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Ethnobotany survey and uses of plants in the Lewoh-Lebang communities in the Lebialem highlands, South West Region, Cameroon

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Ethnobotanical investigations were conducted in four Lewoh-Lebang villages (Attuleh, Leleng, Mbindia and Nyitebong) in Lebialem Division, Southwest Region of Cameroon to identify the different plants used in traditional pharmacopoeia for the treatment of human diseases and also to find out other uses of plants in this community. Ethnobotanical information was collected randomly using semi-structured questionnaires and open-ended discussion with male, female and traditional healers, using different age groups. A total of 108 respondents were interviewed and (56%) were male with age ≥ 55 years. Thirty (30) medicinal plants belonging to 21 families were identified and documented. *Guarea thompsonii*, *Schefflera hierniana* and *Cyclomorpha solmsii* are endemic/vulnerable species. 21 diseases were cured using 30 species with rheumatism being the most frequent ailment and the bark was the most frequently used plant part. 13 species were used as fuel wood, five for fencing, eleven as timber and fifteen for cultural activities. *Vernonia conferta* (25 citations), *Psychotria strictistipula* (21 citations), *Psychotria penducularis* (22 citations) and *Coffea sp.* (20 citations) (all shrubs) were species used as fuel wood mostly harvested by women. It is very important to conserve these plant species in order to improve on the traditional health care practices in this community.

Key words: Ethnobotanical, Lewoh-Lebang, traditional pharmacopoeia, medicinal plant.

INTRODUCTION

Ethnobotany is an area of human ecology that defines the interface between people and their forests and offers clues needed for rural development based on sustainable yields of forest products (Focho et al., 2009a). Traditional societies in Africa and elsewhere have always used plants to promote healing (Idu et al., 2005; Bussmann, 2006; Teferi et al., 2009) and about 80% of the world's population depends on the use of traditional medicine for health care (WHO, 1993). In some African countries up to 95% of traditional medicinal preparations are of plant origin (Abebe, 1986). In Cameroon, the traditional medicine is still unorganized making its integration in the health system ineffective (Nkongmeneck et al., 2007).

The conceptual strategy of health envisage the organization of folk medicine for which, a strategic plan has been worked out in Cameroon to provide the main trends for the development and its integration (Anonymous, 2006). Plants are the basis for the development of modern drugs and medicinal plants have been used for many years in daily life to treat diseases all over the world (Ates and Erdogru, 2003; Adewusi and Afolayan, 2010). Uses of the plant may include food, medicine, shelter, hunting, clothing and even for religious occasions. Plants are also important in ceremonies such as birth, marriage and death in some cultures (Nichter, 1992). Traditional and indigenous knowledge of plants is rapidly eroding (Teferi et al., 2009).

This is exacerbated by rapid habitat destruction, agriculture expansion and over-exploitation of plants used in health care and other purposes putting most

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species under threat of extinction (Focho et al., 2009b). With loss of biodiversity and negative effects of mainstream culture, the traditional/folk medicinal knowledge of many ethnic groups in Africa and elsewhere is facing critical depletion (Nichter, 1992; Cox, 1993; Zhang, 2000; Pei, 2001; Yanchun et al., 2009). Loss of traditional knowledge of plants and culture which is the same as the disappearance of biodiversity is not a reversible process (Huai and Pei, 2009). Deforestation process is a serious threat to biodiversity conservation in the tropics. If no action is taken to remedy the trend, a considerable number of plant and animal species are likely to become extinct even before they are known to science (Zapfack et al., 2001). According to Idu et al. (2011) younger respondents are not as resourceful in traditional knowledge compared with the elderly or middle aged respondents. This gap portends a present threat to the successful transfer of indigenous knowledge from the older to younger generation as the latter appear to demonstrate increasing apathy towards acquiring such vital knowledge.

It accentuates the urgent need for proper documentation. It is important to take urgent action especially in developing African countries to ensure sustainable exploitation of plant resources so that these resources will continue to be available for posterity. Ethnobotanical investigations carried out in Cameroon have covered many parts of the country but left out certain regions despite their richness in plant diversity (Adjanohoum et al., 1996; Mbolu, 2002). An example of such a region is the Lewoh-Lebang area in the Lebialem Division. Lebialem division found in the South West region of Cameroon is characterized by a hilly topography with a rich diversity of flora and fauna. This mountain ecosystem has been under serious pressure from the local people. This ecosystem is a centre of high endemism for many taxa (plants, amphibians, mammals and birds) whose destruction could lead to their extinction. The region also holds some of the globally threatened and endemic species such as the critically endangered cross river gorilla, chimpanzee, flying squirrel, endangered Bannerman's Turaco and Banded Wattle-eye, vulnerable Red-headed Picathartes (Nkembi, 2004). The study area is part of the Bamboutous mountain range which is a stronghold of montane biodiversity. These ecosystems around the Bamboutous Mountain continue to provide valuable goods and services to local people in the region and is an important watershed lodging the tributaries of Manyu River that drain into the cross river.

Forest destruction is causing the local extinction of globally threatened biodiversity (plants and mammals, etc), watershed destruction and degradation of livelihood systems, property and lives. Due to precedent geological and geographical history of these mountain areas and coupled with the high annual rainfall (2000 to 3000 mm) and humidity, these areas are perpetually having

landslides (Ayonghe and Ntasin, 2008; Zogning et al., 2007). Most of the landslides are caused by anthropogenic activities of the communities around the mountain. The action of the local people, have lead to untold suffering including homelessness loss of human lives, properties, forest land, substantial loss of biodiversity, habitats, loss of income sources leading to extreme levels of poverty (Ayonghe and Ntasin, 2008; Che et al., 2011). There is also loss of cultural values and serious degradation of habitats. The Nweh people (tribe in the study site) practice slash and burn agriculture with the bimodal annual farming cycle which is entirely dependent on the rain fall patterns resulting to frequent landslides. As in the case with other communities in Cameroon, the importance of plants as medicine cannot be over emphasized.

Traditional medicine is even preferred to modern medicine, as they are less expensive and often regarded as being more effective (Abebe, 1986; Komaromi, 2009). Women make the greatest use of wild plants for medicinal purposes as well as for food, fibers, utensils, cosmetics and ornaments, whereas men use the wood for crafting, construction of house and bridges within community (Ochoa et al., 1998; Kappelle et al., 2000). In the study area, there is no nearby Health Centre/hospital as the nearest health centre is about 50 km making the local population to rely more on their forest for first aid and treatment. The area is a humid savanna and the forest in the study area is in patches. There are constraints in healthcare, fuel wood for cooking and wood for construction and craft work. This study therefore brings to light the plants used in traditional health care, fuel wood, fencing and timber for construction in the Lewoh- Lebang community in Cameroon.

MATERIALS AND METHODS

Study area

Lebialem is located in the North Eastern part of the Southwest Region of Cameroon (Latitudes 5°38'N and 5°43'N and between Longitude 9°58' E and 10°27' E). Lewoh-Lebang is located between latitudes 5°45' and 5°47' N and longitudes 9°91'E and 9°94' E and at altitudes ranging from 1456 to 1835 m (Figure 1). The climate of this region is similar to that of the Cameroon mountain range which is characterized by high winds and low sunshine. The average daily temperature varies very much with seasons but ranges from 17 to 32°C (Nkembi, 2004). The mean annual rainfall 2000 was 3000 mm. The main vegetation type is grassland with patches of montane and sub-montane forest. The forest is dominated by *Chytranthus gilletii*, *Gambeya africana* and *Schefflera barberi* (Focho et al., 2009a).

Collection of information

Ethnobotanical information was collected in four villages in Lewoh-Lebang (Nyitebong, Mbindia, Attuleh and Lelang) using methods adapted from Jovel et al. (1996) and Karehed and Odulg (1997), consisting of open-ended conversations and semi-structured

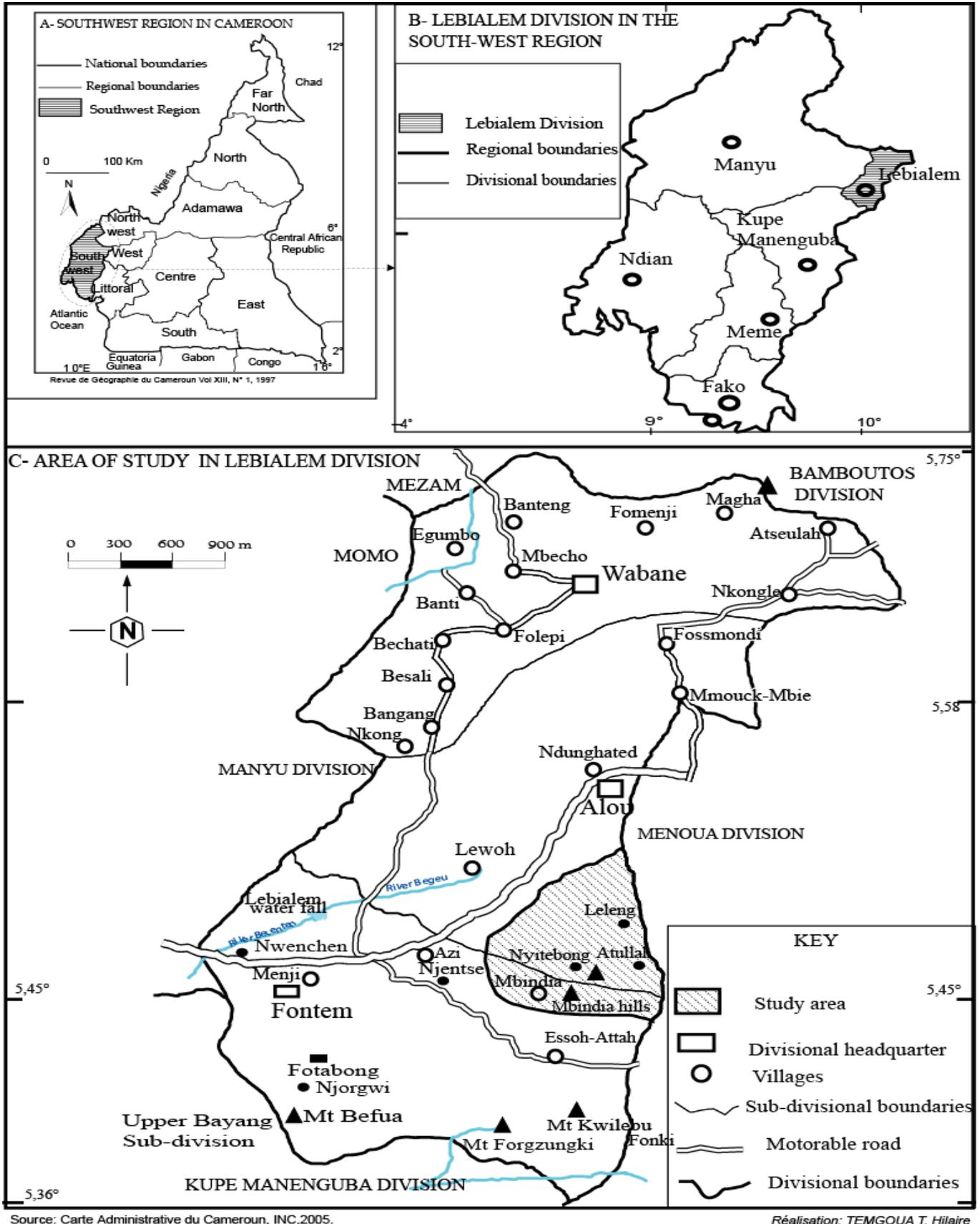


Figure 1. Study area.

Table 1. Percentage of respondents in Nyitebong, Mbindia, Attuleh and Leleng according to their age groups.

Age group (Years)	Number of respondents	Percentage of respondents (%)
Youths (15 to 29)	11	10
Adults (30 to 54)	44	41
Elderly (55 and above)	53	49

Table 2. Percentage of respondents in Nyitebong, Mbindia, Attuleh and Leleng according to their genders.

Gender	Number of respondents	Percentage of respondents (%)
Male	61	56
Female	47	44

questionnaires. Selection of respondents was done randomly in the villages following age groups. On the indigenous knowledge of the medicinal plants youth, women, men and traditional healers in the local community were randomly selected. After seeking their consent, the respondents were interviewed using semi-structure questionnaires and open-ended conversations. The number of men respondents was 61 while that of the female was 47. The data collected included local names of the plants, uses, modes of preparation and administration of herbal drugs and the plant parts used. Informants often accompanied the investigators to the field to collect plant material. In cases of illiterate informants, photographs and fresh plant specimens from the field were presented to them and questionnaires were filled from their responses.

The working language was mostly the dialect spoken in the community (Nweh) and the authors faced no language problems since two of them were natives of the area. Fuel wood collection was done by women using baskets. Fuel wood and timber for construction of houses and for carvings are not collected in sacred forests. Field trips were made from October 2010 to May 2011 during which specimens were collected and pressed for identification for plants that could not be identified *in situ*. Standard methods were used in plant material collection, drying, mounting, preparation and preservation. Plants were identified by their vernacular names and later validated at the Limbe Botanic Garden Herbarium (SCA) and the Cameroon National Herbarium (YA). Voucher specimens were deposited in the University of Buea teaching Herbarium and Limbe Botanic Garden Herbarium.

Data analysis

The data on the plant species uses, vernacular names and disease treated were entered into excel worksheets and percentage and frequencies calculated. The data on plants used were summarized as proposed by Cook (1995)

RESULTS

Table 1 presents the percentages of respondents in terms of their ages. It shows that the respondents were mostly in the age group of 55 years and above (49%) while the youths were the least represented. Table 2 gives the percentages of respondents in terms of their gender, indicating that most of the respondents were men

(56%) and 44% were female. Table 3 shows the scientific name/family, local names, plant parts used, diseases treated, mode of preparation and administration of medicine and the frequency of citation for the different medicinal plants. A total of 30 medicinal plants belonging to 21 families were documented. Asteraceae (3 species) was the most commonly used plant family in the area of study followed by Apocynaceae, Rutaceae, Annonaceae, Liliaceae, Euphorbiaceae, Fabaceae and Sterculiaceae all having 2 species. The other most utilized medicinal plants were *Psidium guajava* (31 citations) and *Aloe vera* (27 citations). In this rural community, child birth is of great importance and gynecological problems are treated with a variety of plants. These include *Zanthoxylum gilleti*, *Vernonia amygdalina*, *Eremomastax speciosa* and *Aloe vera*.

In Table 4, plant species are regrouped according to their use in the management different ailments. Some plants such as *E. speciosa*, (Acanthaceae) and *Rauvolfia vomitoria* Afzel. (Apocynaceae) are used to treat about 3 different ailments. The plants were used to treat ailments ranging from common fatigue to complex pathological disorders relating to gastro-intestinal diseases, respiratory ailments, problems of the urinary system as well as infertility. Thirteen (13) major conditions were prevalent in the area (Table 4). Rheumatism had the highest number of herbal plants used for its treatment (6), followed by the central nervous system (5), the digestive system (4) and the respiratory system (4). The main methods of preparation of remedies were decoctions, concoctions and infusions while the mode of administration was oral for internal infections and topical for skin diseases. Figure 2 illustrates the percentages of plant parts used.

The barks of plants (42%) were the most popular plant part used in the various herbal preparations and followed by the leaves (36%) the latex (5%), whole plant (5%), seeds (3%), roots (3%) and fruits (3%) were the least used. Table 5, 6 and 7 give the plant species used as fuel wood, fencing and timber, respectively. The main supply

Table 3. Documentation of ethnomedicine, treatment and plant uses by the people of Lewoh-Lebang.

No	Species and family names	Local names	Parts used	Diseases treated/uses	Preparation and administration	Frequency
1	<i>Tabernaemontana crassa</i> Benth; (Apocynaceae)	Etong	Bark, leaves	Malaria	Infusion is taken orally	10
2	<i>Kigelia africana</i> (Lam.) Benth. (Bignoniaceae)	Ledongne	Bark	Chest complaints	Decoction is taken orally	7
		Ledongne	Leaves	Rheumatism	Infusion is taken orally	5
3	<i>Cylicomorpha solmsii</i> (Urb.) Urb. (Caricaceae)	Ledongne	Bark	Chest pains of children	Decoction is taken orally	12
4	<i>Santeria balsamifera</i> Oliv. (Burseraceae)	Evong	Bark	Toothache	Decoction is used as mouth wash	2
5	<i>Zanthoxylum gillettii</i> (De Wild.) P.G. Waterman (Rutaceae)	Mbem	Seeds, bark	rheumatism	Decoction is taken orally	7
6	<i>Zanthoxylum buesgenii</i> Engl. (Rutaceae)	Mbem	Roots	Loss of libido, Low sperm count	Decoction is taken orally	4
7	<i>Xylopia africana</i> (Benth.) Oliv. (Annonaceae)	Ndeun	Bark	Rheumatism	Decoction is taken orally	5
8	<i>Schumanniophyton magnificum</i> (K.Schum.) Harms (Rubiaceae)	Sekoh	Bark, leaves	Thyphoid fever	Decoction is taken orally	19
9	<i>Harungana madagascariensis</i> Lam.ex Poir (Clusiaceae)	Etoueh	Bark, leaves	Yellow fever	Decoction is taken orally	9
10	<i>Vernonia conferta</i> Benth (Asteraceae)	Afounouh	Leaves	Stomach ache/ cramps	Maceration of leaves is taken orally	11
11	<i>Vernonia amygdalina</i> Del. Cent. (Asteraceae)	Bekantsu	Leaves	Menstrual cramps	Maceration of leaves is taken orally	13
12	<i>Euphorbia desmindi</i> Keay and Milne-Redhead (Euphorbiaceae)	Aboueh	Bark	Rheumatism	Decoction is taken orally	5
		Aboueh	Latex	Appetizer	Mixture of latex with egg is taken orally	3
13	<i>Guarea cf glomerulata</i> Harm (Meliaceae)	Quat	Bark	Rheumatism, general fatigue	Decoction is taken orally	6
14	<i>Rauvolfia vomitoria</i> Afzel. (Apocynaceae)	Etong-mbin	Bark, leaves	Malaria, stomach aches, gastritis	Decoction is taken orally	20

Table 3. Contd.

15	<i>Piptadeniastrum africanum</i> (Hook.f) Brenan (Fabaceae)	Epheck	Bark	General fatigue	Decoction is taken orally	12
16	<i>Polyscias fulva</i> (Hiern) Harms (Araliaceae)	Keukeu	Bark	Frontal headache	Decoction is taken orally	14
	<i>Pycnanthus angolensis</i> (Welw.) Warb. (Myristicaceae)	keukeu	Latex	Clean the eyes	Small quantity is put inside each eye ad covered, and then the clot is removed	3
17	<i>Isolona maitlandii</i> Keay (Annonaceae)	Ndeung-mbin	Bark	Rheumatism, Chest pain	Decotion is taken orally	12
18	<i>Dichaetanthera Africana</i> (Hook.f.) Jacq.-Fel. (Melastomataceae)	Ngnekeugnang	Leaves, bark	Coughs, Chest complaints, Fatigue	Decoction is taken orally sweetened with honey	22
19	<i>Macaranga monandra</i> Mull. Arg. (Euphorbiaceae)	Atchach	Bark	Tooth ache	Decoction is used as mouth wash	8
20	<i>Psidium guajava</i> Linn. (Myrtaceae)	Guava	Leaves	Malaria and fever	Concoction with leaves of <i>Sena alata</i> and roots of <i>Carica papaya</i> is taken orally	31
21	<i>Hibiscus sabdariffa</i> Linn. (Malvaceae)	Hibiscus	Leaves	Stomach ache	Macerate the leaves and take it orally and as a purgative	9
22	<i>Eremomastax speciosa</i> (Hochst.) Cufod. (Acanthaceae)	Mbanfen	Leaves	Irregular menstruation, infertility in women Stomach cramps	Infusion of two plants (<i>E. speciosa</i> , <i>Aloe vera</i>) is taken orally. Also used as anal wash	37
23	<i>Senna alata</i> (Linn.) Roxb. (Fabaceae)		Leaves	Rashes, Filariasis	Macerate the leaves and apply topically	13
24	<i>Ageratum conyzoides</i> Linn. (Asteraceae)	Venkouh	Whole plants	Headache, tiredness	Infusion of whole plant is taken regularly	15
25	<i>Colocassia esculenta</i> (L.) Schoot (Araceae)	Akouh	Stem	Sores	Grate the stem and apply on the area	4
26	<i>Aloe vera</i> (L.) Burm (Liliaceae)	Akockdem	Leaves	Menstrual cramps Stomach ache	Macerate the leaves and take it orally	35
27	<i>Aloe barbadense</i> Mill. (Liliaceae)	Akockdem	Leaves	fire burns, constipation, stomach aches, gastritis	Mix gel with juice of <i>Ageratum conyzoides</i> and apply topically. Maceration is taken orally	27
28	<i>Cola accuminata</i> (Vent.) Schott and Endt. (Sterculiaceae)	Ledze	Fruit	Abscesses	Grinding the fruit and apply topically	6

Table 3. Contd.

29	<i>Stellaria media</i> (L.) Villis (Caryophyllaceae)	Ntough	Whole plant	Eye pain	Rap the plant in Colocassia leaf and worm it, squeeze the plant and drop the liquid into the eyes	7
30	<i>Kalanchoe crenata</i> (Andr.) Haw. (Crassulaceae)	Louh	Leaves	Ear pain	Squeeze the leaves and drop the liquid in the ears	6

Table 4. Diseases and plants used to manage them.

Ailment	Plant used (numbers as in Table 3)
Digestive system	12, 14, 21, 27
Central nervous system	13, 15, 16, 17, 24
Respiratory system	2, 3, 17, 18
Sores	25
Skin diseases	23, 25, 27
Ear	30
Female sterility/gynaecology	11, 22, 26
Male infertility/sexual dysfunction	6
Eye	16, 29
Dental/mouth	4, 19
Malaria/Thyphoid fever/yellow fever	1,8,9,14,20
Inflammation/abscesses	28
Rheumatism	2, 5, 7, 12, 13, 17

of fuel wood came from *V. conferta* (25 citations), *P. strictistipula* (21 citations), *P. penducularis* (22 citations) and *Coffea sp.* (20 citations). These species are shrubs making it easy for the women to harvest firewood for household needs. Women collect fuel wood in baskets and carry it on their backs at least once a day from the nearest forest. Fuel wood and timber for construction of houses and for carvings are not collected in sacred forests.

Table 8 shows that 15 species of plants were used in cultural activities mostly for protection against accident and witchcraft. Table 9 gives the plant species used for other purposes such as fish poisoning and craft works.

DISCUSSION

The high percentage of the respondent with respect to ethnomedicine was greater than 55 years. This is because they are custodians of traditional knowledge and they know the uses of plants especially medicinal plants than the younger generation, who have moved to neighbouring towns since the area is prone to landslides. This result is similar to that of Idu et al. (2011). According to Zogning et al. (2007) the area was declared by the

government as a region unfit for human habitats after the 2003 landslides which resulted to destruction of biodiversity, life and properties in the area. This has brought fear that indigenous ethnobotanical knowledge would or shall rapidly disappear from this region because of an increasing western lifestyle among the people and also the exodus. Other authors have also reported the gradual disappearance of indigenous knowledge in other parts of the world as a result of changes in lifestyle. For example, among the Wabane people in Lebialem Division of Cameroon (Focho et al., 2009a), the Igede people of (Igoli et al., 2005), Waluguru people in East Uluguru Mountains in Tanzania (Mahonge et al., 2006) and among the people of District Attock (Pungals) of Northern Pakistan (Ahmad et al., 2007).

The study revealed the use of barks as the most used plant part followed by leaves in this area. Barks are known to accumulate alkaloids, tannins and inulins which are active components of most herbal preparations (Okogwale and Omefezi, 2001). Leaves have also been reported to be the most commonly used plant parts in Wabane (Lebialem) and in other parts of Africa (Focho et al., 2009a; Mahonge et al., 2006). In the study the main methods of preparation were decoctions, concoctions and infusions while the mode of administration was oral

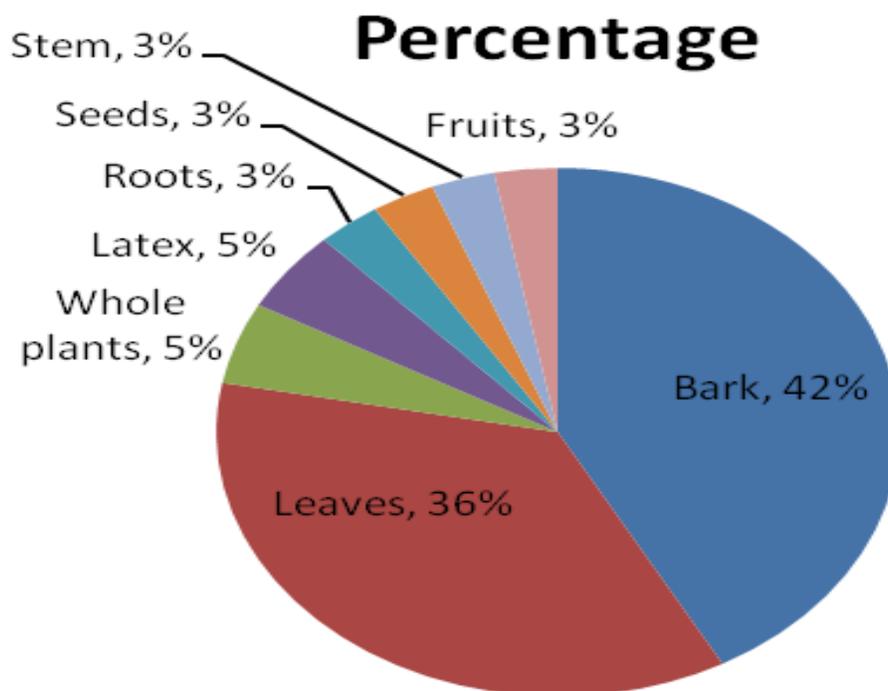


Figure 2. Percentages of parts of plants used as medicine.

Table 5. Plant species used as fuel wood.

No	Species and family names	Local names	Frequency
1	<i>Lecomtedoxa klaineana</i> (Pierre ex Engl.) Dubard (Sapotaceae)	Mbeghembin	13
2	<i>Strombosia scheffleri</i> Engl.(Olacaceae)	Cokembin	3
3	<i>Coffea sp.</i> (Rubiaceae)	Cofembin	20
4	<i>Pentadesma butyracea</i> Sabine (Clusiaceae)	Thieup	8
5	<i>Ficus mucuso</i> Welw. Ex. Ficalho (Moraceae)	Ndar	11
6	<i>Trilepisium madagaseriense</i> DC. (Moraceae)	Leboh	5
7	<i>Psychotria strictistipula</i> Schnell. (Rubiaceae)	Ndelebi	21
8	<i>Dacryodes klaineana</i> (Pierre) H.J. Lam (Burseraceae)	Ntsoh	14
9	<i>Santeria balsamifera</i> Oliv. (Burseraceae)	Evong	8
10	<i>Carapa grandifolia</i> Harms (Meliaceae)	Leven	11
11	<i>Beilschmiedia sp_2</i> (Lauraceae)	Mbeh	15
12	<i>Psychotria penducularis</i> (Salisb.) Steyer. (Rubiaceae)	Ndelente	22
13	<i>Gambeya Africana</i> G. Don (Sapotaceae)	Segnei	2
14	<i>Vernonia conferta</i> (Asteraceae)	Afounouh	25

Table 6. Plant species used for fencing.

No	Species and family names	Local names	Frequency
1	<i>Dracaena arborea</i> (Willd.) Link (Dracaenaceae)	Aquahe	28
2	<i>Schefflera hierniana</i> (Seem.) Harms (Araliaceae)	Tenkwu	39
3	<i>Psychotria strictistipula</i> Schnell. (Rubiaceae)	Ndelebi	15
4	<i>Dracaena mannii</i> Bak. (Dracaenaceae)	Nkeng	22
5	<i>Ficus mucuso</i> Welw. Ex. Ficalho (Moraceae)	Ndar	13

Table 7. Plant species used as timber.

No	Species and family names	Local names
1	<i>Lecomtedoxa klaineana</i> (Pierre ex Engl.) Dubard (Sapotaceae)	Mbeghembin
2	<i>Carapa grandifolia</i> Harms (Meliaceae)	Leven
3	<i>Memecylon afzelii</i> G. Don (Melastomataceae)	Chanye
4	<i>Euphorbia desmindi</i> Keay and Milne-Redhead (Euphorbiaceae)	Aboueh
5	<i>Macaranga monandra</i> Mull.Arg. (Euphorbiaceae)	Alegreb
6	<i>Trichoscypha patens</i> (Oliv.) Engl. (Anacardiaceae)	Ndeghebang
7	<i>Piptadeniastrum africanum</i> (Hook.f) Brenan (Fabaceae)	Epheck
8	<i>Beilschmiedia sp_2</i> (Lauraceae)	Mbeh
9	<i>Trilepisuim madagaseriense</i> DC. (Moraceae)	Leboh
10	<i>Gambeya africana</i> G. Don (Sapotaceae)	Segnei
11	<i>Guarea cf thompsonii</i> Sprague and Hutch. (Meliaceae)	Findwat

for internal infections and topical for skin diseases and this type of finding was also reported by other authors (Focho et al., 2009 a,b; Nkongmeneck et al., 2007; Okoli et al., 2007). The study revealed that 30 plant species belonging to 21 families and 27 genera were medicinal plants of this area. Similar results have been reported by (Focho et al., 2009a). The high prevalence of digestive ailments may be due to the lack of portable water in the area resulting in a high occurrence of water borne diseases. *E. speciosa* (37 citations) was used in the treatment of many disease conditions including irregular menstruation, infertility in women and stomach cramps.

Many plants were used either singly or in combination with other medicinal plants. According to Igoli et al. (2005), the joint use of multiple medicinal plants could be due to synergistic or additive effects of constituents. Many of the plant species in the area have been reported elsewhere in Africa although they are often used for treatment of ailments different from those in the study (Okoli et al., 2007). In the study area, *Cylicomorpha solmsii* which is an endemic/vulnerable species was used in the treatment of children chest pain and this could lead to the disappearance of this important species in the area due to continuous harvesting. Other vulnerable species used in the area were *S. hierniana* used in fencing and *Guarea thompsonii* used as Timber. Fence plants play an important role in local communities in preventing wild and domestic animals from entering crop fields. In Nepal, plant species having spines, thorns and branches are mostly preferred for fencing (Bhattarai et al., 2006). Some of these plants are grown around the field permanently as a life fence whereas some are harvested and temporarily placed as a barrier.

In the study area both the life fence and the barrier systems were used. According to Bhattarai et al. (2006) this fence plants are also used as wind break and erosion control. Fences in Lebialem are both homogenous as well as heterogenous but the heterogenous type of fencing is commonly seen surrounding crop fields and compounds (households). Five species in the study area

were used for fencing including *Dracaena arborea*, *Dracaena mannii*, *S. hierniana*, *P. strictistipula* and *Ficus mucoso*. Focho et al. (2009b) have reported other uses of these plants in other parts of Cameroon. For example, *Schefflera abyssinica*, *Schefflera mannii*, and *Carapa grandifolia* are used for wood carving, construction and honey production in the Fundong area of Cameroon. Also, *D. mannii* and *Dracaena arborea* are used for building bridges and for traditional dances. Fuel wood in Lebialem is used for cooking and heating of houses. Fourteen species of plants were used as fuel wood. Fuel wood gathering was mostly done by females. This is in contrast with the findings of Kappelle et al. (2000) and Ochoa et al. (1998) who observed that fuel wood collection was mostly done by male.

Conclusion

This research has shown that Lewoh- Lebang communities in Cameroon are rich and diversified in medicinal plant species. The elderly people in the area of study are the custodians of indigenous knowledge on medicinal plants while there was rural urban exodus by the younger generation. The collection of information about natural flora, classification, management and use of plants by the people holds importance among the ethnobotanists. The local people and researchers face the challenging task of not only documenting knowledge on plants, but also applying the results of their studies to biodiversity conservation and community development. The population has to be educated on propagation and conservation of plants as it is used in primary health care, timber, energy source as well as in the protection of their fragile ecosystem.

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Table 8. Plant species used in cultural activities.

No	Species and family names	Local names	Parts used	Uses
1	<i>Schumanniohyton magnificum</i> (K. Schum.) Harms (Rubiaceae)	Sekoh	Leaves	Protection against accident
2	<i>Harungana madagascariensis</i> Lam.ex Poir (Clusiaceae)	Etoueh	Leaves	Protection against witchcraft
3	<i>Maesa lanceolata</i> Mez (Myrsinaceae)	Teshi	Leaves	Protection against witchcraft
4	<i>Dracaena mannii</i> Bak. (Dracaenaceae)	Nkeng	Branches	Traditional dance
5	<i>Kigelia africana</i> (Lam.) Benth. (Bignoniaceae)	Ledongne	Stem	Used to fabricate traditional torches used during hunting
6	<i>Dracaena arborea</i> (Willd.) Link (Dracaenaceae)	Aquahe	Branches	Traditional dance
7	<i>Euphorbia desmindi</i> Keay and Milne-Redhead (Euphorbiaceae)	Aboueh	Leaves	Protection against witchcraft
8	<i>Guarea cf glomerulata</i> Harm (Meliaceae)	Quat	Leaves	Protection against accident
9	<i>Vernonia</i> sp. (Asteraceae)	Bakeulouh	Leaves	Protection against accident and witchcraft
10	<i>Psychotria penducularis</i> (Salisb.) Steyer. (Rubiaceae)	Ndelente	Peduncle	Protection against accident and witchcraft
11	<i>Santeria balsamifera</i> Oliv. (Burseraceae)	Evong	Resin	the coagulated resin is burned to drive away witchcraft
12	<i>Kigelia africana</i> (Lam.) Benth. (Bignoniaceae)	Gueve	Leaves	Protection against accident
13	<i>Vernonia</i> sp.(Asteraceae)	Tabang	Leaves	Protection against witchcraft
14	<i>Cestrum nocturnum</i> Linn. (Solanaceae)	Queen of the night	Whole plant	Plant the tree in compounds to drive away witchcraft.
15	<i>Kigelia africana</i> (Lam.) Benth. (Bignoniaceae)	Gueve	Branch	Fetish

Table 9. Plant species used for other purposes.

No	Species and family names	Local names	Parts used	uses
1	<i>Euphorbia desmindi</i> Keay and Milne-Redhead (Euphorbiaceae)	Aboueh	Stem	Craft
2	<i>Gambeya africana</i> G. Don (Sapotaceae)	Seignei	Stem	Craft
3	<i>Zanthoxylum gillettii</i> (De Wild.) P.G. Waterman (Rutaceae)	Mbem	Stem	Carving
4	<i>Cola accuminata</i> (Vent.) Schott and Endt. (Sterculiaceae)	Ledze	Fruits	N.T.F. P
5	<i>Cola heterophylla</i> (P.Beauv.) Schott and Endl (Sterculiaceae)	Ngalle	Fruits	N.T.F.P, used as gums
6	<i>Guarea cf glomerulata</i> Harm (Meliaceae)	Quat	Bark	Fish poisoning

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