Ethnomedicinal study of plants used in the Uvira Territory (Democratic Republic of Congo)

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ABSTRACT

This study aimed to investigate the ethnomedicinal plant knowledge among people living in the Uvira Territory. The data were collected using semi-structured interviews with and field observation in seven villages. The ethnomedicinal data was analyzed using the informant consensus factor (ICF), family importance value (FIV), and Jaccard index (JI). Sixty-nine medicinal plants belonging to 61 genera and 34 families were used to treat eight disease categories. Fabaceae was not only the dominant family but also a family with the high FIV. Decoction and pound were the most common methods of preparation, while leaves were the most used part. We compared this study with 24 other ethnomedicinal studies conducted in RD Congo and neighboring countries, and the results showed that the Jaccard index ranged from 0.57 to 10.94. The highest degree of similarity (10.94) was found with another study conducted in Congo, while the lowest degree of similarity (0.57) was found with a study conducted in Rwanda. The disease category for which there was the highest number of use (66) and plant species (39) was "diseases of the digestive system disorders and intestinal parasites" (ICF 0.42). The investigation of the plants used as drugs in the study area revealed that the population daily relies on medicinal plants to treat different diseases.

Introduction

The use of plants to treat and cure diseases is as old as the human species (Gurib-Fakim 2006; Oliveira et al. 2011; Arshad et al. 2014), and they are considered essential in human health care (Asadi-samani et al. 2013). Moreover, plants provide firewood, timber, and fodder for livestock. This knowledge evolves across cultures and over time and space (Pieroni and Giusti 2009). Furthermore, each ethnic group has an acquaintance and know-how specific to its historical, cultural, and even spatial environment (Shalukoma 2008), representing an invaluable reservoir of skill and considerable potential for yet undiscovered use of natural resources (Balima et al. 2018).

Approximately 80% of the population in developing countries still rely on medicinal plants (Mugisha and Origa 2005; Mahomoodally 2014). The modern health system is often available only to a restricted number of people. Either the amenity is too expensive, or few facilities are accessible for too many people (Ahmed et al. 2018). For this reason, medicinal plants are still a source of medical care in developing countries (Tabuti et al. 2003).

In D.R. of Congo, 69.6% of the population live in rural areas, and 30.4% live in urban areas (Kabinda et al. 2015). Still, given socio-economic realities which do not allow them to access modern health care, they rely on medicinal plants (Kitadi et al. 2019; Chiribagula et al. 2020).

Although previous studies explored the medicinal plants in Sud-Kivu over the last two decades (Schneider 1996; Chifundera 1998, 2001; Shalukoma 2008; Mangambu et al. 2012; Balagizi et al. 2013; Kasali et al. 2013; Mangambu et al. 2014; Amani et al. 2015; Balagizi et al. 2015; Shalukoma et al. 2015; Mangambu et al. 2015a, 2015b; Shalukoma et al. 2016), little is known about ethnomedicinal research within Uvira Territory. Two studies were carried out in low altitudes of the Uvira Territory: Manya et al. (2020) surveyed anti-malarial herbal of Bukavu and Uvira areas, and Byavu et al. (2000) focused on the ethnove- terinary of cattle. Therefore, implying the assessment of ethnomedicine plants has a great potential to provide essential new insights into the knowledge of some...
plant species. Our work investigated the ethnomedicinal plants used by the local people in the Uvira Territory.

**Material and methods**

**Study area**

Our ethnomedicinal investigation has been conducted in seven different villages within Uvira Territory: Kirungu, Shenge, Kalonge, Munanira, Kitala, Gomba, and Kifuta (Figure 1). All these villages are located in the middle plateau of the Territory. The altitude of this area ranged between 1334 and 2078 m, with an oceanic climate (Cfb) according to the Koppen climate classification (https://en.climate-data.org). The population largely depends on subsistence agriculture and livestock farming. Farming is based on a rain-fed cropping system, and the main crops of the area are cassava (*Manihot esculanta*) and Corn (*Zea mays*).

**Ethnobotanical surveys**

During this investigation, 25 traditional healers were interviewed. Information on traditional knowledge related to ethnomedicine was collected through a semi-structured interview conducted in local languages (Fuliiru or Vira) with the help of interpreters. The choice of respondents relied extensively on the professionalization of healers in the communities. An oral agreement was obtained from the participating communities. A survey sheet was submitted to the healers, and the person was asked to give the various diseases that people often consult the healers. The information focused on plants of the recipe, parts used, preparation methods, and administration route. Each time after investigating a traditional healer, a field observation was conducted to collect the specimens. The information for each species, including scientific name, family, local name (Fuliiru or Vira), morphological type, plant parts used, preparation, disease name, and plant habitat, were also collected. The conservation status of plant species was checked in the International Union for Conservation of Nature (IUCN) Red List of Threatened Species (IUCN 2019).

**Botanical identification**

Voucher specimens of the plants were harvested. The identification of the recognized species was made in the field for the species identified by using some books for spelling and name confirmation (Letouzey 1982; Fischer 1993). Scientific names were updated to currently accepted names according to the plant list (www.theplantlist.org). The collected vouchers were compared with the previously specimens conserved at the herbarium of the Natural Sciences Research Center of Lwiro (CRSN/Lwiro) for the unidentified species, where family and scientific names were confirmed. Voucher specimens were prepared and deposited in the herbarium of the Natural Sciences Research Center of Lwiro.

**Quantitative analysis**

Various quantitative indices were calculated to test the homogeneity of the collected medicinal plants:

- **Informant consensus factor (ICF):** It was calculated using the following formula (Tilahun and Mirutse 2010; Bakwaye et al. 2013, Mahomoodally 2014):
  \[
  ICF = \frac{Nur - Nt}{Nur - 1}
  \]
  where Nur is the number of use reports in each disease category and Nt is the number of species used.

- **Family importance value (FIV):** This metric is the number of informants citing the family (FC) divided by the total number of informants participating in the study. It gives the local importance of a family (Kayani et al. 2014):
  \[
  FIV = \frac{FC (\text{family})}{N} \times 100.
  \]

- **Jaccard index (JI):** The Jaccard index was used to compare the similarity of named species between our data with studies already published that were...
conducted in other parts of the DRC other neighboring countries. This index is based on the presence or absence of species on each list (Molares and Ladio 2009) and was calculated as follows (Faruque et al. 2019):

\[
JI = \frac{C \times 100}{A + B + C}
\]

where \( A \) is the recorded number of species of the current study, \( B \) is the documented number of species of another study, and \( C \) is the number of species common to both studies.

**Results and discussion**

**Demography profile**

A total of 25 healers were interviewed. Out of these, 92% were male, and 8% were female. According to the age of the interviewee, the healers were classified into four groups. The age group of 41–60 was observed to have the highest (36%) participation rate, followed by the healers aged ≥ 60 years (28%). The group healers aged between ages 31–40 and 21–30 years corresponded to 24% and 12% of our sampling universe, respectively (Table 1).

**Diversity of the ethnomedicinal plants and habitat**

Through this study, a total of 74 medicinal plants was inventoried. Of these, 63 were identified down to species level, six were identified only to the genus level (Cassia sp, Hibiscus sp, Musa sp, Oxalis sp, Rubus sp, Syzygium sp), and five plants were not identified. The 69 medicinal plants identified represented 61 genera and 34 botanical families. Forty-five species were harvested from their natural environment, 33 were either fallow or ruderal species, and 12 were cultivated (Figure 2). That is similar to other studies that reported that almost all plants were harvested from nature (Megersa et al. 2013). The recorded plant diversity shows that out of the 69 species, 64 were dicotyledons (93%). Four species were monocotyledons (6%), and one was a Pteridophyte (1%) (Table 2).

Seven families (out of 34) provided 43.5% of the medicinal species. The dominant families were the Fabaceae (eight species), followed by the Asteraceae (six species), Myrtaceae (four species). All the remaining families were either represented by three, two, or one species (Appendix). Our results agree with similar research conducted in the DRC (Ngbolua et al. 2013; Kalonda et al. 2014; Manya et al. 2020; Mbuyi et al. 2019), which reported Fabaceae, Asteraceae, and Euphorbiaceae to be among the dominant families in the treatment of various diseases. The reason for the dominance of these families in medicinal plants could be attributed to their species richness. Fabaceae and Asteraceae are the highest diversified plant families regarding the flora in DRC (Bakwaye et al. 2013), and more than any other plant family worldwide (Islam et al. 2014; Faruque et al. 2019). Similar findings were also observed in the neighboring countries (Kamagaju et al. 2013; Ngezhahayo et al. 2015; Tugume et al. 2016; Salinitro et al. 2017).

Almost all genera (\( n = 57 \)) were represented by only one species. Three genera were represented by two species, i.e., *Ficus*, *Persicaria*, and *Syzygium*. The genus with the highest amount of species was *Albizia*, with three representatives. The investigation on the plant morphological type showed that herbs were the kind of plants most reported for medicinal uses, with 32 species, followed by trees and shrubs (13 species each) and sub-shrubs (11 species) (Figure 3). The frequent use of herbaceous species could result from their relative abundance compared with trees and shrubs (Giday et al. 2010).

**Plant parts used, preparation methods, and administration route**

The analysis of the plant parts used as medicine by the healers showed that the leaves were the most commonly utilized plant part in drug preparations,
accounting for 38.9% of the used plant parts. It was followed by the bark of the plants (14.8%), their roots (13.9%), and their stems (13%) (Figure 4). This finding is in line with several studies reported in Congo (Fundiko et al. 2017; Amuri et al. 2018; Masunda et al. 2019) and elsewhere in Africa (Mugisha and Origa 2005; Moshi et al. 2010; Salhi et al. 2010), Asia (Amjad et al. 2015; Panmei et al. 2019), or Europe (Axiotis et al. 2018). The leaves are easier to collect (Faruque et al. 2019). They could contain essential phytochemicals, crude drugs, and many other mixtures valuable in phytotherapy (Amjad et al. 2015). By considering the recipe preparation mode of traditional medicines, reports include decoction, infusion, pound, concoction, maceration, and ash. Among these, the pound was the principal preparation method (34%), followed by decoction. However, other preparation methods, such as maceration, chewing, and squeezing, are used, albeit to a lesser frequency (Figure 3). These findings agree with Inta et al. (2008), who reported that the pound was typical of herbal preparation in the Chinese Akha communities. However, in opposition to other researches, the decoction was the most commonly used method (Lesetsa et al. 2017; Umair et al. 2019).

Most healers suggested taking herbal medicines orally (53%), and the dose ranges from half glass to one glass thrice a day (Figure 4).

**Quantitative analysis**

**ICF, FIV and JI**

The documented medicinal plants were utilized to treat 41 different illnesses grouped into nine categories, and the plants were distributed according to the categories (shown in Table 3). “Respiratory and the cardiovascular” were the ones with high ICF value (0.5), followed by the “diseases of the digestive system and intestinal parasites” (ICF 0.42) and “dermatological diseases” (0.22). The mean ICF for all illness categories was 0.19. Among the illness categories, “diseases of digestive system disorders and intestinal parasites” were dominant with 66 use-reports, followed by “dermatological diseases” and the “reproductive system and related disorders” (19 and 16 use-reports, respectively), as shown in Table 3. Approximately 56.5% of plants were used to treat “digestive system disorders and intestinal parasites,” followed by “dermatological diseases” (21.7%) and “diseases of the reproductive system and related disorders” (18.8%).

Among the 34 plant families with medicinal uses, all families had the FIV below 0.5. The botanical family with high FIV was Fabaceae with 0.42, followed by Myrtaceae and Asteraceae (0.38, 0.31 respectively). Polygonaceae, Myricaceae, Malvaceae, Lamiaceae, and Euphorbiaceae had 0.19, respectively (Figure 5).

**Figure 3.** Distribution of medicinal preparation modes by the morphological types of the plants. Eleven parts were used (top half of circle) including (left to right): maceration (mac), decoction (dec), eat, pound, chewing (chew), infusion (inf), ash, powder (pow), expansion (exp), concoction (conc), and squeezing (squeeze). Morphological types (bottom half of circle). Scale numbers around the circle indicate cited time.
In a comparative analysis of medicinal plant use in Uvira Territory within RD Congo and the four neighboring countries, 24 published articles were used. Only 66 species that were identified to species level were considered for the purpose. The high degree of similarity index in the DRC area was with the studies of Shalukoma et al. (2015), Mangambu et al. (2015a), Balagizi et al. (2013), and Nyakabwa and Dibaluka (1990) with JI values of 10.94, 10.38, 8.63 respectively, and the lowest similarity index was with Bakwaye et al. (2013) with a JI value of 0.88 (Table 4). Compared with the neighboring countries, the similarity index values between Ngezahayo et al. (2015); Asiimwe et al. (2013) and our area were 8.43 and 7.35. Moreover, the low similarity was with Munanyeza et al. (2006) with JI value of 0.57 (Table 5).

**Conservation status**

The excessive collection of timber, fuelwood, food plants, and commercial exploitation of medicinal plants has provided a great deal of vulnerability to plant species (Chhetri et al. 2005). The conservation status of all recorded plant species was checked using the International Union for Conservation of Nature (IUCN) Red List of Threatened Species (IUCN2019). A total of 14 species, namely *Agarista salicifolia* (Lam.) G.Don (Ericaceae), *Albizia adianthifolia* Schum. ex W.Wight (Fabaceae), *Albizia grandibracteata* Taub. (Fabaceae), *Erica arborea* L. (Ericaceae), *Erythrina abyssinica* DC (Fabaceae), *Harungana madagascariensis* Lam. Ex Poir. (Hypericaceae), *Maesa lanceolate* Forssk (Primulaceae), *Myrianthus holstii* Engl. (Urticaceae),

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**Table 3.** Informant consensus factor (ICF) by categories of illness in the study area, Uvira Territory, Democratic Republic of Congo.

| Illness category | Description of ailments | \( n_u \) | \( n_t \) | ICF |
|-----------------|-------------------------|----------|----------|-----|
| Diseases of the digestive system and intestinal parasites | Diarrhea, constipation, hernia, hemorhoids, vomiting, sore throat, stomachache, amebae, tenia, bacillary dysentery, roundworms | 66 | 39 | 0.42 |
| Malaria and Fever | Malaria and Fever | 2 | 2 | 0.00 |
| Diseases of the reproductive system and related disorders | Bleeding, sexual impotence, sterility, pregnancy disorder, breasts swelling, abortion, dairy insufficiency | 16 | 13 | 0.20 |
| Rhumatisme and fracture | Rhumatisme and fracture | 5 | 5 | 0.00 |
| Respiratory and cardiovascular diseases | Cough, sore throat, hypertension | 7 | 4 | 0.50 |
| Dermatological diseases | Scabies, wound, pyrosis, furuncle, abscess, mycoses | 19 | 15 | 0.22 |
| Nervous system diseases | Convulsion, headache, epilepsy, sciatic nerve | 7 | 6 | 0.17 |
| Ear and eye diseases | Otitis, sore eyes, | 5 | 5 | 0.00 |
| Others | Poison, evil spirit, Detoxification | 6 | 5 | 0.20 |

\( n_u \) is the number of use reports in each disease category, and \( n_t \) is the number of species used.
Psidium guajava L. (Myrtaceae), Raphia farinifera (Gaertn.) Hyl (Arecaceae), Spathodea campanulate P.Beauv (Bignoniaceae), Syzygium guineense (Willd) DC (Myrtaceae), Tetradenia riparia (Hochst.)Codd (Lamiaceae), Trema orientalis (L.) Blume (Cannabinaceae) were recorded in the IUCN list as “Least Concern.” In contrast, two species (Lebrunia bushaie Benth. (Clusiaceae) and Khaya anthotheca (Welw.) C.DC. (Meliaceae)) were recorded as “vulnerable,” one species (Mangifera indica L. (Anacardiaceae)) was recorded as “data deficient”, while others species were not recorded.

Conclusion
This study carried out in the middle plateau of the Uvira Territory revealed the daily used of medicinal plants to cure several diseases. Local people used sixty-nine medicinal plant species to treat 41 various illnesses. Diarrhea, stomachaches, hemorrhoid, and sexual impotence were frequently cited as diseases. The most medicinal plants known by the local people include Syzygium guineense, Tetradenia riparia, Plantago palmata, Agauria salifolia, Ricinus communis, Myrica salicifolia, Parinari curatellifolia, Erythrina abyssinica, Trema orientalis, Rhus vulgaris, Maessa

Table 4. Comparison between this study and previous studies in D.R of Congo.

| Previous study area     | Total documented species | Total species in this study | Plants common to both areas | Jaccard index (JI) | References |
|-------------------------|--------------------------|-----------------------------|----------------------------|-------------------|------------|
| Mbanza-Ngungu           | 165                      | 65                          | 2                          | 0.88              | Bakwaye et al. (2013) |
| Kenge                   | 22                       | 65                          | 1                          | 1.16              | Ndombre et al. (2016)  |
| Bushi area              | 170                      | 65                          | 3                          | 1.29              | Chifundera (2001)      |
| Kinshasa                | 49                       | 65                          | 2                          | 1.79              | Makumbelo et al. (2008) |
| Ituri                   | 771                      | 65                          | 16                         | 1.95              |Terashima and Ichikawa (2003) |
| Beni and Lubero          | 182                      | 65                          | 7                          | 2.92              | Kasika et al. (2015)   |
| Dongo                   | 35                       | 65                          | 3                          | 3.09              | Mongeke et al. (2018)  |
| Bas-fleuve              | 25                       | 65                          | 3                          | 3.45              | Ngbulia et al. (2013)  |
| Ruzizi valley           | 85                       | 65                          | 5                          | 3.45              | Byavu et al. (2000)    |
| Bukavu and Uvira         | 45                       | 65                          | 5                          | 4.76              | Manya et al. (2020)    |
| Buhozi                  | 86                       | 65                          | 12                         | 8.63              | Balagizi et al. (2013) |
| Kisangani               | 86                       | 65                          | 12                         | 8.63              | Nyakabwa and Dibaluka (1990) |
| Kauzi-Biega Nat. Parc    | 52                       | 65                          | 11                         | 10.38             | Mangambu et al. (2015a) |
| Kauzi-Biega Nat. Parc    | 77                       | 65                          | 14                         | 10.94             | Shalukoma et al. (2015) |

Figure 5. Family importance value (FIV) of medicinal plants in Uvira territory, Democratic Republic of Congo.

Table 4. Comparison between this study and previous studies in D.R of Congo.
lanceolata, et Harungana madagascariensis. Some plants have been studied in vitro by Congolese scientists, and their phytochemical compounds illustrated. However, many still lack phytochemical information.

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Table 5. Comparison between the present study and previous studies at countries neighboring the Democratic Republic of Congo.

| Previous study area                  | Total documented species | Total species in this study | Plants common to both areas | Jaccard index (J) | References                  |
|-------------------------------------|--------------------------|-----------------------------|-----------------------------|------------------|-----------------------------|
| Rwanda                             | 112                      | 65                          | 1                           | 0.57             | Munyaneza et al. (2006)     |
| Morogoro/ Tanzania                 | 82                       | 65                          | 5                           | 3.52             | Amr and Kisangau (2012)     |
| Katabi sub-county/ Uganda          | 50                       | 65                          | 4                           | 3.60             | Nambeja et al. (2019)       |
| Volcanoes national park/ Rwanda    | 77                       | 65                          | 6                           | 4.41             | Nahayo et al. (2010)        |
| Southern Province/ Rwanda          | 86                       | 65                          | 7                           | 4.86             | Mukazaire et al. (2011)     |
| Rwanda                             | 77                       | 65                          | 5                           | 5.68             | Kagama et al. (2013)        |
| Sango bat area/ Uganda             | 186                      | 65                          | 14                          | 5.81             | Tugume et al. (2016)        |
| Mbarara and Isingiro/ Uganda       | 81                       | 65                          | 10                          | 7.35             | Asilimwe et al. (2013)      |
| Bujumbura/Burundi                  | 115                      | 65                          | 14                          | 8.43             | Ngozehayo et al. (2015)     |
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### Appendix: List of medicinal plant species reported in Uvira Territory, Democratic Republic of Congo

| FAMILY/ species names | Local name | Illnesses                     | Preparation mode | Administration |
|-----------------------|------------|-------------------------------|------------------|----------------|
| **ACANTHACEAE**        |            |                               |                  |                |
| Brillantaisia cicatricosa Lindau | Kinalwishi | Candidiasis                   | Inf, pound       | Enema          |
| Runzia grandis T.Anderson  | NR         | Sciatic nerve                  | Ash              | Cutaneous      |
| **AMARANTHACEAE**      |            |                               |                  |                |
| Dysphania ambrosiodes (L.) Mosyakin & Clements | Munguduzimu | Child convulsion               | Dec              | Vapor bath     |
| **ANACARDIACEAE**      |            |                               |                  |                |
| Mangifera indica L.    | Mwembe     | Stomachache                   | Dec, pound       | Bath           |
| Searsia pyroides (Burch.) Moffett | Kaguguna | Diarrhea, hernia               | Dec, pound, powder | Oral, anoint to epidermis |
| **APIACEAE**           |            |                               |                  |                |
| Agrachis incognita (C. Norman) Heywood & Jury | Majimato | Pregnancy discomfort          | Dec              | Oral           |
| Steganotenia ariolacea Hochst. | Kafokoba | Stomachache, constipation     | Dec              | Enema          |
| **APOCYNACEAE**        |            |                               |                  |                |
| Plumeria alba L.       | Namalimbwe  | Otitis                        | Pound            | Oral           |
| Wrightia demartiniana Chiov. | Ngafukamwa | Dairy insufficiency            | Inf, pound       | Oral           |
| **ARECACEAE**          |            |                               |                  |                |
| Raphia farinifera (Gaertn.) Hyl. | Bubondo | Abortion                      | Inf, pound       | Oral, enema    |
| **ASTERACEAE**         |            |                               |                  |                |
| Acmeola coulhiroza Del. | Kenda      | Toothaches                    | Dec, pound       | Oral           |
| Ageratum conylooids L. | Namuhehe   | Sterility                      | Inf, pound       | Oral           |
| Guizotia scabra (Vis.) Chiov. | Kitunda mbuga | Candiadisis               | Dec, conc        | Oral, nasal, enema |
| Dichocephala integrifolia (L.f.) Kuntze | Kibiri | Stomachache, diarrhea, cow sore eyes | Dec, exp, pound | Oral, nasal, enema |
| **BIGNONIACEAE**       |            |                               |                  |                |
| Spathodea campanulata P.Beauv. | Mujangalubiro | Sexual impotence          | Dec, pound       | Oral           |
| **CANNABACEAE**        |            |                               |                  |                |
| Trema orientalis (L.) Blume | Muhefu | Child convulsion, fracture, stomachaches | Conc, pound | Oral, enema, cutaneous |
| **CHRYSOBALANACEAE**   |            |                               |                  |                |
| Parinari curatellifolia Planch. ex Benth. | Mukumu | Stomachache, diarrhea        | Inf, pound       | Oral           |
| **CLUSIACEAE**         |            |                               |                  |                |
| Lebrunia bushane Staner | Igaja     | Epilepsy                      | Ash              | Oral, cutaneous |
| **CONVOLVULACEAE**     |            |                               |                  |                |
| Ipomoea batatas (L.) Lam. | Bijumbu | Stomachache                   | Dec              | Oral, enema    |
| **CUCURBITACEAE**      |            |                               |                  |                |
| Mukia maderaspatana (L.) M.Roem. | Mugandaganda | Scabies                     | Mac              | Oral           |
| **CYATHEACEAE**        |            |                               |                  |                |
| Cyathea manniana Hook. | Kisembekele, Kishemba nyambwe | Diarrhea          | Dec              | Oral           |
| **ERICACEAE**          |            |                               |                  |                |
| Agarista salicifolia (Lam.) G.Don | Kafiri, kijojo | Stomachache, scabies, sterility | Dec, inf, pound, squeezing, powder | Oral, enema, cutaneous |
| Erica arborea L.       | Kishasha   | Diarrhea                      | Dec              | Oral, enema, powder in ear |
| **EUPHORBIACEAE**      |            |                               |                  |                |
| Tragia brevipes Pax    | Mashusha   | Vomiting                      | Inf              | Oral           |
| Euphorbia hirta L.     | NR         | Ameba                         | Dec              | Oral           |
| Ricinus communis L.    | Magaja     | Detoxication, scabies, ameba  | Conc, pound      | Oral           |
| **FABACEAE**           |            |                               |                  |                |
| Arachis hypogaea L.    | Kalanga    | Detoxication, sexual problem  | Conc             | Oral           |
| Cassia sp              | Kavisa     | Malaria                       | Dec              | Enema          |
| Cassia abbreviata Oliv. | Kavweve    | Stomachache                   | Dec              | Oral           |
| Albizia adianthifolia  | Kashebeye  | Ottis                         | Pound            | Drop in ear    |
| Albizia grandibracteata Taub. | Kashebeye | Rheumatism                    | Nr               | Cutaneous      |
| Albizia gummifera (J.F.Gmel.) C.A.Sm. | Kashebeye | Ameba | Dec | Oral |
| Miliosa pudica L.      | Kopa       | Evil spirits                   | Inf, pound       | Cutaneous      |
| Erythrina abyssinica DC. | Kigohwa | Diarrhea, candidiasis, ootis  | Dec, conc, pound, powder | Oral |
| **HYPERICACEAE**       |            |                               |                  |                |
| Harungania madagascariensis Lam. ex Poir. | Kasombosombo | Stomachache, furuncle, tenia, roundworms | Inf, pound, conc | Oral, cutaneous |

(continued)
| FAMILY/ species names | Local name | Illnesses | Preparation mode | Administration |
|-----------------------|------------|-----------|------------------|----------------|
| **LAMIACEAE**         |            |           |                  |                |
| Tetradenia riparia (Hochst.) Codd | Mushalaba | Diarrhea, cough, headaches, sorethroat, stomachaches | Inf, mac, exp, pound, conc, squeezing | Oral, drop in noise |
| Leonotis nepetifolia (L.) R.Br. | Namafundo, Muhindohindo | Diarrhea, mycosis | Pound | Oral, enema, cutaneous |
| **LAVRACEAE**         |            |           |                  |                |
| Persea americana Mill. | Avocati | Stomachaches, diarrhea | Dec, pound | Oral |
| **MAESACEAE**         |            |           |                  |                |
| Muea lanceolata Forssk. | Muhanga | Child stomachache | Pound, conc, powder | Cutaneous |
| **MALVACEAE**         |            |           |                  |                |
| Triumfetta rhomboidea Jacq | Mulangalanga | Fracture | Pound | Cutaneous |
| Hibiscus sp | Kitata | Hemorrhoids, wound | Pound, ash | Food |
| Sida acuta Burm.f. | Kadundu, Kanunyvu | Diarrhea, hemorrhoids, sexual impotence, breasts swelling | Dec, pound, squeezing | Oral |
| **MELIAEAE**          |            |           |                  |                |
| Khaya anthotheca (Welw.) C.DC. | Kavungwe | Diarrhea | Inf, pound | Oral |
| **MORACEAE**          |            |           |                  |                |
| Ficus exasperata Vahl | Kironkorondo, Mukohe | Stomachache, hypertension | Dec, inf, pound | Drop in eyes |
| Ficus glumosa Delile | Kironkorondo | Sore eyes | Ash | Cutaneous |
| **MUSACEAE**          |            |           |                  |                |
| Musa nana Lour. | Malumbungu | Candidiasis | Inf, pound | Oral |
| Musa sp | Ndizi | Stomachaches | Nr | Cutaneous |
| Ensete ventricosum (Welw.) | Chirembo | Epilepsy | Pound, conc | Oral |
| **MYRACEAE**          |            |           |                  |                |
| Morella salicifolia (Hochst. ex A. Rich.) Verdc. & Polhill | Kinjigi | Abscess, toothaches, diarrhea | Dec, mac, pound, powder | Oral |
| Psidium guajava L. | Mapera | Stomachaches | Dec, pound | Oral |
| Syzygium cordatum Hochst.ex C.Krauss. | Mugote | Hemorrhoids, sexual impotence | Dec, inf, pound, squeezing | Oral, enema |
| Syzygium guineense (Willd.) DC. | Mugote | Stomachaches, diarrhea, dysentery, ameba, wound | Dec, inf, pound, conc, ash, powder | Oral, enema, cutaneous, rinse teeth |
| **OXALIDACEAE**       |            |           |                  |                |
| Oxalis sp | Kabanga njinjira | Teeth aches | Nr | Oral, enema |
| Biophytum petersianum Klootsch. |  | Fracture | Nr | Oral, enema |
| **PLANTAGINACEAE**    |            |           |                  |                |
| Plantago palmata Hook.f. | Mbatama | Diarrhea, ameba, bleeding, abortion | Dec, inf, pound | Drop in ear |
| **POLYGONACEAE**      |            |           |                  |                |
| Persicaria decipiens (R.Br.) K.L.Wilson | Nakazi | Detoxication, sore throat | Chewing | Oral |
| Rumex nepalensis Spreng. | Nakazi | Sorethroat | Conc, pound | Oral, enema |
| Persicaria pulchra (Blume) Sojak NR | | Sorethroat, sexual impotence | Conc, pound | Oral |
| **ROSACEAE**          |            |           |                  |                |
| Alchemilla cryptantha Steud. ex A.Rich. | Kanabweso | Panaris | Dec, pound | Oral |
| Rubus sp | Bukarata | Stomachaches, constipation, ameba | Pound | Oral |
| **RUBIACEAE**         |            |           |                  |                |
| Galinaea saxifraga (Hochst.) Bridson | Lumole | Scabies | Pound | Enema |
| Dolichopentas longiflora (Oliv.) Kårehed & B.Bremer | Kayasa muliro | Poison | Conc, pound | Oral |
| **RUTACEAE**          |            |           |                  |                |
| Citrus lemon (L.) Burm. longumanjoma (Engl.) Kokwaro | Ndimu | Fever | Dec, conc | Oral, enema |
| Zanthoxylum usambarense Engl. | | Hemorrhoids | Inf, pound, squeezing | Nr |
| **SOLANACEAE**        |            |           |                  |                |
| Physalis peruviana L. | Mbuma, Mpuho | Stomachaches, diarrhea | Dec, pound | Oral, cutaneous |
| **URTICACEAE**        |            |           |                  |                |
| Myrantus holtii Engl. | Kiyufua | Stomachaches | Eat | Oral, rinse teeth |

Legend: preparation mode (Dec: decoction, Mac: maceration, Inf: infusion, Exp: expression, conc: concoction), NR: Not Reported