

Title	AN ETHNOBOTANICAL STUDY OF MEDICINAL PLANTS AMONG THE BAKA PYGMIES IN THE DJA BIOSPHERE RESERVE, CAMEROON
Author(s)	BETTI, Jean L.
Citation	African Study Monographs (2004), 25(1): 1-27
Issue Date	2004-03
URL	https://dx.doi.org/10.14989/68229
Right	
Type	Departmental Bulletin Paper
Textversion	publisher

AN ETHNOBOTANICAL STUDY OF MEDICINAL PLANTS AMONG THE BAKA PYGMIES IN THE DJA BIOSPHERE RESERVE, CAMEROON

Jean L. BETTI

*Department of Forestry, Faculty of Agronomy and Agricultural Sciences,
University of Dschang*

ABSTRACT An ethnobotanical survey was conducted from January to April 1994 in the Dja Biosphere Reserve and its adjacent areas in East and South Provinces in Cameroon. The survey aimed at identifying the plants used in the general pharmacopoeia among the Baka pygmies also using interviews with housewives and mothers who have a rich knowledge on the plants. A total of 102 medicinal plants were recorded from 37 households comprising 97 genera and 51 families. Cough, lactation failure, malaria, wound and toothache were the major ailments treated in these households. To compare the usages of the plant species, an index of performance (*Ip*) was calculated for each plant species, from the number of citations of treatment actually recorded from the households against the proportion of each plant among the general flora. Some plants are widely used in Africa in similar ways. The plants with high *Ip* are often confirmed to possess effective medicinal substances in the literature.

Key Words: Medicinal plants; Popular pharmacopoeia; Performance index (*Ip*); Dja Biosphere Reserve; Baka Pygmies.

INTRODUCTION

The Dja Biosphere Reserve is located in the East and South Provinces of Cameroon (Fig. 1). It covers an area of 5,260 km² and is classified among the largest protected areas of the Guinea-Congolian tropical rain forests (Gartlan & Leakay, 1988). The reserve is bound by the Dja River which constitutes its natural boundary, except in the southeast. The climate is equatorial and humid. Average annual rainfall is 1600 mm, while annual temperature is 23°C. The Dja loop is situated in the Congo basin on the Precambrian plateau. The altitude of this plateau varies between 600 and 700 m and slopes slightly towards the southeast. Relief is characterized by shallow valleys (Bedel *et al.*, 1987).

The Dja Reserve accommodates a large proportion of the equatorial wildlife and flora (Gartlan, 1989), and is located at the meeting point of the low Guinean area and the Congolese Basin. The Reserve was established as a Biosphere Reserve on 15 December 1982, and included in the list of world heritage sites on 5 December 1987. The Dja Reserve belongs to the evergreen Cameroonian-Congolese forest, the Dja Congolese district to be precise. Among other salient facts of this district is the absence of semi-deciduous foliated forest species, at least in the Dja Congolese forest, which is intact as far as the trees and the underwood are concerned. The Acanthaceae shrubs of the

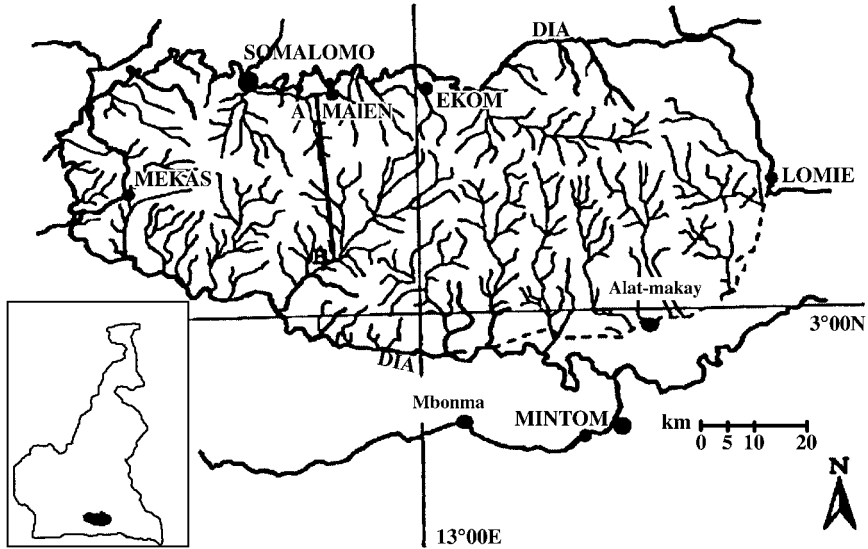


Fig. 1. Location of the Dja Biosphere Reserve in Cameroon.

semi-deciduous forest (at Yaoundé for example) are non-existent or rare (Letouzey, 1985). According to Sonké (1998), three broad categories of forests can be distinguished in the Dja region: forests on rocks, forests on firm soil, and aquatic or hydromorphic forests. Forests on firm soil are further divided into primary forests (without perturbation) and secondary forests (subject to human or natural perturbation).

The Dja accommodates a variety of wildlife species including such endangered species as the forest elephants (*Loxodonta africana cyclotis*), the chimpanzees (*Pan troglodytes*), the leopards (*Panthera pardus*), as well as the forest buffaloes (*Tragelaphus euryceros*) and the gorillas (*Gorilla gorilla*).

The major ethnic groups, the Bantus and the Baka Pygmies live side by side in and outside the reserve. The Bantus include the Badjoué in the North, the Nzimé in the East, the Mbulu in the West, the Fang-Nzaman in the South, and the Baka Pygmies and the Kako farmers who live mostly scattered in small settlements, mainly in the forest at some distance from the Bantu villages and roads. According to Gartlan (1989), the population density is not high, about 1.5 inhabitants/km². These people depend directly on the resources in the reserve for livelihood. The Bantus practice “slash and burn” type of cultivation with a bimodal annual farming cycle, which is entirely dependent on the rainfall pattern (De Wachter, 1996). Hunting and gathering are practiced by all, but more intensively by the Baka Pygmies.

Baka were among the first inhabitants in the area (Bahuchet, 2000). In central Africa, Pygmies are well known in literature as the great healers, who know much about forest products (Bouquet, 1969; Motte, 1980). As in the case of Baguyeli Pygmies in the south-Cameroon (Dijk, 1999), the large majority

of medicines used by the Baka Pygmies are of plant origins (Motte, 1980). The direct use of animal products is limited to the treatment of some specific ailments. For example, the shells of a giant snail (*polo*) is used for treating lumbago, the bones of the leopard are used as aphrodisiac and the eggs of turtles (*kunda*) is used for treating haemorrhoids. Aside from using animal products for healing, it is more common for specific age and gender groups such as young boys or pregnant women to be encouraged or kept from eating certain animals. For example, pregnant women are forbidden from eating turtles which may cause haemorrhoids in their children. This can be considered as a type of prophylaxis to prevent certain diseases. Honey, however, appears to be the most commonly used medicines to treat burns and blisters. It is also often mixed as “adjuvant” with the barks of the liana *Combretum mucronatum* in the treatment of intestinal helminthiasis.

The use of plant medicines plays an important role in daily health care. Local medicines are even preferred to modern medicines. They are of course less expensive, but they are often regarded as being more “effective”.

According to the women interviewed, the *motoko-toko* (*Picralima nitida*) is at least twice as strong as chloroquine against malaria, and *ma'a polo* (*Chenopodium ambrosioides*) has a similarly stronger potency than “vermox” against intestinal worms. In some households, “modern” health care is often applied in combination with traditional treatments.

In the Dja Reserve, as in Congo-Brazzaville (Diafouka, 1997), there exist two types of pharmacopoeia: the specialized pharmacopoeia which is practised by traditional healers for difficult problems, and the popular or general pharmacopoeia which is used by everyone and mostly for treating ordinary ailments such as fever, malaria and diarrhoea. Health problems are often self-treated first with the latter pharmacopoeia, called “self-aid” or “auto-medication.”

This paper describes the popular use of medicinal plants by the Baka Pygmies, and analyses their relative importance.

METHODS

I. Survey

The method used in this study which I call the “method for the popular pharmacopoeia,” has been well described in our previous papers (Betti, 1994; Betti & Lejoly, 1999; Betti & van Essche, 2001). This method consists of gathering data on the popular use of medicinal plants in a given area (ex. village). The originality and the strength of this method derive from its qualitative and quantitative approach. This method has for many years been used successfully by the TRAMIL, a non-governmental organization working for the improvement of the traditional usages of medicinal plants of Haiti, Dominican Republic and other islands (Robineau, 1991). Following this method, the data for this study were obtained from direct interviews with the local people conducted from

January to April 1994 in the Dja Reserve (see Fig. 1). The survey aimed at identifying plants used in the popular pharmacopoeia among the Baka Pygmies. The information was mostly provided by adult women (mothers), because they usually knew the plants better than men and younger people. They provided useful and firsthand information on the popular use of medicinal plants. There was no problem in communication, because the author is a native from the East Province of Cameroon. Information was collected according to a standardized enquiry list of the “Médecine traditionnelle et Pharmacopée (PHARMEL)” database sheets (Adjanohoun *et al.*, 1989; 1994). This is a database of medicinal plants used in traditional medicines of Africa. During the survey, I made enquiry as to what ailments were treated by which plant species rather than asking which plants were used to treat which ailments. The former method (ailments-plants) ensures good data collection, while the second (plants-ailments) may lead to the wrong data. This is because, the healer always use to find a treatment for any plant indicated. For each health problem cited, details of prescriptions (plant part used, mode of preparation, posology) were carefully recorded.

The vernacular names of the plants were recorded as much as possible, and I tried to collect the plants mentioned by the informants. Some of the plants were identified in the field with the help of Mr. Koufani from the Cameroon National Herbarium, Ministry of Technical and Scientific Research. The final identification was made at the Cameroon National Herbarium with the help of Mr. Koufani, Mr. Paul Mezili and Mr. Onana. Vouchered herbal specimens are kept at the Laboratory of Systematic Botany and Phytosociology, Free University of Brussel, Belgium.

The therapeutic statements were made of a specific disease, a symptom or a physiological effect. Information on the diagnosis of ailments was provided through a semi-structured interview of nurses or local health officials. To classify the data according to the world system, the ailments were grouped according to the classification proposed by the World Health Organization and adapted by the African Unity Organisation (AUO) for the Cameroonian pharmacopoeia (Adjanohoun *et al.*, 1996).

II. Habitat Preference/Ecological Group

For each plant species collected, I recorded the main habitat in the area. The five principal types of habitats of the recorded medicinal plants are: primary forest, secondary forest, swamp forest, fields under cultivation and village.

1) Primary forests are characterized by their heterogeneity (except for the forest population of *Gilbertiodendron dewevrei*). The 3 main heterogenous primary forests include the typical heterogenous forest with the dominance of *Uapaca spp.*, primary forests of bamboos (or rotang) with mainly the genus *Eremospatha*, *Laccosperma*, and *Oncocalamus*, and primary forest of *Raphia regalis*. Those primary forests are subject to human influences from beyond their boundaries (Letouzey, 1985; Sonké, 1998).

2) Secondary forests appear after natural or human perturbation i.e. agriculture. They are characterized by pioneer species, which grow fast (*Alstonia boonei*, *Bridelia micrantha*, *Musanga cecropioides* for example) (Letouzey, 1985; Sonké, 1998).

3) Swamp forests include forests of *Uapaca paludosa* and *Mitragyna ciliata*, forests of *Uapaca paludosa* and *Raphia monbuttorum*, forests of *Raphia monbuttorum* and the swampy prairies (Letouzey, 1985; Sonké, 1998).

4) Fields under cultivation: the principal crops that are found in the fields under cultivation are *Arachis hypogea* (ground-nuts), *Manihot esculenta* (cassava), *Musa spp.* (bananas), *Zea mays* (maize) and other crops (De Wachter, 1996). Those mainly found in the home gardens are *Mangifera indica* (mango), *Carica papaya* (papaya), *Elaeis guineensis* (palm oil), *Psidium guajava* (Guava), and *Saccharum officinarum* (sugar cane). The importance of these five crops is due to their medicinal properties and utilization as food (Betti, 2001).

5) Village plants grow spontaneously in the village, near the houses. The majority of those plant species are of wide distribution (widespread species). Many of them belong to the Asteraceae family group such as *Acmella caulirhiza* and *Ageratum conyzoides*. Those plants possess barbs and hooks that help them adhere to hair of animals or man's clothes.

III. Performance Index of Medicinal Plants

Performance index is the same for medicinal plants sold in the Yaoundé markets proposed by Betti (2002a). For analyzing the data, "specific flora" is defined as the list of plants used for treating a specific ailment, symptom or physiological effect. The "global flora" is defined as the total list of plants recorded to be used for all types of ailments among a specific group Baka Pygmies.

The relationship between the "specific flora" and the "global flora" can be inferred as follows: if the use of a specific plant for a specific ailment is randomly selected, the proportion of the number of citations to the total number of citations (P_1) would be similar to the proportion of specific flora to the global flora (P_2). To illustrate the selectivity of a plant for a specific ailment, a comparison is made here between the expected and observed values of the proportion of citation of a plant for a specific disease. The difference (D) between the two proportions is then used to define a performance index (I_p), which ranges from 0 to 3 according to the following arbitrary scale.

- if $P_1 - P_2 < 0$, $I_p = 0$: the plants concerned are rejected, not significant;
- if $0 < P_1 - P_2 \leq 1/3$, $I_p = 1$: average performance;
- if $1/3 < P_1 - P_2 \leq 2/3$, $I_p = 2$: high performance;
- if $P_1 - P_2 > 2/3$, $I_p = 3$: very high performance.

To illustrate this, an example is given for the performance index of a plant, *Bridelia micrantha* used for treating cough.

C_1 = number of citations of *Bridelia micrantha* for treating cough = 6;

C_2 = number of citations of *Bridelia micrantha* in the global list (all ail-

ments)=7;

C_3 =total number of citations of the cough=199;

C_4 =total number of citations for all ailments=1037.

P_1 (observed) and P_2 (theoretical) are calculated as follows:

$$P_1 = C_1/C_2 = 6/7 = 0.86$$

$$P_2 = C_3/C_4 = 199/1037 = 0.19$$

$$D = P_1 - P_2 = 0.86 - 0.19 = 0.67$$

$P_1 - P_2 = 0.67 > 2/3$, therefore $I_p = 3$, which denotes a very high performance

The proportions used are calculated from the ratios of number of citations for diseases. The number of citations for each recorded plant species used for a specific ailment is shown in Appendix 3.

RESULTS

A total of 37 Baka households were surveyed. From this survey, a total of 102 plant species were collected. A total of 1037 citations were recorded for 22 ailments and other health problems. Some prescriptions are made of two or three plant species. For example, for treating amoebic-dysentery, the barks of *Bridelia micrantha*, *Antrocaryon klaineianum* and *Treulia africana* are prepared in water and the decoction is drunk. For treating malaria, it was suggested to prepare in water, the barks of *Omphalocarpum elatum*, together with the fruits of *Capsicum frutescens* and *Solanum anguivi* and drink the decoction.

I. Importance of Ailments Indicated

The importance of each ailment is evaluated based on the number of citations made by the villagers. The 22 ailments recorded are classified into 9 broad categories as shown in Table 1.

Fig. 2 illustrates the relative importance of the 9 groups of ailments. The Specific Symptoms Category in Table 1 was the most important (20.5% of the citations), followed by the Respiratory System Category (19.7%). The relative importance of specific ailments is illustrated in Fig. 3. Here, only the ten most important ailments are illustrated: cough (19.2% of the citations), lactation failure (10.3%), malaria (9.3%), wounds (7.8%), and toothache (7.4%), which indeed was frequently mentioned by the Baka mothers.

II. Habitat of Medicinal Plants

The 102 medicinal plant species comprise 97 genera and 51 botanical families (Appendix 2). The Apocynaceae (7 species), Euphorbiaceae (6), Mimosaceae (5), Anacardiaceae (4), Annonaceae (4), Asteraceae (4), and Combretaceae (4) families are more frequently represented than other families. The forest species (Appendix 1) formed the largest portion (82.3%), of which the primary forest species accounted for nearly a half (49%). The cultivated plant species (crops)

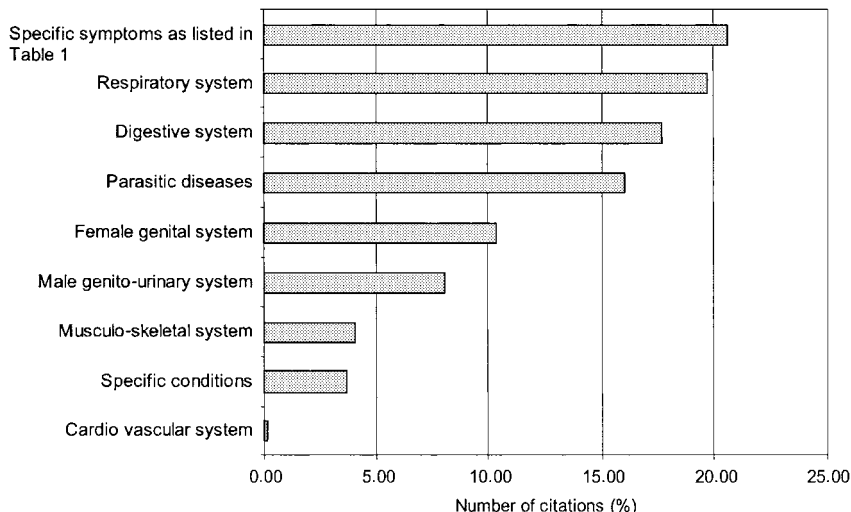


Fig. 2. Relative Importance of Groups of Diseases in Terms of their Number of Citations in the Baka's House holds.

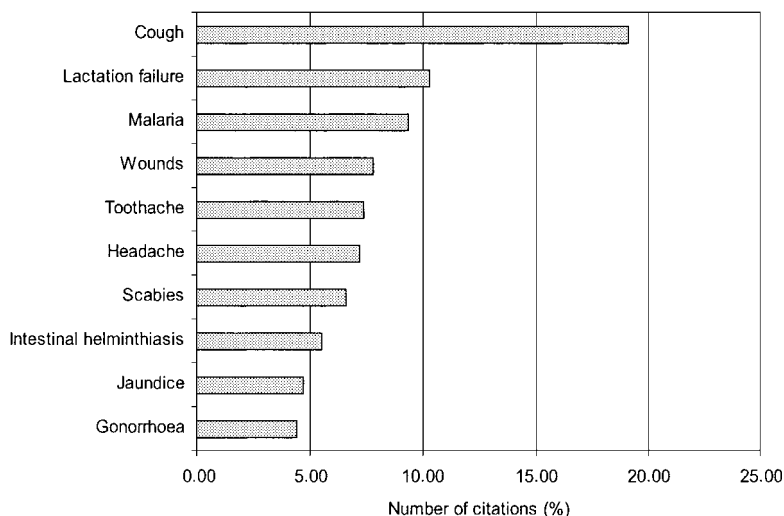


Fig. 3. Relative Importance of Diseases in Terms of Citations in the Baka's Households.

only represented 14% of the total medicinal plants.

III. Index of Performance (*I_p*) of Plant Species

Appendix 2 shows the 1037 citations made for the medicinal plants collected among the study area. Appendix 3 shows all the plants collected with their performance index for specific ailment. We can see for example, *Landolphia owariensis* and *Tabernaemontana crassa* are significantly more frequently

Table 1. Ailments Recorded in the Interviews with the Baka.

Group of Ailments	Ailments	Number of Citations
Cardio vascular system	Haemorrhoids	1
Digestive system	Amoebic dysentery	9
	Diarrhoea	39
	Intestinal helminthiasis	58
	Toothache	77
Female genital system: obstetrics and gynaecology	Lactation failure	107
Male genito-urinary system	Gonorrhoea	46
	Sexual dysfunction	37
	Lumbago	42
Musculo-skeletal system	Lumbago	42
Parasitic diseases	Malaria	97
	Scabies	69
	Bronchite	4
Respiratory system	Cough	199
	Tuberculosis	1
	Abscess	3
Specific conditions	Hernia	7
	Snake bite	28
	Anaemia	2
Specific symptoms	"Child-cross"	6
	Headache	75
	Jaundice	49
	Wounds	81
	Total number of citations	

used ($I_p > 0$) than other medicinal plants for treating wounds, whereas *Capsicum frutescens* is significantly more frequently used for treating toothache.

DISCUSSIONS

I. Relative Importance of Ailments

In terms of the number of citations for medicinal uses, the ailments in the Specific Symptoms Category in Table 1 are most important, followed by the respiratory ailments. The digestive ailments system came in third. In the Cameroonian pharmacopoeia report (Adjanohoun *et al.*, 1996) and in the survey conducted at the markets of Yaoundé (Betti, 2002a), the digestive ailments appear to be the most important group to be treated. Cough, lactation failure, malaria, wound and toothache were the specific ailments most frequently cited by the Baka. The importance of treating lactation failure is due to the fact that the people in the Dja do not use artificial milk (Betti, 2002b), and always

breast-feed their babies (natural lactation). The plants cited for treating this problem are used to improve the quality and the quantity of the mother's milk. The "child-cross" ailment is specific to the Dja area (Betti, 1994). This ailment is characterized by the lose of weight, and occurs on the baby (between 1 and 10 months) when the two parents have not respected certain rituals before sex party.

II. Habitat Preference of the Plants Cited

Forest plants of primary and secondary forests are more represented as medicines in terms of number of species. They comprise 78% of the medicinal plants collected. This may be due to the location of Dja Reserve in the forest area. Forests have richer flora than open savannah areas (Bouquet, 1969; Bitsindou, 1996). According to Evrard (1968), the forest areas have a great number of large plant species in the top or higher strata. Another reason for the large proportion of forest plants is that they have more active secondary compounds than cultivated plants. Also, there is a local belief that forest trees possess some mystical curative powers, because they grow in dark, wild natural habitats. This is why traditional healers prefer forest plants to cultivated plants (Rosoanaivo cited by Bitsindou, 1996) for healing. However, logging, large-scale agriculture and other human activities in the area are leading to the degradation of primary forests (UICN, 1989; Betti, 2002c), thus causing "vulnerability" of the wild plants.

III. Relative Importance of Medicinal Plants

The plants used by the Baka were compared with the plants used in other parts of Africa, mostly in the following seven countries of central Africa: Cameroon, Congo, Gabon, Equatorial Guinea, Central African Republic, Democratic Republic of Congo, and Rwanda. These countries were selected because they belong to the same Guinean-Congolian Forest area (Lebrun, 1947) inhabited by the Baka. They share many common plants. Similarities in medicinal plant uses in countries such as Nigeria, Senegal, and Togo in West Africa were also found. All the information obtained from the survey is given in Appendix 4.

A total of 51 plants frequently used ($Ip > 0$) by the Baka females (mothers) are also used in other regions of Cameroon and/or in other African countries for similar ailments (Appendix 4). Six plants are used in at least four countries: *Chenopodium ambrosioides* (for treating intestinal helminthiasis, in 9 countries), *Alstonia boonei* (malaria, 7 countries), *Picralima nitida* (intestinal helminthiasis, 6 countries), *Mangifera indica* (diarrhoea, 4 countries), *Ocimum gratissimum* (cough, 4 countries), *Psidium guajava* (diarrhoea, 4 countries). The following 8 plants are cited in 3 countries: *Alchornea cordifolia* (for treating toothache), *Capsicum frutescens* (cough), *Carica papaya* (toothache), *Enantia chlorantha* (malaria), *Milicia excelsa* (lactation failure), *Picralima nitida* (malaria), *Pterocarpus soyauxii* (scabies), and *Vernonia amygdalina* (malaria). It is noteworthy

thy that the plant species more frequently used for a specific ailments (with higher value for *Ip*) are known in the literature to possess active compounds. The following are seven of such plants: *Chenopodium ambrosioides*, *Combretum mucronatum*, *Enantia chlorantha*, *Mangifera indica*, *Picralima nitida*, *Psidium guajava*, *Vernonia amygdalina*.

(1) *Chenopodium ambrosioides* (Chenopodiaceae) was recorded among the Baka for use against intestinal helminthiasis (*Ip*=3). The active compound for treating intestinal worms is ascaridol (Robineau, 1991). According to the World Health Organization, a single dose of 20 g of leaves ingested by oral voice is sufficient for expulsing intestinal worms without toxicity to humans.

(2) *Combretum mucronatum* (Combretaceae) was also recorded for use against intestinal helminthiasis (*Ip*=3). The effectivity of this liana was similar to that of "Sodivermil" of chicken, against various worms such as *Capillaria*, *Heterakis* and *Ascaridia* (Tchoumboué *et al.*, 1996). The plant is also effective for treating dracunculosis (Ampofo cited by Sofowora, 1996).

(3) *Enantia chlorantha* (Annonaceae) was recorded for treating jaundice (*Ip*=3) and malaria (*Ip*=1). Pousset (1989) confirmed the plant's properties against jaundice. The anti-malarial activity has also been confirmed against *Plasmodium yoelli nigeriensis* (Agomo *et al.*, 1992).

(4) *Mangifera indica* (Anacardiaceae) is mentioned to be frequently used against diarrhoea (*Ip*=1) and toothache (*Ip*=3). Barks, leaves and seeds of *M. indica* contain tanins (Kerharo & Adam, 1974; Watt & Breyer-Brandwijk, 1962; Bouquet & Debray, 1974; Anonyme, 1993) and this may also explain its effectivity against diarrhoea (Pousset, 1989). According to Pousset (1989), a decoction of 30 g of barks or leaves in one liter of water is effective against diarrhoea. Burkill (1985), Oliver-Bever (1986), Kambu *et al.* (1989), Das *et al.* (1989) has shown the anti-inflammatory properties of the plant. The anti-inflammatory properties (Das *et al.*, 1989) of *M. indica* may explain its use against toothache.

(5) *Picralima nitida* (Apocynaceae) is frequently used against four ailments: diarrhoea (*Ip*=1), gonorrhoea (*Ip*=1), malaria (*Ip*=2), intestinal helminthiasis (*Ip*=1). The main alkaloid found in the seeds, akuamine, has properties similar to morphine (Gbewonyo and Addy, 1983 cited by Gbile, 1998). Recently, some indol-alkaloids have been isolated from the seeds and have shown activity against the cloroquin-resistance type of malaria (Iwu, 1994). Extracts from seeds, fruits and those from stem barks are effective against *Plasmodium falciparum* (Iwu & Klayman, 1992). According to François *et al.* (1996), the anti-malarial activity of the plant is high in roots, stem barks, and fruits, but lower in seeds and leaves. According to Iwu and Klayman (1992), the extracts obtained from fruits are more effective than that obtained from stem barks. The anti-inflammatory, anti-pyretic and anti-malarial (mainly *Plasmodium falciparum*) activities were confirmed for fruits (Ezeamuzie *et al.*, 1994). It has been proved that, *Picralima nitida* has a broad activity for treating parasitic diseases (Iwu *et al.*, 1992; Iwu, 1994), which may lend credibility for its use against diarrhoea, gonorrhoea, and intestinal helminthiasis.

(6) *Psidium guajava* (Myrtaceae) is much used against diarrhoea ($Ip=2$) and cough ($Ip=1$). Extracts from leaves, stem barks, flowers and fruits, have shown activity on micro-organisms such as Gram+ and Gram- (Kerharo & Adam, 1974). The presence of tannins in different plant parts clearly explains its use against diarrhoea (Anonyme, 1990). The “anti-diarrhoeal” activity of *P. guajava* has been mentioned in many works (Kheraro & Adam, 1974; Pousset, 1989; Fortin *et al.*, 1990). Extracts from leaves have shown a cough-suppressing activity (Jaiarj *et al.*, 1999).

(7) *Vernonia amygdalina* (Asteraceae) was recorded to be frequently used against malaria ($Ip=1$). The extract from leaves has shown some anti-malarial property against *Plasmodium berghei* (Hakizamungu & Weri, 1988) and *Plasmodium falciparum* (Tona *et al.*, 1999). The “ndolé” the popular name for *Vernonia* leaves is widely used as relish in Cameroon. The plant is non toxic, but the excessive ingestion of leaves can produce a purgative effect (Iwu, 1993).

These examples show that the plants with high Ip have often effective chemical substances.

For the plants referred to sexual dysfunction, the married Baka women preferred their husbands to take prescriptions of these plants before engaging in sex in order to enhance their performance.

CONCLUSIONS

The ethnobotanical study of useful plants (food and medicines) in the Dja Biosphere Reserve aim to help local people take care of their health and food problems. Through the ethnobotanical survey conducted in Dja in 1994, a total of 102 medicinal plants were recorded from 37 households of the Baka Pygmies. Some plants with higher performance indices were found to be widely used in other regions of Africa for the same purposes. There are also other plants in the literature known for their effective properties against certain ailments, which leads credibility to the popular pharmacopoeia used by the Baka, and to the method used in this paper to evaluate the relative importance of the traditional use of medicinal plants. Similar research using the same method should be conducted among the Baka Pygmies who have settled in the Yokadouma-Moloundou area. Also, further research should be conducted for identifying active chemical substances of the plants with higher performance indices. It is noteworthy that some specialized healers suggested the significance preparing standardized prescriptions, to avoid toxicity accidents.

ACKNOWLEDGEMENTS I thank all the villagers who collaborated with me in this study. The study was supported by the Program of conservation and rational utilization of tropical Forest ECO systems in Central Africa (ECOFAC program). I thank Mr. Aponty, from the Dja Calao Project for the work in the field. I am also grateful to Professor Jean Lejoly and Professor M. Tanghe who allowed me to analyze the data in

their laboratory.

REFERENCES

- Adjanohoun, E., G. Cusset, Issa Lo, A. Keita, M. Lebras, J. Lejoly & P. Waechter 1989. *Banque de données de médecine traditionnelle et de pharmacopée (Pharmel). Notice pour la récolte et l'entrée des données*. A.C.C.T., Paris.
- Adjanohoun, E., G. Cusset, Issa Lo, A. Keita, M. Lebras & J. Lejoly 1994. *Banque de données de médecine traditionnelle et de pharmacopée (Pharmel). Notice pour la collecte et l'entrée des données, seconde édition*. A.C.C.T., Paris.
- Adjanohoun, E., N. Aboubakar, K. Dramane, M.E. Ebot, J.A. Ekpere, E.G. Enow-Orock, D. Focho, Z.O. Gbilé, A. Kamanyi, J. Kamsu Kom, A. Keita, T. Mbenkum, C.N. Mbi, A.L. Mbiele, I.L. Mbome, N.K. Mubiru, W.L. Nancy, B. Nkongmeneck, B. Satabié, A. Sofowora, V. Tamze & C.K. Wirmum 1996. *Contribution to Ethnobotanical and Floristic Studies in Cameroon*. CSTR/OUA.
- Agomo, P.U., J.C. Idigo & B.M. Afolabi 1992. Antimalarial medicinal plants and their impact on cell populations in various organs of mice. *African Journal of Medicine and Medical Sciences*, 21 (2): 39-46.
- Anonyme, 1993. Fiche espèce sur *Mangifera indica* L. *Revue de Médecines et Pharmacopées Africaines*, 6 (2): 119-124.
- Anonyme, 1990. Fiche espèce sur *Psidium guajava* L. *Revue de Médecines et Pharmacopées Africaines*, 4 (1): 65-75.
- Bahuchet, S. 2000. Quel devenir pour la forêt et ses habitants? In (S. Bahuchet & P. De Maret eds.) *Les peuples des forêts tropicales aujourd'hui, volume III, région Afrique centrale*. Programme avenir des peuples des forêts tropicales (APFT), Bruxelles.
- Bedel, J., B. Bousquet & S. Gourlet 1987. *Réserve de Biosphère du Dja. Propositions d'aménagements*. Rapport ENGREF, Montpellier, France.
- Betti, J.L. 1996. *Contribution à la connaissance des plants médicinales de la réserve de Faune du Dja (Cameroun)*. Mémoire d'Ingénieur Forestier, FASA, Dschang, Cameroon.
- 2001. Usages traditionnels et vulnérabilité des plantes médicinales dans la réserve de biosphère du Dja, Cameroun. Thèse Doc., Univ. Libre de Bruxelles.
- 2002a. Usages populaires des plantes galactogènes dans l'arrondissement de Mintom au sud de la Réserve de biosphère du Dja (Cameroun). *Soma*, 2: 35-46.
- 2002b. Medicinal plants sold in Yaoundé markets, Cameroon. *African Study Monographs*, 23 (2): 47-64.
- 2002c. Vulnérabilité des plantes utilisées comme antipaludiques dans l'arrondissement de Mintom au sud de la réserve du Dja (Cameroun). *Systematics and Geography of Plants*, 71: 661-678.
- Betti, J.L. & J. Lejoly 1999. Importance en médecine traditionnelle de *Combretum mucronatum* Shum. & Thon (*Combretaceae*) dans le Dja (Cameroun). In (R. Nasi, I. Amsallem & S. Drouineau, eds.) *La gestion des forêts denses africaines aujourd'hui*. Actes du séminaire FORAFRI de libreville - Session 3: produits de la forêt. CD-Rom, 1-16.
- 2000. Les plantes indiquées comme anthelminthiques en thérapie traditionnelle dans la réserve de biosphère du Dja (Cameroun). *Soma*, 1: 4-16.
- Bitsindou, M. 1996. *Enquêtes sur la phytothérapie traditionnelle à Kindamba et Odzala*. Thèse Doc., Univ. Libre de Bruxelles.
- Bouquet, A. 1969. Féticheurs et médecines traditionnelles du Congo-Brazzaville. *Mémoire ORSTOM*, Paris.

- Bouquet, A. & M. Debray 1974. Plantes médicinales de la Côte d'Ivoire. *Mémoire ORSTOM*, Paris.
- Bourobou-Bourobou, H., H. Mounzeo, B. Mbatchi & B. Posso 1996. Quelques plantes galactogènes utilisées par les Bapunu au Gabon. *Bulletin de Médecine traditionnelle et Pharmacopées*, 10 (1): 71-77.
- Burkill, H.M. 1985. The useful plants of West Tropical Africa, families A-D. *Royal Botanic Gardens, Kew*, 1.
- Cousteix, P.J. 1961. *L'art et la pharmacopée des guérisseurs Ewondo (Région de Yaoundé)*. Recherches et études camerounaises. IRCAM Yaoundé.
- Das, P.C., A. Das, S. Mandal, C.N. Islam, M.K. Dutta & B. Patra 1989. Antiinflammatory and antimicrobial activities of the seed kernel *Mangifera indica*. *Fitoterapi*, 6 (3): 235-241.
- De Wachter, P. 1996. Economie et impact de l'agriculture itinérante badjoué (Sud Cameroun). *Civilisations*, 44 (1-2): 62-93.
- Diafouka, A. 1997. *Analyse des usages des plantes médicinales dans quatre régions du Congo-Brazzaville*. Thèse Doc., Univ. Libre de Bruxelles.
- Dijk, J.F.W. 1999. *Non-Timber Forest Products in the Bipindi-Akom II Region, Cameroon. A Socio-Economic and Ecological Assessment*. The Tropenbos-Cameroon programme.
- Ezeamuzie, I.C., M.C. Ojinnaka, E.O. Uzogara & S.E. Oji 1994. Anti-inflammatory, antipyretic and anti-malarial activities of a West African medicinal plant—*Picralima nitida*. *African Journal of Medicine and Medical Sciences*, 23 (1): 85-90.
- Evrard, C. 1968. *Recherches écologiques sur le peuplement forestier des sols hydromorphes de la cuvette congolaise*. Publ. I.N.E.A.C., sér. scient.
- Fortin, D., M. Lo & G. Maynard 1990. *Plantes médicinales du sahel*. CECI/ENDA.
- Francois, G., L. Ake Assi, J. Holenz & G. Bringman 1996. Constituents of *Picralima nitida* display pronounced inhibitory activities against asexual erythrocytic forms of *Plasmodium falciparum* in vitro. *Journal of Ethnopharmacology*, 54 (2-3): 113-117.
- Gartlan, S. 1989. *La conservation des écosystèmes forestiers du Cameroun*. Gland, Suisse et Cambridge, Royaume-Uni; UICN.
- Gartlan, S. & R. Leakey 1998 Conservation et utilisation rationnelle des écosystèmes forestiers en Afrique centrale. *Dossier d'exécution, annexe 1*. UICN/FED.
- Gbile, Z.O. 1998. Collection, conservation, and utilization of medicinal plants. In (P. Adams Robert & E. Adams Janice, eds.) *Conservation of Plant Genes III: Conservation and -utilization of African Plants*. pp. 163-174. Missouri Botanical Garden Press.
- Hakizamungu, E. & M. Weri 1988. L'usage de plantes médicinales dans le traitement du paludisme en médecine traditionnelle rwandaise. *Bulletin de Médecine Traditionnelle et Pharmacopées*, 2 (1): 11-17.
- Iwu, M.M. 1993. *Handbook of African medicinal plants*. CRS press, Boca Raton Ann Arbor London Tokyo.
- 1994. African medicinal plant in the search for new drugs based on ethnobotanical leads. In (D.J. Chadwick & J. Marsh, eds.) *Ethnobotany and the Search for New Drugs*. Ciba Foundation Symposium, Wiley, Chichester, 185: 116-129.
- Iwu, M.M. & D.L. Klayman 1992. Evaluation of the in vitro antimalarial activity of *Picralima* extracts. *Journal of Ethnopharmacology*, 36 (2): 133-135.
- Iwu, M.M., J.E. Jackson, J.D. Tally & D.L. Klayman 1992. Evaluation of plant extracts for antileishmanial activity using a mechanism-based radiorespirometric microtechnique (RAM). *Planta Medica*, 58: 436-441.
- Jaiarj, P., P. Kloohaswan, Y. Wongkrajang, P. Peungvicha, P. Suriyawong, M.L. Sumal Saraya & O. Ruangsomboon 1999. Anticough and antimicrobial activities of *Psidium guajava* Linn. Leaf extract. *Journal of Ethnopharmacology*, 67: 203-212.
- Kambu, K., L. Tona, N. Luki, K. Cimaga & W. Makuba 1989. Evaluation de l'activité

- antimicrobienne de quelques préparations traditionnelles antidiarrhéiques utilisées dans la ville de Kinshasa-Zaïre. *Bulletin de Médecine Traditionnelle et Pharmacopées*, 3 (1): 15-24.
- Kerharo, J. & J.G. Adam 1974. *Pharmacopée sénégalaise traditionnelle. Plantes médicinales et toxiques*. Edition Vigot—Frères, Paris.
- Lebrun, J. 1947. La végétation de la plaine alluviale au Sud du lac Edouard. Parcs Nat. Congo Belge, *Expl. Parc Nat. Albert, Miss. J. Lebrun (1937-1938)*, 1.
- Letouzey, R. 1985. *Notice de la carte phytogéographique du Cameroun au 1/50000*. Institut de la carte internationale de la végétation. Toulouse-France et IRA de Yaoundé-Cameroun.
- Magilu, M., M. Mbuyi & M.B. Ndjélé 1996. Plantes médicinales utilisées par les pygmées (Mbute) pour combattre le paludisme dans la zone de Mambasa, Ituri, Zaïre. In (L.J.G. van der Maesen, X.M. van der Burgt & J.M. van Medenbach de Rooy, eds.) *Kluwer Academic publishers. The Netherlands. The biodiversity of African Plants*, 741-746.
- Motte, F. 1980. Les plantes chez les pygmées Aka et les Mozombo de la Lobaye (Centrafrique). *Soc. Et. Ling. et Anthrop. de France, Etudes pygmées V*.
- Oliver-Bever, D. 1986. *Medicinal Plants in Tropical West Africa*. Cambridge. Univ. Press.
- Pousset, J.-L. 1989. *Plantes médicinales africaines. Utilisation pratique*. ACCT, Paris.
- Richel, T. 1995. *Les plantes médicinales d'Afrique occidentale. Essai de synthèse sur base de la banque de données pharml.* Thèse Doc., Univ. Libre de Bruxelles.
- Robineau, L. 1991. *Vers une pharmacopée Caraïbe. Séminaire Tramil 4*, Enda-Caraïbe et UNAH, Santo Domingo.
- Sofowora, A. 1996. *Plantes médicinales et médecine traditionnelle d'Afrique*. Ed. Karthala, Paris.
- Sonké, B. 1998. *Etudes floristiques et structurales des forêts de la réserve de faune du Dja (Cameroun)*. Thèse Doc. Univ. Libre de Bruxelles.
- Tchoumboué, J., M. Mpoame & M. Akamba 1996. Essai comparé de traitement de nématodes de poulet au "Sodivermyl"—Baird et à l'écorce de *Combretum sp.* (Combretaceae). *Tropicultura*, 14 (1): 4-5.
- Tona, L., N.P. Ngimbi, M. Tsakala, K. Mesia, K. Cimanga, S. Apers, T. De Bruyne, L. Pieters, J. Totté & A.J. Vlietinck 1999. Antimalarial activity of 20 crude extracts from nine African medicinal plants used in Kinshasa, Congo. *Journal of Ethnopharmacology*, 68: 193-203.
- UICN 1989. *La conservation des écosystèmes forestiers d'Afrique centrale*. UICN, Gland, Suisse, Cambridge, Royaume-Uni.
- Watt, J.M. & M.G. Breyer-Brandwijk 1962. *The medicinal and poisonous plants of Southern and Eastern Africa. vol 1, 2nd edition*. Churchill, London.

——— Accepted August 1, 2003

Author's Name and Address: Jean L. BETTI, *Department of Forestry, Faculty of Agronomy and Agricultural Sciences, University of Dschang & Forest Revenue Enhancement Program, Ministry of Environment and Forest, Yaoundé/CAMEROON.*
E-mail: betlagarde@yahoo.fr

Appendix 1. Medicinal Plants Recorded among the Baka and Their Habitats.

Sw=Swamp forest; Cul=Cultivated plant (farm or fallows); Fp=Primary forest; Fs=Secondary forest; Vi=Village.

Plant species	Family	Major Habitat
<i>Acmella caulirhiza</i> Del. (syn.: <i>Spilanthes filicaulis</i> , S. africana)	Asteraceae	Vi
<i>Aframomum daniellii</i> (Hook. f.) K. Schum.	Zingiberaceae	Fp
<i>Albizia adianthifolia</i> (Schum.) W.F. Wight	Mimosaceae	Fs
<i>Alchornea cordifolia</i> (Sch. & Thonn.) Müll. Arg.	Euphorbiaceae	Fs
<i>Alchornea floribunda</i> Mull. Arg.	Euphorbiaceae	Fp
<i>Allanblackia floribunda</i> Oliv.	Clusiaceae	Fs
<i>Alstonia boonei</i> De Wild.	Apocynaceae	Fs
<i>Ancistrophyllum secundiflorum</i> (P. Beauv.) Wendl.	Arecaceae	Fp
<i>Anonidium mannii</i> (Oliv.) Engl. & Diels	Annonaceae	Fp
<i>Antrocaryon klaineianum</i> Pierre	Anacardiaceae	Fp
<i>Baillonella toxisperma</i> Pierre	Sapotaceae	Fp
<i>Barteria nigritiana</i> Hook. f. subsp. <i>fistulosa</i> (Mast.) Sleumer	Flacourtiaceae	Fs
<i>Bridelia micrantha</i> (Hochst.) Baill.	Euphorbiaceae	Fs
<i>Calycobolus africanus</i> (G. Don) Heine (Syn: <i>Prevostea africana</i>)	Convolvulaceae	Fp
<i>Capsicum frutescens</i> L.	Solanaceae	Cul
<i>Carica papaya</i> L.	Caricaceae	Cul
<i>Carpolobia alba</i> G. Don	Polygalaceae	Fs
<i>Ceiba pentandra</i> (L.) Gaertn.	Bombacaceae	Fs
<i>Celtis mildbraedii</i> Engl.	Ulmaceae	Fp
<i>Chenopodium ambrosioides</i> L.	Chenopodiaceae	Vi
<i>Citrus limon</i> (L.) Burm. f.	Rutaceae	Cul
<i>Clerodendrum splendens</i> G. Don	Verbenaceae	Fs
<i>Combretum mucronatum</i> Schum. & Thonn. (syn: <i>C. smeathmannii</i> G Don, <i>C. pellucidum</i> Excell)	Combretaceae	Fp
<i>Costus afer</i> Ker Gawl	Costaceae	Fs
<i>Cylicodiscus gabunensis</i> Harms	Mimosaceae	Fp
<i>Dalbergia hostilis</i> Benth.	Fabaceae	Fp
<i>Desbordesia glaucescens</i> (Engl.) Van Thiegh.	Combretaceae	Fp
<i>Desmodium adscendens</i> (SW.) DC.	Fabaceae	Fs
<i>Diospyros hoyleana</i> F. White	Ebenaceae	Fp
<i>Dracaena arborea</i> (Willd.) Link	Agavaceae	Fp
<i>Duboscia macrocarpa</i> BOcq.	Tiliaceae	Fp
<i>Elaeis guineensis</i> Jacq.	Arecaceae	Cul
<i>Elaeophorbia drupifera</i> (Thonn.) Stapf	Euphorbiaceae	Fp
<i>Emilia coccinea</i> (Sims) G. Don	Asteraceae	Fs
<i>Enantia chlorantha</i> Oliv.	Annonaceae	Fp
<i>Eribroma oblongum</i> (Mast) Pierre ex Germain	Sterculiaceae	Fp
<i>Erythrophleum suaveolens</i> (Guil. & Perr.) Brenan	Caesalpiniaceae	Fp
<i>Ficus mucuso</i> Welw. ex Ficalho	Moraceae	Fs
<i>Funtumia elastica</i> (Preuss) Stapf	Apocynaceae	Fs
<i>Gambeya africana</i> (G. Don. ex Bak.) Pierre	Sapotaceae	Fp
<i>Garcinia cola</i> Heckel	Clusiaceae	Fp
<i>Guarea thompsonii</i> Sprague & Hutch.	Meliaceae	Fp
<i>Harungana madagascariensis</i> Lam. ex Poir.	Hypericaceae	Fs
<i>Haumania danckelmaniana</i> (Braun & K. Schum.) Milne-Redh.	Marantaceae	Fp
<i>Heisteria zimmereri</i> Engl.	Olacaceae	Fp
<i>Hua gaboni</i> Pierre ex De Wild.	Huaceae	Fp
<i>Hylodendron gabunense</i> Taubert	Caesalpiniaceae	Fp
<i>Irvingia gabonensis</i> (Aub.-Lec. ex O'R) Bail.	Irvingiaceae	Fp
<i>Klainedoxa gabonensis</i> Pierre	Irvingiaceae	Fp

(continued)

Appendix 1. (continued)

Plant species	Family	Major Habitat
<i>Landolphia owariensis</i> P. Beauv.	Apocynaceae	Fp
<i>Lonchitis currori</i> (Hooker) Mett. ex Kühn	Dennstaedtiaceae	Fp
<i>Mammea africana</i> Sabine	Clusiaceae	Sw
<i>Mangifera indica</i> L.	Anacardiaceae	Cul
<i>Manihot esculenta</i> Crantz	Euphorbiaceae	Cul
<i>Microdesmis puberula</i> Hook. f. ex Planch.	Pandaceae	Fp
<i>Milicia excelsa</i> (Welw.) Berg	Moraceae	Fs
<i>Musa paradisiaca</i> L.	Musaceae	Cul
<i>Musanga cecropioides</i> R. Br.	Moraceae	Fs
<i>Myrianthus arboreus</i> P. Beauv.	Moraceae	Fs
<i>Ocimum gratissimum</i> L.	Lamiaceae	Cul
<i>Omphalocarpum elatum</i> Miers	Sapotaceae	Fp
<i>Pachypodanthium staudtii</i> (Engl. & Diels)	Annonaceae	Fp
<i>Palisota ambigua</i> Clarke	Commelinaceae	Fs
<i>Panda oleosa</i> Pierre	Pandaceae	Fp
<i>Pentaclethra macrophylla</i> Benth.	Mimosaceae	Fs
<i>Pentadiplandra brazzeana</i> Bail.	Pentadiplandraceae	Fs
<i>Petersianthus macrocarpus</i> (P. Beauv.) Liben.	Lecythidaceae	Fs
<i>Picralima nitida</i> (Stapf) Th & H. Dur.	Apocynaceae	Fs
<i>Piptadeniastrum africanum</i> (Hook. f.) Bren.	Mimosaceae	Fp
<i>Polyalthia suaveolens</i> Engl. & Diels	Annonaceae	Fp
<i>Psidium guajava</i> L.	Myrtaceae	Cul
<i>Psychotria densinervia</i> (K. Krause) Verde. (syn: <i>Cephaelis densinervia</i>)	Rubiaceae	Fs
<i>Pteleopsis hylodendron</i> Mildbr.	Combretaceae	Fp
<i>Pterocarpus soyauxii</i> Taub.	Fabaceae	Fp
<i>Pycnanthus angolensis</i> (Welw.) Excell	Myristicaceae	Fs
<i>Raphia mombutorum</i> Drude	Arecaceae	Sw
<i>Rauwolfia macrophylla</i> Stapf	Apocynaceae	Fs
<i>Rauwolfia vomitoria</i> Afzel.	Apocynaceae	Fs
<i>Saccharum officinarum</i> L.	Poaceae	Cul
<i>Santiria trimera</i> (Oliv.) Aubrév.	Burseraceae	Fp
<i>Scleria boivinii</i> Steud.	Cyperaceae	Sw
<i>Sida acuta</i> Burm.	Malvaceae	Vi
<i>Solanum anguivi</i> Lam. (syn: <i>Solanum indicum</i> L.)	Solanaceae	Cul
<i>Solanum torvum</i> sw.	Solanaceae	Cul
<i>Staudtia kamerunensis</i> Warb.	Myristicaceae	Fp
<i>Strombosopsis tetrandra</i> Engl.	Olacaceae	Fp
<i>Strychnos longicaudata</i> Gilg	Loganiaceae	Fp
<i>Tabernaemontana crassa</i> Benth.	Apocynaceae	Fs
<i>Terminalia superba</i> Engl. & Diels	Combretaceae	Fp
<i>Tetracera potatoria</i> Afz. ex G. Don	Dilleniaceae	Fp
<i>Tetrapleura tetraptera</i> (Schum. & Thonn.) Taub.	Mimosaceae	Fp
<i>Treculia africana</i> Desc.	Moraceae	Fp
<i>Trema orientalis</i> (L.) Blume	Ulmaceae	Fs
<i>Trichilia rubescens</i> Oliv.	Meliaceae	Fp
<i>Trichoscypha acuminata</i> Engl.	Anacardiaceae	Fp
<i>Trichoscypha patens</i> (Oliv.) Engl.	Anacardiaceae	Fp
<i>Triplochiton scleroxylon</i> K. Schum.	Sterculiaceae	Fs
<i>Uapaca paludosa</i> Aubrév. & Léandri	Euphorbiaceae	Sw
<i>Vernonia amygdalina</i> Del.	Asteraceae	Cul
<i>Vernonia conferta</i> Benth.	Asteraceae	Fs
<i>Zanthoxylum heitzii</i> (Aubr. et Pell.) Waterman	Rutaceae	Fp
<i>Zea mays</i> L.	Poaceae	Cul

Appendix 2. Citations of Medicinal Plants in the House Holds among the Baka.

Hh=number of households where the specific usage (a citation) was cited.

Ailments (Ail): Abs=Abscess; Amo=Amoebic dysentery; Ana=Anaemia; Bro=Bronchite; Bab="Baby or child crossed": this ailment occurs on the baby (weight loss) when parents have not respect some ritual before sex party; Cou=Cough; Dia=Diarrhoea; Gon=Gonorrhoea; Hae=Haemorrhoids; Head=Headache; Her=Hernia; Int-hel=Intestinal helminthiasis; Jau=Jaundice; Lac=Lactation failure; Lum=Lumbago; Mal=Malaria; Sex=Sexual dysfunction; Sca=Scabies; Sna=Snake bite; Too=Toothache; Tub=Tuberculosis; Wou=Wound.

Plant part (Pl-part): d-ba=dried bark; flo=flower; fr=fruit; le=leaf; ro=root; ro-ba=bark of the root; sa=sap; se=seed; sp=spine; st=stem; st-ba=bark of the stem, wo=wood; yo-le=young leaf

Pharmaceutical form (Phar): as=ash; co=cooking; de=decoction; inf=infusion; ju=juice; ma=maceration (soak); mas=masticated; p-oil=palm oil; po=pounding; scr=scraping; scr+wa=scraping and warming; s-oil=seed oil; tr=tritured; no=not prepared.

Mode of administration (Adm): ap=local application; br-to=brush the teeth; ey-in=instillation in eyes; fo-ba=foot bath; fr=friction; g-ba=general bath; ins=local instillation; mas=massage; mo-ba=mouth bath; mo-va-ba=mouth vaporation bath; no-in=instillation in nose; onc=onction; or=oral voice; re=rectal voice; se=scarification; su-bl=to succe (succer in French) the blood; to-in=instillation in the teeth; hea-ba=wash the head (head bath).

Associated plants: plants which are prescribed together with other plant (s) for the same prescription. For example, to treat amoebic dysentery, one informant proposed to prepare (boil) together the stem barks of *Bridelia micrantha*, *Antrocaryon klaineianum* and *Treulia africana* and drink the decoction. For treating diarrhoea, another person proposed to boil together the stem barks of *Mangifera indica* with the leaves of *Psidium guajava*, and drink the decoction.

Ail	Scientific name of plant	Associated plant	Pl-part	Phar	Adm	Hh
Hae	<i>Tetracera potatoria</i>		le	de	or	1
Amo	<i>Bridelia micrantha</i>	<i>Antrocaryon, Treulia</i>	st-ba	de	or	1
Amo	<i>Antrocaryon klaineianum</i>	associated with <i>Bridelia</i>	st-ba	de	or	1
Amo	<i>Treulia africana</i>	associated with <i>Bridelia</i>	st-ba	de	or	1
Amo	<i>Pterocarpus soyauxii</i>		st-ba	de	or	2
Amo	<i>Strombosiopsis tetrandra</i>		st-ba	de	or	3
Amo	<i>Pterocarpus soyauxii</i>		wod	de	or	1
Dia	<i>Mangifera indica</i>	associated with <i>Psidium</i>	st-ba	de	or	1
Dia	<i>Psidium guajava</i>	<i>Mangifera</i>	le	de	or	1
Dia	<i>Pentaclethra macrophylla</i>		st-ba	ma	re	2
Dia	<i>Picalima nitida</i>		st-ba	ma	re	2
Dia	<i>Citrus limon</i>		fr	ju	or	1
Dia	<i>Anonidium mannii</i>		st-ba	ma	or	1
Dia	<i>Santiria trimera</i>		st-ba	ma	or	11
Dia	<i>Pentaclethra macrophylla</i>		st-ba	ma	or	8
Dia	<i>Picalima nitida</i>		st-ba	ma	or	3
Dia	<i>Alchornea floribunda</i>		yo-le	ma	or	9
Int-hel	<i>Musa paradisiaca</i>	associated with <i>Combretum</i>	fr	po	or	6
Int-hel	<i>Combretum mucronatum</i>	<i>Musa</i>	st-ba	po	or	3
Int-hel	<i>Combretum mucronatum</i>	<i>Musa</i>	st-ba	co	or	2
Int-hel	<i>Combretum mucronatum</i>	<i>Musa</i>	st-ba	scr	or	1
Int-hel	<i>Alstonia boonei</i>		st-ba	de	re	1
Int-hel	<i>Combretum mucronatum</i>		sa	no	or	9
Int-hel	<i>Alstonia boonei</i>		st-ba	de	or	1
Int-hel	<i>Picalima nitida</i>		st-ba	de	or	2
Int-hel	<i>Alstonia boonei</i>		st-ba	ma	or	5
Int-hel	<i>Pentaclethra macrophylla</i>		st-ba	ma	or	6
Int-hel	<i>Combretum mucronatum</i>		st-ba	ma	or	19
Int-hel	<i>Chenopodium ambrosioides</i>		le	ma	or	2

(continued)

Appendix 2. (continued)

Ail	Scientific name of plant	Associated plant	Pl-part	Phar	Adm	Hh
Int-hel	<i>Clerodendrum splendens</i>		le	ma	or	1
Too	<i>Capsicum frutescens</i>	associated with <i>Acmella</i>	fr	po	Ap	9
Too	<i>Capsicum frutescens</i>	associated with <i>Aframomum</i>	fr	po	to-in	1
Too	<i>Mangifera indica</i>	associated with <i>Alchornea</i>	st-ba	de	mo-va-ba	1
Too	<i>Musanga cecropioides</i>	associated with <i>Alchornea</i>	st-ba	de	mo-va-ba	1
Too	<i>Capsicum frutescens</i>	associated with <i>Barteria</i>	fr	po	Ap	1
Too	<i>Barteria nigritiana</i>	<i>Capsicum</i>	st	as	Ap	1
Too	<i>Acmella caulirhiza</i>	<i>Capsicum</i>	le	po	Ap	9
Too	<i>Aframomum daniellii</i>	<i>Capsicum</i>	ro	scr	to-in	1
Too	<i>Alchornea cordifolia</i>	<i>Musanga</i>	yo-le	de	mo-va-ba	1
Too	<i>Duboscia macrocarpa</i>		se	no	Ap	1
Too	<i>Irvingia gabonensis</i>		st-ba	de	mo-ba	9
Too	<i>Mangifera indica</i>		st-ba	de	mo-ba	10
Too	<i>Mangifera indica</i>		st-ba	de	mo-va-ba	1
Too	<i>Duboscia macrocarpa</i>		st-ba	de	br-t	2
Too	<i>Ficus mucoso</i>		st-ba	de	br-t	1
Too	<i>Strombosiopsis tetrandra</i>		st-ba	de	br-t	1
Too	<i>Terminalia superba</i>		st-ba	de	br-t	1
Too	<i>Uapaca paludosa</i>		st-ba	de	br-t	3
Too	<i>Zanthoxylum heitzii</i>		st-ba	de	br-t	3
Too	<i>Carica papaya</i>		ro	de	br-t	2
Too	<i>Pycnanthus angolensis</i>		st-ba	de	br-t	1
Too	<i>Costus afer</i>		st	de	br-t	1
Too	<i>Elaeophorbium drupifera</i>		sa	no	to-in	2
Too	<i>Staudtia kamerunensis</i>		sa	no	to-in	7
Too	<i>Picralima nitida</i>		st-ba	scr+wa	to-in	1
Too	<i>Pentadiplandra brazzeana</i>		ro	po	no-in	2
Too	<i>Pachypodanthium staudtii</i>		ro-ba	scr	no-in	3
Too	<i>Pentaclethra macrophylla</i>		st-ba	scr	no-in	1
Lac	<i>Solanum anguivi</i>	associated with <i>Heisteria</i>	fr	de	or	9
Lac	<i>Solanum anguivi</i>	associated with <i>Omphalocarpum</i>	fr	de	or	14
Lac	<i>Solanum anguivi</i>	associated with <i>Pycnanthus</i>	fr	de	or	13
Lac	<i>Solanum anguivi</i>	associated with <i>Triplochiton</i>	fr	de	or	4
Lac	<i>Heisteria zimmereri</i>	<i>Solanum</i>	st-ba	de	or	9
Lac	<i>Omphalocarpum elatum</i>	<i>Solanum</i>	st-ba	de	or	14
Lac	<i>Pycnanthus angolensis</i>	<i>Solanum</i>	st-ba	de	or	13
Lac	<i>Triplochiton scleroxylon</i>	<i>Solanum</i>	st-ba	de	or	4
Lac	<i>Musanga cecropioides</i>		sa	no	or	3
Lac	<i>Ceiba pentandra</i>		st-ba	de	or	6
Lac	<i>Musanga cecropioides</i>		st-ba	de	or	2
Lac	<i>Ceiba pentandra</i>		st-ba	ma	or	1
Lac	<i>Alstonia boonei</i>		st-ba	ma	or	3
Lac	<i>Ficus mucoso</i>		st-ba	ma	or	1
Lac	<i>Gambee africana</i>		st-ba	ma	or	1
Lac	<i>Milicia excelsa</i>		st-ba	ma	or	1
Lac	<i>Musanga cecropioides</i>		st-ba	ma	or	3
Lac	<i>Omphalocarpum elatum</i>		st-ba	ma	or	1
Lac	<i>Vernonia conferta</i>		st-ba	ma	or	5
Gon	<i>Solanum anguivi</i>	associated with <i>Celtis</i>	fr	de	or	5
Gon	<i>Solanum anguivi</i>	associated with <i>Pterocarpus</i>	fr	de	or	8
Gon	<i>Pterocarpus soyauxii</i>	<i>Solanum</i>	st-ba	de	or	8
Gon	<i>Celtis mildbraedii</i>	<i>Solanum</i>	st-ba	de	or	5

(continued)

Appendix 2. (continued)

Ail	Scientific name of plant	Associated plant	Pl-part	Phar	Adm	Hh
Gon	<i>Panda oleosa</i>		st-ba	de	re	1
Gon	<i>Tetrapleura tetraptera</i>		st-ba	de	re	1
Gon	<i>Guarea thompsonii</i>		st-ba	ma	re	9
Gon	<i>Klainedoxa gabonensis</i>		st-ba	de	or	2
Gon	<i>Pteleopsis hylodendron</i>		st-ba	de	or	3
Gon	<i>Picralima nitida</i>		st-ba	ma	or	1
Gon	<i>Desmodium adscendens</i>		le	ma	or	3
Sex	<i>Zea mays</i>	associated with <i>Klainedoxa</i>	se	de	or	8
Sex	<i>Zea mays</i>	associated with <i>Milicia</i>	se	de	or	5
Sex	<i>Milicia excelsa</i>	<i>Zea</i>	st-ba	de	or	5
Sex	<i>Klainedoxa gabonensis</i>	<i>Zea</i>	d-ba	de	or	8
Sex	<i>Calycobolus africanus</i>		ro	no	or	5
Sex	<i>Carpolobia alba</i>		ro	no	or	3
Sex	<i>Microdesmis puberula</i>		ro	no	or	1
Sex	<i>Pentaclethra macrophylla</i>		ro	no	or	1
Sex	<i>Milicia excelsa</i>		d-ba	no	or	1
Lum	<i>Elaeis guineensis</i>	associated with <i>Alchornea</i>	se	s-oil	sc	1
Lum	<i>Elaeis guineensis</i>	associated with <i>Funtumia</i>	se	s-oil	sc	2
Lum	<i>Capsicum frutescens</i>	associated with <i>Garcinia</i>	fr	de	re	2
Lum	<i>Elaeis guineensis</i>	associated with <i>Hua</i>	se	s-oil	sc	3
Lum	<i>Elaeis guineensis</i>	associated with <i>Penda</i>	se	s-oil	sc	2
Lum	<i>Elaeis guineensis</i>	associated with <i>Terminalia</i>	se	s-oil	sc	2
Lum	<i>Garcinia cola</i>	<i>Capsicum</i>	st-ba	de	re	2
Lum	<i>Funtumia elastica</i>	<i>Elaeis</i>	st-ba	as	sc	2
Lum	<i>Panda oleosa</i>	<i>Elaeis</i>	st-ba	as	sc	2
Lum	<i>Terminalia superba</i>	<i>Elaeis</i>	st-ba	as	sc	2
Lum	<i>Hua gabonii</i>	<i>Elaeis</i>	ro	as	sc	3
Lum	<i>Alchornea floribunda</i>	<i>Elaeis</i>	st	as	sc	1
Lum	<i>Albizia adianthifolia</i>		st-ba	scr	fr	1
Lum	<i>Enantia chlorantha</i>		st-ba	scr	fr	1
Lum	<i>Triplochiton scleroxylon</i>		st-ba	scr+wa	mas	2
Lum	<i>Psychotria dennisinervia</i>		le	scr+wa	mas	1
Lum	<i>Manihot esculenta</i>		le	scr+wa	mas	1
Lum	<i>Baillonella toxisperma</i>		st-ba	de	re	8
Lum	<i>Petersianthus macrocarpus</i>		st-ba	de	re	1
Lum	<i>Pterocarpus soyauxii</i>		st-ba	de	re	1
Lum	<i>Tetrapleura tetraptera</i>		se	de	re	2
Mal	<i>Capsicum frutescens</i>	associated with <i>Omphalocarpum</i>	fr	de	or	1
Mal	<i>Solanum anguivi</i>	associated with <i>Omphalocarpum</i>	fr	de	or	1
Mal	<i>Elaeis guineensis</i>	associated with <i>Piptadeniastrum</i>	se	s-oil	sc	1
Mal	<i>Elaeis guineensis</i>	associated with <i>Polyalthia</i>	se	s-oil	sc	1
Mal	<i>Solanum torvum</i>	<i>Capsicum</i>	yo-le	tr	no-in	1
Mal	<i>Omphalocarpum elatum</i>	<i>Capsicum, Solanum</i>	st-ba	de	or	1
Mal	<i>Piptadeniastrum africanum</i>	<i>Elaeis</i>	st-ba	as	sc	1
Mal	<i>Polyalthia suaveolens</i>	<i>Elaeis</i>	st-ba	as	sc	1
Mal	<i>Cylicodiscus gabunense</i>		st-ba	ma	g-ba	1
Mal	<i>Musanga cecropioides</i>		st-ba	de	fo-ba	1
Mal	<i>Microdesmis puberula</i>		yo-le	tr	no-in	1
Mal	<i>Alstonia boonei</i>		st-ba	de	re	1
Mal	<i>Cylicodiscus gabunense</i>		st-ba	de	re	1
Mal	<i>Alstonia boonei</i>		st-ba	ma	re	9
Mal	<i>Anonidium mannii</i>		st-ba	ma	re	1

(continued)

Appendix 2. (continued)

Ail	Scientific name of plant	Associated plant	Pl-part	Phar	Adm	Hh
Mal	<i>Alstonia boonei</i>		st-ba	de	or	26
Mal	<i>Cylicodiscus gabunense</i>		st-ba	de	or	2
Mal	<i>Enantia chlorantha</i>		st-ba	de	or	1
Mal	<i>Picralima nitida</i>		st-ba	de	or	1
Mal	<i>Alstonia boonei</i>		st-ba	ma	or	10
Mal	<i>Enantia chlorantha</i>		st-ba	ma	or	2
Mal	<i>Irvingia gabonensis</i>		st-ba	ma	or	1
Mal	<i>Pentaclethra macrophylla</i>		st-ba	ma	or	16
Mal	<i>Picralima nitida</i>		st-ba	ma	or	8
Mal	<i>Trichilia rubescens</i>		st-ba	ma	or	1
Mal	<i>Aframomum daniellii</i>		ro	ma	or	2
Mal	<i>Polyalthia suaveolens</i>		st-ba	ma	or	2
Mal	<i>Acmella caulirhiza</i>		le	ma	or	1
Mal	<i>Vernonia amygdalina</i>		le	ma	or	1
Sca	<i>Citrus limon</i>	associated with <i>Costus</i>	fr	de	g-ba	14
Sca	<i>Elaeis guineensis</i>	associated with <i>Raphia</i>	se	s-oil	onc	2
Sca	<i>Costus afer</i>	<i>Citrus</i>	st	de	g-ba	14
Sca	<i>Raphia mombutorum</i>	<i>Elaeis</i>	st	as	onc	2
Sca	<i>Mammea africana</i>		st-ba	de	g-ba	16
Sca	<i>Pterocarpus soyauxii</i>		st-ba	de	g-ba	4
Sca	<i>Erythrophleum suaveolens</i>		st-ba	inf	g-ba	1
Sca	<i>Pterocarpus soyauxii</i>		wod	scr	fr	2
Sca	<i>Rauvolfia macrophylla</i>		st-ba	scr	fr	8
Sca	<i>Strychnos longicaudata</i>		st-ba	scr+wa	fr	6
Bro	<i>Pteleopsis hylodendron</i>		st-ba	de	or	1
Bro	<i>Trichilia rubescens</i>		st-ba	ma	or	3
Cou	<i>Capsicum frutescens</i>	associated with <i>Allanblackia</i>	fr	ma	no-in	1
Cou	<i>Solanum anguivi</i>	associated with <i>Allanblackia</i>	fr	de	or	3
Cou	<i>Capsicum frutescens</i>	associated with <i>Bridelia</i>	fr	ma	or	6
Cou	<i>Capsicum frutescens</i>	associated with <i>Costus</i>	fr	ma	or	16
Cou	<i>Solanum anguivi</i>	associated with <i>Eribroma</i>	fr	de	or	3
Cou	<i>Solanum anguivi</i>	associated with <i>Hylodendron</i>	fr	de	or	17
Cou	<i>Capsicum frutescens</i>	associated with <i>Microdesmis</i>	fr	po	or	13
Cou	<i>Solanum anguivi</i>	associated with <i>Omphalocarpum</i>	fr	de	or	6
Cou	<i>Capsicum frutescens</i>	associated with <i>Pycnanthus</i>	fr	de	or	10
Cou	<i>Solanum anguivi</i>	associated with <i>Pycnanthus</i>	fr	de	or	10
Cou	<i>Allanblackia floribunda</i>	<i>Capsicum</i>	st-ba	ma	no-in	1
Cou	<i>Costus afer</i>	<i>Capsicum</i>	st	ma	or	16
Cou	<i>Bridelia micrantha</i>	<i>Capsicum</i>	st-ba	ma	or	6
Cou	<i>Microdesmis puberula</i>	<i>Capsicum</i>	yo-le	po	or	13
Cou	<i>Pycnanthus angolensis</i>	<i>Capsicum, Solanum</i>	st-ba	de	or	10
Cou	<i>Allanblackia floribunda</i>	<i>Solanum</i>	st-ba	de	or	3
Cou	<i>Eribroma oblongum</i>	<i>Solanum</i>	st-ba	de	or	3
Cou	<i>Hylodendron gabunense</i>	<i>Solanum</i>	st-ba	de	or	17
Cou	<i>Omphalocarpum elatum</i>	<i>Solanum</i>	yo-le	de	or	6
Cou	<i>Aframomum daniellii</i>		yo-le	tr	no-in	17
Cou	<i>Duboscia macrocarpa</i>		st-ba	no	or	1
Cou	<i>Hylodendron gabunense</i>		st-ba	no	or	1
Cou	<i>Alchornea floribunda</i>		le	no	or	1
Cou	<i>Microdesmis puberula</i>		le	no	or	1
Cou	<i>Musanga cecropioides</i>		st-ba	de	or	1
Cou	<i>Trichoscypha acuminata</i>		st-ba	de	or	13

(continued)

Appendix 2. (continued)

Ail	Scientific name of plant	Associated plant	Pl-part	Phar	Adm	Hh
Cou	<i>Trichoscypha patens</i>		st-ba	de	or	1
Cou	<i>Uapaca paludosa</i>		st-ba	de	or	1
Cou	<i>Psidium guajava</i>		le	de	or	1
Cou	<i>Ocimum gratissimum</i>		le	ma	or	1
Tub	<i>Dalbergia hostilis</i>		sp	ma	or	1
Abs	<i>Dracaena arborea</i>		st-ba	scr	Ap	1
Abs	<i>Guarea thompsonii</i>		st-ba	scr	Ap	1
Abs	<i>Trema orientalis</i>		st-ba	scr	Ap	1
Her	<i>Elaeis guineensis</i>	associated with <i>Myrianthus</i>	fr	p-oil	or	3
Her	<i>Myrianthus arboreus</i>	<i>Elaeis</i>	st-ba	ma	or	3
Her	<i>Desbordesia glaucescens</i>		st-ba	ma	or	1
Sna	<i>Funtumia elastica</i>		sa	no	Ap	2
Sna	<i>Haumania danckelmaniana</i>		yo-le	mas	Ap	9
Sna	<i>Polyalthia suaveolens</i>		yo-le	mas	Ap	1
Sna	<i>Anonidium mannii</i>		st-ba	scr	Ap	3
Sna	<i>Palisota ambigua</i>		st	po	Ap	2
Sna	<i>Palisota ambigua</i>		st	po	ins	2
Sna	<i>Haumania danckelmaniana</i>		yo-le	mas	su-bl	2
Sna	<i>Alstonia boonei</i>		st-ba	de	or	3
Sna	<i>Terminalia superba</i>		st-ba	de	or	4
Ana	<i>Barteria nigriflora</i>		st-ba	de	or	1
Ana	<i>Pterocarpus soyauxii</i>		st-ba	de	or	1
Bab	<i>Celtis mildbraedii</i>		st-ba	inf	g-ba	1
Bab	<i>Barteria nigriflora</i>		yo-le	ma	no-in	1
Bab	<i>Barteria nigriflora</i>		yo-le	ma	ey-in	1
Bab	<i>Lonchitis curori</i>		le	tr	ey-in	1
Bab	<i>Barteria nigriflora</i>		yo-le	ma	or	1
Bab	<i>Petersianthus macrocarpus</i>		le	ma	or	1
Head	<i>Elaeis guineensis</i>	associated with <i>Alchornea</i>	se	s-oil	sc	8
Head	<i>Elaeis guineensis</i>	associated with <i>avec Celtis</i>	se	s-oil	sc	1
Head	<i>Elaeis guineensis</i>	associated with <i>Haumania</i>	se	s-oil	sc	2
Head	<i>Elaeis guineensis</i>	associated with <i>Pentaclethra</i>	se	s-oil	sc	1
Head	<i>Elaeis guineensis</i>	associated with <i>Polyalthia</i>	se	s-oil	sc	4
Head	<i>Elaeis guineensis</i>	associated with <i>Scleria</i>	se	s-oil	sc	5
Head	<i>Celtis mildbraedii</i>	<i>Elaeis</i>	st-ba	as	sc	1
Head	<i>Alchornea floribunda</i>	<i>Elaeis</i>	ro	as	sc	8
Head	<i>Haumania danckelmaniana</i>	<i>Elaeis</i>	ro	as	sc	2
Head	<i>Pentaclethra macrophylla</i>	<i>Elaeis</i>	ro	as	sc	1
Head	<i>Polyalthia suaveolens</i>	<i>Elaeis</i>	ro	as	sc	4
Head	<i>Scleria boivinii</i>	<i>Elaeis</i>	ro	as	sc	5
Head	<i>Sida acuta</i>		le	ma	hea-ba	1
Head	<i>Rauvolfia vomitoria</i>		ro-ba	scr	no-in	3
Head	<i>Tabernaemontana crassa</i>		ro-ba	scr	no-in	13
Head	<i>Albizia adianthifolia</i>		st-ba	scr	no-in	3
Head	<i>Diospyros hoyleana</i>		st-ba	scr	no-in	1
Head	<i>Polyalthia suaveolens</i>		ro-ba	scr+wa	no-in	3
Head	<i>Hua gabonii</i>		st-ba	scr+wa	no-in	4
Head	<i>Aframomum daniellii</i>		yo-le	tr	no-in	3
Head	<i>Desbordesia glaucescens</i>		st-ba	ma	or	2
Jau	<i>Saccharum officinarum</i>	associated with <i>Harungana</i>	st	ju	or	4
Jau	<i>Saccharum officinarum</i>	associated with <i>Vernonia</i>	st	ju	or	2
Jau	<i>Harungana madagascariensis</i>	<i>Saccharum</i>	st-ba	ju	or	4

(continued)

Appendix 2. (continued)

Ail	Scientific name of plant	Associated plant	Pl-part	Phar	Adm	Hh
Jau	<i>Vernonia conferta</i>	<i>Saccharum</i>	st-ba	ju	or	2
Jau	<i>Ancistrophylum secundiflorum</i>		sa	no	or	1
Jau	<i>Musanga cecropioides</i>		sa	no	or	1
Jau	<i>Tetracera potatoria</i>		sa	no	or	1
Jau	<i>Ancistrophylum secundiflorum</i>		st	no	or	2
Jau	<i>Enantia chlorantha</i>		st-ba	de	or	11
Jau	<i>Ficus mucoso</i>		st-ba	de	or	1
Jau	<i>Ancistrophylum secundiflorum</i>		ro	de	or	1
Jau	<i>Emilia coccinea</i>		flo	de	or	1
Jau	<i>Citrus limon</i>		fr	ju	or	1
Jau	<i>Enantia chlorantha</i>		st-ba	ma	or	14
Jau	<i>Harungana madagascariensis</i>		st-ba	ma	or	3
Wou	<i>Funtumia elastica</i>		sa	no	Ap	4
Wou	<i>Landolphia owariensis</i>		sa	no	Ap	21
Wou	<i>Tabernaemontana crassa</i>		sa	no	Ap	10
Wou	<i>Funtumia elastica</i>		st-ba	scr	Ap	4
Wou	<i>Landolphia owariensis</i>		st-ba	scr	Ap	21
Wou	<i>Musanga cecropioides</i>		st-ba	scr	Ap	1
Wou	<i>Tabernaemontana crassa</i>		st-ba	scr	Ap	18
Wou	<i>Terminalia superba</i>		st-ba	scr	Ap	1
Wou	<i>Vernonia conferta</i>		st-ba	scr	Ap	1

Appendix 3. Index of Performance of Medicinal Plants Used by the Baka Pygmies in the Dja Biosphere Reserve.

	Abscess	Anaemia	Wound	Bronchitis	Amoebic dysentery	Diarrhoea	"Baby-cross"	Scabies	Gonorrhoea	Haemorrhoids	Hernia	Lactation failure	Sexual dysfunction	Jaundice	Lumbago	Toothache	Headache	Snake bite	Malaria	Cough	Tuberculosis	Intestinal helminthiasis	Total number of citation
<i>Acmella caulirhiza</i>	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3	0	0	1	0	0	0	10
<i>Aframomum daniellii</i>	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	2	0	0	23
<i>Albizia adianthifolia</i>	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	3	0	0	0	0	0	4
<i>Alchornea cordifolia</i>	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3	0	0	0	0	0	0	1
<i>Alchornea floribunda</i>	0	0	0	0	2	0	0	0	0	0	0	0	0	0	1	0	2	0	0	0	0	0	19
<i>Allanblackia floribunda</i>	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3	0	0	4
<i>Alstonia boonei</i>	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	3	0	0	1	59	
<i>Ancistrophylum secundiflorum</i>	0	0	0	0	0	0	0	0	0	0	0	0	0	3	0	0	0	0	0	0	0	0	4
<i>Anonidium mannii</i>	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	2	1	0	0	0	0	5
<i>Antrocaryon klaineianum</i>	0	0	0	3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
<i>Baillonella toxisperma</i>	0	0	0	0	0	0	0	0	0	0	0	0	0	3	0	0	0	0	0	0	0	0	8
<i>Barteria nigriflora</i>	0	1	0	0	0	2	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	5
<i>Bridelia micrantha</i>	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3	0	0	0	7
<i>Calycobolus africanus</i>	0	0	0	0	0	0	0	0	0	0	0	3	0	0	0	0	0	0	0	0	0	0	5
<i>Capsicum frutescens</i>	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	2	0	0	0	60
<i>Carica papaya</i>	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3	0	0	0	0	0	0	0	2
<i>Carpolobia alba</i>	0	0	0	0	0	0	0	0	0	0	0	3	0	0	0	0	0	0	0	0	0	0	3
<i>Ceiba pentandra</i>	0	0	0	0	0	0	0	0	0	0	3	0	0	0	0	0	0	0	0	0	0	0	7
<i>Celtis mildbraedii</i>	0	0	0	0	0	1	0	3	0	0	0	0	0	0	0	1	0	0	0	0	0	0	7
<i>Psychotria dennisinervia</i>	0	0	0	0	0	0	0	0	0	0	0	0	0	3	0	0	0	0	0	0	0	0	1
<i>Chenopodium ambrosioides</i>	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3	2
<i>Citrus limon</i>	0	0	0	0	1	0	3	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	16
<i>Clerodendrum splendens</i>	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3	1
<i>Combretum mucronatum</i>	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3	34
<i>Costus afer</i>	0	0	0	0	0	2	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	31
<i>Cylicodiscus gabunense</i>	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3	0	0	0	0	4
<i>Dalbergia hostilis</i>	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3	0	0	1
<i>Desbordesia glaucescens</i>	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	2	0	0	0	0	0	0	3
<i>Desmodium adscendens</i>	0	0	0	0	0	0	3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3
<i>Diospyros hoyleana</i>	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3	0	0	0	0	0	0	1
<i>Dracaena arborea</i>	3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
<i>Duboscia macrocarpa</i>	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3	0	0	0	1	0	0	0	4
<i>Elaeis guineensis</i>	0	0	0	0	0	0	0	0	1	0	0	0	1	0	0	2	0	0	0	0	0	0	38
<i>Elaeophorbium drupifera</i>	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3	0	0	0	0	0	0	0	2
<i>Emilia coccinea</i>	0	0	0	0	0	0	0	0	0	0	0	0	3	0	0	0	0	0	0	0	0	0	1
<i>Enantia chlorantha</i>	0	0	0	0	0	0	0	0	0	0	0	0	3	0	0	0	0	1	0	0	0	0	29
<i>Eriobroma oblongum</i>	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3	0	0	0	0	3
<i>Erythrophleum suaveolens</i>	0	0	0	0	0	3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
<i>Ficus mucosa</i>	0	0	0	0	0	0	0	0	0	1	0	1	0	1	0	1	0	0	0	0	0	0	3
<i>Funtumia elastica</i>	0	0	2	0	0	0	0	0	0	0	0	0	0	1	0	0	1	0	0	0	0	0	12
<i>Gambeya africana</i>	0	0	0	0	0	0	0	0	0	3	0	0	0	0	0	0	0	0	0	0	0	0	1
<i>Garcinia cola</i>	0	0	0	0	0	0	0	0	0	0	0	0	3	0	0	0	0	0	0	0	0	0	2
<i>Guarea thompsonii</i>	1	0	0	0	0	0	0	3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	10
<i>Harungana madagascariensis</i>	0	0	0	0	0	0	0	0	0	0	0	0	3	0	0	0	0	0	0	0	0	0	7

(continued)

Appendix 3. (continued)

	Abscess	Anaemia	Wound	Bronchitis	Amoebic dysentery	Diarrhoea	"Baby-cross"	Scabies	Gonorrhoea	Haemorrhoids	Hernia	Lactation failure	Sexual dysfunction	Jaundice	Lumbago	Toothache	Headache	Snake bite	Malaria	Cough	Tuberculosis	Intestinal helminthiasis	Total number of citation
<i>Haumania danckelmaniana</i>	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	3	0	0	0	0	13
<i>Heisteria zimmereri</i>	0	0	0	0	0	0	0	0	0	0	0	3	0	0	0	0	0	0	0	0	0	0	9
<i>Hua gabonii</i>	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	0	2	0	0	0	0	0	7
<i>Hylodendron gabunense</i>	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3	0	0	18
<i>Irvingia gabonensis</i>	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3	0	0	1	0	0	0	0	10
<i>Klainedoxa gabonensis</i>	0	0	0	0	0	0	0	1	0	0	0	3	0	0	0	0	0	0	0	0	0	0	10
<i>Landolphia owariensis</i>	0	0	3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	42
<i>Lonchitis curori</i>	0	0	0	0	0	3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
<i>Mammea africana</i>	0	0	0	0	0	0	3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	16
<i>Mangifera indica</i>	0	0	0	0	1	0	0	0	0	0	0	0	0	0	3	0	0	0	0	0	0	0	13
<i>Manihot esculenta</i>	0	0	0	0	0	0	0	0	0	0	0	0	0	3	0	0	0	0	0	0	0	0	1
<i>Microdesmis puberula</i>	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	3	0	0	0	16
<i>Milicia excelsa</i>	0	0	0	0	0	0	0	0	0	0	1	3	0	0	0	0	0	0	0	0	0	0	7
<i>Musa paradisiaca</i>	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3	6
<i>Musanga cecropioides</i>	0	0	0	0	0	0	0	0	0	0	2	0	1	0	1	0	0	0	0	0	0	0	13
<i>Myrianthus arboreus</i>	0	0	0	0	0	0	0	0	3	0	0	0	0	0	0	0	0	0	0	0	0	0	3
<i>Ocimum gratissimum</i>	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3	0	0	0	1
<i>Omphalocarpum elatum</i>	0	0	0	0	0	0	0	0	0	0	2	0	0	0	0	0	0	0	1	0	0	0	22
<i>Pachypodanthium staudtii</i>	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3	0	0	0	0	0	0	0	3
<i>Palisota ambigua</i>	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3	0	0	0	0	0	0	4
<i>Panda oleosa</i>	0	0	0	0	0	0	1	0	0	0	0	0	0	2	0	0	0	0	0	0	0	0	3
<i>Pentaclethra macrophylla</i>	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	2	0	0	1	35	0	1
<i>Pentadiplandra brazzeana</i>	0	0	0	0	0	0	0	0	0	0	0	0	0	3	0	0	0	0	0	0	0	0	2
<i>Petersianthus macrocarpus</i>	0	0	0	0	0	2	0	0	0	0	0	0	0	2	0	0	0	0	0	0	0	0	2
<i>Picalima nitida</i>	0	0	0	0	1	0	0	1	0	0	0	0	0	0	0	0	2	0	0	1	18	0	1
<i>Piptadeniastrum africanum</i>	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3	0	0	0	0	0	0	1
<i>Polyalthia suaveolens</i>	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	1	1	0	0	0	0	0	11
<i>Psidium guajava</i>	0	0	0	0	2	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	2	0	2
<i>Pteleopsis hylodendron</i>	0	0	0	2	0	0	0	3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	4
<i>Pterocarpus soyauxii</i>	0	1	0	0	1	0	1	2	0	0	0	0	1	0	0	0	0	0	0	0	0	0	19
<i>Pycnanthus angolensis</i>	0	0	0	0	0	0	0	0	0	0	2	0	0	0	0	0	0	0	1	0	24	0	1
<i>Raphia mombutorum</i>	0	0	0	0	0	0	3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2
<i>Rauwolfia macrophylla</i>	0	0	0	0	0	0	3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	8
<i>Rauwolfia vomitoria</i>	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3	0	0	0	0	0	0	0	3
<i>Saccharum officinarum</i>	0	0	0	0	0	0	0	0	0	0	0	3	0	0	0	0	0	0	0	0	0	0	6
<i>Santiria trimera</i>	0	0	0	0	3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	11
<i>Scleria boivinii</i>	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3	0	0	0	0	0	0	0	5
<i>Sida acuta</i>	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3	0	0	0	0	0	0	0	1
<i>Solanum anguivi</i>	0	0	0	0	0	0	0	1	0	0	1	0	0	0	0	0	0	1	0	0	93	0	1
<i>Solanum torvum</i>	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3	0	0	0	0	0	0	1
<i>Staudtia kamerunensis</i>	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3	0	0	0	0	0	0	0	7
<i>Strombosiopsis tetrandra</i>	0	0	0	0	3	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	4
<i>Strychnos longicaudata</i>	0	0	0	0	0	0	3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	6
<i>Tabernaemontana crassa</i>	0	0	2	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	41

(continued)

Appendix 3. (continued)

	Abscess	Anaemia	Wound	Bronchitis	Amoebic dysentery	Diarrhoea	"Baby-cross"	Scabies	Gonorrhoea	Haemorrhoids	Hernia	Lactation failure	Sexual dysfunction	Jaundice	Lumbago	Toothache	Headache	Snake bite	Malaria	Cough	Tuberculosis	Intestinal helminthiasis	Total number of citation
<i>Terminalia superba</i>	0	0	1	0	0	0	0	0	0	0	0	0	0	0	1	1	0	2	0	0	0	0	8
<i>Tetracera potatoria</i>	0	0	0	0	0	0	0	0	0	2	0	0	0	2	0	0	0	0	0	0	0	0	2
<i>Tetrapleura tetraptera</i>	0	0	0	0	0	0	0	0	1	0	0	0	0	0	2	0	0	0	0	0	0	0	3
<i>Treculia africana</i>	0	0	0	0	3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
<i>Trema orientalis</i>	3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
<i>Trichilia rubescens</i>	0	0	0	3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	4
<i>Trichoscypha acuminata</i>	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3	0	0	13
<i>Trichoscypha patens</i>	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3	0	0	1
<i>Triplochiton scleroxylon</i>	0	0	0	0	0	0	0	0	0	0	0	2	0	0	1	0	0	0	0	0	0	0	6
<i>Uapaca paludosa</i>	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3	0	0	0	1	0	0	0	4
<i>Vernonia amygdalina</i>	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3	0	0	0	0	1
<i>Vernonia conferta</i>	0	0	1	0	0	0	0	0	0	0	0	2	0	1	0	0	0	0	0	0	0	0	8
<i>Zanthoxylum heitzii</i>	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3	0	0	0	0	0	0	0	3
<i>Zea mays</i>	0	0	0	0	0	0	0	0	0	0	0	3	0	0	0	0	0	0	0	0	0	0	13
<i>Total number of citation</i>	3	2	8	4	9	39	6	69	46	1	7	106	37	49	42	77	75	28	97	199	1	58	1037

Appendix 4. Use of Medicinal Plants out of the Dja Region.

Countries: Cam=Cameroon; Ben=Benin; DRC=Democratic Republic of Congo; C-Br=Congo-Brazzaville; Eq=Equatorial Guinea; Gha=Ghana; Mad=Madagascar; Nig=Nigeria; Ou=Ouganda; Rw=Rwanda; Sen=Senegal; Tog=Togo; W-Afr=West Africa.

Sources: 1=Adjahoun *et al.*, 1996; 2=Betti 2002a; 3=Bitsindou, 1996; 4=Bourobou-Bourobou *et al.*, 1996; 5=Cousteix, 1961; 6=Diafouka, 1997; 7=Dijk, 1999; 8=Hakizamungu and Weri, 1988; 9=Iwu, 1994; 10=Iwu *et al.*, 1992; 11=Magilu *et al.*, 1996; 12=Richel, 1995; 13=Sofowora, 1996; 14=Tchoumboué *et al.*, 1996; 15=Bouquet, 1969.

Plant species	Ailments	Country (source)
<i>Albizia adianthifolia</i>	Lumbago	C-Br (3)
<i>Alchornea coordifolia</i>	Toothache	Cam (5; 7), C-Br (3; 6), RDC (3)
<i>Allanblackia floribunda</i>	Cough	C-Br (6; 3), RDC (3)
<i>Bridelia micrantha</i>	Cough	RDC (3)
<i>Carica papaya</i>	Toothache	Cam (7), RCA, RDC (3)
<i>Carpolobia alba</i>	Sexual dysfunction	C-Br (15), W-Afr (12)
<i>Chenopodium ambrosioides</i>	Intestinal helminthiasis	Cam (1), Ben, Mad, Nig, Sen, Tog, Oug (12), RDC (3; 12), C-Br (3; 6; 12)
<i>Combretum mucronatum</i>	Intestinal Helminthiasis	Cam (14), Gha (13)
<i>Costus afer</i>	Cough	C-Br (6; 3), RDC (3)
<i>Desmodium adscendens</i>	Gonorrhoea	RCA (3)
<i>Elaeis guineensis</i>	Headache	C-Br, RDC (3)
<i>Erythrophleum suaveolens</i>	Scabies	RCA (3)
<i>Funtumia elastica</i>	Wound	C-Br, RCA (3)
<i>Harungana madagascariensis</i>	Jaundice	Cam (7)
<i>Klainedoxa gabonensis</i>	Gonorrhoea	C-Br (6)
<i>Klainedoxa gabonensis</i>	Sexual dysfunction	Congo (15)
<i>Mammea africana</i>	Scabies	C-Br, RDC (3)
<i>Microdesmis puberula</i>	Sexual dysfunction	Congo (15)
<i>Milicia excelsa</i>	Lactation failure	Cam (7), C-Br (6), Gab (4)
<i>Musanga cecropioides</i>	Lactation failure	Cam (5; 7)
<i>Myrianthus arboreus</i>	Hernia	C-Br (6)
<i>Ocimum gratissimum</i>	Cough	C-Br (3; 6), Cam, Gab, RDC (3)
<i>Omphalocarpum elatum</i>	Cough	C-Br (3)
<i>Palisota ambigua</i>	Snake bite	C-Br (6)
<i>Petersianthus macrocarpus</i>	Lumbago	C-Br (6), RDC (3)
<i>Psidium guajava</i>	Diarrhoea	Cam (1; 3; 5), C-Br (3; 6), RCA, RDC (3)
<i>Pterocarpus soyauxii</i>	Anaemia	Cam (7)
<i>Saccharum officinarum</i>	Jaundice	Cam (7)
<i>Santiria trimera</i>	Diarrhoea	C-Br (3)
<i>Scleria boivinii</i>	Headache	C-Br (3)
<i>Tabernaemontana crassa</i>	Wound	Cam (7), RCA (3)
<i>Terminalia superba</i>	Toothache	Cam (7)
<i>Vernonia amygdalina</i>	Malaria	Cam (7), Rw (8), RDC (11)
<i>Vernonia conferta</i>	Wound	Cam (7), C-Br (6), RDC (3)
<i>Zanthoxylum heitzii</i>	Toothache	Cam (7), C-Br (3)
<i>Acmella caulirhiza</i>	Malaria	Cam (7)
	Toothache	Cam, DRC (3; 5; 7)
<i>Alstonia boonei</i>	Malaria	Cam (1; 5; 7; 2), C-Br (6), Eq (3), Nig, Sen, Tog (12), DRC (11).
	Snake bite	Cam (7), C-Br (6)
<i>Capsicum frutescens</i>	Cough	C-Br, RCA, RDC (3)
	Toothache	RDC (3)
<i>Enantia chlorantha</i>	Malaria	Cam (5, 2, 7), Eq (3), C-Br (6)

(continued)

Appendix 4. (continued)

Plant species	Ailments	Country (source)
<i>Irvingia gabonensis</i>	Jaundice	Cam (7)
	Malaria	Cam (7)
	Toothache	Cam (7), C-Br (3)
<i>Mangifera indica</i>	Toothache	Cam (1), RDC (3)
	Diarrhoea	Cam (7), C-Br (6), Eq, RDC (3)
<i>Pentaclethra macrophylla</i>	Malaria	Cam (7), C-Br (3)
	Diarrhoea	C-Br (6), RDC (3)
<i>Picralima nitida</i>	Malaria	Cam (1; 7; 2), RDC (11), Nig (9; 10)
	Intestinal helminthiasis	Cam (7), Nig, Sen, RDC (12), Gab (3), C-Br (6; 12)
		C-Br (6)
<i>Pterocarpus soyauxii</i>	Diarrhoea	
	Lumbago	RCA (3)
	Scabies	Gab, RCA, RDC (3)
<i>Pycnanthus angolensis</i>	Lactation failure	Cam (7)
	Cough	C-Br (3, 6)
<i>Polyalthia suaveolens</i>	Malaria and snake bite	C-Br (6)
		C-Br (3)
<i>Elaeophorbia drupifera</i> , <i>Duboscia macrocarpa</i> , <i>Barteria nigriflora</i> , <i>Uapaca paludosa</i> , <i>Pentadiplandra brazzeana</i> , <i>Strombosiospis tetrandra</i> .	Headache	
	Toothache	C-Br (3)