

## **Cheklis of Plants Used Traditionally to treat Menstrual Disorders in Ekiti-State, Nigeria. Need for Conservation as a Sustainable Practice in Healthcare Management in Rural Areas.**

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**Abstract:** *The use of traditional plants by the people of Ekiti State, is a practice of great results to its inhabitants over generations. A checklist of plants used traditional to treat Menstrual Disorders in Ekiti South Senetorial District, Ekiti-State, Nigeria was carried out. A total of 40 plants belonging to 30 families were identified. The plant parts varied from leaves (30, 76% plants), seeds (5, 13% plants), fruits (3, 8% plants) and stem bark (2, 3% plants), respectively. Dysmenorrhoea (painful menstruation), Menorrhagia (excessive bleeding), Oligomenorrhoea (irregular menstruation), Hypomenorrhoea (scanty menstruation) and Amenorrhoea (absence of menstruation) were identified. The frequencies of citation shows that *Mormodica charantia* has the highest pecentage frequency of 35%, followed by *Ocimum gratissimum* (27%). The informant consensus shows that *Dysmenohroea* and *Menorrhagia* had a greater number of plants species with 0.73, while *Amenohroea* has the least. Most of the plants found suitably used are rare (37.5%), abundant plant species was (32.5 %), while just abundant (30 %) respectively. The use of the plants revealed that the plants were safe (99), cheap (98), readily available (97) and the plants has little or no side effect (96). Strategies that would conserved the rare species were proposed.*

**Keywords:** *Menstrual disorders, plants, traditional management, conservation, strategies*

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### **I. Introduction**

Recently, there are a large number of people who are affected with different type of sicknesses and diseases affecting different part of their body. Historically, the indigenous practice of managing forest and its products are not only providing man with food but also served as an agent of protection and healing to the mankind (Elujoba *et al.*, 2005, Mahmood *et al.*, 2013). The people, especially the women living in the rural areas or communities adopted traditional approach of indigenous tribe knowledge of medicinal plants for the treatment of various ailments and diseased conditions. Diseased conditions such as fibroids, pains, fever, breast cancer, infertilities, menstrual disorders, abortion, delivery problems, menopausal problems as challenged among others are managed through the use of plants. People in the rural area are close and having access to the plants better than people living in the urban centre (Patel, 2012; Lawal *et al.*, 2013, Olanipekun *et al.*, 2016). Also the suitability and the reliability of medicinal plants had been proved over the years by trial and error for many generations. Besides, plants are not scarce, they are readily available, easily exploited or harvested, they do not require special skill for their preparations.

The roles of women in a particular environment or locality are so enormous and they cannot be over emphasized. The services of women could be physically and mentally quite tasking. Women occupy various positions as leaders and subordinates in our society, homes, various government and non-governmental offices where they received wages for their sustenance. Women are role models in the communities, they are mostly consulted using homemade remedies and traditional health management of their household members as primary health services. They are very strong and occupy leadership positions, so valuable as a major stakeholder in the agro-forestry activities, economic, education, health and political settings etc. However, in spite of all these qualities and responsibilities, women have a naturally endowed health challenged condition called Menstruation (Patel, 2012; Lawal *et al.*, 2013; Zahra and Adeel, 2014; Olanipekun *et al.*, 2016).

Menstruation is a monthly process of shedding the old or matured uterine lining of the uterus to make way for the new ones. Menstruation is a quite challenging experience that normally occurs at every average interval of 28 days in women. Every woman is expected to experience an average of 400 menstrual cycles in her child bearing lifetime (Ayodele, 1988; Yadav *et al.*, 2006). Millions of women across the globe, both in rural and urban communities suffer from menstrual pains syndromes such as menorrhagia (excessive bleeding), dysmenorrhoea (painful menstruation), oligomenorrhoea (irregular menstruation), hypomenorrhoea (scanty menstruation) and amenorrhoea (absence of menstruation). The most common symptoms ranges from abdominal pains, mood instability, irritability, nervous tension, headache, increased appetite, palpitations, weaknesses, dizziness and fainting, weight gain, swollen hands and feet, swelling and sensitivity of breast, penchant to sweets, swelling and abdominal bloating, depression, poor memory and insomnia (Rajni *et al.*, 2009; Singh *et*

al.,1999; Singh, 2006; Olanipekun *et al.*, 2016). These challenge has been handled through convectional methods as well as traditional ways by the rural people. Modern medical facilities are available with the help of government intervention and the services have been helping in managing cases associated with the menstruation through the primary health care services both in the rural and urban centers. However, there are cases of potential side effects such as severe pains, nausea, vomiting, skin rashes, digestive problems which in most times put the users off from adopting conventional methods. Also, the services are expensive compared to their economy and the drugs sometimes are not readily available, therefore making the rural people still involving in the use of traditional knowledge they have gathered over years in curing many diseases. The use of herbal medicines are found to be the saving grace because plants are cheap, easily available and patient friendly. Hence, most rural dwellers rely on their indigenous traditional knowledge of herbal medicine to cure different ailments, rather than the use of modern medicine.

The importance of medicinal plants in meeting the treatment of menstrual disorders cannot be overemphasized. The use of Plants from generation to generation has proved effective because plants contain a lot of bioactive ingredients that are responsible for its action. However, the various anthropogenic activities in world is resulting in the reduction in the availability of forest products, thus making the forest facing the threat of depletion (Elujoba *et al.*, 2005, Ayodele 2005, Saeed *et al.*, 2004, Tagola and Diallo, 2005, Olanipekun *et al.*, 2013). Also there is a gross dearth in the documentation and conservation of plants having the potential to treat menstrual disorder in the study area.

Keeping this in view, the present study was initiated with the aim of documenting the traditional plants treating menstrual disorders with the view of identifying the rare ones and propose the conservation measures that ensures their availability for its continuous existence.

## II. Materials and Methods

### The Study Area

The research was conducted in five villages in Ekiti West Local Government Area of Ekiti-State, namely Ipole-Iloro Ekiti, Ikogosi Ekiti, Erijiyan Ekiti, Aramoko Ekiti and Erio Ekiti. Ekiti West has an area of 346 km and a population of 165,277 (Population Census, 2006).

Ethno- botanical information on medicinal plants found to be useful in the treatment of menstrual disorders were obtained through the administration of Semi-Structured questionnaires distributed to the respondents which were mostly women, farmers, traditional clinic workers, traditional healers, herbalists and individuals who have the knowledge about the use of plants around them or have inherited the knowledge from their forefathers.

### Methods

The identified plants were collected and documented. The voucher specimens of the identified plants were prepared and deposited at the herbarium unit of Plant Science and Biotechnology Department of Ekiti State University, Ado Ekiti. The scientific name, family name, parts used, abundance status, methods of preparation and mode of administration were documented. Similarly, the frequency of citation and informants consensus agreement which revealed the reliability and credibility on the utilization reports were also obtained. Also, the conservation measures that ensured the availability and sustainability of the rare species were identified.

The data were spread on Excel sheet and encoded using Statistical Package for Socio Sciences (SPSS). Descriptive statistical tools (percentages, frequencies and mean) were used to summarize the data.

Frequency of citation (%) ( $F_c$ ) was calculated by using the following formula:

$$F_c = \frac{\text{Number of informants who cited the species}}{\text{Total number of informants interviewed}} \times 100$$

Total number of informants interviewed

Factors of informant consensus ( $F_{ic}$ ) on the knowledge used for different menstrual disorder was calculated using the methods provided by (Trotter and Logan,1991) and (Heinrich *et al.*,2009)

$$F_{ic} = \frac{N_{ur} - N_{TAXA}}{N_{ur} - 1}$$

$N_{ur}$  - 1

$F_{ic}$  = Factor of informant consensus

$N_{ur}$  = Number of used reports in a particular ailment

$N_{TAXA}$  = Number of taxa used to treat that particular ailment

## III. Results and discussion

A total of 40 botanicals belonging to 30 families were identified (Table 1). The common names and the various used parts were documented. The predominant parts that are used were leaves (30, 76 % plants), seeds (5, 13 % plants), fruits (3, 8 % plants) and stem bark (2, 3 % plants), respectively (Fig.1). The habit of the plants were mostly trees (18, 46 %), shrubs (10, 27 %), climber (4, 8 %) and herbs (8, 19 %), respectively (Fig. 2).

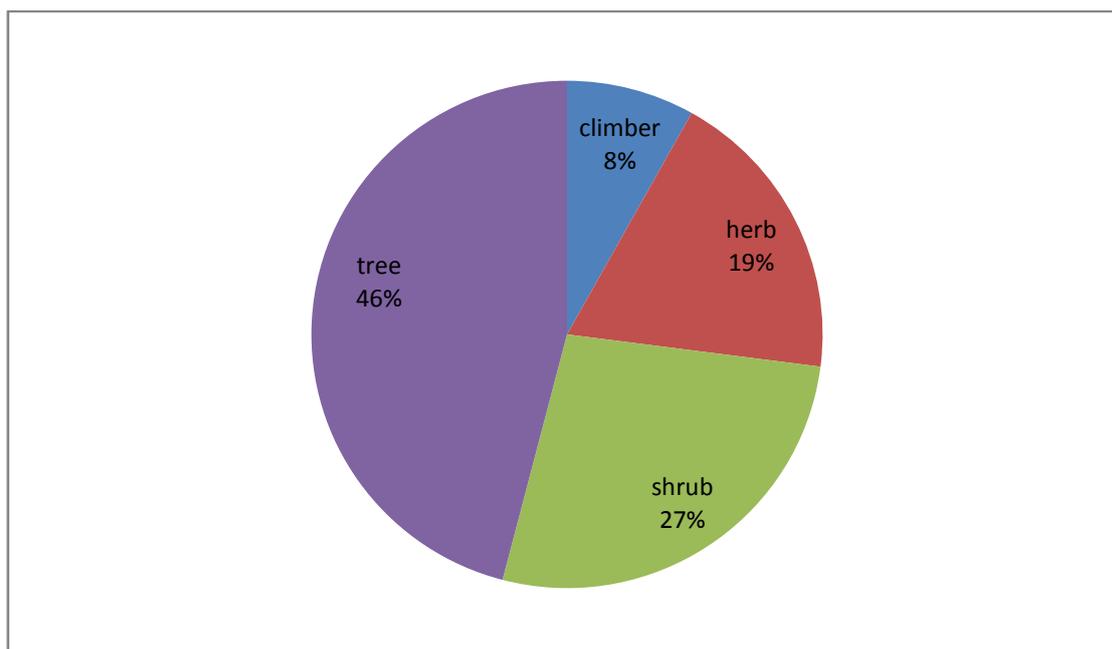
Also, the frequency of citation was found that *Mormodica charantia* has the highest percentage frequency of 35 %, followed by *Ocimum gratissimum* (27 %) (Table 1). Table 2 shows the informant consensus on the traditionally used species for treat various menstrual disorders. It was observed that dysmenohroea and menorrhagia were conditions that had a greater number of plants species with the informant consensus of 0.73, while Amenohroea has the least (Table 2). Also, most of the plants found suitably used are rare (37.5 %) on the abundance scale compared to the plants that are very abundant (32.5 %) and just abundant (30 %), respectively (Table 3). The respondents perception on the use of the plants revealed that the plants were safe (99), cheap (98), readily available (97) and the plants have little or no side effect (96), respectively (Table 4).

**Table 1.** Plants used in treating menstrual disorders in Ekiti State.

| No | Botanical name                              | Family         | Common name                          | Part used     | Habit/Life form | F <sub>c</sub> (%) |
|----|---|----------------|--------------------------------------|---------------|-----------------|--------------------|
| 1  | <i>Abrus precatorius</i> L.                 | Papilionaceae  | Crab's eye                           | Leaf          | Climber         | 1                  |
| 2  | <i>Aframomum melegueta</i> k. Schum.        | Zingiberaceae  | Alligator pepper                     | Seed          | Herb            | 3                  |
| 3  | <i>Ageratum conyzoides</i> L.               | Asteraceae     | Goat weed                            | Leaf          | Herb            | 5                  |
| 4  | <i>Alchornea laxiflora</i> L.               | Euphorbiaceae  | Canestiks                            | Leaf          | Shrub           | 10                 |
| 5  | <i>Allium ascalonicum</i> L.                | Liliaceae      | Onions                               | Leaf/<br>bud  | Herb            | 3                  |
| 6  | <i>Aspilia africana</i> C.D Adams           | Asteraceae     | Haemorrhage plant,<br>Bush marigold  | Leaf          | Herb            | 10                 |
| 7  | <i>Baphia nitida</i> Lodd.                  | Leguminosae    | Cam wood                             | Stem/<br>Leaf | Tree            | 1                  |
| 8  | <i>Bryophyllum pinnatum</i> Lam.            | Crassulaceae   | Resurrection or life<br>plant        | Leaf          | Herb            | 1                  |
| 9  | <i>Chromolaena odorata</i> Linn.            | Asteraceae     | Bitter bush                          | Leaf          | Shrub           | 1                  |
| 10 | <i>Cynometra mannii</i> Oliv                | Fabaceae       | Cynometra                            | Bark          | Tree            | 1                  |
| 11 | <i>Citrus aurantifolia</i> Christm          | Rutaceae       | Auce lime                            | Fruit         | Tree            | 2                  |
| 12 | <i>Cissampelos owariensis</i> P. Beau       | Menispermaceae | Cissampelos<br>pregnancy herb        | Leaf          | Shrub           | 19                 |
| 13 | <i>Cola nitida</i> Schot                    | Sterculiaceae  | Cola                                 | Seed          | Tree            | 2                  |
| 14 | <i>Detarium microcarpum</i> Guill & Perr.   | Caesalpinaceae | Detarium                             | Leaf          | Shrub           | 5                  |
| 15 | <i>Diospyros alboflavescens</i> Gurke.      | Ebenaceae      | Diospyros                            | Bark          | Tree            | 4                  |
| 16 | <i>Ficus exasperata</i> Vatil.              | Moraceae       | Sand paper leaves                    | Leaf          | Tree            | 5                  |
| 17 | <i>Heliotropium indicum</i> L               | Boraginaceae   | Indian heliotrope                    | Leaf          | Herb            | 3                  |
| 18 | <i>Hyperium perforatum</i> John watt.       | Hypericaceae   | Hypefora                             | Leaf          | Tree            | 1                  |
| 19 | <i>Ipomoea batatas</i> Lam.                 | Convolvulaceae | Sweet potatoe                        | Leaf          | Climber         | 1                  |
| 20 | <i>Jatropha curcas</i> Leeuwen.             | Euphorbiaceae  | Barbados nut /<br>purging nut        | Leaf          | Tree            | 10                 |
| 21 | <i>Jatropha gossypifolia</i> L.             | Euphorbiaceae  | Cotton leaf                          | Leaf          | Shrub           | 21                 |
| 22 | <i>Jaundeia pinnate</i> Lawsonia.           | Connasaceae    | Lawsonia                             | Leaf          | Shrub           | 1                  |
| 23 | <i>Khaya ivorensis</i> Lova.                | Mohaceae       | Mahogamy                             | Bark          | Tree            | 2                  |
| 24 | <i>Kigelia africana</i> Lam.                | Bignoniaceae   | Africa sausage tree                  | Fruit         | Tree            | 9                  |
| 25 | <i>Momordica charantia</i> L.               | Cucurbitaceae  | Bitter gourd                         | Leaf          | Climber         | 35                 |
| 26 | <i>Mucuna flagellipes</i> H.                | Fabaceae       | Ijokun                               | Leaf          | Climber         | 1                  |
| 27 | <i>Musa sapientum</i> L.                    | Musaceae       | Banana                               | Fruit         | Tree            | 2                  |
| 28 | <i>Myrianthus arboreus</i> P. Beauv.        | Moraceae       | Myrianthus                           | Leaf          | Tree            | 2                  |
| 29 | <i>Newbouldia laevis</i> P. Beauv.          | Bignoniaceae   | Africatulip tree                     | Leaf          | Tree            | 1                  |
| 30 | <i>Ocimum gratissimum</i> L.                | Lamiaceae      | Mint                                 | Leaf          | Herb            | 27                 |
| 31 | <i>Parquetina nigrescens</i> Afzel.         | Periplocaceae  | Atufa                                | Leaf          | Climber         | 22                 |
| 32 | <i>Pennisetum purpureum</i> Seifu.          | Poaceae        | Elephant grass                       | Leaf          | Herb            | 2                  |
| 33 | <i>Phyllanthus muellerianus</i> .<br>Kuntze | Phyllanthaceae | Leaf flower / stone<br>breaker       | Leaf          | Herb            | 3                  |
| 34 | <i>Piper guineense</i> Schum. &<br>Thonn    | Piperaceae     | Africa Black<br>pepper               | Seed          | Climber         | 2                  |
| 35 | <i>Pizralima nitida</i> .                   | Apocynaceae    | Pizra plant                          | Seed          | Shrub           | 2                  |
| 36 | <i>Senna podocarpa</i> (Guill. &<br>Pers.)  | Caesalpinaceae | Senna                                | Leaf          | Tree            | 1                  |
| 37 | <i>Spondias mombin</i> L.                   | Anarcadaceae   | Yellow mombin                        | Leaf          | Tree            | 2                  |
| 38 | <i>Talinum triangulae</i> Rbda.             | Portulacacicea | Water leaf                           | Leaf          | Herb            | 2                  |
| 39 | <i>Tragia spathulata</i> Lam.               | Euphorbiaceae  | Indian stinging /<br>climbing nettle | Leaf          | Herb            | 12                 |
| 40 | <i>Vernonia amygdalina</i> L.               | Asteraceae     | Bitter leaf                          | Leaf          | Tree            | 6                  |

F<sub>c</sub>= Frequency of citation

#### Plant parts used for treating menstrual disorders



**Figure 2:** Growth habits of the identified plants.

**Table 2:** Informant consensus on the use of plant for the treatment of menstrual disorders in Ekiti-State

| Menstrual disorder, | Species extracted and used for cure   | F <sub>ic</sub> |
|---------------------|---|-----------------|
| Dysmenorrhoea       | <i>Ocimum gratissimum, Vernonia amgdalina, Khaya ivorensis, Aspilia africana, Momordica charantia, Detariu microcapum, Cissampelos owarensis Senna podocarpa, Jatropha curcas, Jatroph gossypifolia Alchornea laxiflora, Parquetina nigrescenes, Hypericum perforatum, Abrus precatorius, Spondia mombin, Heliotricum indicum, Citrus aurantifolia, Pizralima nitida, Tragia spathulata, Chromolaena odorata, Ipomoea batatas, Myrianthus arboreus, Newbouldias laevis, Aframomum melegueta and Cola nitida</i> | 0.73            |
| Oligomenorrhoea     | <i>Pennisetum purpureum, Cissampelos owariensis, Momordica charantia, Aspilia africana, Alchornea laxiflora, Parquetina nigrescenes, Helitrocum indium, Hyperium perforatum, Abrus precatorius, Bryophyllum pinnatum, Detarium microcarpum, Ficus exasperate, Jatropha curcas, and Jaundea pinnate</i>  | 0.54            |
| Menorrhagia         | <i>Ficus exasperata, Aspila africana and Spondia mombins, Alchornea laxiflora, Ocimum gratissimum, Momordica charantia, Alchornea laxiflora Hypericum perforatum, Parquetina nigrescenes, phyllathus muelerianas, Cissampelos owariensis, Jatropha curcas Jatropha gossypifolia, Heliotricum indicum and Ageratum conyzoides.</i>   | 0.73            |
| Hypomenorrhoea      | <i>Mucuna flagellipes, Jatropha gossypifolia, Ageratum conyzoides, Jatropha curcas</i>  | 0.52            |
| Amenorrhoea         | <i>Momordica charantia, Alchornea laxiflora, Hyperium perforatum, Ficus exasperate, Phyllanthus muelerianas, Ocimum gratissimum, Parquetina nigrescenes, Cissampelos owariences, Jatropha curcas, and Jatropha gossypifolia .</i>   | 0.17            |

**Table 3:** The availability of the identified plants species used in treating menstrual disorder in Ekiti-State.

| Abundance     | Species  | Proportion (%) of the species |
|---------------|--|-------------------------------|
| Very abundant | <i>Ageratum conyzoides, Alchornea laxiflora, Allium ascalonicum, Aspilia Africana, Chromolaena odorata, Citrus aurantifolia, Momordica charanta, Musa spp, Ocimum gratissimum, Piper guinenses, Spondias mombin, Talinum triangulae, Vernonia amygdalina</i>   | 32.5                          |
| Abundant      | <i>Abrus precatorious, Aframonum melegueta, Baphia nitida, Cola nitida, Ficus exasperate, Ipomoea batatas, Jatropha curcas, Jatropha gossypifolia, Kigelia africana, Mucuna flagellipes, Parquetina nigrescenes, Tragia spathulata</i>   | 30                            |
| Rare          | <i>Bryophyllum pinnatum, Cynometra mannii, Cissampelos owariensis, Detarium microcapum, Diospyrousal boflavescens, Heliotropium indicum, Hyperium perforatum, Jaundea pinnate, Khaya ivorensis, Myrianthus arboreus, Myrianthus arboreus, Neubouldia laevis, Pennisetum purpureum, Phyllanthus muellerianus, Pizralima nitida, Senna podocarpa</i> | 37.5                          |

**Table 4:** Respondents perception on the identified species in the study area.

| Rank | Feature                   | Proportion (%) of respondents |
|------|---------------------------|-------------------------------|
| 1    | Safe                      | 99                            |
| 2    | Cheap                     | 98                            |
| 3    | Readily available         | 97                            |
| 4    | Little or no side effects | 96                            |

#### IV. Discussion

The results revealed the study area was consisted of various plants suitable as medicinal remedies against diseases. Various part of plants such as leaves, fruits, seeds and stem barks are used traditionally in the preparation and administration of herbal medicine for the treatment and prevention of painful conditions associated with menstrual disorders. However, leaves are the most used part out of stem bark and roots. Leaves are believed to be readily available with high potential of bioactive ingredients which are capable of effecting the healing processes. Also, leaves have regenerative capacity and its extraction does not always destroy the existence of the plants unlike the use of stem bark and the roots which are annihilative and destructive when harvested (Kayode, 2005; Kayode, 2007). The most frequently and popularly used plant is *Momordica charantia* (35 %) and *Ocimum gratissimum* (27 %). This could be attributed to the availability of the plants in the study area. *Momordica charantia* (35%) and *Ocimum gratissimum* are abundant in large scale; the forest vegetation in the study area support its growth. The use of plants for herbal remedies is common in the study area as the respondents agreed that plants are in abundance, proved over times, easily prepared in various forms, cheaper and culturally acceptable. *Momordica charantia* locally known as Ejinrin leaves are prepared by decoction to extract the active ingredients to treat the menstrual disorders and other associated diseases in the study area. *Mucuna flagellipes* locally known as Ijokun, the extract is allowed to be fermented after extraction for few days. This ensures adequate extraction and increase the concentration of the active ingredients against *Hypomenorrhoea*. The use of plants prepared locally has been of helped in managing the pains associated with sicknesses over generations. This is probably because plants are available, effective, holistic in nature and they are non resistance to most microorganisms caused diseased conditions. The use of plant parts for the treatment of ailments may be due to the presence of bioactive ingredients present in the plants. Some of the medicinal plants reported in this study have been previously reported by (Lambo, 1997; Mendonca and Menezes, 2003; Ibe and Nwafor, 2005; Mahmood *et al.*, 2013; Arowosegbe *et al.*, 2015) who asserted the biological activities and the bioactive constituents responsible for their therapeutic properties which justifies and validates the efficacies of the plants. The study area is a forest zone where natural resources are much and the annual rainfall is adequate. There are evidences that quite a number of these species are common because the vegetation supports their growth. However the collections are usually done indiscriminately and unscientifically without any consideration for size and age, thus resulting in species depletion.

A considerable proportion of the identified botanicals were obtained from the natural environment ( home gardens and the forest area). To gain credibility, scientific study utilizes traditional knowledge must be

reliable. In ethnobotanical studies, consensus analysis provides a measure of reliability for any given claim proving reliable evidence. High value of  $F_{IC}$  indicates the agreement of selection of taxa between the informants, whereas a low value indicates disagreement (Mendonca and Menezes, 2003; Kayode *et al.*, 2015). Some of the plants were found very abundant 32.5 % in the study area, however, there is about 30 % that is just abundant while 37.5 % is rare or sparsely available. The rate at which forest and natural environment in the study area are exploited and destroyed is alarming, thus making the availability of plants threatened, therefore a need to conserve forest for future use. Also, the unsustainable collection of generative and vegetative parts of medicinal plants from natural resources are annihilative and predatory, thereby reduced the populations as well as decreased multiplication and regenerating power of plants. Therefore, the need to embark on *in-situ* and *ex-situ* conservation measures, conservation strategies such as domestications of rare species, embarking on afforestation programmes, public enlightenment on the effect of deforestation and genetic erosion of species in their natural habitat among others should be advocated for.

## V. Conclusion

The use of plants is very important in treating ailments in the study area. However, the exploitation of plants have not been intensively monitored, thus led to the reduction in their availability to the end users. There is therefore an urgent need to create awareness among the inhabitants about its sustainable collection. Conservation measures such as, domestication, public enlightenment, small scale for home or personal use as well as large scale for trade of medicinal plants should be encouraged.

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