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An ethnobotanical study of medicinal plants in Mana Angetu District, southeastern Ethiopia

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Abstract

This study documents indigenous medicinal plant utilization, management and the threats affecting them. The study was carried out in Mana Angetu district between January 2003 and December 2004. Ethnobotanical data were collected using semi structured interviews, field observations, preference and direct matrix ranking with traditional medicine practitioners. The ethnomedicinal use of 230 plant species was documented in the study area. Most of the plants (78.7%) were reportedly used to treat human diseases. The most frequently used plant part were roots (33.9%), followed by leaves (25.6%). Most of the medicinal species (90.4%) were collected from the wild. Direct matrix analysis showed that *Olea europaea* L. Subsp. *cuspidata* (Wall. ex G. Don) was the most important species followed by *Acacia tortilis* (Forssk.) Hayne (120) indicating high utility value of these species for the local community. The principal threatening factors reported were deforestation (90%), agricultural expansion (85%) and fire (53%). Documenting the eroding plants and associated indigenous knowledge can be used as a basis for developing management plans for conservation and sustainable use of medicinal plants in the area.

Background

Since ancient times plants have been indispensable sources of both preventive and curative traditional medicine preparations for human beings and livestock. Historical accounts of traditionally used medicinal plants depict that different medicinal plants were in use as early as 5000 to 4000 BC in China, and 1600 BC by Syrians, Babylonians, Hebrews and Egyptians [1]. Much of an indigenous knowledge system, from the earliest times, is also found linked with the use of traditional medicine in different countries [2]. Traditional medicine refers to any ancient, culturally based healthcare practice different from scientific medicine and it is commonly regarded as indigenous, unorthodox, alternative or folk and largely orally trans-

mitted practice used by communities with different cultures [3]. WHO also defined traditional medicine as health practices, approaches, knowledge and beliefs incorporating plant, animal and mineral based medicines, spiritual therapies, manual techniques and exercises applied to treat, diagnose and prevent illnesses or maintain well being [4].

Beside their use in fighting various ailments at local level different medicinal plants are used as export commodities, which generate considerable income [5]. These plants are normally traded in dried or freshly preserved form as whole or comminuted [6]; and their global markets are found in China, India, Germany, France, Italy, Japan, Eng-

land and USA [7]. Currently, large number of medicinal plants has found their way as raw materials of modern bio-pharmaceutical industry.

In Ethiopia the long history of using traditional medicinal plants for combating various ailments can be confirmed by referring to the medico-religious manuscripts in the country [8]. Plant remedies are still the most important and sometimes the only source of therapeutics for nearly 80% of the population in Ethiopia [9]. The current loss of medicinal plants in the country due to natural and anthropogenic factors links with the missing of valuable indigenous knowledge associated with the plants. This strong link suggests a need to conduct ethnobotanical research and to document the medicinal plants and the associated indigenous knowledge. Such studies are useful to identify threatened plants and to take appropriate conservation measures. The present research documents the wealth of indigenous knowledge on utilization, management and conservation of medicinal plants as well as the threats to the plants in Mana Angetu District, Southeastern Ethiopia.

Materials and methods

Study area and ethnographic background of the local people

Mana Angetu District is found in the Southwestern corner of Bale Zone, Oromia National Regional State, Ethiopia (Figure 1). The district is located between 06° 10' N and 06° 31' N, and 039° 30' E and 039° 45' E. The highland portion of the district is an extension of the Bale massif. Geologically the Bale Mountains appear to be of volcanic origin resulting from the trappan lava, which cover the Mesozoic strata [10].

Based on the meteorological data recorded at Dollo Mana station for 18 years (January 1986 to December 2003), the study area had bimodal rainfall distribution with the highest rain falling from March to May and then in October. The mean annual rainfall of the study area was 740.47 mm, and the mean annual temperature was 30.57°C.

The vegetation type of the area is moist montane forest type, which is also found in Southwestern part of Ethiopia [11]. It is composed of various species of plants including the largest and commercially most important trees in Ethiopia like *Pouteria adolfi-friederici* (Engl.) Baehni, *Podocarpus falcatus* (Thunb.) Mirb. and *Polyscias fulva* (Hiern) Harms; the under storey bears coffee plants (*Coffea arabica* L.).

A total population of approximately 120,000 inhabits the district. About 91% of the inhabitants are engaged in agriculture; of which 28% conduct crop production, 18% cattle rearing and 45% mixed farming. The district has only

two health centers and three clinics supporting the entire population. The livestock population of 220,000 are supported by three veterinary clinics and six health workers [12].

The majority of the local people in Mana Angetu District of Bale Zone belong to the Oromo ethnic group. The Oromo people constitute at least 40% of the Ethiopian population [13] and are traditionally pastoral tribes. They are linguistically Cushitic speaking, using the widely spoken *Afaan Oromo* language. Some Oromo people practice sedentary agriculture while many others practice mixed farming, which involves cultivation of crops and livestock rearing. According to [14], they probably originated from North Somalia and later migrated to Lake Turkana and the Ethiopian highlands. In contrast other publications [15] state that the Oromo ethnic groups are from the highlands of Bale, Borana and Guji in Southeastern Ethiopia. The people had their own religion called *Waaqeffannaa* before the expansion of Christianity and Islam [16]. This religion is still maintained by a few of the Oromo people [17]. They have a long tradition of age based social organization called the *Gada* system by which they maintain their social, political and belief systems.

Methods

Eighteen Kebeles, which are found as buffer zones at the southern part of the Bale Mountains National Park, were selected for ethnobotanical data collection. A total of 70 informants (63 males and 7 females) were selected purposively following [18] with the help of local administrators, the office of the district's traditional healers association and local elderly people. Nominations on knowledge depth of respondents were collected from local elderly people, heads of the district's traditional healers association and the local administrators of each Kebele. Similar responses obtained from the three groups were used to identify knowledgeable traditional healers. The traditional healers identified were asked for their consent to share their knowledge only for the purpose of this study.

The methods used for ethnobotanical data collection were semi structured interviews described by [3] and [18]; field observation, preference ranking and direct-matrix ranking according to [3,18,19]. The respondents' background, health problems treated, diagnosis and treatment methods, local name of medicinal plants used, source of collection (wild/cultivated), growth form, degree of scarcity, plant part used, methods of preparation and application, threats to medicinal plants and conservation practices of respondents were carefully recorded. Observations were made on the morphological features and habitats of each medicinal plant species in the field.

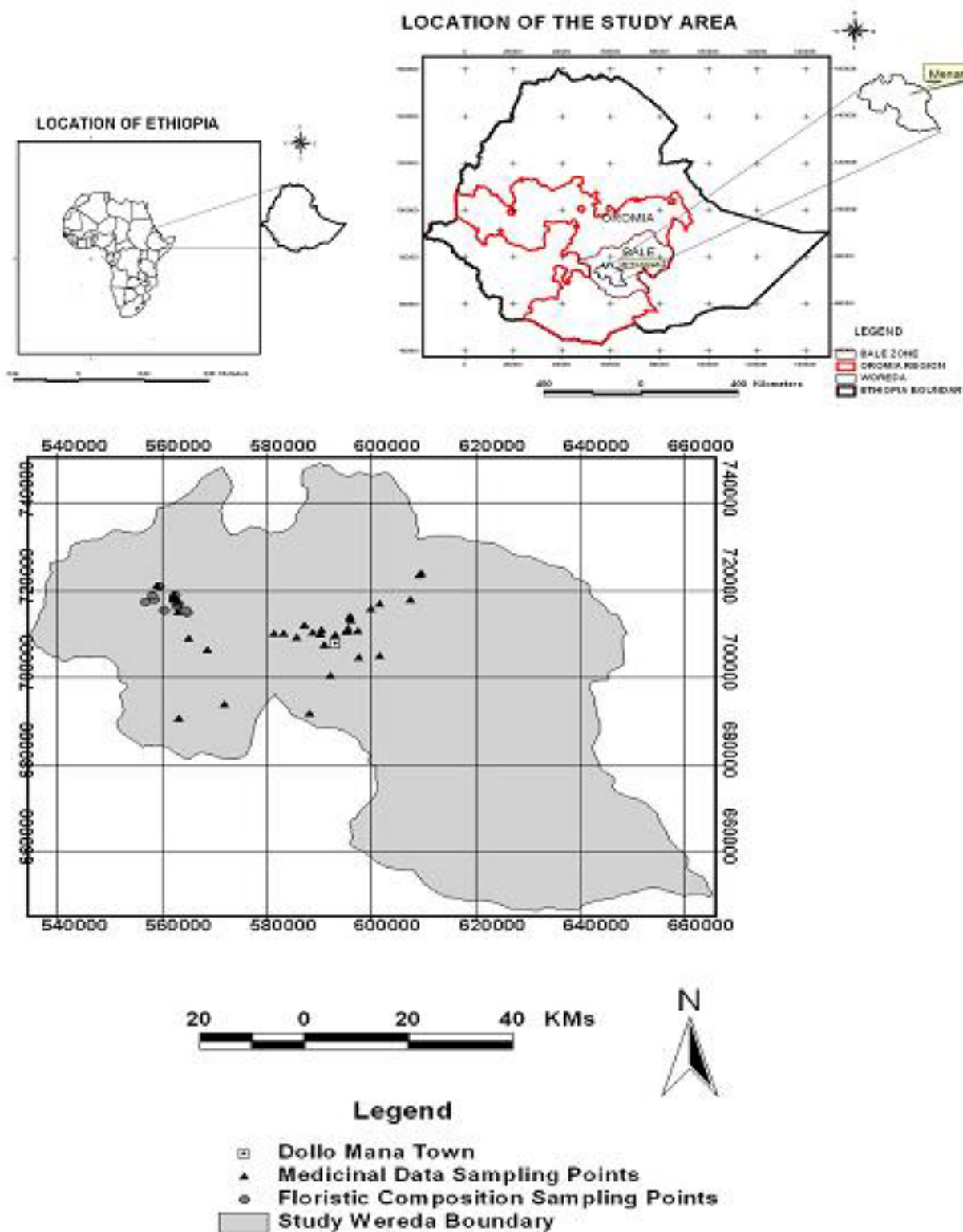


Figure 1
Map of the study area showing medicinal data sampling points.

The frequency of citation for each of the reported ailments was used as a basis to identify the most frequently occurring human ailment in the study area, which in this case was gonorrhoea. Preference ranking of all the medicinal plant species (7 species) reported by traditional healers to treat this ailment was conducted following [18] and [19] so as to show healers' perception on the relative degree of efficacy of the 7 species and get useful information to identify target plants for future pharmacological investigations. The key informants for purposes of ranking these species were selected randomly from among all informants who reported to treat the ailment.

The status of all the medicinal plants was recorded as abundant, less abundant, rare or very rare as per healers' perception during the semi structured interviews. To determine the most threatened medicinal plants in the study area, authors short listed all medicinal plant species (6 species) reported by traditional healers as very rare in the area and conducted preference ranking of these species using 14 randomly selected informants. Direct matrix ranking exercise was conducted for seven multipurpose medicinal plants to determine the main cause for over harvesting of the respective plants. Frequency of citation as multipurpose species was used as a criterion to select the seven candidate medicinal plant species for the direct matrix ranking exercise. Additional file 1 shows pictures reflecting some of the field data collection events in this study.

Identification of the medicinal plant specimens collected from the study area was performed at the National Herbarium (Ethiopia), Addis Ababa University using taxonomic keys and Floras [20-26] and by comparison with already identified herbarium specimens. The identified specimens were deposited at the National Herbarium.

Data analyses

Ethnobotanical data were entered in to Excel spreadsheet and summarized using descriptive statistics [27]. The spreadsheet data filter facility was employed to determine frequencies of citations so as to identify the most common ailments in the study area, popularly used medicinal plant species and multipurpose plant species, to determine proportions of different variables like plant families, growth forms, source of collection, degree of scarcity, plant part used, methods of preparation and threatening factors. The preference values/scores assigned by key informants for selected medicinal plant species were added and ranked during the preference ranking and direct matrix ranking activities.

Results and discussion

Medicinal plants in Mana Angetu District

In this study a total of 230 medicinal plant species used for treatment of human and livestock ailments were collected (see Additional file 2). Of these, 181 (78.70 %) were used as human medicine, 27 (11.74%) as livestock medicine and the remaining 22 (9.57 %) were used for treating both human and livestock ailments. The presence of such a large number of medicinal plant species and associated ethnomedicinal knowledge in the district compared to number of species reported for other regions in Ethiopia [see [28-34]] indicates that the area has a very high diversity of medicinal plant species and is a site for various indigenous knowledge.

The medicinal plants collected belong to 177 genera and 74 families. The family Fabaceae was represented by the highest number of species (26 species, 11.3%). This was followed by Asteraceae (19 species, 8.3%), Euphorbiaceae (15 species, 6.5%), Asclepiadaceae (11 species, 4.8%), and Rubiaceae (9 species, 3.9%). Families Lamiaceae, Acanthaceae, Rutaceae, and Verbenaceae were represented by 7 species each, where as Malvaceae, Solanaceae and Vitaceae with 6 species each. This also indicates that the area consisted of considerable diversity of plant species. These plant families are consistently recorded in different ethnomedicinal inventories [for example, [31-36]], which could be attributed to their wider distribution and abundance [35] and rich bioactive ingredient contents [37].

The results of growth form analysis of medicinal plants showed that shrubs made up the highest proportion being represented with 110 species (47.83 %), followed by herbs (55 species, 23.91 %), trees (44 species, 19.13 %), climbers (15 species, 6.52 %), lianas, and epiphytes (3 species each, 1.30 % each) (Figure 2). This finding is contrary to the general pattern seen in most medicinal inventories [for example, [28,31,32]] where herbaceous medicinal plants dominate. This could be associated to the abundance and year round availability of shrub species in the study area.

Of the 230 medicinal plants studied, 208 species (90.43 %) were collected from the wild while 13 species (5.65 %) were found in cultivation and 9 species (3.91 %) were obtained both from cultivation and the wild. This indicates that the practitioners depend on the wild source or the natural environment rather than home gardens to obtain the medicinal plants, and the activity of cultivating medicinal plants is very poor in the study area. It also indicates that the natural forest of Mana Angetu is being over exploited by traditional practitioners for its medicinal plants composition.

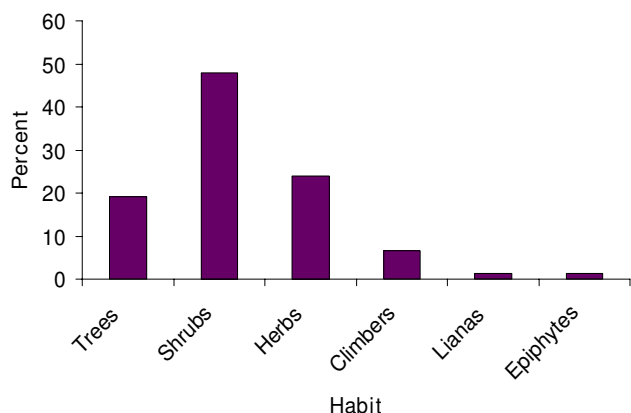


Figure 2
Growth forms (habits) of the reported ethnomedicinal plant species.

The plant parts used widely to treat human and livestock health problems include root, stem, leaves and others (Table 1). The most commonly used plant parts for herbal preparations in the area were roots (33.91 %) and leaves (25.65 %). Such wide harvesting of roots, which are important for survival of plants has a negative influence on the survival and continuity of useful medicinal plants and hence affects sustainable utilization of the plants. Large proportion of herbal prescription from root sources was also reported by [32] and [38] in their ethnobotanical investigations.

Table 1: Medicinal plant parts used by traditional healers for remedy preparation

Plant part used	No of species	Percent
Root wood	78	33.9
Leaves	59	25.7
Root and leaves	30	13
Root bark	15	6.5
Seeds	7	3
Stem bark	6	2.6
Stem bark, Root bark	5	2.2
Fruits	4	1.7
Stem wood	3	1.3
Root, stem and leaves	3	1.3
Stem and leaves	3	1.3
Root and stem	3	1.3
Leaf, fruit and root	2	0.9
Latex only	2	0.9
Leaves, seed and stem	2	0.9
Root and fruit	2	0.9
Leaves and stem bark	2	0.9
Resin and root	2	0.9
Fruit and leaves	1	0.4
Root, leaves, seeds, fruit and oil	1	0.4
Total	230	100.00

The medicinal plants have various methods of preparation and application for different types of ailments and they have various preparation forms like concoction, decoction, powder, and crushed and homogenized in water. Concoction (60 species, 26.1%) constituted the highest type of preparation form, followed by crushed and homogenized in water (46 species, 20 %) and powder form (37 species, 16.1%). The preparation and application methods vary based on the type of disease treated and the actual site of the ailment.

The medicinal plant preparations were applied through different routes of administration like oral, topical or dermal, and nasal routes. However, oral application (116 preparations, 50.43 %) was the highest and most commonly used route of application followed by topical or dermal application (54 preparations, 23.48 %) (Figure 3). These results are consistent with the findings of various ethnobotanical researches elsewhere in Ethiopia, such as that of [[28,30,32], and [33]].

Most of the medicinal plant species collected and identified in this study were also medicinally used in other parts of Ethiopia and also other African countries. For example, of the 230 medicinal plants found and used in Mana Angetu District: [39] documented 24 species, [40] documented 59 species; [41] documented 41 species; [38] documented 19 species; and [29] documented 25 species, as medicinally important to cure human and livestock diseases. In Uganda 21 species were found documented in the medicinal plant list of [42], and in Kenya 20 species were documented in the list of [43]. Such widespread use of these plants by different groups of societies in different countries could to a certain extent be attributed to their efficacy. In other words, the ethnomedicinal reports of those species from wider geographical regions and different cultural groups could validate the medicinal properties of the species.

Disease types, treatment methods and herbal preparations used to treat human health problems

Though more than 50 different disease types were recorded as human health problems in the district, the major and most widespread diseases according to the informants include gonorrhoea, jaundice, kidney infection and general malaise (Table 2). In addition to these the practitioners were also visited for diseases like skin infections, mental disorder, rheumatoid arthritis and hemorrhoids.

The result as shown in Table 2 indicates that gonorrhoea was the most common disease followed by jaundice and kidney infections for which patients commonly visit the traditional medical practitioners (TMPs).

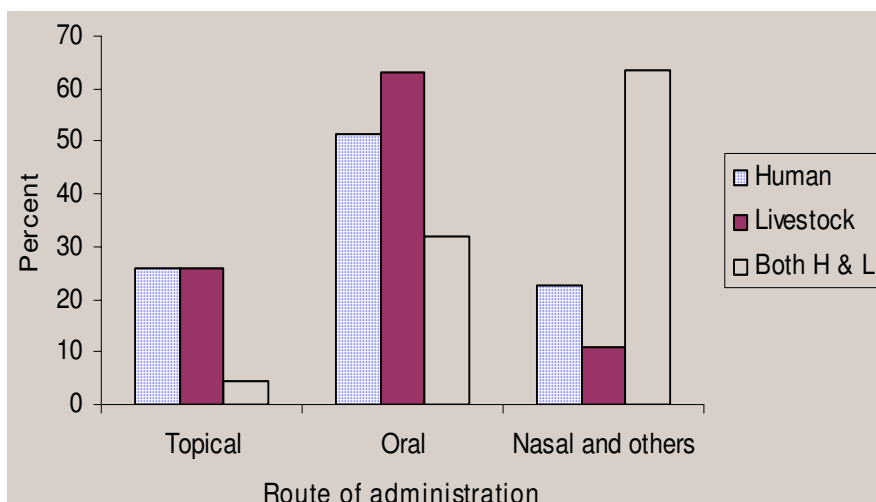


Figure 3
Reported routes of administration of medicinal plant remedies used for human beings, livestock and both.

Interviews with the TMPs found different diagnosis and treatment methods depending on the type of the ailment. The practitioners commonly diagnose each health problem by an interview and visual inspection of the patient. Patients or their attendants are commonly interviewed for symptoms observed and the duration of the health problem. Changes in eye and skin color, tongue and throat regions, body temperature and status of sores are all visually inspected by the practitioner and the remedy is prescribed.

Internal ailments were commonly treated by making the patient drink herbal preparations; skin infections such as ringworm were treated by rubbing and painting herbal preparations on an infected skin; sores by chewing and spitting remedial plant part on the sore; headaches and fever by steam bath and vapor inhalation. Similar results were reported elsewhere in Ethiopia by [29] and [41].

Though special care was taken, some herbal preparations had side effects and resulted in diarrhoea and vomiting. When such conditions happened, antidotes like coffee, milk, honey, yogurt, butter and powder of roasted barley were used or ordered by most of the practitioners to reverse the condition. Most of the medicinal plant preparations given did not have standardized doses. In most cases dosages were determined according to the age, sex and physical appearance of the patient. Some of the medicinal plant preparations were measured in a small cup, a jug, while others as handful, or spoonful. Proper care is needed for sanitation of herbal preparations and their containers. Some preparations were placed in unclean containers and areas which may result contamination and seriously affect users when drunk. Patients suffered from overdose and contaminations were believed to recover by application of antidotes.

Table 2: Common diseases affecting human health in Mana Angetu District

Disease type (local name)	Frequency
Gonorrhoea (<i>Chobto</i>)	22
Jaundice (<i>Alati</i>)	11
Kidney (<i>Birbirti</i>)	11
General malaise (<i>Michi</i>)	9
Skin infection (<i>Sibiji</i>)	8
Mental disorder (<i>Merata</i>)	7
Rheumatoid arthritis (<i>Qilensa</i>)	5
Hemorrhoid (<i>Qormade</i>)	5

Among the medicinal plants used for herbal preparations to treat human health problems, *Cissampelos pariera* L. was found commonly used by most of the traditional practitioners followed by *Carissa spinarum* L., *Withania somnifera* (L.) Dun., *Croton macrostachyus* Del. and *Euclea divinorum* Hiern (Table 3).

Preference ranking of medicinal plants used for treating gonorrhoea

Preference ranking of 7 medicinal plants that were reported as effective for treating gonorrhoea, was conducted after selecting 10 key informants. The informants were asked to compare the given medicinal plants based on their efficacy, and to give the highest number (7) for the medicinal plant which they thought most effective in

Table 3: Popularly used medicinal plants of the Mana Angetu District

Scientific name	Frequency of report
<i>Cissampelos pariera</i> L.	51
<i>Carissa spinarum</i> L.	33
<i>Croton macrostachyus</i> Del.	14
<i>Euclea divinorum</i> Hiern	14
<i>Withania somnifera</i> (L) Dun.	14
<i>Rubus steudneri</i> Schweinf.	10
<i>Psychotria orophila</i> Petit	9
<i>Senna occidentalis</i> (L.) Link	9
<i>Warburgia ugandensis</i> Sprague	8
<i>Ximenia americana</i> L.	8

treating gonorrhoea and the lowest number (1) for the least effective plant in treating gonorrhoea. As shown in Table 4, *Euclea divinorum* scored the highest mark and ranked first indicating that it was the most effective in treating gonorrhoea followed by *Ricinus communis* L. Ethnobotanical investigations done elsewhere in Ethiopia also reported that *Euclea divinorum* was used for treatment of gonorrhoea [29,40]. The compounds lupeol, lupene, betulin, 7-methyljuglone, isodiospyrin, shinalone, catechin and 3fl-(5-hydroxyferuloyl)lup-20(30)-ene were isolated by [44] from the root bark of this plant species. Antiperiodontopathic bacterial activity of this medicinal plant species was reported by [45]. Further pharmacological test of this species against gonorrhoea might reveal promising results.

Medicinal plants used to treat livestock health problems

The TMPs use different forms of remedy preparations and applications to treat livestock diseases. The most popular and widely used medicinal plants used to treat livestock diseases in the study area include *Acacia seyal* Del., *Breonia salicina* Vahl (Hepper and Wood), and *Rhyncosia ferruginea* A. Rich. Black leg/*aba gorba*, scabies/skin infection and diarrhoea/*tuma* were also reported as the most common livestock health problems. Most of the preparations

used (12 species, 44.44%), involved crushing and homogenizing the remedies in water, followed by concoction (9 species, 33.33%) and powdering (4 species, 14.81%).

Based on the nature of the ailment the remedies were applied through different routes. Oral application of remedies was found the highest (62.96%), followed by topical application (25.93%) and nasal application (11.11%).

Ranking of threatened medicinal plants

Based on the degree of threat and rarity, ranking of 6 different medicinal plants that were recorded for rarity, was conducted after selecting 14 key informants in the study area. The results showed that *Withania somnifera* got the highest score indicating that it is the most threatened plant followed by *Asparagus africanus* Lam. and *Dioscorea quartiniana* A. Rich. On the other hand *Pittosporum viridiflorum* Sims scored the least indicating that it was less threatened when compared to the other species (Table 5).

Medicinal plants used for purposes other than medicinal value

In Mana Angetu the majority of the inhabitants rely on wild plants for various purposes such as forage, medicine, firewood, charcoal making, construction and food. It was found that 99 species (43.04%) of medicinal plants have values other than their medicinal role. To assess the relative importance and to check the major impact on such plants direct matrix ranking was performed.

The result indicated that *Olea europaea* was ranked first followed by *Acacia tortolis*, *Cordia africana* and *Warburgia ugandensis* Sprague (Table 6). This indicates that the plants were known for their values other than their medicinal role and this could be associated directly with the cause of their depletion in the study area. It also indicates that special focus should be given for conservation of these plants since they are being widely exploited for purposes other than their medicinal value.

Table 4: Preference ranking of medicinal plants used for treating gonorrhoea

Medicinal plants	Informants labeled A to J										Total score	Rank
	A	B	C	D	E	F	G	H	I	J		
<i>Acokanthera schimperi</i> (A. DC.) Schweinf.	4	7	5	4	7	5	2	1	2	1	38	4
<i>Crabbea velutina</i> S. Moore	2	5	4	2	4	7	3	2	3	2	34	5
<i>Euclea divinorum</i> Hiern	7	6	6	7	5	3	5	6	4	7	55	1
<i>Gnidia stenophylla</i> Gilg	3	3	3	6	6	4	6	3	6	4	44	3
<i>Ricinus communis</i> L.	5	4	7	5	1	6	4	5	5	5	47	2
<i>Solanum incanum</i> L.	1	2	2	3	2	1	1	7	7	6	32	6
<i>Surregada procera</i> (Prain) Croizat	6	1	1	1	3	2	7	4	1	3	29	7

Key-Scores in the table indicate ranks given to medicinal plants based on their efficacy. Highest number (7) for the medicinal plant which informants thought most effective in treating gonorrhoea and the lowest number (1) for the least effective plant.

Table 5: Ranking of medicinal plants reported as threatened in the study site

List of medicinal plants	Key informants coded A-N														Total score	Rank
	A	B	C	D	E	F	G	H	I	J	K	L	M	N		
<i>Olea europaea</i> L. subsp. <i>cuspidata</i> (Wall. ex G.Don)	3	2	1	4	1	1	2	3	6	5	5	2	4	2	41	5
<i>Asparagus africanus</i> Lam.	4	3	6	3	6	4	3	4	5	3	3	5	1	4	54	2
<i>Dioscorea quartini</i> A. Rich.	5	5	5	1	2	2	4	2	3	1	6	4	6	3	49	3
<i>Pittosporum viridiflorum</i> Sims	1	1	3	2	3	6	6	5	1	4	1	1	2	1	37	6
<i>Hydnoria johannis</i> Becc.	2	4	2	6	5	5	1	1	4	2	2	3	3	5	45	4
<i>Withania somnifera</i> (L.) Dun.	6	6	4	5	4	3	5	6	2	6	4	6	5	6	68	1

Threats to medicinal plants and conservation practices

In Mana Angetu District various factors that were considered as main threats for medicinal plants were recorded by interviewing the informants. The major factors claimed were deforestation (90%), agricultural expansion (85%), fire (53%), overgrazing (15%), drought (12%) and trading charcoal and firewood (10%). Other research on threats to medicinal plants used by Kereyu pastoralists in Ethiopia [29] indicates similar investigation.

The effort to conserve medicinal plants in the district was observed to be very poor. Some traditional practitioners have started to conserve medicinal plants by cultivating at home gardens, though the effort was minimal. About 5.7 %, of the medicinal plants collected were reported as found cultivated at home gardens and these include plants like *Carica papaya* L., *Catha edulis* (Vahl) Forssk. ex Endl., *Coffea arabica*, *Jatropha curcas* L., *Prunus perisca* (L.) Batsch and *Euphorbia piscidermis* M. Gilbert. Traditional beliefs in the area also have their own unintentional role in conservation and sustainable utilization of medicinal plants.

Giving conservation priority for identified threatened medicinal plants, promoting *in-situ* and *ex-situ* conservation of medicinal plants in Mana Angetu area as well as

supporting the district's Traditional Healers Association, by providing funds, land for cultivating medicinal plants and assisting their activities with professional guidance helps to conserve the fast eroding medicinal plants of the study area.

Competing interests

The authors declare that they have no competing interests.

Table 6: Average score for direct matrix ranking of 7 medicinal plant species with different uses other than medicinal use.

No	Use diversity	<i>Acacia tortilis</i>	<i>Warburgia ugandensis</i>	<i>Euclea divinorum</i>	<i>Cordia africana</i>	<i>Croton macrostachyus</i>	<i>Olea europaea</i>	<i>Asparagus africanus</i>
1	Fire wood	5	5	3	3	4	5	5
2	Charcoal	5	1	0	2	2	3	3
3	Medicine	3	5	5	4	4	4	4
4	Building	3	4	2	5	3	5	3
5	Forage	3	1	2	1	1	1	2
6	Furniture	2	2	0	4	2	5	1
Total		121	90	73	102	70	125	82
Rank		2	4	6	3	7	1	5

Based on use criteria (5 = best; 4 = Very good; 3 = good; 2 = less used; 1 = least used and 0 = no value)

Authors' contributions

All authors contributed equally during the field work, data analysis and preparation of the manuscript.

Additional material

Additional file 1

The additional file shows pictures reflecting some of the field data collection events.

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[<http://www.biomedcentral.com/content/supplementary/1746-4269-4-10-S1.pdf>]

Additional file 2

Medicinal plants used for treatment of human and/or livestock diseases. The additional file lists plant species used to treat human and/or livestock ailments, and methods of preparation and application.

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[<http://www.biomedcentral.com/content/supplementary/1746-4269-4-10-S2.pdf>]

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Additional file 2. Medicinal plants used for treatment of human and /or livestock diseases

Scientific name	Family	Local name	Herb. Vouch.	Disease treated (local name)	L/H	Part used	Form used	MPAP
<i>Abutilon mauritianum</i> (Jacq.) Medic.	Malvaceae	Pelampul	EL154	Snake bite/ Boffa	H	R	F	CT
<i>Acacia etbaica</i> Schweinf.	Fabaceae	Hamaressa	EL167	Inability to walk properly /Dereba	L	R	F/D	Cdr
<i>Acacia mellifera</i> (Vahl) Benth.	Fabaceae	Bilala	EL230	Kidney/ Birbirti	H	R	D	CBdr.
<i>Acacia senegal</i> (L.) Willd.	Fabaceae	Sapansa	EL170	Evil spirit/ Ka falfala	H	S	F/D	CR
<i>Acacia seyal</i> Del.	Fabaceae	Watcho	EL158	Breast pain /Dhukuba harma	L	R	F/D	Cdr
<i>Acacia tortilis</i> (Forssk.) Hayne	Fabaceae	Dedecha/Kitkita	EL159	Problem of removing after birth/ Ka hobati	L	L	F	Cdr
<i>Acalypha fruticosa</i> Forssk.	Euphorbiaceae	Gurbi dag Hadoftu	EL232	Tonsilities/ Entil	H	R	F/D	Cdr
<i>Acanthospermum hispidum</i> DC.	Asteraceae	Qummuxxi	EL136	Sterility in females/ Mehaninet	H	R	F	CBdr.
<i>Achyranthes aspera</i> L.	Amaranthaceae	Jibir	EL104	Itching sore/ Aro	H	L	F	CBdr.
<i>Acokanthera schimperi</i> (A.DC.) Schweinf.	Apocynaceae	Kararo	EL100	Gonorrhoea/ Chobto	H	RB	F	CBdr
<i>Actinopterys radiata</i> (L.) P. Beauv.	Actinopteridaceae		EL187	Stabbing pain/ Woransa	H	L	F	CT
<i>Aerangis brachycarpa</i> (A. Rich.) Th. Dur. & Schinz	Orchidaceae	Muka kulubi	EL239	Hemorrhoids/ Qormade	H	L	F	CRrb
<i>Ageratum conyzoides</i> L.	Asteraceae		EL87	Gonorrhoea/ Chobto	H	R	F	CBdr.
<i>Allophylus macrobotrys</i> Gilg	Sapindaceae	Chobsa	EL117	Impotence /Dhirumalebi	H	R	D	Cdr
<i>Aloe gilbertii</i> Sebsebe & Brandham	Aloaceae	Hargessa	EL209	Liver case/ Hadhoftu	H	LA	F	CEJ
<i>Aloe parvidens</i> Gilbert & Sebsebe	Aloaceae	Hargessa	EL208	Stabbing pain/ Woransa	H	LA	F	Cdr
<i>Aloe pubescens</i> Reynolds	Aloaceae	Hargessa	EL207	Common cold/ Qufa Dhukuba dugda TB /Sombe	L H H	S S S	F D D	CR CBdr. Cdr

Additional file 2 (continued)

Scientific name	Family	Local name	Herb. Vouch.	Disease treated (local name)	L/H	Part used	Form used	MPAP
<i>Aloe pubescens</i> Reynolds	Aloaceae	Hargessa	EL207	Kidney /Birbirti	H	S	F	Cex
				Cold /Qilensa	H	S	F	Cex
<i>Ampelocissus abyssinica</i> (Hochst. ex A. Rich.) Planch.	Vitaceae	Teru	EL175	Black leg/Aba gorba	L	R	F/D	CBdr.
<i>Anethum graveolens</i> L.	Apiaceae	Kamona	EL29	Eye disease/ Dukuba ija	H	LA	F	CR
				Back pain/ Kale	H	L	F	Cdr
				Impotence/ Dhirumalebi	H	RLSF	F	CBdr.
				Weakness/ Dukubaone	H	LSB	F/D	CBdr.
<i>Asparagus africanus</i> Lam.	Asparagaceae	Argeg	EL189	Weakness/ Dukubaone	H	R	F	CT
<i>Asparagus leptocladodius</i> Chiov.	Asparagaceae	Seriti	EL190	Impotence/ Dhirumalebi	H	R	D	Cdr
				Liver case /Hadhoftu	H	R	F	Cdr
				Rabies/ Dukuba serie	H	R	F/D	CBdr.
				Depresssion /Gafila	H	L	F	CBdr.
<i>Aspilia gillettii</i> Wild	Asteraceae		EL113	Liver case/ Hadhoftu	H	RL	F/D	CBdr.
				Abnormal Menustration/ dhiga	H	L	D	CT
<i>Asystasia guttata</i> (Forssk.) Brummitt	Acanthaceae	Baquli	EL191	Diarrhoea/ Bassa	H	R	F/D	CR
				Evil spirit/Jinni	H	R	F	CR
<i>Balanites aegyptica</i> (L.) Del.	Balanitaceae	Badanna	EL147	Evil spirit/ Jinni	H	R	F/D	CR
<i>Barleria argentea</i> Balf. f.	Acanthaceae	Hokto	EL194	Diarrhoea /Albati	H	RL	F	Cdr
<i>Barleria eranthemoides</i> R. Br. ex C. B. Clarke	Acanthaceae	Shishi	EL193	Stabbing pain/ Woransa	H	R	D	CBdr.
				Cold/ Ka fatime	H	R	F	CR
				Taenia versicolor/ Barley	H	L	F	CRrb
<i>Bersama abyssinica</i> Fresen.	Melianthaceae	kilisa guracha	EL173	Ascariasis /Magga	H	L	F	CBdr.

Additional file 2 (continued)

Scientific name	Family	Local name	Herb. Vouch.	Disease treated (local name)	L/H	Part used	Form used	MPAP
<i>Blyttia fruticosum</i> (Decne.) D.V. Field	Asclepiadaceae	Joshani	EL221	Vomit& diarrhoea/ Wantufa	H	SB	F	CBdr.
<i>Boscia salicifolia</i> Oliv.	Capparidaceae	Qalqalchi qalada	EL111	Diarrhoea /Tuma	L	RB	D	Cdr
<i>Boscia senegalensis</i> Lam. ex Poir.	Capparidaceae	Qalqalcha	EL182	Headache/ Bowo	H	RL	F	CT
<i>Breonadia salicina</i> (Vahl) Hepper and Wood	Rubiaceae	Erba	EL142	Intestinal worms/Maga	L	SB	F/D	CBdr.
<i>Brucea antidysenterica</i> J. F. Mill.	Simaroubaceae	kilisa adi	EL152	Gonorrhoea/ Chobto	H	L	F	CBdr.
<i>Caesalpinia volkensii</i> Harms	Fabaceae	Sidika	EL233	Evil spirit/ Jinni Sterility in females/ Mehaninet	H H	L Se	F D	CP Cdr
<i>Calpurnia aurea</i> (Ait.) Benth.	Fabaceae	Chekata	EL76	Amoebiasis /Dubera	H	S	F/D	CBdr.
				Swelling of nose in mule/ Chachabsa	L	S	F/D	CR
				Sore and depression/ Hinjira	L	L	F	CR
				Rabies /Dukuba serie	H	R	F/D	CPdr
				Diarrhoea/ Bassa	H	L	F/D	CBdr.
<i>Capparis tomentosa</i> Lam.	Capparidaceae	Gombor	EL121	Mental disorder/ Ka marata	H	R	F	CB
				Meningites/ Dhukubadhira	H	R	F	Cdr
<i>Capsicum frutescens</i> L.	Solanaceae	Mitmita	EL204	Diarrhoea /Tuma	L	F	D	Cdr
<i>Caralluma peckii</i> Bally	Asclepiadaceae	Hadama	EL118	Gonorrhoea/ Chobto	H	R	F/D	Cdr
<i>Caralluma speciosa</i> (N.E. Br.) N.E. Br.	Asclepiadaceae		EL132	Ascariasis/ Magga	H	R	F	CBdr
<i>Carica papaya</i> L.	Caricaceae	Papaya	EL40	Anaemia/ Helina diga	H	F	F/D	Cdr.
<i>Carissa spinarum</i> L.	Apocynaceae	Agamsa	EL16	Mental disorder/ Marata	H	R	F	Csn
				Evil spirit/Jinni	H	R	F	CR
				Evil eye/ Buda	H	R	F/D	CR
				Rabies/ Dukuba serie	H	RB	F/D	Cdr
				Rabies/ Dukuba serie	H	R	F/D	CBdr.

Additional file 2 (continued)

Scientific name	Family	Local name	Herb. Vouch.	Disease treated (local name)	L/H	Part used	Form used	MPAP
<i>Carissa spinarum</i> L.	Apocynaceae	Agamsa	EL16	Kidney /Birbirti Skin infection /Beresa	H H	SB R	F F	CBdr. CRbo
<i>Cassytha filliformis</i> L.	Lauraceae	Korsa buda	EL79	Evil eye / Buda	H	R	F/D	CR
<i>Catha edulis</i> (Vahl) Forssk. ex Endl.	Celasteraceae	Chati	EL26	Gonorrhoea/ Chobto	H	L	F	CBdr.
<i>Caucanthus auriculatus</i> (Radlk.) Niedenzu	Malphigiaceae	Alotu	EL186	Evil eye / Buda	H	RB	F	Cdr
<i>Chenopodium ambrosioides</i> L.	Chenopodiaceae	Ajo	EL4	Dandruff /Forofori	H	LSS	D	CR
<i>Chionanthus mildbraedii</i> (Gilg & Schellenb.) Stearn	Oleaceae	Gaggama	EL183	Inability of excretion/Dhukuba dira	H	RB	F	CBdr.
<i>Cissampelos pareira</i> L.	Menispermaceae	Baltoke	EL77	Evil eye/ Buda Impotence/ Dhirumalebi Kidney /Birbirti Amoebiasis/ Dubera Abnormal Menstruation/ .Dhukuba dhiga Constipation/ Ka mara Diarrhoea /Tuma Stabbing pain/ Woransa	L H H H H H H H	R R RL R R R R R	F D F/D F F/D F F/D F/D	Cdr/Cp Cdr Cdr CBdr. CBf CBdr. Cdr CBdr. CBdr.
<i>Cissus populnea</i> Guill. and Perr.	Vitaceae	Gangalto	EL115	Vomit& diarrhoea /Wantufa	H	R	F/D	CBdr.
<i>Cissus quadrangularis</i> L.	Vitaceae	Chopi	EL176	Gonorrhoea /Chobto	H	R	F	CBdr.
<i>Citrus limon</i> (L.) Burm.f.	Rutaceae	Lemon	EL155	Bleeding nose/ Nasir	H	FL	F/D	Cex
<i>Citrus medica</i> L.	Rutaceae	Tiringo	EL114	Cold /Kebena Swelling/Gofla	H H	L L	F F/D	Cb CT/Cdr
<i>Clematis hirsuta</i> Perr. and Guill.	Ranunculaceae	Fitti	EL18	Naqarssa	L	L	F	CT
<i>Clematis simensis</i> Fresen.	Ranunculaceae	Fitti	EL43	Naqarssa	L	R	F	CT
<i>Clerodendrum alatum</i> Gurke	Lamiaceae	Hawore	EL70	Mental disorder /Marata	H	R	F	CBdr.

Additional file 2 (continued)

Scientific name	Family	Local name	Herb. Vouch.	Disease treated (local name)	L/H	Part used	Form used	MPAP
<i>Clerodendrum alatum</i> Gurke	Lamiaceae	Hawore	EL70	Hepatitis /Dukuba tiru	H	R	F/D	CBdr.
<i>Clerodendrum myricoides</i> (Hochst.) Vatke	Lamiaceae	Marasisa	EL201	Mental disorder /Marata	H	RB	F	Csn
<i>Clutia abyssinica</i> Jaub. and Spach.	Euphorbiaceae		EL10	General malaise /Mich	H	L	F	CR
				Cold /Qilensa	H	RB	F	Cdr
				Skin infection/ Chito	H	L	F	CR
<i>Coccinia grandis</i> (L.) Voigt	Cucurbitaceae	Gale	EL141	Bloody diarrhoea/ Setea Kidney infection /Birbirti	H H	R R	F/D F/D	CBdr. CR
<i>Coffea arabica</i> L.	Rubiaceae	Bunna	EL12	Stabbing pain /Woransa Kidney infection/ Birbirti	H H	R L	F/D F	Cdr CBdr.
<i>Colocassia esculenta</i> (L.) Schott	Araceae	Gondire	EL196	Hepatitis /Dukuba tiru Vomit& diarrhoea /Wantufa	H H	S,Se L	F F	CBdr. CRrb
<i>Combretum hereroense</i> Schinz	Combretaceae	Hurufo	EL148	Sore /Sibiji	H	L	F	Crb
<i>Commicarpus plumbagineus</i> (Cav.) Standl.	Nyctaginaceae	Sifa	EL225	Stabbing pain /Woransa	H	R	D	CBdr.
<i>Convolvulus siculus</i> L.	Convolvulaceae	Lelbab	EL236	Diarrhoea /Tuma	H	L	F/D	CBdr
<i>Cordia africana</i> Lam.	Boraginaceae	Wodessa	EL56	Gastritis/ Agano Sore /Dhukuba mada Sore/ Sibiji	H H H	SB L L	F F F	ChSw CT CR
<i>Crabbea velutena</i> S. Moore	Acanthaceae		EL59	Gonorrhoea /Chobto	H	R	F	CBdr
<i>Crambe hispanica</i> L.	Brassicaceae	Fugul (Arabic)	EL92	Naqarssa	H	R	F	CBdr.
<i>Crotalaria deserticola</i> Bak. f.	Fabaceae		EL48	Naqarssa	H	R	D	CBdr

Additional file 2 (continued)

Scientific name	Family	Local name	Herb. Vouch.	Disease treated (local name)	L/H	Part used	Form used	MPAP
<i>Crotalaria spinosa</i> Hochst. ex Benth.	Fabaceae		EL161	Epilepsy in cattle/ Furtu	L	L	F	Cdr
<i>Croton dichogamus</i> Pax	Euphorbiaceae	Makuffa	EL101	Skin infection/Chito/Ikek	H	RB	F/D	CB
				Cold/ Qilensa	H	R	D	Csm
				Diarrhoea/Qirt bussa	L	R	D	Cdr
<i>Croton macrostachyus</i> Del.	Euphorbiaceae	Bakanissa	EL17	Swelling of nose in mule /Chachabsa	L	L	F/D	CR
				Epilepsy /Gagabdo	H	SB	F/D	Cdr.
				Epilepsy in cattle /Furtu	L	L	F/D	CO
				Hepatitis /Dukuba tiru	H	RB	D	CE
				Ascariasis /Maga	H	SBRB	F/D	Cdr
				Epilepsy in cattle /Furtu	L	L	F	Cex
				Gonorrhoea /Sure	H	R	D	CE
<i>Croton schimperianus</i> Muell. Arg.	Euphorbiaceae	Makafta	EL219	Evil spirit/ Jinni	H	L	F/D	Csm
				Cold /Qilensa	H	R	D	Csm
<i>Cryptostegia grandifolia</i> Roxb. ex R. Br.	Asclepiadaceae	Headache	EL131	Sore/ Sibiji	H	L	F/D	Crb
<i>Cucumis dipsaceus</i> Ehrenb. ex Spach	Cucurbitaceae	Kurera	EL140	Meningitis/ Dhukuba dhira	H	F	F	Cex
				Hemorrhoid/ Qormade	H	F	F	Cex
				Rabies/ Dukuba serie	H	F	F	Cex
<i>Cucumis ficifolius</i> A. Rich.	Cucurbitaceae	Hanchote	EL68	Rabies /Dukuba serie	H	R	F/D	CPdr
				Lung disease /Sombe	L	RF	F	Cdr
				Gonorrhoea /Chobto	H	RF	F/D	Cdr
				Jaundice /Alati	H	R	F/D	CBdr.
<i>Cucurbita pepo</i> L.	Cucurbitaceae	Buke	EL96	Epilepsy in cattle /Furtu	L	L	F	Cdr
<i>Cussonia holstii</i> Harms ex Engl.	Araliaceae	Bubiftu	EL99	Headache and fever/ Qora	H	L	F	CR
<i>Cynanchum abyssinicum</i> Decne.	Asclepiadaceae	Muka Aro	EL6	Sore Dukuba /Aro	H	L	F/D	Crb
<i>Cynanchum clavidens</i> N.E. Br.	Asclepiadaceae	Halala	EL81	Tenia versicolour/ Barley	H	L	F	Crb

Additional file 2 (continued)

Scientific name	Family	Local name	Herb. Vouch.	Disease treated (local name)	L/H	Part used	Form used	MPAP
<i>Cynoglossum amplifolium</i> Hochst. ex DC.	Boraginaceae	Karchaba	EL75	General malaise /Mich	H	L	F	CR
<i>Cynoglossum coeruleum</i> Hochst. DC.	Boraginaceae	Matare	EL66	General malaise/ Mich	H	L	F/D	CR
<i>Cyphostemma cyphopetalum</i> (Fresen.) Descoings ex Wild & Drum.	Vitaceae	Likime	EL3	Impotence /Dhirumalebi	H	R	D	Crd
				Eye disease /Dukuba ija	H	L	F	Cex
				Diarrhoea /Tuma	L	R	F	Cdr
<i>Cyphostemma dembianense</i> (Chiov.) Vollesen	Vitaceae	Namignata	EL177	Coughing only in Horse and Donkey /Killis	L	R	F/D	CR ex
				Inability to walk properly /Dereba	L	R	F	Cdr
				Sore /Naffa Goggoysa	H	R	F/D	Cdr /P
<i>Datura stramonium</i> L.	Solanaceae	Bengi	EL241	Stabbing pain/ Qilensa	H	RF	D	CR
<i>Desmodium velutinum</i> (Willd.) DC.	Fabaceae	Hidda Diga	EL11	Intestinal parasites /Gara muru	H	R	F	CBdr
<i>Dichrocephala chrysanthemifolia</i> (Bl.) DC.	Asteraceae	Gurbii	EL88	Gonorrhoea/ Chobto	H	R	F	Cdr
<i>Dioscorea quartiniana</i> A. Rich.	Dioscoreaceae	Gishu	EL108	Vomit & diarrhoea /Wantufa	H	R	F/D	CT/Cdr
				Kidney infection /Birbirti	L	R	F/D	Cdr
				Side pain/ Woransa	H	R	F	CBdr.
<i>Dodonaea angustifolia</i> L. f.	Sapindaceae	Kitkitta	EL20	Hemorrhoids/ Qormade	H	RB	F/D	CBdr
<i>Dorstenia foetida</i> (Forssk.) Schweinf.	Moraceae	Serbi	EL138	Skin infection /Beresa/	H	R	F	CRrb
<i>Dyschoriste multicaulis</i> Lindau	Acanthaceae	Qorsa loo	EL198	Diarrhoea/ Tuma	L	L	F/D	Cdr

Additional file 2 (continued)

Scientific name	Family	Local name	Herb. Vouch.	Disease treated (local name)	L/H	Part used	Form used	MPAP
<i>Dyschoriste multicaulis</i> Lindau	Acanthaceae	Qorsa loo	EL198	Diarrhoea /Tuma	L	SB	F/D	Cdr
<i>Echinops amplexicaulis</i> Oliv.	Asteraceae	Kore Hare	EL21	Hepatitis /Wansimbira	H	R	F/D	CBdr
<i>Erianthemum dregei</i> (Eckl and Zeyh.) V. Tiegh.	Loranthaceae	Derto	EL41	Evil spirit /Gini	H	SL	F/D	CB
				Naqarssa	L	SL	F/D	CT
				Epilepsy in cattle /Merto	L	RSL	F/D	Cdr
				Sore /Sibiji	H	L	F	CRrb
<i>Erythrina brucei</i> Schweinf.	Fabaceae	Wolena	EL247	Problem of after birth/ Ka hobati	H	R	F	CBdr.
<i>Erythrochlamys spectabilis</i> Gurke	Lamiaceae	Qorsa adi michi	EL210	General malaise/ Mich	H	L	F	CRrb
				Tenia versicolor/ Barley	H	L	F	Crb
<i>Eucalyptus saligna</i> Sm.	Myrtaceae	Bahir Zaf	EL89	Stabbing pain/ Qilensa/	H	L	F	CB
<i>Euclea divinorum</i> Hiern	Ebenaceae	Meiesa	EL14	Gonorrhoea /Chobto	H	R	F/D	CR
				Kidney infection /Birbirti	H	SB	F	CE
				Hepatitis/ Dukuba tiru	H	RB	D	CE
<i>Euphorbia dumalis</i> S. Carter	Euphorbiaceae	Dargu adi	EL35	Liver case /Hadhoftu	H	R	F	Cdr
<i>Euphorbia heterophylla</i> L.	Euphorbiaceae	Ananole	EL218	Dandruff /Foroforii	H	S	F	Cex
<i>Euphorbia lophiosperma</i> S. Carter	Euphorbiaceae	Kelkelcha alati	EL231	Evil eye/ Buda	H	R	F/D	CR
<i>Euphorbia piscidermis</i> M. Gilbert	Euphorbiaceae	Kolkol	EL103	Gonorrhoea /Chobto	H	RS	F	CBdr.
				Evil spirit /Ka falfala/	H	S	F/D	CBdr.
				Hemorrhoids /Qormade/	H	S	F	CR
				Leprosy /Jusana	H	R	F	CE
<i>Euphorbia schimperiana</i> Scheele	Euphorbiaceae	Robe	EL36	Gonorrhoea/ Chobto	H	R	F/D	CBdr.
<i>Faurea speciosa</i> Welw.	Proteaceae	Bobeya	EL143	Skin infection/Ikek/ Chito	H	RB	F/D	Crb

Additional file 2 (continued)

Scientific name	Family	Local name	Herb. Vouch.	Disease treated (local name)	L/H	Part used	Form used	MPAP
<i>Garcinia livingstonei</i> T. Anders	Clusiaceae	Abuqurto	EL27	Hepatitis /Dukuba tiru	H	R	F/D	CBdr.
				Rabies /Dukuba serie	H	R	F/D	CPdr
				Urinary tract problem /Dukuba Finchani	H	R	F/D	Cdr
<i>Gardenia ternifolia</i> Schumach. & Thonn.	Rubiaceae	Gambella	EL248	Headache /Bowo	H	R	F/D	Cdr
<i>Gloriosa superba</i> L.	Colchicaceae		EL235	Pain of chest /Ka Qoma	H	R	D	CBdr.
<i>Gnidia stenophylla</i> Gilg	Thymaelaceae	Harmala Tiqishu	EL7	Epilepsy/ Gagabdo	H	R	F/D	CBdr
				Inability to walk properly /Dereba	L	R	F/D	Cdr
				Cold /Qilensa	H	R	F/D	Cdr
				Intestinal parasites /Gara muru	H	R	F/D	CBdr.
				Hemorrhoids /Qormade	H	R	F/D	Crb
				Gonorrhoea/ Chobto	H	R	F/D	CBdr.
				Sore Dhukuba/ mada	H	L	F/D	Crb
<i>Gomphocarpus fruticosus</i> (L.) Ait. F	Asclepiadaceae	Dibe galla	EL133					
<i>Gomphocarpus integer</i> (N.E. Br.) Bullock	Asclepiadaceae	Harmala	EL222	Gastritis /Agano	H	RL	F	Cdr
				Sore /Sibiji	H	L	F/D	CT
				Gonorrhoea/ Chobto	H	R	F/D	CE
				Hemorrhoids/ Qormade	H	RL	F	CR
				Kidney /Birbirti	H	R	F/D	CBdr.
				Gonorrhoea/ Chobto	H	R	F	CE
				Skin infection/Ikek/ Chito	H	L	F	Crb
<i>Gossypium arboreum</i> L.	Malvaceae	Gibir	EL25					
<i>Grewia ferruginea</i> Hochst. ex A. Rich	Tiliaceae	Hinshilo	EL217	Constipation /Ka mara	H	RL	F	Cdr
				Diarrhoea /Tuma	L	SB	F/D	Cdr
<i>Harrisonia abyssinica</i> Oliv.	Simaroubaceae	Tebenai	EL95	Inability to walk properly /Dereba	L	RL	D	Cdr
<i>Heteromorpha arborescens</i> (Spreng.) Cham. & Schldl.	Apiaceae	Alhanka	EL30	Aggressiveness in cows /Dhoitu	L	L	F	Cex
<i>Hibiscus luduwigii</i> Eckl. and Zeyh.	Malvaceae	Bulanbula	EL179	Diarrhoea /Bassa	H	R	F/D	Cdr

Additional file 2 (continued)

Scientific name	Family	Local name	Herb. Vouch.	Disease treated (local name)	L/H	Part used	Form used	MPAP
<i>Hydnoria johannis</i> Becc.	Hydnoraceae	Thuqa	EL78	Swelling of facial part/ Bofe	L	R	F	Cdr
<i>Indigofera amorphoides</i> Jaub. and Spach	Fabaceae	Gurbi adi	EL162	Lung disease /Sombe	H	R	F	CBdr
<i>Indigofera dauensis</i> Gillett	Fabaceae	Korsa Birti	EL128	Evil eye /Buda	H	R	F/D	CT
<i>Indigofera spicata</i> Forssk.	Fabaceae	Gurbi	EL166	Tenia versicolor /Barley	H	R	F/D	CR
				Diarrhoea/ Bassa	H	R	F	CBdr.
				Constipation /Mara	H	SB	F	Cdr
				Abnormal menstruation /Dhukuba dhiga	H	R	F/D	CBdr.
<i>Inula decipiens</i> E. A. Bruce	Asteraceae	Tamboborofa	EL135	Sore/ Sibiji	H	R	F	Crb
<i>Inula paniculata</i> (Klatt) Burt-Davy	Asteraceae	Kora	EL51	Urinary tract problem / Finchani	H	R	F/D	Cdr
<i>Jasminum schimperi</i> Vatke	Oleaceae	Ilu	EL1	Evil spirit/ Gini	H	R	D	CR
<i>Jatropha curcas</i> L.	Euphorbiaceae	Abatal buluk	EL34	Headache/ Bowo	H	Se	F	CR
<i>Justicia diclipteroides</i> Lindau	Acanthaceae		EL60	Sore /Dhukuba mada	H	L	D	CR
<i>Justicia odora</i> (Forssk.) Lam.	Acanthaceae	Loketo	EL237	Depression/ Gafla	H	R	F/D	CBdr.
<i>Kalanchoe laciniata</i> (L.) DC.	Crassulaceae	Kontukature	EL139	Tenia versicolor /Barley	H	L	F	CR
				Eye disease/ Dukuba ija	H	L	F/D	Cex
<i>Kalanchoe petitiiana</i> A. Rich.	Crassulaceae	Hanchura	EL94	Intestinal parasites /Gara muru	H	R	D	Cdr
<i>Kanahia carlsbergiana</i> Field et al.	Asclepiadaceae	Kertassa	EL82	Sore /Sibiji	H	L	D	Cpa
<i>Kleinia abyssinica</i> (A. Rich) A. Berger	Asteraceae	Burka	EL84	Vomit& diarrhoea /Wantufa	H	R	F/D	CBdr.
<i>Kleinia squarrosa</i> Cufod.	Asteraceae	Luqo	EL229	Cold /Kebena	H	R	D	Cb
<i>Lagenaria siceraria</i> (Molina) Standl.	Cucurbitaceae	Buke	EL28	Evil spirit /JinniGini	H	F	F	CT

Additional file 2 (continued)

Scientific name	Family	Local name	Herb. Vouch.	Disease treated (local name)	L/H	Part used	Form used	MPAP
<i>Laggera crispata</i> (Vahl) Hepper and Wood	Asteraceae	Dedeho	EL134	Abnormal menstruation/.Dhukuba dhiga	H	L	F	CT
<i>Lannea schimperi</i> (A. Rich.) Engl.	Anacardiaceae	Enxxilif	EL13	Skin infection /Chito	H	L	D	Crb
<i>Lantana camara</i> L.	Verbenaceae		EL200	Skin infection/Chito/Ikek	H	L	F	CRrb
				Gonorrhoea /Sure	H	R	F/D	CBdr.
				Evil eye /Buda	L	R	F	Cdr/Cp
<i>Lantana trifolia</i> L.	Verbenaceae	Medandubra	EL64	Sore /Mada	H	R	D	CP
				General malaise /Mich	H	L	F	CR
				Gonorrhoea/ Sure	H	R	F/D	CBdr.
				Evil eye /Buda	L	R	F	Cdr/Cp
<i>Lantana viburnoides</i> (Forssk.) Vahl	Verbenaceae	Medandubra	EL67	Jaundice/ Shinbira	H	R	D	CR
				Evil eye/ Buda	H	RL	F/D	CBdr.
<i>Launea intybacea</i> (Jacq.) Beauv.	Asteraceae	Lalessa	EL52	Impotence/ Dhirumalebi	H	R	F/D	CBdr.
<i>Lepidotrichillia volkensii</i> (Gurke) Ler.	Meliaceae	Sakero	EL249	Kidney /Birbirti	H	Se	F	Cex
<i>Lippia javanica</i> (Burm. f.) Spreng.	Verbenaceae	Sukahi	EL65	Diarrhoea /Albati	H	L	F	Cdr
				Jaundice /Alati	H	RL	D	CR
				Kidney disorder /Kulalit	H	L	D	Cdr
				Evil eye /Buda/	H	RL	D	Cdr
<i>Maesa lanceolata</i> Forssk.	Myrsinaceae	Dhunda/Abeyi	EL42	Skin infection/Chito/Ikek	L	Se	D	CPa
<i>Maytenus arbutifolia</i> (A. Rich.) Wilczek	Celasteraceae	Kombolcha	EL47	Wound/Madda/Dhita	L	L	F	CT
<i>Maytenus senegalensis</i> (Lam.) Exell	Celasteraceae	Kombolcha	EL45	Evil eye /Buda/	H	L	F	Csm
<i>Melia azedarach</i> L.	Meliaceae	Lucimia	EL91	Ascariasis /Maga	H	L	D	Cdr
<i>Microglossa pyrifolia</i> (Lam.) Kuntze	Asteraceae	Halalchu	EL144	Tenia versicolor /Barley	H	L	F	Crb

Additional file 2 (continued)

Scientific name	Family	Local name	Herb. Vouch.	Disease treated (local name)	L/H	Part used	Form used	MPAP
<i>Mimusops kummel</i> A. DC.	Sapotaceae	Qolati	EL151	Sterility in females /Mehaninet	H	SB	F	Cdr.
				Womb disorder /Hormata berra	H	RS	D	Cdr.
<i>Myrsine africana</i> L.	Myrsinaceae	Kechemsa	EL49	Skin infection /Chito	H	L	F	CRrb
<i>Nicotiana tabacum</i> L.	Solanaceae	Tambo	EL246	Epilepsy /Gagabdo	H	R	D	Cdr.
				Epilepsy in cattle/ Furtu	L	L	F	Cdr
<i>Ocimum gratissimum</i> L.	Lamiaceae	Dama Kessie	EL71	General malaise /Mich	H	L	F	Cdr.
<i>Ocimum gratissimum</i> L.	Lamiaceae	Dama Kessie	EL72	Eye disease/ Dukuba ija	H	L	F	Cex
<i>Ocimum spicatum</i> Defl.	Lamiaceae	Gurbi hare	EL214	Tenia versicolor/ Barley	H	L	F	CRrb
<i>Ocimum urticifolium</i> Roth	Lamiaceae	Korsa michi	EL69	General malaise/ Mich	H	L	F/D	CR
<i>Olea europaea</i> L. subsp. <i>Cuspidata</i> (Wall. ex G.Don)	Oleaceae	Ejersa	EL19	Leprosy /Jusana	H	RS	F	Distillation
				Mental disorder /Merata	H	L	F/D	CBdr.
				Urinary tract problem/ Finchani	H	L	F	Cdr
				Stabbing pain/ Woransa	H	L	F/D	CBdr.
<i>Olinia rochetiana</i> A. Juss.	Oliniaceae	Guna	EL102	Stabbing pain /Woransa	H	L	F/D	CBdr.
<i>Ormocarpum trichocarpum</i> (Taub.) Engl.	Fabaceae	Bute	EL125	Swelling of legs /Kurkassa	L	R	F/D	Cdr
<i>Osyridocarpus schimperanus</i> (A. Rich.) A. DC.	Santalaceae	Muca guracha	EL122	Jaundice /Alati	H	L	F	Cdr
<i>Osyris quadripartita</i> Decn.	Santalaceae	Wato	EL211	Pus from an ear /Dhukba guraa	H	RB	D	CR
<i>Ozoroa insignis</i> Del.	Anacardiaceae	Dheri	EL180	Gonorrhoea /Chobto	H	L	F/D	CBdr.
<i>Pentanopsis fragrans</i> Rendle	Rubiaceae	Kurso	EL216	Snakebite /Buti	H	RL	F	CRrb
				Gastritis /Agano	H	L	F/D	CBdr
<i>Pentas lanceolata</i> (Forssk.) Defl.	Rubiaceae	Dhumuga	EL213	Stabbing pain/ Woransa/	H	L	F/D	CBdr.

Additional file 2 (continued)

Scientific name	Family	Local name	Herb. Vouch.	Disease treated (local name)	L/H	Part used	Form used	MPAP
<i>Periploca linearifolia</i> Quart. -Dill. & A. Rich.	Asclepiadaceae	Sarkutal	EL83	Sore /Boffa	L	SL	F/D	CT
<i>Phyllanthus sepialis</i> Muell. Arg.	Euphorbiaceae	Sumalfer	EL2	Tooth ache /Dhukuba Hilkanani	H	R	F	CRch
<i>Phytolacca dodecandra</i> L'.Herit.	Phytolacaceae	Handode	EL243	Gonorrhoea/ Chobto	H	R	F/D	CBdr.
<i>Pittosporum viridiflorum</i> Sims	Pittosporaceae	Ara	EL212	Stabbing pain/ Woransa	H	SB	F/D	Cdr.
<i>Plumbago zeylanica</i> L.	Plumbaginaceae	Digagi	EL58	Kidney /Birbirti	H	R	F	CBdr.
<i>Podocarpus falcatus</i> (Thunb.) Mirb.	Podocarpaceae	Birbirsa	EL197	Naqarssa	H	Rr	D	CP
				Womb disorder/ Lo'o	H	R	D	CBdr.
<i>Portulaca oleracea</i> L.	Portulacaceae	Doma	EL123	Nakarssa	H	R	F	CBdr.
<i>Premna schimperi</i> Engl.	Lamiaceae	Urgessa	EL202	Fire accident/ Ibida Nama Gubi	H	L	F	CPa
<i>Prunus perisca</i> (L.) Batsch	Rosaceae	Kok	EL32	Constipation and fever/ Oogera	H	L	F/D	Cdr
<i>Psidium guagava</i> L.	Myrtaceae	Zeyituna	EL38	Hepatitis /Wansimbira	H	Se	D	CBdr
<i>Psychotria kirkii</i> Hiern	Rubiaceae	Muka bofa	EL168	Snake bite /Bofa	H	RL	D	Cdr
<i>Psychotria orophila</i> Petit	Rubiaceae	Ulaga	EL15	General malaise /Mich	H	L	F	CRrb
				Jaundice /Alati	H	RL	F/D	Cdr
				Eye disease /Dukuba ija	H	L	F	Cex
<i>Psydrax schimperiana</i> (A. Rich.) Bridson	Rubiaceae	Gallo	EL165	TB /Sombe	H	R	F/D	CBdr.
<i>Pterocephalus frutescens</i> Hochst. ex A. Rich.	Dipsacaceae		EL116	General malaise/ Mich	H	L	F	CR
<i>Pterolobium stellatum</i> (Forssk.) Brenan	Fabaceae	Kejima	EL46	Sore/ Sibiji	H	L	F	Cdr
				Stabbing pain /Woransa	H	R	F/D	CBdr.
<i>Pyrenacantha malvifolia</i> Engl.	Icacinaceae	Buri	EL106	Snakebite /Buti	H	R	F/D	CT

Additional file 2 (continued)

Scientific name	Family	Local name	Herb. Vouch.	Disease treated (local name)	L/H	Part used	Form used	MPAP
<i>Rhoicissus tridentata</i> (L. f.) Wild. & Drummond	Vitaceae		EL178	Abnormal menstruation/.Dhukuba dhiga	H	RS	F	CBdr.
<i>Rhus natalensis</i> Krauss	Anacardiaceae		EL120	Abnormal menstruation/.Dhukuba dhiga	H	RB	D	Cdr
<i>Rhynchosia densiflora</i> (Roth) DC.	Fabaceae		EL54	Vomit and Diarrhoea /Gudiftu/Wanejole	H	R	F	CR
<i>Rhynchosia elegans</i> A. Rich.	Fabaceae	Shabee	EL164	Jaundice /Alati/	H	R	F/D	Cdr
<i>Rhynchosia ferruginea</i> A. Rich.	Fabaceae		EL55	Evil eye/ Buda	L	RL	F	Cdr
<i>Ricinus communis</i> L.	Euphorbiaceae		EL33	Gonorrhoea /Chobto	H	R	F	Cex
<i>Rubia cordifolia</i> L.	Rubiaceae	Lalessa	EL53	Impotence/ Dhirumalebi	H	R	D	Cdr
				Pus from an ear/ Dhukba guraa	H	F	F	Cex
				Gonorrhoea/ Chobto	H	R	F/D	CBdr.
				General malaise/ Mich	H	L	F	Cdr
<i>Rubus steudneri</i> Schweinf.	Rosaceae	Goora	EL242	Headache/ Bowo	H	S	F	Cex
				Gonorrhoea /Chobto	H	L	F/D	CBdr.
<i>Rumex nepalensis</i> Spreng.	Polygonaceae	Shabee	EL24	Diarrhoea/ Bassa	H	R	F	CR
				Naqarssa	H	R	D	Cdr
<i>Ruta chalepensis</i> L.	Rutaceae	Siliti	EL37	Common cold /Qufa	H	L	F/D	CBdr
<i>Sansevieria ehrenbergii</i> Schweinf. ex Bak.	Dracenaceae	Muka koricha	EL238	Swelling/Ebach/Gofla	H	RB	F/D	CT
<i>Satureja abyssinica</i> (Benth.) Briq.	Lamiaceae	Korsa qufa	EL61	Common cold/ Qufa	H	L	F	CBdr.
<i>Sclerocarya birrea</i> (A. Rich.) Hochst.	Anacardiaceae	Udha	EL184	Kidney/ Birbirti	H	SB	F/D	CBdr
<i>Secamone parvifolia</i> (Oliv.) Bullock	Asclepiadaceae	Kiki	EL228	<i>Naqarssa</i>	L	L	F	CT
<i>Senna occidentalis</i> (L.) Link	Fabaceae	Hawacho	EL44	Loss of appetite /Albti kutu	H	SB	D	Cdr
				Gonorrhoea /Chobto	H	RB	F/D	CBdr.

Additional file 2 (continued)

Scientific name	Family	Local name	Herb. Vouch.	Disease treated (local name)	L/H	Part used	Form used	MPAP
<i>Senna occidentalis</i> (L.) Link	Fabaceae	Hawacho	EL44	Gonorrhoea /Chobto	H	R	F	CBdr.
<i>Senna petersiana</i> (Bolle) Lock	Fabaceae	Odusalem	EL172	Jaundice /Alati	H	L	F	CBdr
<i>Senna septemtrionalis</i> (Viv.) Irwin and Barneby	Fabaceae	Simamak	EL171	Hemorrhoids/ Qormade	H	RB	F/D	CRrb
<i>Sesamum indicum</i> L.	Pedaliaceae	Selit	EL188	Swelling/Dula Binguge Mental disorder/Marata	H H	L Se	F D	CT Cdr
<i>Sida collina</i> Schlechtend.	Malvaceae	Weed	EL127	Evil eye/ Buda	H	R	D	Cdr
<i>Sida ovata</i> Forssk.	Malvaceae	Urgosiwaka	EL126	Infections/Gemogi	L	RL	F/D	Cdr
<i>Sida schimperiana</i> A. Rich	Malvaceae	Misira	EL153	Impotence /Dhirumalebi	H	RL	D	CBdr.
<i>Solanum giganteum</i> Jacq.	Solanaceae		EL205	Diarrhoea /Bassa	H	R	F/D	CBdr.
<i>Solanum incanum</i> L.	Solanaceae	Hiddi	EL63	Headache/ Bowo Impotence /Dhirumalebi Epilepsy in cattle/ Furtu Gonorrhoea/ Chobto	H H L H	RB R R R	F F F F	Cex CBdr. Cex Cex
<i>Steganotaenia araliacea</i> Hochst. ex A. Rich.	Apiaceae	Boboftu	EL149	Jaundice /Alati	H	L	F/D	Cdr
<i>Stephania abyssinica</i> (Dillon and A. Rich) Walp.	Menispermaceae	Kalala	EL130	Vomit and fever/Dingetegna	H	R	F	Cdr.
<i>Stomatanthus africanus</i> (Oliv. & Hiern) R. M. King and H. Rob	Asteraceae	Sara guracha	EL145	Jaundice /Alati Headache/ Bowo	H H	RL L	F F/D	Cdr Cdr.
<i>Suregada procera</i> (Prain) Croizat	Euphorbiaceae	Xillo	EL185	Gonorrhoea/ Chobto	H	RB	D	CBdr
<i>Syzygium guineense</i> (Willd.) DC.	Myrtaceae	Unoma	EL39	Skinny cattles /Honoma Urinary tract problem /Dukuba Finchani	L H	Rr RB	D F/D	Cdr CBdr

Additional file 2 (continued)

Scientific name	Family	Local name	Herb. Vouch.	Disease treated (local name)	L/H	Part used	Form used	MPAP
<i>Talinum caffrum</i> (Thunb.) Eckl. and Zeyh.	Portulacaceae	Burka	EL224	Stabbing pain /Woransa	H	R	F/D	Cdr
<i>Talinum portulacifolium</i> (Forssk.) Asch. ex Schweinf.	Portulacaceae	Joshani	EL223	Hemorrhoids /Qormade	H	RB	D	CR
<i>Tamarindus indica</i> L.	Fabaceae	Roka	EL107	Tapeworm /Kosso	H	Se	F/D	CE
<i>Terminallia brownii</i> Fresen.	Combretaceae	Birdhesa	EL119	Jaundice/ Alati	H	RB	F	CB
<i>Thalictrum rhyngocarpum</i> Dill. & A. Rich.	Ranunculaceae	Bala/Sirebizu	EL535	Stabbing pain/Woransa	H	R	F/D	CBdr.
<i>Tinnea somalensis</i> Gurke ex Chiov.	Lamiaceae	Kertatumi	EL62	Ascariasis/ Magga	H	L	D	CBdr
<i>Tinospora caffra</i> (Miers) Troupin	Menispermaceae	Buri	EL74	Buda/ Evil eye	L	R	F	Cdr
<i>Toddalia asiatica</i> (L.) Lam.	Rutaceae	Kundo	EL97	Intestinal parasites/ Gara muru	H	L	F	CE
<i>Tragia brevipes</i> Pax	Euphorbiaceae	Lalesa	EL93	Urinary tract problem /Dukuba Finchani	H	R	F	CT
<i>Trichilia dregeana</i> Sond.	Meliaceae	Menisa	EL226	Jaundice /Alati	H	R	F	Cdr
<i>Trichilia emetica</i> Vahl	Meliaceae	Botoro	EL90	Gonorrhoea /Chobto	H	RB	D	CBdr
<i>Trichodesma uniflora</i> Brand	Boraginaceae		EL195	Bassa/Diarrhoea	L	SB	D	Cdr
<i>Triumfetta heterocarpa</i> Sprague and Hutch.	Tiliaceae	Gurbi hola	EL146	Sore /Sibiji	H	RB	F	CRrb
<i>Vepris dainellii</i> (Pchi-Serm) Kokwaro	Rutaceae	Arabe	EL110	Jaundice /Alati	H	R	F	CBdr
<i>Vernonia amygdalina</i> Del.	Asteraceae	Ebicha	EL22	Malaria/ Bussa	H	F	F	Cdr.
<i>Vernonia auriculifera</i> Hiern.	Asteraceae	Ebicha	EL85	Buda/ Evil eye	L	L	F	Cdr
				Diarrhoea /Tuma	L	L	F/D	Cdr

Additional file 2 (continued)

Scientific name	Family	Local name	Herb. Vouch.	Disease treated (local name)	L/H	Part used	Form used	MPAP
<i>Vernonia myriantha</i> Hook. f.	Asteraceae	Ragi	EL129	Abnormal menstruation /Dhiga	H	L	F	CT
<i>Vernonia wollastonii</i> S. Moore	Asteraceae	Hida gabro	EL86	Diarrhoea/Albati	H	RB	F	Cdr
<i>Vigna heterophylla</i> A. Rich.	Fabaceae	Uhdualem	EL124	Mental disorder /Merata Headache/ Bowo	H H	RL R	F/D F/D	CBdr. CP
<i>Vigna membrenacea</i> A. Rich.	Fabaceae	Ropi	EL163	Mental disorder /Merata Mental disorder /Ka marata	H H	RL R	F/D D	CBdr. CE
<i>Viscum tuberculatum</i> A. Rich.	Viscaceae	Digelo	EL109	Jaundice/ Alati	L	L	F	Cdr.
<i>Vitex doniana</i> Sweet	Verbenaceae	Sari	EL220	Hepatitis/ Dukuba tiru Kidney infection /Birbirti	H H	R R	F/D F/D	CR CR
<i>Warburgia ugandensis</i> Sprague	Canellaceae	Befiti	EL23	Headache /Bowo	H	SB	F/D	CP
<i>Withania somnifera</i> (L.) Dun.	Solanaceae	Unso	EL206	Pus from an ear /Dhukba guraa Swelling of nose in mule/ Chachabsa	H L	SB R	D F/D	CR CR
<i>Woodfordia uniflora</i> (A. Rich.) Koehne	Lythraceae	Itecha	EL181	Evil eye /Buda Epilepsy /Gagabdo Retained placenta /Hobati	H H L	R R L	D F/D F	CBdr. CBdr. Cdr
<i>Xanthium strumarium</i> L.	Asteraceae	Konti katiro	EL5	Hepatitis/ Liver Tenia versicolor /Barley	H H	R L	F F	CBdr. Crb
<i>Ximenia americana</i> L.	Olacaceae	Uhdualem	EL50	Evil eye /Buda Impotence/ Dhirumalebi	L H	R R	F F	Cdr/Cp CT
<i>Ximenia caffra</i> Sond.	Olacaceae	Hudha	EL174	Evil spirit /Jinni	H	R	F/D	CR
<i>Zanthoxylum usambarense</i> (Engl.) Kokowara	Rutaceae	Geda	EL98	Kidney infection/ Birbirti Swelling of joints/ Gofla	H L	SB SB	D F	CBdr. CT

Additional file 2 (continued)

Scientific name	Family	Local name	Herb. Vouch.	Disease treated (local name)	L/H	Part used	Form used	MPAP
<i>Zinnia peruviana</i> L.	Asteraceae		EL240	Diarrhoea /Bassa	H	R	F/D	CBdr.
<i>Ziziphus abyssinica</i> Hochst. ex A. Rich.	Rhamnaceae	Kankura	EL8	Jaundice/ Alati	H	RL	F	Cdr
<i>Zornia apiculata</i> Milne-Redh.	Fabaceae	Kumbishi	EL234	Dhirumalebi/Impotence	H	RB	D	CBdr

Keys

Part used: Leaf, L.; Root, R; Fruit, F; Bark, B; Root bark, RB; Stem Bark, SB. For Livestock or human (L/H).

Form used: Dry, D; Fresh, F).

Methods of preparation and application (MPAP)_ Crush and tie, CT; Crush boil and drink; CBdr; Cdr, Crush and drink; Crush and extract its content, Cex; Crush and paint, Cpa.