaundice, fever, diarrhea	Infusion of the leaves is use to treat jaundice, the sap of the leaves is ingested to treat cough, decoction of the bark is use to treat fever and diarrhea.	Oral administration	Frequent	Combretaceae	Tree
18	Furo-ituka	<i>Ageratum conyzoides L.</i>	Gastro-intestinal pain, eye troubles	Soak in water	The sap of the leaves is applied to the eye for eye troubles, the water extract is administered orally	Abundant	Asteraceae	Herb
19	Furu kana, karan	<i>Ocimum gratissimum</i>	(a). feverish illness, poor digestion, migraine, acne and skin infections (b). Stomach ache	Infusion or decoction in water	It is administered orally to treat fever, poor digestion, migraine and applied externally to treat acne and skin infections.	Very abundant	Lamiaceae	Herb

S/N	Local name	Scientific name	Disease(s) cured	Method of Preparation	Method of Utilization	Availability	Family	Habit
20	Furutuo	<i>Chromolaena odorata</i>	(a). Skin infection, malaria, dysentery, diarrhoea. (b). Wound healing and fever in children	(a). Infusion in water, boiled in water it is use externally on the skin to treat skin infection. (b). Squeezing the leaves to get the extract and applying it on the wounded area	(a). Oral administration (b). it is use to bath	Abundant	Asteraceae	Shrub
21	Gbologi	<i>Baselle alba</i>	Diarrhoea	Boiled in water	Administered orally, cook as vegetable	Frequent	Basellaceae	Herb
22	Guava	<i>Psidium guajava</i>	Stomach ache	Decoction in water	Oral administration of the extract of the bark chewed with seven alligator pepper	Abundant	Myrtaceae	Shrub
23	Iginiga	<i>Newbouldia laevis</i>	Cough, diarrhea, chest pains and dysentery	Decoction of the plant	Oral administration	Abundant	Bignoniaceae	Shrub
24	Indu	<i>Carica papaya</i>	(a).Malaria and typhoid fever (b). Fever	(a). Infuse in palm wine or boil in water (b). Decoction of the leaves of the plant in water	(a). Oral administration (b). Bathing and oral administration.	(a). Abundant (b). Very Abundant	Caricaceae	Tree
25	Kalalila	<i>Citrus aurantifolia</i>	Malaria, excess worm	Decoction in water	Oral administration	Abundant	Rutaceae	Tree
26	Kalawomo-igainia	<i>Peperomia pellucida</i>	Waist pain, Intestinal problem, Stomach ache	(a). The plant is pound to extract the active component (b). The plant is soak in water or alcohol	(a).The plant extract is rubbed on the surface of the affected skin area externally (b). Oral administration	Abundant	Piperraceae	Herb
27	Kasu	<i>Anacardium occidentale</i>	Miscarriage during pregnancy	The bark is boil in water and allowed to cool	The extract is administered orally	Abundant	Anacardiaceae	Tree
28	Kingbou	<i>Alstonia boonei</i>	Malaria, typhoid fever, gonorrhoea, asthma and dysentery	Infusion in water, boil in water	Oral administration	Frequent	Apocynaceae	Tree
29	Kiriologbo	<i>Venonia amygdalina</i>	(a). Malaria (b). Measles (c). High temperature in children.	(a). Infusion in water and alcohol (b). The stem and root bark are pounded and infuse in water to get the extract (c). The plant is squeezed to remove the extract and palm oil is added to it	(a). Oral administration (b). The extract of the plant that is mixed with palm oil is rubbed on the skin of the child infected with measles.	Abundant	Asteraceae	Shrub

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S/N	Local name	Scientific name	Disease(s) cured	Method of Preparation	Method of Utilization	Availability	Family	Habit
30	Lakwa	<i>Eichhornia crassipes</i>	Malaria, fever and diarrhea	Infusion of the leaves	Oral administration	Abundant	Pontederiaceae	Herb
31	Lila	<i>Citrus sinensis</i>	Malaria	Decoction in water	Oral administration	Abundant	Rutaceae	Tree
32	(a).Man power (b)Poroporo	<i>Sorghum vulgare</i>	(a) Low infertility (b) Anemia (c) Malaria (d) Typhoid fever	(a) Soak in water or alcohol, boil in water (b) Boil in water and the extract is allowed to cool before taken	Oral administration	Abundant	Poaceae	Herb
33	Never die	<i>Kalanchoe pinnata</i>	(a). Children navel problem, stomach disorder, arrest bleeding from wounds (b) Ear problem, unhealed baby navel	Boil in water, the leaves are placed on a heat source to soften them and these are later squeezed to remove the extract and place on the baby navel	(a). The plant is squeeze to remove the extract and place on the baby navel, oral administration. (b). The extract is added in drops into the ear.	Abundant	Crassulaceae	Herb
34	Obirigia	<i>Panda oleosa</i>	Abdominal troubles, abortion and rheumatism	The whole plant is pounded to remove the extract	The extract is administered internally to treat abdominal troubles and abortions and it is administered externally to treat rheumatism	Frequent	Pandaceae	Tree
35	Ogborodi	<i>Smilax kraussinia</i>	Gonorrhea and sexually transmitted diseases	Decoction of the plant.	Oral administration	Frequent	Smilacaceae	Shrub
36	Ogu	<i>Telfaria occidentalis</i>	Diabetes, malaria and low infertility	Cook as vegetable	Eaten as vegetable	Abundant	Cucurbitaceae	Herb
37	Okogolo	<i>Monodora myristica</i>	Sores, wounds, rheumatism, and arthritis	Infusion or decoction of the bark, the seeds are cooked as vegetable	The seeds and uziza seeds are used to prepare soup for woman that just delivered; the extract of the decoction is taken orally.	Frequent	Annonaceae	Tree
38	Opakipaki, Obugotandigha tin	<i>Zanthoxylum gillettii</i>	Bone fracture, rheumatism, diarrhea, gonorrhea	Decoction of the leaves	Oral administration	Frequent	Rutaceae	Tree
39	Osunga	<i>Panicum maximum</i>	Sore Wound	The plant is squeezed to remove the extract	The extract is applied directly on the wound	Very Abundant	Poaceae	Herb

S/N	Local name	Scientific name	Disease(s) cured	Method of Preparation	Method of Utilization	Availability	Family	Habit
40	Osuo	<i>Brassica oleracea</i>	Hernia	Decoction of the leaves the plant	Oral administration	Frequent	Brassicaceae	Herb
41	Oziza, uziza	<i>Piper guineense</i>	(a). Stomach ache or disorder (b). Diarrhoea and stomach ache	(a). Squeeze in water, cook as vegetable (b). Chewing the plant raw	(a). Eaten as a vegetable (b). Oral administration of the extract.	Abundant	Piperaceae	Herb
42	Piriagbaka tin	<i>Pentaclethra macrophylla</i>	Diarrhoea	Decoction in water	Oral administration	Frequent	Mimosaceae	Tree
43	Piriri-tin	<i>Dennettia trippetala</i>	Cough, fever and loss of appetite	Decoction of the leaves	Oral administration	Abundant	Annonaceae	Tree
44	Pulomu	<i>Spondias mombin</i>	Diarrhea, dysentery, cold, fever and gonorrhea	Decoction of the leaves	Oral administration	Abundant	Anacardiaceae	Tree



**Table 2: Classification of the identified medicinal herbs among the Ijaw Tribal Community of Bayelsa State, Nigeria**

Description	Species indentified	Inference
A. Species that grow naturally in the study area	<i>A. conyzoides</i> , <i>A. spinosus</i> , <i>B. alba</i> , <i>B. oleracea</i> , <i>C. bengalensis</i> , <i>D. sandens</i> , <i>E. crassipes</i> , <i>K. pinnata</i> , <i>O. gratissimum</i> , <i>P. pellucida</i> , <i>P. stratiotes</i> , <i>P. leracele</i>	These species are readily available in the study area
B. Species cultivated in the study area	<i>P. guineense</i> , <i>T. occidentalis</i>	These species are readily available in the study area
C. Species that does not grow naturally and were not cultivated appreciably in the study area	<i>A. cepa</i> , <i>G. max</i> , <i>P. maximum</i> , <i>S. vulgare</i> , <i>T. danielli</i>	These species need to be conserved in the study area

**Table 3: Respondents' indigenous knowledge on the identified non-cultivated species in Bayelsa State, Nigeria**

Description	Species	Indigenous Knowledge	Ecological Implication
Ecology	<i>A. cepa</i>	Thrives in fertile and well-drained soils Grow in loamy soils Enjoy economy of space	Capable of cultivation in household area
	<i>G. max</i>	Thrive in loamy soil	Capable of cultivation in the study area
	<i>P. maximum</i>	It is shade-tolerant	Capable of cultivation in the study area
	<i>S. vulgare</i>	Thrive in fertile soil	Capable of cultivation in the study area
	<i>T. danielli</i>	Thrive in fertile soil	Capable of cultivation in the study area
Utilities	<i>A. cepa</i>	Culinary and medicinal	Could enhance cultivation
	<i>G. max</i>	Food (Protein) and medicinal	Could enhance cultivation
	<i>P. maximum</i>	Fodder and medicine	Could enhance cultivation
	<i>S. vulgare</i>	Food and medicine	Could enhance cultivation
	<i>T. danielli</i>	Wrapping, Mat material and medicine	Could enhance cultivation

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