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### Ethnobotanical survey of the Savanna: (7) Medicinal plants used by traditional healers in treating human conditions in four localities in Bauchi State, Nigeria

Usman H. Dukku, Muhammad N. Ahmad, Naima Y. Barau, Ummahani Ibrahim, Polmi J. Zuya and Murjaatu O. Musa

Department of Biological Sciences, Abubakar Tafawa Balewa University, Bauchi, Nigeria.

#### Abstract

Despite the widespread reliance on traditional medicine across Nigeria, ethnobotanical knowledge relating to the use of medicinal plants for healthcare maintenance remains inadequately documented, particularly in northern Nigeria. This study was undertaken to enrich the ethnobotanical knowledge base of Nigeria through the documentation and assessment of medicinal plant species utilized in four localities within Bauchi State. Ethnobotanical data were obtained from 29 traditional healers using structured interviews designed to capture indigenous knowledge on medicinal plant use. Information collected included plant species names, plant parts utilized, therapeutic applications, and methods of preparation and administration of crude herbal remedies. The study documented a total of 105 plant species distributed across 42 families, accounting for 236 use reports. These use reports were classified into 13 therapeutic categories, with the majority concentrated in four dominant groups: infections and infestations, pain-related conditions, digestive system disorders, and circulatory system disorders, indicating the prevalence of these health concerns within the study area. Family-level analysis revealed that Fabaceae was the most represented family with 22 species, followed by Moraceae with six species, while Combretaceae and Rubiaceae were represented by five species each. Voucher specimens of all recorded taxa were collected, authenticated, and deposited in the herbarium of the Department of Biological Sciences, Abubakar Tafawa Balewa University, ensuring taxonomic verification and future reference. The findings demonstrate a substantial reservoir of indigenous medicinal knowledge and underscore the importance of preserving this biocultural heritage. The documented species represent valuable candidates for pharmacological, phytochemical, and toxicological investigations to validate their claimed therapeutic efficacy and support their potential contribution to drug discovery and sustainable healthcare development.

#### Keywords

Ethnobotany,  
Ethnomedicine,  
Traditional medicine,  
Herb, Medicinal plant.

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## Introduction

A detailed introduction to the series is given in Dukku (2022a). The present study reports 105 species of medicinal plants used in Ningi, Yelwa, Liman Katagum and Zuya.

## Materials and methods

### The area of study

Located in Northeastern Nigeria, Bauchi State lies within the Sudan Savanna zone of vegetation. There are two seasons, defined by moisture, in the area: A rainy season, from May to October, and a dry season, from November to April. The weather is always warm or hot with a mean temperature of 38°C. Crop farming and animal husbandry are the main occupations of the people. Both rural and urban dwellers have access to primary healthcare facilities; however, traditional medicine is still widely used, especially among rural dwellers. Consequently, traditional healers such as herbalists, traditional birth attendants and spiritualists, are still consulted. Bauchi is a multi-ethnic and multi-cultural state with over thirty tribes with Hausa as the most widely spoken language. To document the use of herbal medicine by urban and rural communities, two towns (Ningi, 11° 5'N; 9° 34'E and Liman Katagum, 10°1'N; 9° 47'E) and two villages (Yelwa, 10° 17'N; 9° 48'E and Zuya, 9° 43' N, 9° 20' E) were selected for the study.

### Collection of ethnobotanical data

A structured interview was used for the collection of ethnobotanical data from 29 traditional healers, who consented to participate in the study, from the four localities mentioned above. Participants were requested to provide the names of the plants, the part used, the condition treated and the mode of administration and the information provided was recorded, as much as possible,

avoiding technical terms. For example, 'pain in the head' was recorded as 'a headache.' The participants were distributed as follows: Ningi, 17; Yelwa, five; Liman Katagum, three and Zuya, four. The snap sampling method was used to collect the data from Ningi, Zuya and Liman Katagum in 2021 and from Yelwa in 2022. The interviews were conducted in Hausa by the authors. The number of participants was determined by the availability of volunteers in the localities.

### Collection and preparation of voucher specimens

Voucher specimens of the plants recorded in the study were collected under the guidance of the participants, pressed, dried and preserved at the herbarium of the Department of Biological Sciences of Abubakar Tafawa Balewa University, Bauchi, Nigeria. The plants were identified by the first author using determination keys (Arbonnier, 2004; Hopkins & Stanfield, 1966).

### Results and discussion

This study highlights the plants used in the traditional medicine of four localities in Bauchi State, Nigeria, from the information provided by 29 participants. Due to the limitations of the indices that are commonly used in reporting ethnobotanical data, only primary data are presented in this paper as suggested by Weckerle et al. (2018). As shown in Tables 1-5, a total of 105 species of plant, belonging to 42 families, with 236 use reports were recorded. The use reports fell into 13 use categories, according to the classification by Cook (1995), with most of the reports falling into four categories: infections/infestations, pain, digestive system disorders and circulatory system disorders (Figure 1). Most of the species had three or less use reports while only one, *Boswellia dalzielii* Hutch, had up to 10

(Figure 2). The large number of medicinal plants recorded from the relatively small number of participants interviewed, coupled with the low number of use reports per species, is suggestive of a rich culture and flora in the area of study. The most popular methods of preparation were decoction and infusion and most of the preparations were administered orally.

The family Fabaceae, with 22 (21%) species, recorded the highest citation. It was followed by Moraceae with six and then Combretaceae and Rubiaceae with five species each. The dominance of Fabaceae has been similarly reported in other studies (Abd El-Ghani, 2016; Bello et al., 2019; Mudansiru et al., 2016) and this may be due to its dominance in the Savanna vegetation. For example, it was reported as the most common family among honeybee plants of the Savanna in Nigeria and Chad (Dukku, 2013; Mbah & Amao, 2009; Nguemo et al., 2016). There were 60 (57%) trees, 22 (21%) shrubs, 20 (19%) herbs and 3 (2%) lianas.

The preponderance of woody species (79%) over herbaceous ones (21%) may be explained by their availability throughout the year; unlike herbs which are annuals. However, for the purpose of development of drugs and environmental conservation, herbs and lianas offer more advantages due to their relative ease of cultivation, quick maturity and less reliance on wild species. The distribution of use reports according to growth habit of the plants, which ranged between four in lianas to 159 in trees, is shown in Figure 3. The most popular parts of the plant used, by use reports, were stem bark: 104 (44%), root: 61 (26%) and leaf: 54 (23%). Other parts (fruit, seed, oil, latex and twig) accounted for only 17 (7%) of the uses (Figure 4). The dominance of stem

bark and root (70% of use reports) as the part of choice may impact, negatively, on the survival of the plants, if necessary, conservation measures are not taken (Dukku et al., 2022b).

### Conclusions

This research indicates abundance of traditional knowledge that can be harnessed for the advancement of humanity. We, therefore, recommend further examination of these plants to ascertain their claimed uses.

### Acknowledgments

The authors are grateful to the participants for sharing their knowledge.

Table 1 A checklist of medicinal plants used in treating various conditions in humans in traditional medicine recorded in four localities in Bauchi State, Nigeria. Additional information is given in Tables 2-5

Serial #	Scientific name	Family	Local name (Hausa)	Growth habit	Use reports
1.	<i>Albizia chevalieri</i> Harms	Fabaceae	Katsari	Tree	1
2.	<i>Acanthospermum hispidum</i> DC.	Asteraceae	Kashin Yawo	Herb	1
3.	<i>Adansonia digitata</i> L.	Bombacaceae	Kuka	Tree	5
4.	<i>Allium sativum</i> L.	Amaryllidaceae	Tafarnuwa	Herb	1
5.	<i>Ananas comosus</i> (L.) Merr.	Bromeliaceae	Abarba	Herb	1
6.	<i>Anisopus mannii</i> N.E.Br.	Apocynaceae	Sakayau	Herb	3
7.	<i>Annona senegalensis</i> Pers.	Annonaceae	Gwandar jeji	Shrub	5
8.	<i>Anogeissus leiocarpus</i> (DC) Guil. & Perr.	Combretaceae	Marke	Tree	9
9.	<i>Artemisia</i> sp	Asteraceae	Tazargade	Herb	3
10.	<i>Asparagus flagellaris</i> (Kunth.) Baker	Asparagaceae	Kayar bera	Herb	1
11.	<i>Azadirachta indica</i> A. Jussieu	Meliaceae	Maina	Tree	1
12.	<i>Balanites aegyptiaca</i> (L.) Del.	Balanitaceae	Aduwa	Tree	4
13.	<i>Biophytum petersianum</i> Klotzsch.	Oxalidaceae	Rufe rumbunka	Herb	1
14.	<i>Bombax costatum</i> Pellegr. & Vuill	Bombacaceae	Gurjiya	Tree	1
15.	<i>Boswellia dalzielii</i> Hutch.	Burseraceae	Ararrabi	Tree	10
16.	<i>Calotropis procera</i> (Aiton) W. T. Aiton	Asclepiadaceae	Tumfafiya	Shrub	2
17.	<i>Camellia sinensis</i> (L.) Kuntze	Theaceae	Ganyen shayi	Herb	1
18.	<i>Carica papaya</i> L.	Caricaceae	Gwanda	Shrub	4
19.	<i>Carissa edulis</i> Vahl.	Apocynaceae	Lemon tsunstu	Shrub	3
20.	<i>Ceiba pentandra</i> (L.) Gaertn.	Bombacaceae	Rimi	Tree	1
21.	<i>Centaurea perrottetii</i> DC.	Asteraceae	Dayi	Herb	1
22.	<i>Citrus sinensis</i> (L.) Osbeck	Rutaceae	Lemon zaki	Shrub	1
23.	<i>Cochlospermum tinctorium</i> A. Rich	Cochlospermaceae	Rawaya	Shrub	2
24.	<i>Combretum glutinosum</i> Perr. ex. DC.	Combretaceae	Jan tarauniya	Tree	1
25.	<i>Combretum molle</i> R. Br. ex G. Don	Combretaceae	Wuyan damo	Tree	2
26.	<i>Commiphora africana</i> (A. Rich.) Engl.	Burseraceae	Dashi	Tree	1
27.	<i>Cordia africana</i> Lam.	Boraginaceae	Alilliba	Tree	1
28.	<i>Cucumis prophetarum</i> Linn.	Cucurbitaceae	Kan fakara	Liana	1

29.	<i>Daniellia oliveri</i> (Rolfe) Hutch. & Dalz.	Fabaceae	Maje	Tree	5
30.	<i>Datura stramonium</i> L.	Solanaceae	Zakami	Herb	1
31.	<i>Daucus carota</i> (Hoffm.) Schübl. & G. Martens	Apiaceae	Karas	Herb	1
32.	<i>Dichrostachys cineria</i> (L.) Wight & Arn.	Fabaceae	Dundu	Shrub	3
33.	<i>Diospyros mespiliformis</i> Hochst. Ex A. Rich	Ebenaceae	Kanya	Tree	6
34.	<i>Entada africana</i> Guill. & Perr.	Fabaceae	Dorowar biri	Tree	1
35.	<i>Erythrina senegalensis</i> DC.	Fabaceae	Minjirya	Tree	2
36.	<i>Eucalyptus camaldulensis</i> Dehnh	Myrtaceae	Turare	Tree	1
37.	<i>Euphorbia hirta</i> L.	Euphorbiaceae	Nonon kurciya	Herb	1
38.	<i>Faidherbia albida</i> (Delile) A. Chev.	Fabaceae	Gawo	Tree	2
39.	<i>Feretia apodanthera</i> Del.	Rubiaceae	Burugali	Shrub	2
40.	<i>Ficus abutilifolia</i> . (Miq.) Miq	Moraceae	Yandi	Tree	2
41.	<i>Ficus exasperata</i> Vahl	Moraceae	Borai	Tree	1
42.	<i>Ficus ingens</i> (Miq.) Miq.	Moraceae	Kawuri	Tree	2
43.	<i>Ficus platyphylla</i> Del.	Moraceae	Gamji	Tree	3
44.	<i>Ficus polita</i> Vahl.	Moraceae	Durumi	Tree	1
45.	<i>Ficus sycomorus</i> L.	Moraceae	Baure	Tree	3
46.	<i>Gardenia erubescens</i> Stapf & Hutch.	Rubiaceae	Gaude	Shrub	2
47.	<i>Gliricidia sepium</i> (Jacq)Walp.	Fabaceae	Mahasken goro	Shrub	1
48.	<i>Gossypium herbaceum</i> L.	Malvaceae	Auduga	Herb	1
49.	<i>Grewia barteri</i> Burret	Tiliaceae	Abakurun jeji	Shrub	1
50.	<i>Guiera senegalensis</i> J.F.Gmel	Combretaceae	Sabara	Shrub	1
51.	<i>Hymenocardia acida</i> Tul	Euphrboiaceae	Janyaro	Tree	1
52.	<i>Hyphaene thebaica</i> Mart.	Arecaceae	Gworiba	Tree	1
53.	<i>Hyptis suaveolens</i> (L.) Poit	Lamiaceae	Bunsurun fage	Herb	1
54.	<i>Isoberlinia doka</i> Craib & Stapf	Fabaceae	Doka	Tree	1
55.	<i>Jatropha curcas</i> L.	Euphorbiaceae	Binidazugu	Shrub	3
56.	<i>Khaya senegalensis</i> (Desr) A Juss	Meliaceae	Madaci	Tree	6
57.	<i>Kigelia africana</i> Lam.	Bignoniaceae	Rahaina	Tree	2
58.	<i>Lannea acida</i> A.Rich	Anacardiaceae	Faru	Tree	2
59.	<i>Lawsonia inermis</i> L.	Lythraceae	Lalle	Shrub	2

60.	<i>Luffa cylindrica</i> (L.) Roem.	Cucurbitaceae	Soson danga	Liana	1
61.	<i>Mangifera indica</i> L.	Anacardiaceae	Mangwaro	Tree	8
62.	<i>Manihot esculenta</i> Crantz	Euphorbiaceae	Rogo	Shrub	1
63.	<i>Maytenus senegalensis</i> (Lam.) Exell	Celastraceae	Namijin tsada	Tree	2
64.	<i>Mimosa pigra</i> L.	Fabaceae	Kaidaji	Shrub	2
65.	<i>Mitracarpus scaber</i> Zucc.	Rubiaceae	Gogamasu	Herb	2
66.	<i>Moringa oleifera</i> Lam	Moringaceae	Zogale	Shrub	6
67.	<i>Momordica charantia</i> L.	Cucurbitaceae	Garafuni	Liana	2
68.	<i>Nauclea latifolia</i> Smith	Rubiaceae	Tafashiya	Tree	2
69.	<i>Newbouldia laevis</i> (P. Beauv.) Seem. ex.Bureau	Bignoniaceae	Aduruku	Tree	2
70.	<i>Ozoroa insignis</i> Del	Anacardiaceae	Hawayen zaki	Tree	2
71.	<i>Parkia biglobosa</i> (Jacq) Benth.	Fabaceae	Dorowa	Tree	6
72.	<i>Pavetta crassipes</i> K. Schum.	Rubiaceae	Rubatari	Shrub	1
73.	<i>Pericopsis laxiflora</i> (Benth) van Meeuwen	Fabaceae	Karyagatari	Tree	3
74.	<i>Phoenix dactylifera</i> L.	Arecaceae	Dabino	Tree	3
75.	<i>Piliostigma thonningii</i> (Schum)	Fabaceae	Kargo	Tree	2
76.	<i>Prosopis africana</i> (Guill. & Per.) Taub	Fabaceae	Kiryra	Tree	2
77.	<i>Pseudocedrela kotschyi</i> (Schweinf.) Harms	Meliaceae	Tunas	Tree	1
78.	<i>Psidium guajava</i> L.	Myrtaceae	Goba	Tree	3
79.	<i>Pterocarpus erinaceus</i> Poir.	Fabaceae	Madobiya	Tree	1
80.	<i>Sclerocarya birrea</i> (A.Rich.)	Anacardiaceae	Danya	Tree	3
81.	<i>Securidaca longepedunculata</i> Fres.	Polygalaceae	Sanya	Shrub	1
82.	<i>Senegalia ataxacantha</i> DC.	Fabaceae	Duhuwa	Tree	1
83.	<i>Senna occidentalis</i> L.	Fabaceae	Raidore	Herb	2
84.	<i>Senna siamea</i> (Lam.) Irwin & Barneby	Fabaceae	Gadina	Tree	1
85.	<i>Senna tora</i> (L.) Roxb.	Fabaceae	Tafasa	Herb	1
86.	<i>Solanum americanum</i> Mill.	Solanacea	Gautar kura	Herb	1
87.	<i>Sterculia setigera</i> Del	Sterculiaceae	Kukuki	Tree	4
88.	<i>Striga</i> sp	Orobanchaceae	Wutawuta	Herb	1
89.	<i>Strychnos innocua</i> Del.	Loganiaceae	Kokiyar biri	Shrub	1
90.	<i>Syzygium aromaticum</i> (L.) Merr. & L.M. Perry	Myrtaceae	Kanamfari	Tree	1

91.	<i>Syzygium guineense</i> (Willd.) DC.	Myrtaceae	Malmo	Tree	2
92.	<i>Tamarindus indica</i> L.	Fabaceae	Tsamiya	Tree	8
93.	<i>Terminalia laxiflora</i> Engl.	Combretaceae	Baushe	Tree	2
94.	<i>Uvaria chame</i> P. Beauv.	Annonaceae	Kaskaifi	Shrub	1
95.	<i>Vachellia hockii</i> De Will.	Fabaceae	Bakar kaya	Tree	1
96.	<i>Vachellia nilotica</i> (L.) Delile	Fabaceae	Gabaruwa	Tree	2
97.	<i>Vachellia sieberiana</i> DC.	Fabaceae	Farar kaya	Tree	1
98.	<i>Vernonia amygdalina</i> Delile	Asteraceae	Shuwaka	Shrub	2
99.	<i>Vitellaria paradoxa</i> (Gaertn C.F.)	Sapotaceae	Kadanya	Tree	5
100.	<i>Vitex doniana</i> Sweet.	Lamiaceae	Dinya	Tree	5
101.	<i>Waltheria indica</i> L.	Sterculiaceae	Hankufa	Herb	1
102.	<i>Ximenia Americana</i> L.	Olacaceae	Tsada	Tree	3
103.	<i>Ziziphus mauritiana</i> Lamarck	Rhamnaceae	Magariya	Tree	2
104.	<i>Ziziphus mucronata</i> Willd.	Rhamnaceae	Magariyar kura	Tree	1
105.	<i>Ziziphus spina-christi</i> (L.) Desf.	Rhamnaceae	Kurna	Tree	1
Total					236

Table 2 Medicinal plants of Ningi used in treating various conditions in humans in traditional medicine.

Serial #	Scientific name [Voucher number]	Part used	Use	Mode of administration
1.	<i>Anogeissus leiocarpus</i> (DC) Guil. & Perr. [EB-21-086]	Stem bark	Diarrhoea, dysentery, vomiting, cough and body ache.	Infusion taken orally
2.	<i>Diospyros mespiliformis</i> Hochst. Ex A. Rich [EB-21-095]	Stem bark	Swelling of the part of the neck known as goiter.	Infusion taken orally.
3.	<i>Lannea acida</i> A. Rich [EB-21-102]	Stem bark	Abdominal pain	Infusion taken orally
4.	<i>Pterocarpus erinaceus</i> Poir. [EB-21-112]	Stem bark	Blood tonic	Infusion taken orally
5.	<i>Ficus platyphylla</i> Del. [EB-21-097]	Stem bark	Joint pain	Infusion taken orally
6.	<i>Ficus ingens</i> (Miq.) Miq. [EB-21-096]	Stem bark	Swollen stomach	Infusion taken orally
7.	<i>Sterculia setigera</i> Del [EB-21-114]	Stem bark	Back pain	Infusion taken orally
8.	<i>Vitellaria paradoxa</i> (Gaertn C.F.) [EB-21-117]	leaf	Blood clotting	Poultice
9.	<i>Balanites aegyptiaca</i> (L.) Del. [EB-21-088]	Stem bark	Hernia.	Infusion taken orally
10.	<i>Tamarindus indica</i> L. [EB-21-116]	Stem bark	Peptic ulcer	Infusion taken orally
11.	<i>Ziziphus mucronata</i> Willd. [EB-21-119]	Root or bark	Gonorrhoea	Infusion taken orally
12.	<i>Piliostigma thonningii</i> (Schum) [EB-21-109]	Leaf	Nausea and vomiting	Chewing the fresh leaf
13.	<i>Albizia chevalieri</i> Harms [EB-21-081]	Stem bark	Stomach worm	Infusion taken orally
14.	<i>Prosopis africana</i> (Guill. & Per.) Taub [EB-21-110]	Stem bark	Abdominal pain	Infusion taken orally
15.	<i>Cochlospermum tinctorium</i> A. Rich [EB-21-092]	Stem bark	Typhoid	Infusion taken orally
16.	<i>Adansonia digitata</i> L. [EB-21-083]	Stem bark	Jaundice	Infusion taken orally
17.	<i>Khaya senegalensis</i> (Desr) A Juss [EB-21-101]	Root	Nausea	Infusion taken orally
18.	<i>Ficus sycomorus</i> L. [EB-21-098]	Stem bark	Haemorrhoids	Infusion taken orally
19.	<i>Parkia biglobosa</i> (Jacq) Benth. [EB-21-108]	Stem bark	Antiseptic	Infusion taken
20.	<i>Daniellia oliveri</i> (Rolfe) Hutch. & Dalz. [EB-21-094]	Leaf	Toothache	Infusion taken orally
21.	<i>Sclerocarya birrea</i> (A.Rich.) [EB-21-113]	Stem bark	Abdominal pain	Infusion taken orally

22.	<i>Diospyros mespiliformis</i> Hochst. Ex A. Rich [EB-21-095]	Stem bark	Hypertension	Infusion taken orally
23.	<i>Tamarindus indica</i> L. [EB-21-116]	Fruit	Antiseptic and digestive	Infusion taken orally
24.	<i>Jatropha curcas</i> L. [EB-21-100]	Root	Constipation	Infusion taken orally
25.	<i>Mangifera indica</i> L. [EB-21-103] + <i>Centaurea perrottetii</i> DC. [EB-21-091] + <i>Manihot esculenta</i> Crantz [EB-21-104]	Leaf	Chicken pox	Infusion taken orally
26.	<i>Syzygium aromaticum</i> (L.) Merr. & L.M. Perry [EB-21-115]	Seed	Toothache and mouth odors	Chewing
27.	<i>Sclerocarya birrea</i> (A. Rich.) [EB-21-113] + <i>Daniellia oliveri</i> (Rolfe) Hutch. & Dalz. [EB-21-094]+ <i>Hymenocardia acida</i> Tul [EB-21-099]	Stem bark	Joint pain and weakness	Infusion taken orally
28.	<i>Cassia occidentalis</i> L. [EB-21-090]	Shoot	Fever	Infusion taken orally and steam bath
29.	<i>Artemisia</i> sp [EB-21-087] + <i>Allium sativum</i> L. [EB-21-084]		Cough and catarrh	Smoking/inhaling
30.	<i>Momordica charantia</i> L. [EB-21-106]	Stem bark	Rashes on the tongue	Powder put in the mouth
31.	<i>Mangifera indica</i> L. [EB-21-103]	Leaf	Typhoid	Infusion taken orally
32.	<i>Mangifera indica</i> L. [EB-21-103]	Leaf	Peptic ulcer	Grind to powder and mix with honey
33.	<i>Psidium guajava</i> L. [EB-21-111] + <i>Acanthospermum hispidum</i> DC. [EB-21-082]	Leaf	Diarrhoea	Infusion taken orally
34.	<i>Moringa oleifera</i> Lam [EB-21-105]	Leaf	Peptic ulcer	Grind the leaf and mix with milk taken orally on an empty stomach
35.	<i>Cassia occidentalis</i> L. [EB-21-090]	Leaf	Dehydration	Leaf extract mix with 7up and a little salt taken orally

36.	<i>Boswellia dalzielii</i> Hutch. [EB-21-089]	Stem bark	Haemorrhoids, Fever	Infusion taken orally
37.	<i>Cassia occidentalis</i> L. [EB-21-090]	Root	Yeast, fungal or bacterial infection	Infusion taken orally
38.	<i>Anisopus mannii</i> N.E.Br. [EB-21-085]	Leaf	Hyperglycemia	Dry and grind to powder and drink with pap
39.	<i>Anogeissus leiocarpus</i> (DC) Guil. & Perr. [EB-21-086] + <i>Ficus platyphylla</i> Del. [EB-21-097] + <i>Ficus sycomorus</i> L. [EB-21-098]	Stem bark	Hypertension	Dry and grind to powder and drink with pap
40.	<i>Ficus sycomorus</i> L. [EB-21-098]	Sap	Cough	Taken orally
41.	<i>Ximenia Americana</i> L. [EB-21-118]	Stem bark	Blood tonic	Infusion taken orally
42.	<i>Nauclea latifolia</i> Smith [EB-21-107]	Root	Abdominal pain	Soak in water and drink
43.	<i>Pterocarpus erinaceus</i> Poir. [EB-21-112] <i>Ficus platyphylla</i> Del. [EB-21-097]	Stem bark	Blood tonic	Infusion taken orally
44.	<i>Combretum glutinosum</i> Perr. Ex. DC. [EB-21-093]	Leaf	Blood clotting	Grind the Leaf
45.	<i>Sterculia setigera</i> Del [EB-21-114]	Stem bark	Toothache	Chewing the bark
46.	<i>Tamarindus indica</i> L. [EB-21-116]	Stem bark	Itching	Dry and grind to powder and apply on skin

Table 3 Medicinal plants of Yelwa used in treating various conditions in humans in traditional medicine

Serial #	Scientific Name [Voucher number]	Part used	Use	Mode of administration
1.	<i>Calotropis procera</i> (Aiton) W.T.Aiton [EB-23-006]	Leaf	Backache	Smear and used as poultice
2.	<i>Euphorbia hirta</i> L. [EB-23-013]	Whole plant	Toothache	Aqueous extract as ear drops
3.	<i>Mitracarpus scaber</i> Zucc. [EB-23-027]	Whole plant	Skin infection	Fresh paste for topical application
4.	<i>Moringa oleifera</i> Lam [EB-23-028]	Root	Typhoid	Decoction taken orally
5.	<i>Mangifera indica</i> L. [EB-23-026]	Leaf	Diabetes	Decoction taken orally
6.	<i>Ficus sycomorus</i> L. [EB-23-017]	Root	Measles	Decoction taken orally
7.	<i>Guiera senegalensis</i> J.F.Gmel [EB-23-018]	Leaf	Wound	Powered mixed with petroleum jelly for topical application
8.	<i>Boswellia dalzielii</i> Hutch. [EB-23-005]	Leaf	Haemorrhoids	Crushed mixed with Vaseline for topical application
9.	<i>Securidaca longepedunculata</i> Fres. [EB-23-034]	Leaf	Migraine	Powdered is inhaled
10.	<i>Annona senegalensis</i> Pers. [EB-23-002]	Root	Ease labour	Decoction taken orally
11.	<i>Khaya senegalensis</i> (Desr) A Juss [EB-23-021]	Bark	Headache	Dissolve and taken orally
12.	<i>Pavetta crassipes</i> K. Schum. [EB-23-031]	Leaf	Coughs	Decoction taken orally
13.	<i>Sterculia setigera</i> Del [EB-23-035]	Leaf	Earache	Liquid droplet in ear
14.	<i>Ziziphus mauritiana</i> Lamarck [EB-23-043]	Leaf	Bad dreams	The smoke is inhaled
15.	<i>Balanites aegyptiaca</i> (L.) Del. [EB-23-004]	Seed	Hypertension	Liquid taken orally
16.	<i>Nauclea latifolia</i> Smith [EB-23-029]	Bark	Abdominal pain	Infused and taken orally
17.	<i>Carica papaya</i> L. [EB-23-007]	Leaf	Increase milk flow	Decoction taken orally
18.	<i>Ficus polita</i> Vahl. [EB-23-016]	Leaf	Evil eye	Crush and bath
19.	<i>Ximenia Americana</i> L. [EB-23-042]	Root	High fever	Decoction taken orally
20.	<i>Kigelia africana</i> Lam. [EB-23-022]	Small branch	Swelling	Smear and use as topical as topical application

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21. <i>Vachellia hockii</i> De Will. [EB-23-037]	Latex	Earache	Used as ear drops
22. <i>Commiphora africana</i> (A. Rich.) Engl. [EB-23-010]	Small branch	<i>Herpes labialis</i>	Smear as a topical application
23. <i>Vachellia nilotica</i> (L.) Delile [EB-23-038]	Seed	Scabies/Chicken pox	Use as topical application
24. <i>Ceiba pentandra</i> (L.) Gaertn. [EB-23-008]	Root	Kidney disease	Decoction is taken orally
25. <i>Tamarindus indica</i> L. [EB-23-036]	Leaf	Skin rashes	Boiled and use as a topical application
26. <i>Jatropha curcas</i> L. [EB-23-020]	Leaf	Diarrhoea	Boiled an as a topical application
27. <i>Vernonia amygdalina</i> Delile [EB-23-039]	Leaf	Diarrhoea	Fresh juice is taken orally
28. <i>Psidium guajava</i> L. [EB-23-033]	Leaf	Diarrhoea	Powder is mixed with pap and taken orally
29. <i>Eucalyptus camaldulensis</i> Dehnh [EB-23-012]	Leaf	Typhoid	Decoction is taken and as a topical application
30. <i>Azadirachta indica</i> A. Jussieu [EB-23-003]	Leaf	High fever	Decoction two branches and taken orally
31. <i>Ficus platyphylla</i> Del. [EB-23-015]	Root	Blood tonic	Decoction mixed with potash and taken
32. <i>Hyphaene thebaica</i> Mart. [EB-23-019]	Seed	Hypertension	Infusion is taken orally
33. <i>Adansonia digitata</i> L. [EB-23-001]	Root	Blood tonic	Decoction is taken orally
34. <i>Luffa cylindrica</i> (L.) Roem.[EB-23-025]	Leaf	Diarrhoea	Decoction as a topical application
35. <i>Lannea acida</i> A.Rich. [EB-23-023]	Root	Blood tonic	Decoction and taken orally
36. <i>Parkia biglobosa</i> (Jacq) Benth. [EB-23-030]	Root	Jaundice	Decoction is taken orally
37. <i>Vitellaria paradoxa</i> Gaertn. [EB-23-040]	Oil	Athlete`s foot	Use as a topical application
38. <i>Ficus abutilifolia</i> . (Miq.) Miq [EB-23-014]	Twig	High fever	Decoction is taken orally
39. <i>Diospyros mespiliformis</i> Hochst. Ex A. Rich [EB-23-011]	Leaf	Vomiting	Decoction is taken orally
40. <i>Lawsonia inermis</i> L. [EB-23-024]	Leaf	Whitlow	Crush leaf tied as topical application
41. <i>Vitex doniana</i> Sweet. [EB-23-041]	Leaf	Typhoid	Decoction is taken orally
42. <i>Phoenix dactylifera</i> L. [EB-23-032]	Root	Toothache	Decoction is use as topical application
43. <i>Citrus sinensis</i> (L.) Osbeck [EB-23-009]	Juice	Abdominal pain	Juice is taken orally

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Table 4 Medicinal plants of Liman Katagum used in treating various conditions in humans in traditional medicine

Serial No	Scientific name [Voucher number]	Part used	Use	Mode of application
1.	<i>Boswellia dalzielii</i> Hutch [EB-21-069] + <i>Sclerocarya birrea</i> (A.Rich.) [EB-21-069] + <i>Vitex doniana</i> Sweet [EB-21-078]	Stem bark	Skin eruptions/tumour	Powder applied topically
2.	<i>Phoenix dactylifera</i> L. [EB-21-066]	Root	Toothache	Decoction for gurgling the mouth
3.	<i>Sclerocarya birrea</i> (A.Rich.) [EB-21-069]	Stem bark	Hemorrhoids	Powder given orally with water
4.	<i>Vachellia sieberiana</i> DC. [EB-21-076]	Stem bark/root	Fever	Infusion for bathing and drinking
5.	<i>Faidherbia albida</i> (Delile) A. Chev. [EB-21-055]	Stem bark	Fever	Decoction given orally
6.	<i>Faidherbia albida</i> (Delile) A. Chev. [EB-21-055]	Root	Skin eruptions	Powder applied topically
7.	<i>Daniellia oliveri</i> (Rolfe) Hutch. & Dalz. [EB-21-050]	Stem bark	Fever	Powder taken with water
8.	<i>Daniellia oliveri</i> (Rolfe) Hutch. & Dalz. [EB-21-050]	Stem bark	Skin eruptions/tumour	Powder applied topically
9.	<i>Mangifera indica</i> L. [EB-21-059] + <i>Psidium guajava</i> L. [EB-21-068]	Leaf	Jaundice	Decoction given orally
10.	<i>Anogeissus leiocarpus</i> (DC) Guil. & Perr. [EB-21-041]	Stem bark	Cough	Infusion given orally
11.	<i>Senna tora</i> (L.) Roxb. [EB-21-071]	Root	Nausea/vomiting	Decoction taken orally
12.	<i>Moringa oleifera</i> Lam [EB-21-062]	Leaf	Jaundice	Decoction taken orally
13.	<i>Ananas comosus</i> (L.) Merr. [EB-21-038]	Fruit Root	Psychosis	Paste taken with honey
14.	<i>Daucus carota</i> (Hoffm.) Schübl. & G. Martens [EB-21-051]			
15.	<i>Syzygium guineense</i> (Willd.) DC. [EB-21-074]	Root	Rheumatism	Decoction taken orally

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16. <i>Mimosa pigra</i> L. [EB-21-061]			
17. <i>Vitex doniana</i> Sweet [EB-21-078]	Stem bark	Sore throat	Decoction taken orally
18. <i>Vitex doniana</i> Sweet [EB-21-078]	Seed	Wound	Powder applied topically
19. <i>Waltheria indica</i> L. [EB-21-079]	Root	Hypertension	Decoction taken orally
20. <i>Cordia africana</i> Lam. [EB-21-048]	Stem bark	Hypertension	Decoction taken orally
21. <i>Annona senegalensis</i> Pers. [EB-21-040]	Leaf	Oedema/tumor	Powder mixed with butter for topical application
22. <i>Anisopus mannii</i> N.E.Br. [EB-21-039]	Vine	Myalgia	Infusion given orally
23. <i>Feretia apodanthera</i> Del. [EB-21-056] <i>Anisopus mannii</i> N.E.Br.[EB-21-039] <i>Dichrostachys cineria</i> (L.) Wight & Arn. [EB-21-052] <i>Gardenia erubescens</i> Stapf & Hutch. [EB-21-057]	Root	Myalgia	Decoction taken orally
24. <i>Dichrostachys cineria</i> (L.) Wight & Arn. [EB-21-052]	Root	Backache	Paste used as poultice
25. <i>Vitellaria paradoxa</i> Gaertn. [EB-21-077]	Stem bark	Psychosis	Infusion for bathing
26. <i>Striga</i> spp [EB-21-073]	Leaf	Gonorrhoea	Decoction taken orally
27. <i>Pseudocedrela kotschyi</i> (Schweinf.) Harms [EB-21-067]	Stem bark	Fever	Decoction taken orally
28. <i>Combretum molle</i> R. Br. ex G. Don [EB-21-047]	Root	Myalgia	Decoction taken orally
29. <i>Carissa edulis</i> Vahl. [EB-21-046]	Leaf	Ear infection	Infusion as eardrops
30. <i>Senegalia ataxacantha</i> DC [EB-21-070].	Leaf (tender)	Infertility in women	Cooked with chicken and eaten
31. <i>Kigelia africana</i> Lam. [EB-21-058]	Stem bark	Labour	Powder taken with water

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32	<i>Newbouldia laevis</i> (P. Beauv.) Seem. Ex.Bureau [EB-21-064]	Stem bark + root	Infantile jaundice	Decoction for bathing and drinking
33	<i>Solanum americanum</i> Mill. [EB-21-072]	Root	Umbilical hernia/colic	Decoction taken orally
34	<i>Newbouldia laevis</i> (P. Beauv.) Seem. ex Bureau [EB-21-064]	Leaf/stem bark	Jaundice in infants	Decoction taken orally by mother and infant and used for bathing.
35	<i>Momordica charantia</i> L. [EB-21-063]	Leaf	Jaundice in infants	Decoction taken orally by mother and infant and used for bathing.
36	<i>Boswellia dalzielii</i> Hutch. [EB-21-044]	Stem bark	Jaundice in infants	Decoction taken orally by mother and infant and used for bathing.
37	<i>Cucumis prophetarum</i> Linn. [EB-21-049]	Root	Postpartum abdominal pain	Decoction taken orally
38	<i>Mangifera indica</i> L. [EB-21-059] <i>Parkia biglobosa</i> (Jacq) Benth. [EB-21-065]	Stem bark	Diarrhoea	Decoction taken orally
39	<i>Ximenia Americana</i> L. [EB-21-080]	Root + leaf	Anaemia	Decoction taken orally
40	<i>Bombax costatum</i> Pellegr. & Vuill [EB-21-043]	Stem bark	Skin eruptions/tumor	Powder applied topically
41	<i>Carissa edulis</i> Vahl. [EB-21-046]	Root bark	Headache	Powder used as snuff
42	<i>Combretum molle</i> R. Br. ex G. Don [EB-21-047] <i>Camellia sinensis</i> (L.) Kuntze [EB-21-045]	Root Leaf	Erectile dysfunction	Decoction taken orally
43	<i>Tamarindus indica</i> L. [EB-21-075] + <i>Gardenia erubescens</i> Stapf & Hutch. [EB-21-057] + <i>Maytenus senegalensis</i> (Lam.) Exell [EB-21-060] + <i>Feretia apodanthera</i> Del. [EB-21-056] + <i>Dichrostachys cineria</i> (L.) Wight & Arn. [EB-21-052] + <i>Carissa edulis</i> Vahl.[EB-21-046] +	Root	Myalgia/fatigue	Infusion taken orally

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*Diospyros mespiliformis* Hochst. Ex A. Rich [EB-21-053]

44	<i>Mimosa pigra</i> L. [EB-21-061] + <i>Boswellia dalzielii</i> Hutch. [EB-21-044] + <i>Erythrina senegalensis</i> [EB-21-054] + <i>Tamarindus indica</i> L. [EB-21-075]	Root Stem bark Stem bark Stem bark	Fever	Decoction taken orally
45	<i>Asparagus flagellaris</i> (Kunth.) Baker [EB-21-042]	Root	Eye infection	Face steam-bathed with decoction

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Table 5 Medicinal plants of Zuya used in treating various conditions in humans in traditional medicine

Serial #	Scientific Name [Voucher No]	Part used	Use	Mode of administration
1.	<i>Adansonia digitata</i> L. [EB-22-001]	Stem bark	Body weakness	Decoction taken orally
2.	<i>Annona senegalensis</i> Pers. [EB-22-001]	Stem bark	Snake bite	Decoction taken orally
3.	<i>Anogeissus leiocarpus</i> (DC) Guil. & Perr. [EB-22-001]	Stem bark	Haemorrhoids	Infusion taken orally
4.	<i>Biophytum petersianum</i> Klotzsch. [EB-22-004]	Root, Stem, Leaf	Aphrodisiac	Infusion taken orally
5.	<i>Boswellia dalzielii</i> Hutch. [EB-22-005]	Stem bark	Diarrhoea/vomiting	Decoction taken orally
6.	<i>Carica papaya</i> L. [EB-22-006]	Root, Leaf	Gonorrhoea	Infusion taken orally
7.	<i>Daniellia oliveri</i> (Rolfe) Hutch. & Dalz. [EB-22-007]	Stem bark	Psychosis	Infusion taken orally
8.	<i>Datura stramonium</i> L. [EB-22-008]	Seed	Toothache	Mouth smoked with powder
9.	<i>Diospyros mespiliformis</i> Hochst. Ex A. Rich [EB-22-009]	Stem bark	Haemorrhoids	Infusion taken orally
10.	<i>Entada africana</i> Guill. & Perr. [EB-22-010]	Stem bark	Vomiting	Infusion taken orally
11.	<i>Erythrina senegalensis</i> DC. [EB-22-011]	Stem bark	Jaundice	Infusion taken orally
12.	<i>Ficus abutilifolia</i> (Miq.) Miq. [EB-22-012]	Stem bark	Epilepsy	Decoction for bathing
13.	<i>Ficus exasperata</i> Vahl [EB-22-01]	Stem bark	Diarrhoea	Decoction For bathing
14.	<i>Gliricidia sepium</i> (Jacq.) Walp [EB-22-014]	Root	Abdominal pain	Infusion taken orally
15.	<i>Gossypium herbaceum</i> L. [EB-22-015]	Root	Abortion	Infusion taken orally
16.	<i>Grewia barteri</i> Burret [EB-22-016]	Root	Anaemia	Decoction taken orally
17.	<i>Hyptis suaveolens</i> (L.) Poit [EB-22-017]	Stem bark	Epilepsy	Decoction for bathing
18.	<i>Isoberlinia doka</i> Craib & Stapf [EB-22-018]	Stem bark	Ulcer	Infusion taken orally
19.	<i>Jatropha curcas</i> L. [EB-22-019]	Root	Gonorrhoea	Decoction taken orally
20.	<i>Khaya senegalensis</i> (Desr) A Juss [EB-22-020]	Seed oil	Analgesic	Powder applied as poultice
21.	<i>Lawsonia inermis</i> L. [EB-22-02]	Root	Labour	Decoction taken orally
22.	<i>Mangifera indica</i> L. [EB-22-02]	Stem bark	Pinworm	Decoction for bathing
23.	<i>Maytenus senegalensis</i> (Lam.) Exell [EB-22-023]	Root	Brain recovery	Decoction taken orally
24.	<i>Moringa oleifera</i> Lam [EB-22-024]	Root	Pain reliever	Powder applied as poultice

25.	<i>Ozoroa insignis</i> Del [EB-22-02]	Leaf	Typhoid	Infusion taken orally
26.	<i>Parkia biglobosa</i> (Jacq) Benth. [EB-22-026]	Stem bark	Pinworm	Decoction taken orally
27.	<i>Pericopsis laxiflora</i> (Benth) van Meeuwen [EB-22-027]	Stem bark	Evil spirits	Infusion taken orally
28.	<i>Piliostigma thonningii</i> (Schum) [EB-22-028]	Fruit	Ulcer	Infusion taken orally
29.	<i>Prosopis africana</i> (Guill. & Per.) Taub [EB-22-029]	Stem bark	Anaemia	Infusion taken orally
30.	<i>Sclerocarya birrea</i> (A. Rich.) [EB-22-030]	Stem bark	Haemorrhoids	Infusion taken orally
31.	<i>Senna siamea</i> (Lam.) Irwin & Barneby [EB-22-031]	Leaf	Typhoid	Decoction taken orally
32.	<i>Sterculia setigera</i> Del [EB-22-03]	Stem bark	Anaemia	Infusion taken orally
33.	<i>Strychnos innocua</i> Del.	Root	Hepatitis	Infusion taken orally
34.	<i>Syzygium guineense</i> (Willd.) DC. [EB-22-03]	Stem bark	Haemorrhoids	Infusion taken orally
35.	<i>Tamarindus indica</i> L. [EB-22-035]	Stem bark	Evil spirits	Infusion taken orally
36.	<i>Terminalia laxiflora</i> Engl. [EB-22-036]	Stem bark	Dysentery	Infusion taken orally
37.	<i>Uvaria chame</i> P. Beauv. [EB-22-037]	Root Leaf	Epilepsy	Decoction for bathing
38.	<i>Vachellia nilotica</i> (L.) Delile [EB-22-038]	Fruit	Typhoid	Powder taken with malt drink
39.	<i>Vernonia amygdalina</i> Delile [EB-22-039]	Leaf	Typhoid	Infusion taken orally
40.	<i>Vitellaria paradoxa</i> Gaertn. [EB-22-040]	Stem bark	Evil spirits	Powder used with body cream
41.	<i>Vitex doniana</i> Sweet. [EB-22-041]	Stem bark	Anaemia	Powder applied as poultice
42.	<i>Ziziphus mauritiana</i> Lamarck [EB-22-043]	Root and leaf	Haemorrhoids	Infusion taken orally
43.	<i>Ziziphus spina-christi</i> (L.) Desf. [EB-22-043]	Leaf	Itching	Decoction for bathing

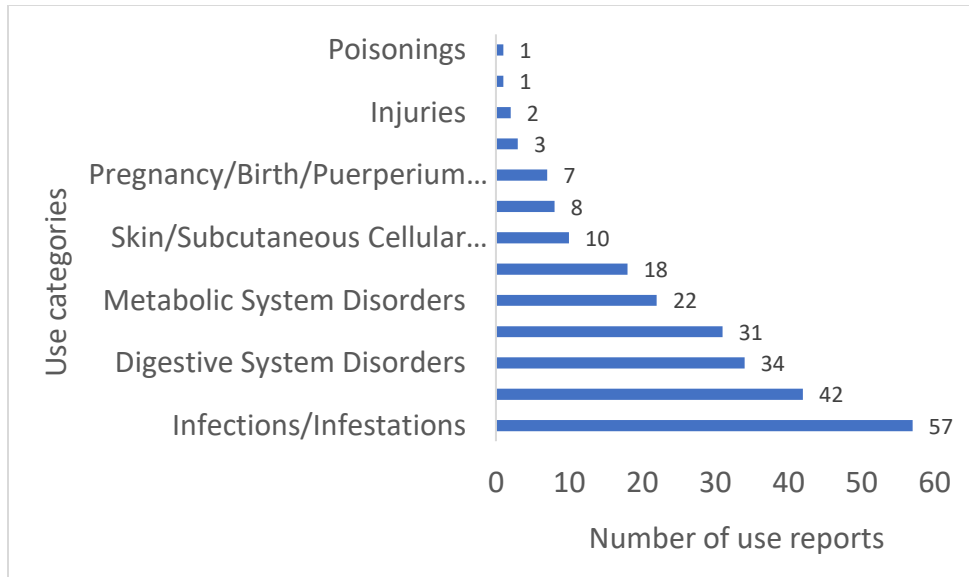


Figure 1 Categorization of use reports

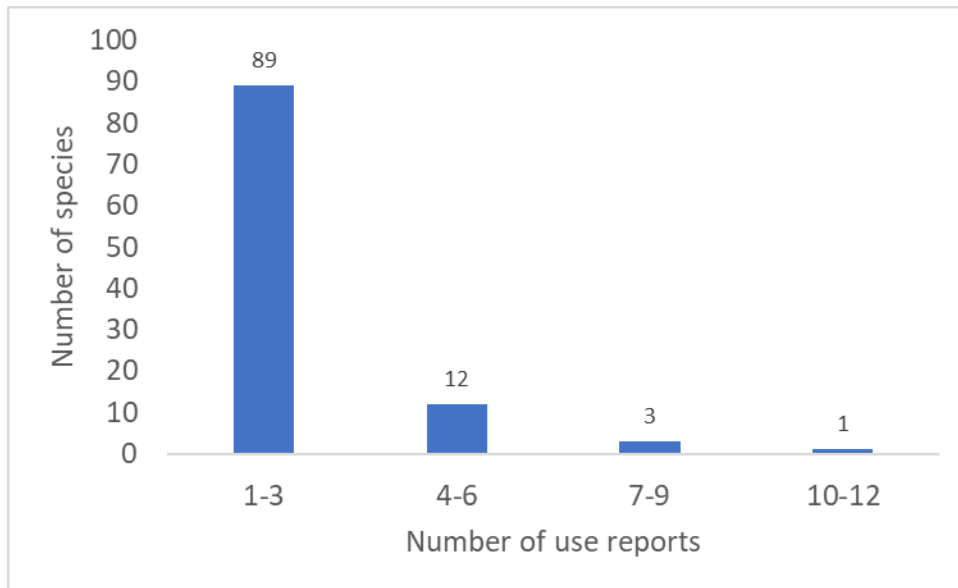


Figure 2 Distribution of use reports among 105 species of medicinal plants

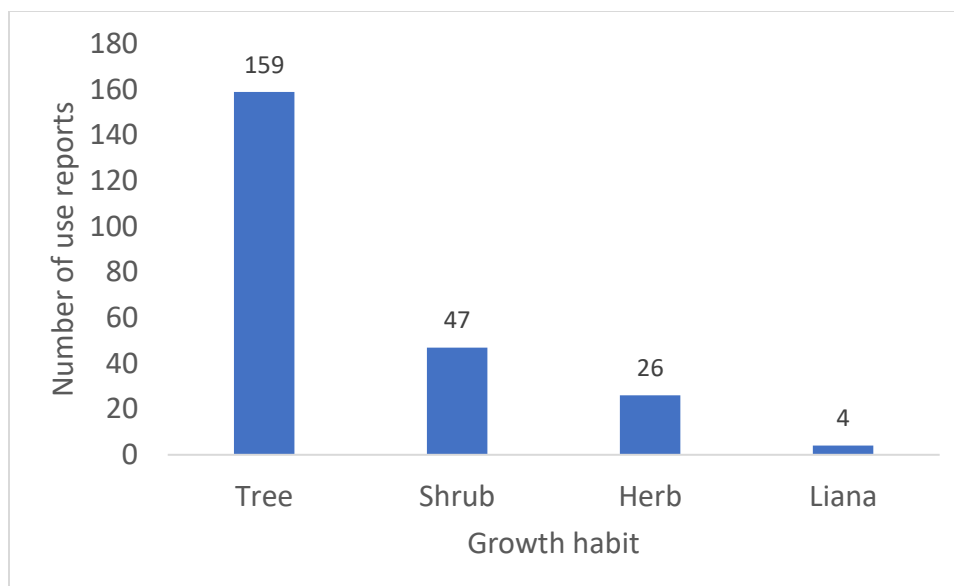


Figure 3 Distribution of use reports according to growth habits of medicinal plants

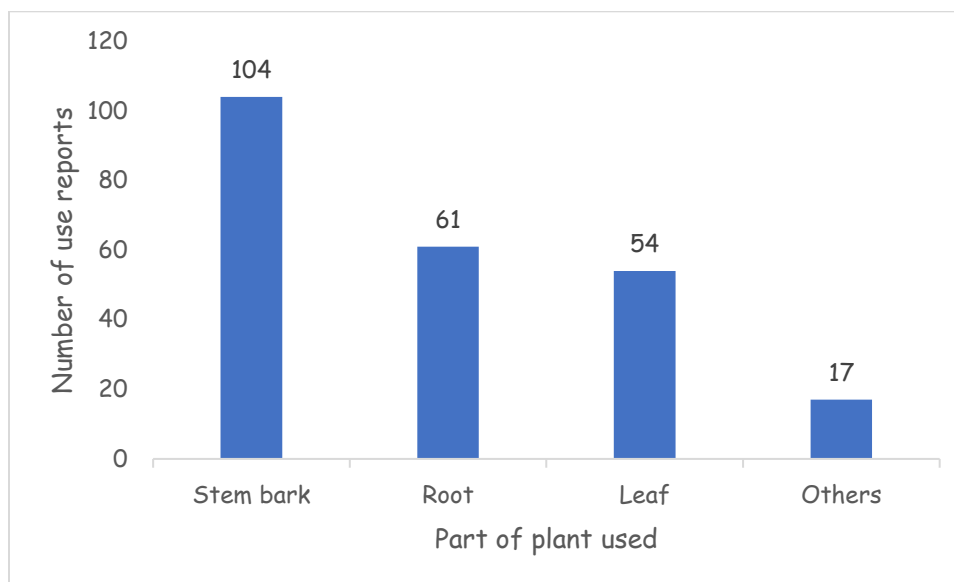


Figure 4 Distribution of use reports among parts of the plants used as medicine

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