Indigenous Utilization of Forest Plant Leaves in Malaria Treatment in Ogun State, Nigeria

S. D. Idowu, S. A. Oluwalana, S. Momoh, A. M. Aduradola

Abstract
This study examined indigenous utilization of forest plant leaves in malaria treatment in Ogun State, Nigeria to provide further information on the indigenous knowledge of forest plants leaves in healthcare delivery systems. Multi-stage sampling technique was adopted in this study. A total of one hundred and seventy-four respondents were sampled according to population distribution in each area. Well-structured questionnaire were administered through interview schedules on some randomly selected household users. A total of 50 plants species from 31 families were identified. These consisted of trees (44%), shrubs (20%), herbs (22%) and climbers (14%) whose leaves were usually extracted to effect cure during malaria attacks were recorded. Domestication of some of the plant leaves is essential and therefore recommended in order to prevent the extinction of the plants as there are fast disappearance of the African flora especially Nigerians’ due largely to deforestation of conservation of the forest plants.

Keywords: Forest Plants, Leaves–‘Ewe’, Malaria, Concoction, Decoction.

1. Introduction
Forest plant leaves are found within diverse ecological zones of Nigeria. Depending on the species involved, a particular product may be restricted to or span through more than one ecological zone. For instance, leafy vegetables are obtained from various species in the different ecological zones. Leaves are put into different uses, which include food, medicines, roofing, household utensils and cultural values [1-3]. Approximately estimate that eighty percent of the people in developing countries depend on forest plant through traditional medicine for primary health care needs and modern pharmacopoeia still contain at least 25% drugs derived from plants and many others which are synthetic analogues built on prototype compounds isolated from plant [4]. Unfortunately, however, indigenous people have been more than decimated. For instance, the Amerindian population of Brazil is only 0.1% of its 1492 A.D. level and current tribal extinction rates are more than one per year. This is an irreversible loss of cultural diversity and ultimately, loss of indigenous knowledge with a myriad of biological consequences. In addition, natural resources are vanishing before people become aware of their existence [5].

In Nigeria, Malaria is endemic throughout the country, World Health Organization (WHO) estimated malaria mortality rate for children under five in Nigeria at 729 per 100,000. The Ministry of Health reported in April 2004 that malaria is responsible for one out of ten deaths in pregnant women [6]. In Nigeria various plants are used for the managements of malaria and these vary from one locality to another [7, 8]. This study was aimed at documenting indigenous utilization of forest plant leaves in malaria treatment in Ogun State, Nigeria to provide further information on the indigenous knowledge of forest plants leaves in healthcare delivery systems. The results should provide information crucial to a review of forest policy and plant diversity conservation in Ogun State, and Nigeria as a whole.

2. Methodology
2.1 The Study Area
Ogun State, created in February, 1976 from the Old Western State of Nigeria, is one of the 36 states in Nigeria. It covers an area of 16,762km². This includes a total area of 2,371.48km² of forest reserve [9]. The state lies between latitudes 6° and 8°N and longitude 2°31 and 5°E. It is situated in the moist tropical rain forest zone, much of which has been deforested. The State usually experience two seasons, the rainy season between March and November, and the dry season, November to March. Ogun State with a population of 3,728,098 million people [10] has 20 local government areas. The study area (Ogun State) was divided into three areas: Egba, Yewa and Ijebu/Remo as sub-ethnic divisions. The areas were based on ecological and climatic...
factors having political characteristics that fall along sub-
ethnic divisions in the state. Egba and Yewa areas have forest
and derived savanna vegetation types while Ijebu/Remo is in
the rainforest region.

2.2 Sampling Techniques

Multistage sampling procedure was adopted in selecting the
sample population from which data were collected for this
study. The State was first divided into three areas representing
the first stage of sampling which produced a sample of
primary selection unit. Each primary selection unit denotes a
stratum. In the second stage of sampling, from each of these
areas, three (3) local government areas were selected based on
pre-tested survey information. In the third stage, the number
of respondents was determined with Probability Proportional to
Size (PPS) based on population distribution in the strata. One
hundred and seventy-four (174) respondents of forest plant
leaves household user and traditional herbalist were also
randomly selected based on PPS determined number. Ogun
State with a population of 3,728,098 million people [11] has 20
local government areas. The study covers 9 local government
areas (that is 45 percent) from where respondents were
selected. The populations of the strata were as follows:
Egba–1,369,900, Ijebu–1,248,314 and Yewa–1,109,884, with
a pre-determined sample size of 174 respondents, the sampling
pattern was as follows:

Egba–64 Respondents (3 local government areas)
Ijebu–58 Respondents (3 local government areas)
Yewa–52 Respondents (3 local government areas)

3. Results and Discussion

The summary of the plant species, their uses and methods of
use are presented in the tables1. The result showed that fifty
(50) of forest plants species were utilized by the respondents
for malarial treatment. The fifty (50) forest plants species
belongs to 31 families. This is an update of [12] study that
reported 20 species belonging to 16 families [14]. Reported
species) or concoctions. Some management implications can
be deducted from this study, for instance deforestation has
been a bane to sustainable utilization of forest resources
especially in the tropical countries like Nigeria. For instance
majority of the plants are from the wild, if the area is cleared
for other purposes, these plants might not be available for use
again. Also constant plant defoliation might make regeneration
almost near impossible and this is not compatible with the
principles of environmental sustainability while in the early
twentieth century, reforestation was among the weapons used
in the battle to eliminate malaria from Italy [20]. The majority
of the uses were medicinal was not surprising because in
man’s quest for subsistence, some of his foremost priorities
have been food and good health. The results reflect that the use
are broadly known by the respondents though knowledge and
the uses are diverse and varies between individual, families
and communities. There are, however, key individuals who are
custodians of very “sensitive” knowledge. These persons are
those who invariably act as “healers” or “consultants” in their
communities.

4. Conclusion

The concern for deforestation and desertification has made
timber, fuel wood and charcoal popular in forest resources
management. However, this study has revealed that forest
plant leaves are equally important especially in the area of
health care delivery system of rural and urban dwellers. Forest
plant leaves are utilized mainly for various medicinal
purposes. Therefore, the political changes in Nigeria due to
democratization should enhance the formulation of new forest
policies which would be holistic enough to cater for the
sustainable utilization of forest plant leaves in Nigeria.
Table 1: Different Types of Forest Plant Leaves Utilized As Anti-Malaria Treatment in the Study Area

<table>
<thead>
<tr>
<th>S/N</th>
<th>LN</th>
<th>SN</th>
<th>FMY</th>
<th>PF</th>
<th>FU</th>
<th>Method of Use</th>
<th>HBT</th>
<th>PH</th>
<th>Rare</th>
<th>Connected</th>
<th>Ext</th>
<th>Wild</th>
<th>Cvrt</th>
<th>Rpsd</th>
<th>sun</th>
<th>AD</th>
<th>Chem</th>
<th>Freq</th>
<th>SL</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>ÈwéMesén-mesén / Ojúólogbò</td>
<td><em>Abrus precatorius</em> Linn.</td>
<td>Leguminosae: Papilinoideae Climber</td>
<td>F</td>
<td></td>
<td>Prepared as concoction and decoction is taken</td>
<td>DL</td>
<td>D</td>
<td>R</td>
<td>N</td>
<td>N</td>
<td>Y</td>
<td>Y</td>
<td>Y</td>
<td>N</td>
<td>N</td>
<td></td>
<td>3-6mth</td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>ÈwéKajú</td>
<td><em>Anacardium occidentale</em> Linn.</td>
<td>Anacardiaceae Tree</td>
<td>F</td>
<td></td>
<td>Prepared as decoction</td>
<td>DL</td>
<td>A</td>
<td>R</td>
<td>N</td>
<td>Y</td>
<td>N</td>
<td>Y</td>
<td>Y</td>
<td>Y</td>
<td>Y</td>
<td>N</td>
<td>H</td>
<td>1yr</td>
</tr>
<tr>
<td>3</td>
<td>ÈwéAbgárietu</td>
<td><em>Alafia barteri</em> Oliv.</td>
<td>Apocynaceae Herb</td>
<td>F</td>
<td></td>
<td>Prepared as decoction</td>
<td>DL</td>
<td>D</td>
<td>R</td>
<td>N</td>
<td>N</td>
<td>Y</td>
<td>Y</td>
<td>Y</td>
<td>Y</td>
<td>N</td>
<td>N</td>
<td>H</td>
<td>1yr</td>
</tr>
<tr>
<td>4</td>
<td>ÈwéÁhun</td>
<td><em>Aristolabooon</em> De Wild.</td>
<td>Apocynaceae Tree</td>
<td>F/D</td>
<td></td>
<td>Prepared as decoction</td>
<td>DL</td>
<td>A</td>
<td>R</td>
<td>N</td>
<td>N</td>
<td>Y</td>
<td>Y</td>
<td>Y</td>
<td>Y</td>
<td>N</td>
<td>N</td>
<td>H</td>
<td>6mth</td>
</tr>
<tr>
<td>5</td>
<td>Èwéipà / òmísìn</td>
<td><em>Alchornea cordifolia</em> (Schum. &amp;Thonn.) Müll. Arg. Euphobiaceae Shrub / Tree</td>
<td>F/D</td>
<td>Prepared as decoction</td>
<td>B</td>
<td>D</td>
<td>R</td>
<td>N</td>
<td>N</td>
<td>Y</td>
<td>Y</td>
<td>Y</td>
<td>Y</td>
<td>Y</td>
<td>N</td>
<td>H</td>
<td>3-6mth</td>
<td></td>
<td></td>
</tr>
<tr>
<td>6</td>
<td>ÈwéAtare</td>
<td><em>Aframomum melegu</em> a K. Schum.</td>
<td>Zingiberaceae Herb</td>
<td>F</td>
<td></td>
<td>Prepared as decoction</td>
<td>WL</td>
<td>D</td>
<td>R</td>
<td>N</td>
<td>Y</td>
<td>N</td>
<td>Y</td>
<td>Y</td>
<td>Y</td>
<td>Y</td>
<td>N</td>
<td>N</td>
<td>6mth</td>
</tr>
<tr>
<td>7</td>
<td>ÈwéDógónyáro</td>
<td><em>Azadirachta indica</em> A. Juss.</td>
<td>Meliaceae Tree</td>
<td>F</td>
<td></td>
<td>Prepared as decoction</td>
<td>DL</td>
<td>A</td>
<td>R</td>
<td>N</td>
<td>Y</td>
<td>N</td>
<td>Y</td>
<td>Y</td>
<td>Y</td>
<td>Y</td>
<td>Y</td>
<td>N</td>
<td>1yr</td>
</tr>
<tr>
<td>8</td>
<td>ÈwéOparun</td>
<td><em>Bambusa vulgaris</em> Schrad.</td>
<td>Poaceae Tree</td>
<td>D</td>
<td></td>
<td>Prepared as decoction</td>
<td>WL</td>
<td>A</td>
<td>R</td>
<td>N</td>
<td>Y</td>
<td>N</td>
<td>Y</td>
<td>Y</td>
<td>Y</td>
<td>Y</td>
<td>Y</td>
<td>Y</td>
<td>1yr</td>
</tr>
<tr>
<td>9</td>
<td>ÈwélsinOko</td>
<td><em>Blighianjunjuga</em> Bak.</td>
<td>Sapindaceae Tree</td>
<td>F</td>
<td></td>
<td>Prepared as decoction</td>
<td>DL</td>
<td>A</td>
<td>R</td>
<td>N</td>
<td>N</td>
<td>Y</td>
<td>Y</td>
<td>Y</td>
<td>Y</td>
<td>N</td>
<td>N</td>
<td>H</td>
<td>6mth</td>
</tr>
<tr>
<td>10</td>
<td>Èwébépe</td>
<td><em>Carica papaya</em> Linn.</td>
<td>Caricaceae Tree</td>
<td>F</td>
<td></td>
<td>Prepared as decoction</td>
<td>DL</td>
<td>D</td>
<td>R</td>
<td>N</td>
<td>Y</td>
<td>N</td>
<td>Y</td>
<td>Y</td>
<td>Y</td>
<td>Y</td>
<td>N</td>
<td>N</td>
<td>3mth</td>
</tr>
</tbody>
</table>

Source: Field Survey

A: All season  Abnt: Abundant  DL: Dry land  AD: Air Dry  Av: Average  Avbty: Availability
B: Both Dry Land and Wet Land  Chem: Chemical  Cnn: Common  Cvt: Cultivated  D: Dry Season  Ext: Extinct
F: Fresh  F/D: Fresh & Dry  FMY: Family  FU: Form use  H: High  HBT: Habitat
L: Local Name  MWL: Mostly Wet Land  N: No  PF: Plant Form  PH: Period of Harvest  Psd: Purchased

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### Different Types of Forest Plant Leaves Utilized As Anti-Malaria Treatment in the Study Area

| S/N | LN            | SN                          | FMY       | PF | FU | Method of Use                  | HBT | PH | Sce | Abe | Rar | Cmn | Ext | Sre | Psd | Sun | AD | Chem | Freq | SL  |
|-----|---------------|-----------------------------|-----------|----|----|-------------------------------|-----|----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| 11  | Ewé Osánwéwé  | *Citrus aurantifolia* (Christm.) Swingle | Rutaceae  | Tree | F  | Prepared as decoction        | DL  | D  | R   | N   | Y   | N   | Y   | Y   | Y   | Y   | N   | N   | H   | 1yr |
| 12  | Ewé Ajéòbálé  | *Croton zambesicus* Muell. Arg. | Euphorbiaceae | Tree | F  | Prepared as decoction        | DL  | D  | R   | N   | N   | Y   | N   | Y   | Y   | Y   | N   | N   | H   | 1yr |
| 13  | Ewé Ápákó     | *Cleistopholispatens* (Benth.) Engl. & Diels | Annonaceae | Tree | F  | Prepared as decoction        | WL  | R  | D   | N   | Y   | N   | Y   | Y   | Y   | Y   | N   | N   | H   | 6mth|
| 14  | Ewé Êpìà      | *Cleomeviscosa* Linn.        | Capparaceae | Herb | F  | Prepared as concoction or mixed with soap for treating headache | DL  | D  | R   | N   | N   | Y   | N   | Y   | Y   | Y   | Y   | N   | H   | 3mth|
| 15  | Ewé Òdùndún   | *Emilia coccinea* (Sims) G. Don | Asteraceae | Herb | F/D| Prepared as Concoction       | DL  | D  | R   | N   | N   | Y   | N   | Y   | Y   | Y   | Y   | N   | H   | 3mth|

Source: Field Survey.

<table>
<thead>
<tr>
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<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>L:</td>
<td>Rainy season</td>
<td>SL: Shelf Life</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Psvtn: Preservation</td>
<td>R: Rainy season</td>
<td>SN: Scientific Name</td>
<td>Y: Yes</td>
<td>WL: Wet land</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

~ 12 ~
## Continued: Different Types of Forest Plant Leaves Utilized As Anti-Malaria Treatment in the Study Area

<table>
<thead>
<tr>
<th>S/N</th>
<th>LN</th>
<th>SN</th>
<th>FMY</th>
<th>PF</th>
<th>FU</th>
<th>Method of Use</th>
<th>HBT</th>
<th>PH</th>
<th>Rare</th>
<th>Avbty</th>
<th>Snce</th>
<th>Psve</th>
<th>Freq</th>
<th>SL</th>
</tr>
</thead>
<tbody>
<tr>
<td>16.</td>
<td>EwéÉpín</td>
<td><em>Ficusexasperata</em> Vahl</td>
<td>Moraceae Tree</td>
<td>F</td>
<td></td>
<td>Prepared as decoction</td>
<td>DL</td>
<td></td>
<td>R</td>
<td>Y</td>
<td>N</td>
<td>Y</td>
<td>Y</td>
<td>Y</td>
</tr>
<tr>
<td>17.</td>
<td>EwéMáwolúlé</td>
<td><em>Reissantia indica</em> (Willd.) Hallé</td>
<td>Hipperateaceae Climber</td>
<td>F</td>
<td></td>
<td>Prepared as decoction</td>
<td>DL</td>
<td></td>
<td>R</td>
<td>Y</td>
<td>N</td>
<td>Y</td>
<td>Y</td>
<td>Y</td>
</tr>
<tr>
<td>18.</td>
<td>EwéLááli</td>
<td><em>Lawsonia kemphis</em> Linn.</td>
<td>Lytheraceae Shrub</td>
<td>F</td>
<td></td>
<td>Prepared as decoction</td>
<td>DL</td>
<td></td>
<td>R</td>
<td>Y</td>
<td>N</td>
<td>Y</td>
<td>Y</td>
<td>Y</td>
</tr>
<tr>
<td>19.</td>
<td>EwéÉfinrin (Forómábá)</td>
<td><em>Lippia multiflora</em> Mold enke</td>
<td>Verbenaceae Shrub</td>
<td>F</td>
<td></td>
<td>Prepared as decoction</td>
<td>DL</td>
<td></td>
<td>R</td>
<td>Y</td>
<td>N</td>
<td>Y</td>
<td>Y</td>
<td>Y</td>
</tr>
<tr>
<td>20.</td>
<td>EwéYánrin</td>
<td><em>Launaeataraxacifolia</em> (Willd.) Amin. MS ex C. Jeffrey</td>
<td>Asteraceae Herb</td>
<td>F</td>
<td></td>
<td>Prepared as decoction</td>
<td>DL</td>
<td></td>
<td>R</td>
<td>Y</td>
<td>N</td>
<td>Y</td>
<td>Y</td>
<td>Y</td>
</tr>
<tr>
<td>21.</td>
<td>Ewé Mángorò</td>
<td><em>Mangifera indica</em> Linn.</td>
<td>Anacardiaceae Tree</td>
<td>F</td>
<td></td>
<td>Prepared as decoction</td>
<td>DL</td>
<td></td>
<td>R</td>
<td>Y</td>
<td>N</td>
<td>Y</td>
<td>Y</td>
<td>Y</td>
</tr>
</tbody>
</table>

Source: Field Survey.

|---------------|----------------|--------------|-------------|-------------|---------------------|-------------------------------|----------------|-------------|----------------|---------------|---------------|

~13~
Continued: Different Types of Forest Plant Leaves Utilized As Anti-Malaria Treatment in the Study Area

<table>
<thead>
<tr>
<th>SN</th>
<th>LN</th>
<th>SN</th>
<th>FMY</th>
<th>PF</th>
<th>FU</th>
<th>Method of Use</th>
<th>HBT</th>
<th>PH</th>
<th>Avbty</th>
<th>Srce</th>
<th>Psvtn</th>
<th>PSvrn</th>
<th>Freq</th>
<th>SL</th>
</tr>
</thead>
<tbody>
<tr>
<td>22.</td>
<td>Ewé Ejinrin</td>
<td><em>Momordica charantia</em></td>
<td>Cucurbitaceae</td>
<td>Climber</td>
<td>F</td>
<td>Prepared as decoction</td>
<td>DL</td>
<td>D</td>
<td>R</td>
<td>N</td>
<td>Y</td>
<td>N</td>
<td>Y</td>
<td>Y</td>
</tr>
<tr>
<td>23.</td>
<td>Ewé Itó</td>
<td><em>Millettia thonningii</em> (Schum. &amp; Thonn.) Bak.</td>
<td>Leguminosae: Papilionoideae</td>
<td>Tree</td>
<td>F</td>
<td>Prepared as decoction</td>
<td>WL</td>
<td>D</td>
<td>R</td>
<td>N</td>
<td>Y</td>
<td>N</td>
<td>Y</td>
<td>Y</td>
</tr>
<tr>
<td>24.</td>
<td>Ewé Wèrèpè</td>
<td><em>Mucuna puriens</em> (Lin n.) DC. var. puriens</td>
<td>Leguminosae: Papilionoideae</td>
<td>Climber</td>
<td>F</td>
<td>Prepared as decoction</td>
<td>DL</td>
<td>D</td>
<td>R</td>
<td>N</td>
<td>Y</td>
<td>N</td>
<td>Y</td>
<td>Y</td>
</tr>
<tr>
<td>25.</td>
<td>Ewé Akòko</td>
<td><em>Newbouldia laevis</em> (P. Beauv.) Seemann ex Bureau</td>
<td>Bignoniaceae</td>
<td>Tree</td>
<td>F</td>
<td>Prepared as decoction</td>
<td>DL</td>
<td>D</td>
<td>R</td>
<td>N</td>
<td>Y</td>
<td>N</td>
<td>Y</td>
<td>Y</td>
</tr>
<tr>
<td>26.</td>
<td>Ewé Efínrininosó</td>
<td><em>Occimum grattissimum</em></td>
<td>Labitaceae</td>
<td>Shrub</td>
<td>F</td>
<td>Prepared as decoction</td>
<td>DL</td>
<td>D</td>
<td>R</td>
<td>N</td>
<td>Y</td>
<td>N</td>
<td>Y</td>
<td>Y</td>
</tr>
<tr>
<td>27.</td>
<td>Ewé Èyìn Olóbe</td>
<td><em>Phyllanthus amarus</em> Sc hum. &amp; Thonn.</td>
<td>Euphorbiaceae</td>
<td>Herb</td>
<td>F</td>
<td>Prepared as decoction</td>
<td>DL</td>
<td>D</td>
<td>R</td>
<td>N</td>
<td>Y</td>
<td>N</td>
<td>Y</td>
<td>Y</td>
</tr>
</tbody>
</table>

Source: Field Survey.

A: A: All season  Abnt: Abundant  DL: Dry land  AD: Air Dry  Av: Average  Avbty: Availability  
B: B: Both Dry Land and WetLand  Chem: Chemical  Cmm: Common  Cvt: Cultivated  D: Dry Season  Ext: Extinct  
L: L/N: Local Name  MWL: Mostly WetLand  N: No  PF: Plant Form  PH: Period of Harvest  Psd: Purchased  
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<th>SN</th>
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<th>FU</th>
<th>Method of Use</th>
<th>HBT</th>
<th>SL</th>
</tr>
</thead>
<tbody>
<tr>
<td>28.</td>
<td>EwéEmígbégi</td>
<td><em>Pseudocedrelakotschyii</em> (Schweinf.) Harms</td>
<td>Meliaceae</td>
<td>Tree</td>
<td>F</td>
<td>Prepared as decoction</td>
<td>DL</td>
<td></td>
</tr>
<tr>
<td>29.</td>
<td>EwéEfòn</td>
<td><em>Piper umbellatum</em> Linn.</td>
<td>Piperaceae</td>
<td>Climber</td>
<td>F</td>
<td>Prepared as decoction</td>
<td>DL</td>
<td></td>
</tr>
<tr>
<td>30.</td>
<td>EwéPonjúOwìi</td>
<td><em>Reissantia indica</em> (Willd.) N.Hallé</td>
<td>Celastraceae</td>
<td>Shrub</td>
<td>F/D</td>
<td>Prepared as decoction</td>
<td>DL</td>
<td></td>
</tr>
<tr>
<td>31.</td>
<td>EwéEkikáiyeỳè</td>
<td><em>Spondiasmombin</em> Linn.</td>
<td>Anacardiaceae</td>
<td>Tree</td>
<td>F</td>
<td>Prepared as decoction</td>
<td>DL</td>
<td></td>
</tr>
<tr>
<td>32.</td>
<td>EwéIfìn</td>
<td><em>Sida rhombifolia</em> Linn.</td>
<td>Malvaceae</td>
<td>Perennial</td>
<td>Herb</td>
<td>Prepared as decoction</td>
<td>DL</td>
<td></td>
</tr>
<tr>
<td>33.</td>
<td>Ewéldì / Orín Pupa</td>
<td><em>Terminaliaschimperi</em> anaHochst.</td>
<td>Combretaceae</td>
<td>Tree</td>
<td>F</td>
<td>Prepared as decoction</td>
<td>DL</td>
<td></td>
</tr>
<tr>
<td>34.</td>
<td>EwéAkó-reere</td>
<td><em>Trichilamonadelpha</em> (Thonn.) J.J. De Wilde</td>
<td>Meliaceae</td>
<td>Tree</td>
<td>F</td>
<td>Prepared as decoction</td>
<td>DL</td>
<td></td>
</tr>
<tr>
<td>35.</td>
<td>EwéEwúro</td>
<td><em>Vernoniaamygdalina</em> Del.</td>
<td>Asteraceae</td>
<td>Shrub / Tree</td>
<td>F</td>
<td>Prepared as concortion, decortion also squeezed to drink the extract.</td>
<td>DL</td>
<td></td>
</tr>
</tbody>
</table>

Source: Field Survey.

- A: A: All season
- Abnt: Abundant
- DL: Dry land
- AD: Air Dry
- Av: Average
- Avbty: Availability
- B: B: Both Dry Land and WetLand
- Chem: Chemical
- Cmn: Common
- Cvt: Cultivated
- D: Dry Season
- Ext: Extinct
- F: F: Fresh
- F/D: Fresh & Dry
- FMY: Family
- FU: Form use
- H: High
- HBT: Habitat
- L: Low
- L/N: Local Name
- MWL: Mostly WetL
- andN: No
- PF: Plant Form
- PH: Period of Harvest
- Psd: Purchased
- Psvtn: Preservation
- R: Rainy season
- SL: Shelf Life
- Srce: Source
- SN: Scientific Name
- Y: Yes
- WL: Wet land
Continued: Different Types of Forest Plant Leaves Utilized As Anti-Malaria Treatment in the Study Area

<table>
<thead>
<tr>
<th>S/N</th>
<th>LN</th>
<th>SN</th>
<th>FMY</th>
<th>PF</th>
<th>FU</th>
<th>Method of Use</th>
<th>HBT</th>
<th>PH</th>
<th>Abt</th>
<th>Rare</th>
<th>Avbty</th>
<th>Ext</th>
<th>Wild</th>
<th>Ctv</th>
<th>Ped</th>
<th>Sun</th>
<th>AD</th>
<th>Chem</th>
<th>Freq</th>
<th>SL</th>
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<tbody>
<tr>
<td>36</td>
<td>Ewélá</td>
<td>CucumismeloLinn.</td>
<td>Cucurbitaceae</td>
<td>Herb</td>
<td>F</td>
<td>Mixed with soap for bathing</td>
<td>WL</td>
<td>D</td>
<td>R</td>
<td>N</td>
<td>Y</td>
<td>Y</td>
<td>Y</td>
<td>Y</td>
<td>Y</td>
<td>Y</td>
<td>Y</td>
<td>N</td>
<td>N</td>
<td>H</td>
</tr>
<tr>
<td>37</td>
<td>Ewéléjú</td>
<td>Gongronemalatifoliu mBenth.</td>
<td>Asclepiadaceae</td>
<td>Climber</td>
<td>F/D</td>
<td>Prepared as decoction</td>
<td>DL</td>
<td>D</td>
<td>R</td>
<td>N</td>
<td>Y</td>
<td>Y</td>
<td>Y</td>
<td>Y</td>
<td>Y</td>
<td>Y</td>
<td>Y</td>
<td>N</td>
<td>H</td>
<td>1yr</td>
</tr>
<tr>
<td>38</td>
<td>EwéOrúwo</td>
<td>MorindalucidaBenth.</td>
<td>Rubiaceae</td>
<td>Tree</td>
<td>F</td>
<td>Prepared as decoction</td>
<td>DL</td>
<td>D</td>
<td>R</td>
<td>N</td>
<td>Y</td>
<td>N</td>
<td>Y</td>
<td>Y</td>
<td>Y</td>
<td>Y</td>
<td>Y</td>
<td>N</td>
<td>H</td>
<td>1yr</td>
</tr>
<tr>
<td>39</td>
<td>EwélúOkété</td>
<td>Pyrenaanthastaudtii (Engl.) Engl.</td>
<td>Icacinaceae</td>
<td>Shrub/ Small Tree</td>
<td>F</td>
<td>Prepared as decoction</td>
<td>WL</td>
<td>D</td>
<td>R</td>
<td>N</td>
<td>Y</td>
<td>N</td>
<td>Y</td>
<td>Y</td>
<td>Y</td>
<td>Y</td>
<td>Y</td>
<td>N</td>
<td>H</td>
<td>1mth</td>
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<tr>
<td>40</td>
<td>EwéGilófá</td>
<td>PsidiumguajavaLinn.</td>
<td>Myrtaceae</td>
<td>Tree</td>
<td>F</td>
<td>Prepared as decoction</td>
<td>DL</td>
<td>D</td>
<td>R</td>
<td>N</td>
<td>Y</td>
<td>N</td>
<td>Y</td>
<td>Y</td>
<td>Y</td>
<td>Y</td>
<td>Y</td>
<td>N</td>
<td>H</td>
<td>6mth</td>
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<tr>
<td>41</td>
<td>EwéÈgbési</td>
<td>Sarcocphasalatifoli um(Sm.)E.A Bruce</td>
<td>Rubiaceae</td>
<td>Shrub/Tree</td>
<td>F/D</td>
<td>Prepared as decoction</td>
<td>WL</td>
<td>D</td>
<td>R</td>
<td>N</td>
<td>Y</td>
<td>N</td>
<td>Y</td>
<td>Y</td>
<td>Y</td>
<td>Y</td>
<td>Y</td>
<td>N</td>
<td>H</td>
<td>1mth</td>
</tr>
</tbody>
</table>

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A: A: All season  Abnt: Abundant  DL: Dry land  AD: Air Dry  Av: Average  Avbty: Availability
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L L/N: Local Name  MLW: Mostly WetLandN: No  PF: Plant Form  PH: Period of Harvest  Psd: Purchased

Continued: Different Types of Forest Plant Leaves Utilized As Anti-Malaria Treatment in the Study Area
<table>
<thead>
<tr>
<th>SN</th>
<th>LN</th>
<th>SN</th>
<th>FMY</th>
<th>PF</th>
<th>FU</th>
<th>Method of Use</th>
<th>HBT</th>
<th>PH</th>
<th>Avbty</th>
<th>Av</th>
<th>Cmn</th>
<th>Ext</th>
<th>Wild</th>
<th>Ctvt</th>
<th>Ps</th>
<th>Freq</th>
<th>SL</th>
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<tr>
<td>42.</td>
<td>EwéÀbámó</td>
<td>Bryophyllum pinnatum (Lam.) Oken</td>
<td>Crassulaceae</td>
<td>Herb</td>
<td>F</td>
<td>Prepared as Concoction</td>
<td>DL</td>
<td>D</td>
<td>R</td>
<td>N</td>
<td>Y</td>
<td>N</td>
<td>Y</td>
<td>Y</td>
<td>Y</td>
<td>N</td>
<td>N</td>
</tr>
<tr>
<td>43.</td>
<td>Ewé Àrùnpálé</td>
<td>Chenopodium ambiosioides Linn.</td>
<td>Chenopodiaceae</td>
<td>Herb</td>
<td>F</td>
<td>Prepared as Concoction</td>
<td>DL</td>
<td>A</td>
<td>N</td>
<td>Y</td>
<td>N</td>
<td>Y</td>
<td>N</td>
<td>Y</td>
<td>Y</td>
<td>N</td>
<td>N</td>
</tr>
<tr>
<td>44.</td>
<td>EwéOsùnsún</td>
<td>Microdesmis puberula Hook. f. ex Planch</td>
<td>Pandaceae</td>
<td>Shrub/Tree</td>
<td>F</td>
<td>Prepared as decoction</td>
<td>DL</td>
<td>D</td>
<td>R</td>
<td>N</td>
<td>Y</td>
<td>N</td>
<td>N</td>
<td>Y</td>
<td>Y</td>
<td>Y</td>
<td>N</td>
</tr>
<tr>
<td>45.</td>
<td>Ewélá</td>
<td>Mucunas sloanei Fawcett &amp; Rendle</td>
<td>Leguminosae: Papilionoideae</td>
<td>Climber</td>
<td>F</td>
<td>Prepared as concoction and also in powdery form, mix with cream or soap.</td>
<td>DL</td>
<td>D</td>
<td>R</td>
<td>N</td>
<td>Y</td>
<td>N</td>
<td>N</td>
<td>Y</td>
<td>Y</td>
<td>Y</td>
<td>N</td>
</tr>
<tr>
<td>46.</td>
<td>EwéTábá</td>
<td>Nicotiana tabacum Linn.</td>
<td>Solonaceae</td>
<td>Herb</td>
<td>F</td>
<td>Prepared as decoction</td>
<td>DL</td>
<td>D</td>
<td>R</td>
<td>N</td>
<td>Y</td>
<td>N</td>
<td>N</td>
<td>Y</td>
<td>Y</td>
<td>Y</td>
<td>N</td>
</tr>
</tbody>
</table>

Source: Field Survey.

Fig 1: Forest Plants Leaves Type Categorization in the Study Area

5. References