ETHNOBOTANICAL STUDIES OF PLANTS OF SIX LOCAL GOVERNMENT AREAS OF PLATEAU STATE, NIGERIA

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ABSTRACT

The inventory of plants used in the treatment and management of diseases in traditional medicine is of utmost importance in environment where access to orthodox medicine is limited. Such communities therefore depend on Plants and plant products as means of healthcare. The study aimed at documenting folklore plants used in six Local Government Areas of Plateau State, Nigeria. Information from respondents on plants used as aphrodisiacs, in the treatment of infectious and non-infectious diseases in Six Local Government Areas of Plateau State of Nigeria (Jos South, Jos East, Langtang South, Langtang North, Bokkos and Mangu) were obtained, using semi-structured questionnaires. In total fifty-nine species from twenty-eight families were identified in this study. Seven, twenty and thirty-seven recipes were obtained for aphrodisiacs, infectious and non-infectious diseases respectively. *Fadogia agrestics* and *Loudetia phragmitoides* were mainly mentioned in the aphrodisiac recipes while members of the Fabaceae family were mostly mentioned as part of the recipes used in these studied areas in the treatment of both infectious and non-infectious diseases. This study has been able to provide document for the plants used in Jos South, Jos East, Langtang South, Langtang North, Bokkos and Mangu Local Government Areas as aphrodisiacs and in the treatment of infectious and non-infectious diseases.

Keywords: Aphrodisiac, Infectious, Jos, Non-infectious, Plateau state
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INTRODUCTION

Diverse cultures employ the use of or a combination of herbs in the treatment and/or management of diseases. Some of these herbs apart from their uses as medications act as sources of food and cosmetics. The importance of these herbs as phytopharmaceuticals and nutraceuticals in various cultures are still very relevant as they were in the ancient times.

However, the loss of information on the use of plants and plant recipes in these cultures, creates gaps in traditional knowledge and possible loss of detailed information in search for novel treatment for certain ailment specific and peculiar to such culture. Death of custodians of such information is a major concern and worries particularly in the developing Countries where the populace depends mainly on the use of plants and plant products as remedies, cure and treatment. This is because of their long historic use as well as the belief in the efficacy, safety, accessibility and affordability of these plant and plant products [1]. This study aims at documenting plants used in treating diseases and as aphrodisiacs in Six Local Government Areas of Plateau State in the North Central Nigeria.

METHODOLOGY

Area of study

This study was carried out in Six Local Government Areas (Jos South, Jos East, Langtang South, Langtang North, Bokkos and Mangu) out of the Seventeen Local Government Areas of Plateau State (Figure 1). The studied areas were chosen from the three Senatorial districts in the State (North, Central and South). Though different languages are spoken in the State, Hausa Language is commonly spoken by the people of the State. Therefore, the Hausa-Language was adopted as means of collating information from the respondents.

Plateau State is located in the North Central region of Nigeria, a state characterized with several natural sites thereby making it a site for tourism. It is located between latitude 08° 24N, longitude 08° 32 and 010° 38 East. Plateau State has an estimated population of 3.207 million as at 2006 and indigenes are predominantly farmers. Plateau State shares boundaries with Bauchi State in the North, Nasarawa State in the West, Taraba State in the East and in the South. It covers an area of 26,899 sq km. The areas covered by this study is sufficiently provided with Primary (Primary Health Centres), Secondary (General Hospitals) and Tertiary Health (Teaching Hospital) care facilities.

Administration of questionnaires

The survey was carried out between December, 2014 and March, 2015. The consent of the respondents was sought and semi-structured questionnaires were administered to respondents who are knowledgeable about medicinal plants. These were mainly herb sellers, herbalists, farmers, few civil servants and traders. In some cases, the oral questioning method was adopted for those who could not read or write. The respondents were asked questions in the commonly used local language with the assistance of interpreters.

Information on the recipes obtained were local names (vernacular names), morphological parts used, their medicinal properties and usage. The plants mentioned were collected for proper identification. The botanical names of the plants were obtained by comparing the collected specimens with those in the herbarium of the University of Jos and these were further authenticated using the International Plant Names Index [IPNI] and other literatures [1 - 4].

Figure 1: Map of Plateau State, [Study Area]
Source: Google Map

Data analysis

The results are presented as pie charts, bar charts and as percentages.

RESULTS AND DISCUSSION

A total of one hundred and fifty-two respondents in the Six Local Government Areas participated in this study. The age range of respondents spanned between 20 and above 60 years, respondents in the age range of 20-40, 41-60, 61 and above made up 16.7%, 43.3% and 40% (Figure 2) respectively. Of these, (130) 86.7% were male and 13.3% female, while 96.7% are married and 3.3% widowed (Figure 3).

All respondents speak and understand Hausa Language, the main language spoken in the studied areas while 46.7% of them understand and speak English Language to an appreciable extent. 98% claimed to have obtained information and knowledge on the use of medicinal plants from their ancestors.

In the studied area, morphological parts of trees (69%) were predominantly used as aphrodisiac, treatment of communicable and non-communicable diseases. This is in agreement with the study conducted in Jos Local Government Area by Adedire *et al*. [5]. This is because the vegetation in the studied area favours the growth form which makes the various morphological parts of the trees available all through the seasons. Contrary to other ethnobotanical studies where the most commonly used morphological parts reported are leaves [6, 7, 8], in this study, the roots (33.09%) of the plants identified were used more in the reported recipes.

The plants in the recipes where used more in the fresh form (58.14%) than dried form (32.56%). In addition, the respondents prepared the recipes as Decoction (57.61%) rather than as powder (36.96%), infusion (3.26%) and other forms (2.17%). These preparations were administered mainly through the oral route (87.91%). This is in agreement with previous studies in other cultures [9, 10], topical (10.99%), sniffing or inhaling (1.10%).

The plant materials which are mainly from trees were collected from the wild (84.04%), 13.83% bought from the market and 2.13% cultivated. In all, fifty-nine species from twenty-eight families were identified in this study. In the six Local Government Areas, seven main recipes made up of five different plant species were identified as used as aphrodisiacs. *Fadogia agrestics* and *Loudetia phragmitoides* were the most common plant mentioned in the recipes (Table 1).

Twenty recipes were identified as used in the treatment of infectious diseases. Some of the recipes had only one plant species while other were a combination of two or more plant species (Table 2). Thirty-Seven recipes were mentioned by respondents as used in the treatment of non-infectious diseases in the studied areas. Diseases such as tooth infections, itching, anaemia, malaria, diabetes, pile, stomachache, vomiting, diarrhea, pneumonia, hypertension, chest pain, hernia, convulsion, rheumatism, female infertility, anti-emetics, waist pain, erectile dysfunction, in delivery and expulsion of placenta as well as breast (milk) infection were mentioned to be treated with these recipes (Table 3).

The respondents in this study though could give information on these recipes, their knowledge on the strength, efficacy, dosage and side effects are lacking. This lack of precision is considered and remains one of the main disadvantages of traditional medicine [11]. Infectious diseases are caused by pathogens which can be spread directly or indirectly from person to person [12] while non-infectious diseases such as hypertension, diabetes, cancer, anaemia caused by genetic, environmental and lifestyle factors do not pass from one person to another.

Plants are employed in every culture in the treatment and management of communicable and non-communicable diseases. In these studied areas, the most frequently used plants in the recipes as infectious and non-infectious diseases are *Carica papaya, Deuterium microcarpum, Cochlospermum planchoni*. A comparison of plant species identified in these six Local Government Areas with the standard compendium in relation to their uses showed some similarities. *Tribulus terrestris* identified in this study as a recipe or part of recipe as an aphrodisiac is considered an extremely powerful medicinal plant. Previous study has reported its activity to increase the body's natural testosterone level, thereby improving male sexual performance [13].

Furthermore, the root of *Senna singuena* and *Terminalia avicennioides* are used traditionally in these areas as treatment for malaria, studies have revealed the antiplasmodial and protective ability of the latter against malaria severity and complications [14]. *Nauclea latifolia* used as folklore treatment in this study for hernia and stomachache is a natural source of the synthetic opiod tramadol, and in other cultures it is used by the local populations to treat epilepsy, malaria, general pain and other infectious diseases [15].

The species of the Fabaceae family were mostly mentioned by respondents in the recipes for the treatment of infections and non-infectious diseases. This is similar to findings of other studies in the Plateau State region [2, 5]. In conclusion, this study has been able to document plant species used in the folklore medicine of Jos South, Jos East, Langtang South, Langtang North, Bokkos and Mangu Local Government Areas of Plateau State, Nigeria.

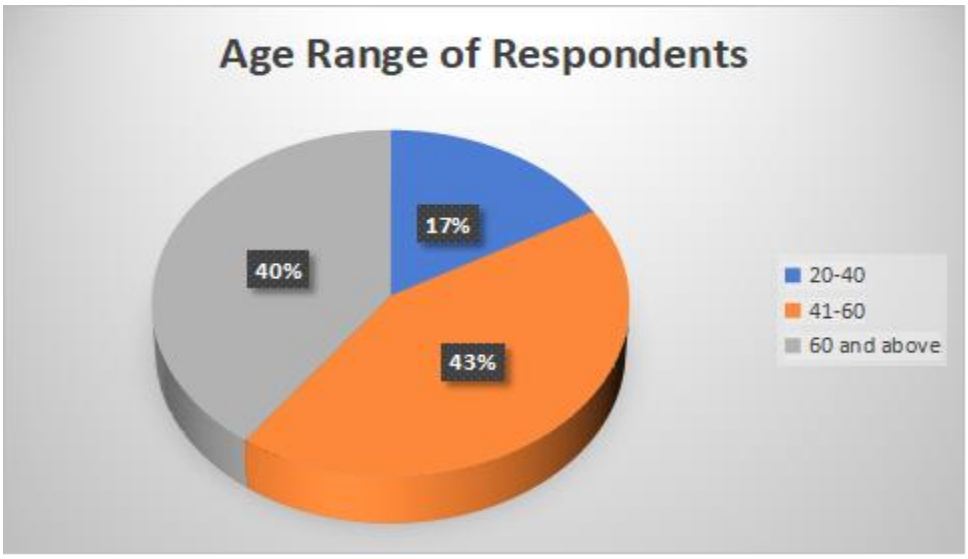

Figure 2: Age range of respondents

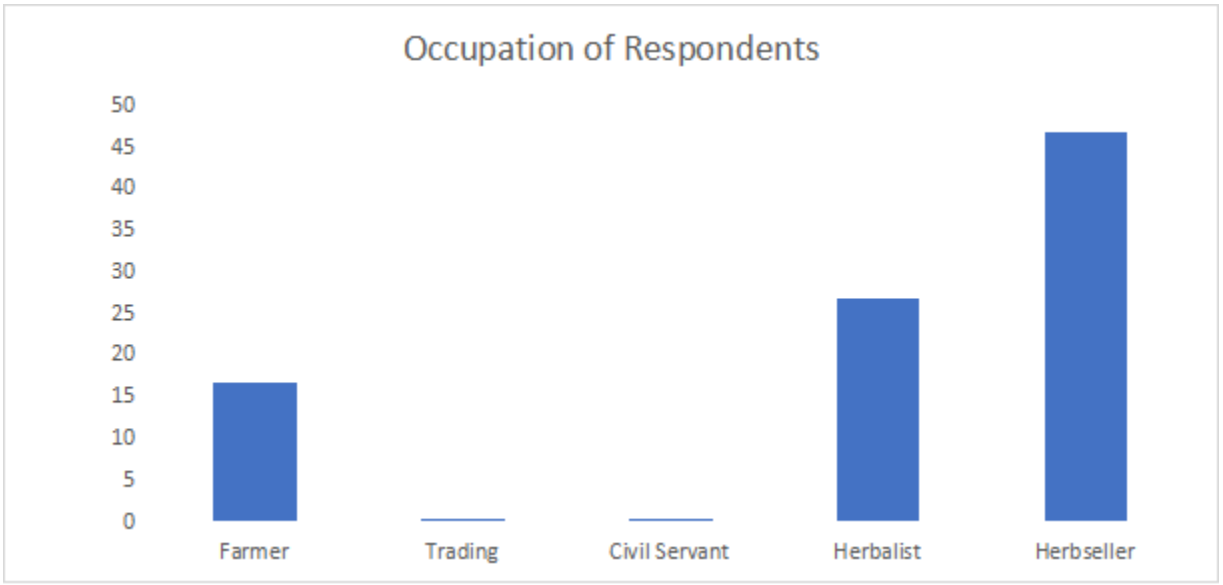

Figure 3: Percentage distribution of occupation of respondents

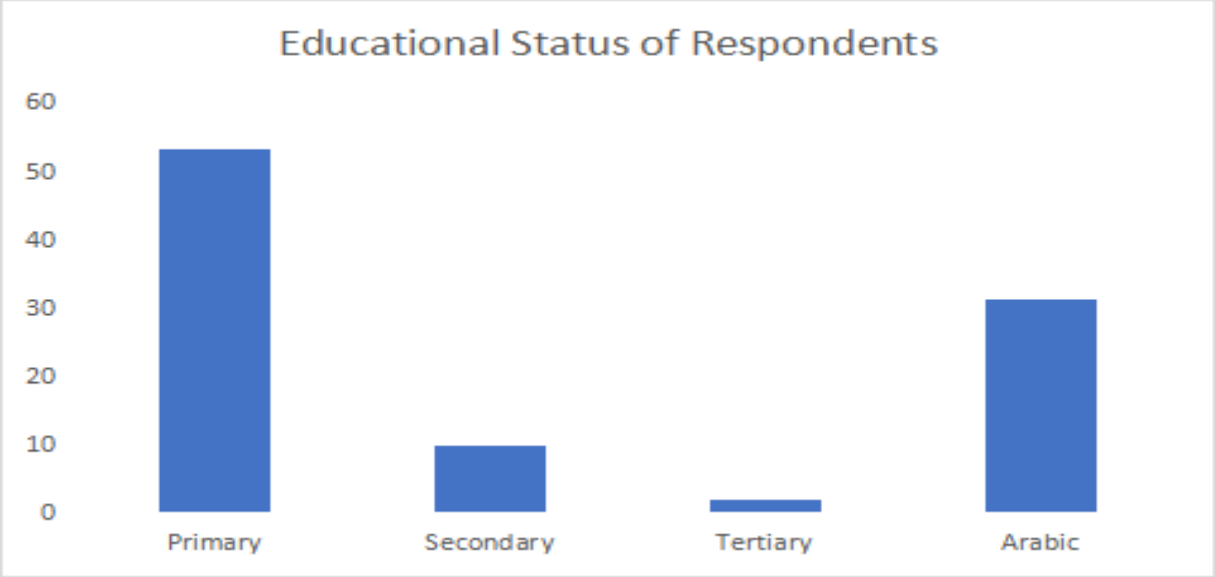

Figure 4: Educational status of respondents

Table 1: Plant recipes used as aphrodisiac in the ethnobotanical studies of six LGA of Plateau State, Nigeria

Botanical Name	**Vernacular Name**	**Family**	**Morphological Part**	**Mode of Preparation**	**Mode of Administration**	**Plant Form**	**Status)**
Fadogia agrestics (Schweinf. Ex. Hiern	Barkin gagai	Rubiaceae	Whole plant	maceration	oral	Shrub	Available
Fadogia agrestics (Schweinf. Ex. Hiern *Gardenia aqualla* Stapf & Hutch	Barkin gagai Gaudee Wayandamo	Rubiaceae Rubiaceae	Root Root Root	Decoction	Oral	Shrub Tree Tree	Available
Guiera senegalensis J.F. Gmel	Sabara	Combretaceae	Leaves	Infusion	Oral		Available
Loudetia phragmitoides (Peter C.E. Hubb)	Tsintsiyar-maza	Poaceae	Leaves	Maceration	Oral	Tree	Available
Loudetia phragmitoides (Peter C.E. Hubb) *Fadogia agrestics* (Schweinf. Ex. Hiern *Gardenia aqualla* Stapf & Hutch	Tsintsiyar-maza Barkin gagai Gaudee	Poaceae Rubiaceae Rubiaceae	Leaves Root Root	Powder	Oral	Tree Tree Tree	Available
Monotes kerstingii Gilg	Hansto	Dipterocarpeae	Bark	Maceration	Oral	Tree	Available
Tribullus terrestis L	Hana - taakma	Zygophyiaceae	Whole plant	Maceration	Oral	Tree	Available

Table 2: Plant recipes used in treating infectious diseases in the six LGA of Plateau State, Nigeria

Botanical name	**Vernacular name**	**Family**	**Part used**	**Medicinal Use**	**Mode of Preparation**	**Mode of Administration**	**Status**
Carica papaya L	Gwanda	Caricaceae	Leaves	Measle	decoction	Topical	Available
Carica papaya L *Strophanthus sarmentosus* DC	Gwanda Kwan-kwani	Caricaceae Apocynaceae	Root	Gonorrhoea	decoction	Oral	Available Available
Cochlospermum planchoni Hook f.exPlanch	Rawaya	Cochlospermaceae	root	HIV	decoction	Oral	Available
Cochlospermum planchoni Hook f.exPlanch	Rawaya	Cochlospermaceae	Whole plant	Typhoid, Fever	Powder	Oral	Available
Cochlospermum planchoni Hook f.exPlanch *Sarcocephalus russegesi* *Lannea acida A. Richex. Jeffrey* *Sida ovata Forssk*	Rawaya Tafashiya Faru Miyan -tsanyan	Cochlospermaceae Rubiaceae Anacardiaceae Malvaceae	Root Root Bark Whole plant	Typhoid, Fever	decoction	Oral	Available
Diospyros mespiliformis Hochst ex A. DC	Kanya	Ebenaceae	Bark	HIV	Decoction	Oral	Available
Guiera senegalensis J.F. Gmel	Sabara	Combretaceae	Leaves	Chicken pox	Decoction	Oral	Available
Guiera senegalensis J.F. Gmel *Boswellia dalzielii Hutch*	Sabara Ararabi	Combretaceae Burseraceae	Leaves Leaves Stem bark	Chicken pox	Powder	Oral	Available
Khaya senegalensis (Desr.) A. Juss	Madaci	Meliaceae	Bark	Gonorrhea	Decoction	Oral	Available

Stachytarpheta ajugifolia Schauer	Wutsiyan-Kadangare	Verbenaceae	Whole plant				
Mitracarpus scaber Zucc.Zarma *Guiera senegalensis J.F. Gmel* *Momordica Charantia L*	Gogamasu Sabara Garafunu	Rubiaceae Combretaceae Cucurbitaceae	All parts Leaves Whole plant	Ringworm, Chickenpox Gonorhoea (blood & pus)	Powder powder	Topical Oral	Available Available Available
Moringa oleifera J. Lamarck	Zogale	Moringaceae	L eaves, Flower, Stems	STD	Powder	Oral	Available
Nicotiana tabacum L	Taba	Solanaceae	Leaves	Toilet disease	Powder	Topical	Available
Saerva lanata (L) Juss Ex Schult		Amaranthaceae	Leaves	Common cold	Decoction	Oral	Available
Sarcocephalus latifollus (Smith) Bruce *Erythrina senegalensis DC* *Cochlospermum tinctorium A. Rich*	Tafashiya Minjirya Rawaya	Rubiaceae Fabaceae Cochlospermaceae	Root Bark root				Available Available Available
Sansevieria liberica Ger and Labr	Mooda	Agavaceae	Stem Bark	Hepatitis	Decoction	Oral	Available
Senna alata (L) Rocb.	Bango	Fabaceae	Leaves	Toilet disease , whooping cough, cholera	Decoction	Oral	Available
Sorghum guineense Staph	Doro	Poaceae	Seeds, stem	Measles, Hepatitis	Decoction	Oral	Available

Spermacoce sigmoidea	Kwarhin	Rubiaceae	Fresh leaves	Eczema		Topical	Available
Xylopia aethiopica (Dun)A. Rich	Kimba	Annonaceae	Stem bark	HIV	Decoction	Oral	Available
Zingiber officinale Roscue	Chitta	Zingiberaceae	Rhizome	Typhoid fever, Malaria	Decoction	Oral	Available

Table 3: Plant recipes used in treating non-infectious diseases in the six LGA of Plateau State, Nigeria

Botanical name	**Vernacular name**	**Family**	**Part used**	**Medicinal Use**	**Mode of preparation**	**Mode of Administration**	**Plant Form**	**Status**
Acacia ataxacantha DC	Nmmur	Fabaceae	New apex of leaves	Teeth infection, Decay Cavities	Powder	Apply to affected areas	Shrub	Available
Aeschynomene indica L	Zarmake	Fabaceae	Leaves	Itching	Powder	Topical	Shrub	LA
Annona senegalensis Pers	Gwandadaji Kayanbera mazugi	Annonnaceae	Root Root root	Anaemia	Decoction	Oral	Shrub Shrub Shrub	Available Available Available
Alstonia boonei de Wild	Awun	Apocynaceae	Root Bark leaves	Malaria Fever Yellow fever	Decoction	Oral	Shrub	Available
Balanites aegyptica (L) Del	Adua	Zygophyllaceae	Root	constipation	Decoction	Oral	Tree	Available
Balanites aegyptica (L) Del	Adua Nazuam	Zygophyllaceae	Root	Malaria	Decoction	Oral	Tree	Available
Calotropis procera W.T. Aiton *Moringa oleifera J. Lamark*	Tumfafiya Zogale	Apocynaceae Moringaceae	W plt. Leaves	Diabetes	Decoction	Oral	Shrub	Available
Senna singuena (Del.) Lock	Runfu	Fabaceae	Flower	Pile	Powder	Oral	Herb	Available
Casytha fuliforms L	Shalo	Lauraceae	Leaves, stem	Safe and easy delivery	Decoction	Oral	Climber	Scarce
Carissa edulis (Forssk.) Vahl	Lemu – tsunsu	Apocynaceae	Root	Stomach-ache	decoction	oral	Tree	Available

Terminalia avicennioides Guill & Perr	Baushee	Combretaceae	Root	Decoction			Tree	Available
Pseudocedrela kotschyi (Schweinf.) Harms	Tuna	Meliaceae					Tree	Available
Carica papaya Linn	Gwanda	Caricaceae	Leaves	Vomiting, purging	Decoction	Oral	Tree	Available
Terminalia avicennioides Guill & Perr	Baushee	Combretaceae	Leaves & Bark					
Casytha fuliforms L	Shalo	Lauraceae	Leaves, stem	Delivery	Decoction	Oral	Climber	Available
Daniella thurifera J.J. Bennett	Maje	Fabaceae	Bark	Diabetes	Decoction	Oral	Tree	Available
Deterium microcarpum Guill. & Perr	Tawra	Fabaceae	Root	Pile	Decoction	Oral	Tree	Available
Parkia biglobosa (Jacq) R. Br	Fara-dorowa	Fabaceae					Tree	Available
Erythrina senegalensis DC	Minjeriya	Fabaceae	Bark	Malaria	Decoction	Oral	Tree	Available
Cochlospermum tentorium A. Rich	Rawaya	Cochlospermaceae	Root				Tree	Available
Senna singuena Del	Runfu	Fabaceae	Root				Tree	Available
Mangifera indica Linn	Mongoro	Anacardiaceae	Bark				Tree	Available
Erythrina senegalensis DC	Minjeriya	Fabaceae	bark	Typhoid Pneumonia	Decoction	Oral	Tree	Available
Senna Occidentalis L	Raidore	Fabaceae		hypertension			Tree	Available
Momordica charantia L	Garafunii	Cucurbitaceae					Climber	Available
Allium cepa L	Albasa	Alliaceae						

							Bulb	Available
Erythrina senegalensis DC	Minjeriya	Fabaceae	Bark	Fever	Decoction	Oral	Tree	Available
Anogeissus leiocarpus (DC) Guill. & Perr	Marke	Loganiaceae	Root				Tree	Available
Cochlospermum tentorium A. Rich	Rawaya	Cochlospermaceae	Root				Tree	Available
Huernia nigeriana Lavranos J. S	Kiranan-dose	Ascelpiadaceae	Leaves, stem	Chest pain	Chew while fresh	Oral	Shrub	Rare
Indigofera spp Sacrocephalus latifollus (Smith) Bruce	Bahbah Ishind	Fabaceae Rubiaceae	Root Bark	Hyena	Decoction	Oral	Shrub	Available
Nauclea latifolia Sm	Marga	Rubiaceae	Root	Hyena, stomach ache	Powder, decoction	Oral	Tree	LA
Nicotiana tabacum L	Taba	Solanaceae	Leaves	Convulsion	Decoction	Oral	Shrub	Available
Parkia biglobosa (Jacq) R. Br Deuterium microcarpum Guill. & Perr	Dorowa Tawra	Fabaceae Fabaceae	Bark Bark	Pile	Decoction	Oral	Tree	Available
Picralima nitida (Stapf.)		Apocynaceae	Seed	Diabetes	Powder	Oral	Tree	Rare
Prosopis africana Guill. & Perr Deuterium microcarpum Guill & Sperr Pterocarpus erinaceus Poir	Kirya Tawra Madobiya	Mimosaceae Caesalpinaceae Fabaceae	All parts Bark	Pile	Powder	Oral	Tree Tree	Available Available
Prosopis africana Guill & amp. Perr Sclerocarya birrea (A. Rich) Hocgst	Kirya Dinyaa	Leguminosae Anacardiaceae	Bark Bark				Tree Tree	Available
Securidica	Sanya	Polygalaceae	Root	Rheumatism	Powder	Topical	Tree	Available

longepedunculata Fer					mixed with shea butter			
Senna singuena (Del)	Ipijigal Kwag-kwali	Fabaceae	Root Root	Waist pain, blood purifier	Decoction	Oral	Tree	Available
Spondias mombin Linn	Isadar	Anacardiaceae	leaves	Anti-emetics	Maceration	Oral	Tree	Available
Sterculia setiguera Del	Kukuki	Sterculiaceae	Bark	Hypertension	Decoction	Oral	Tree	Available
Sterculia setiguera Del *Boswellia dalzelli Hutch* *Erythrina senagelensis DC* *Deuterium microcarpum Guill & Sperr*	Kukuki Ararabi Minjiriya Tawra	Sterculiaceae Burseraceae Fabaceae Caesalpinaceae	Bark Bark	Hypertension	Decoction	Oral	Tree	Available
Syzyglum guineense Wall *Ficus gnaphalocarpa (Miq)Steud ex. A. Rich*	Malmo Baure	Myrtaceae Moraceae	Root Root	Female infertility	decoction	oral	Tree	Available
Viscum album L	Kauci	Loranthaceae	All parts	Diabetes	Powder	Oral climber		Less Avaialable
Vernonia amygdalina	Shuwaka	Compositae	Leaves, roots, stems	Diabetes, Malaria	Decoction	Oral	Shrub	Available
Ziziphus spina-christi (L.) Desf. *Boswellia dalzielli Hutch*	Kurna Ararabi	Rhamnaceae Burseraceae	Leaves Bark	Cancer	Powder	Oral Topical	Tree	Available
Grewia mollis Juss	Dargaza	Tiliaceae	Bark	Expulsion of	Infusion	Oral	Shrub	Available

				placenta				
Waltheria indica L	Hankufa	Sterculiaceae	Root	Erectile dysfunction	Decoction	Oral	Shrub	Available
Senna singuena (Del)	Pidigar	Fabaceae	Root	Abortion (pregnancy of less than 3 months)	Decoction	Oral	Shrub	Available

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