Ethnopharmacological Study on Some Medicinal Plants Used in Ujiji, Kigoma, Tanzania

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ABSTRACT

The purpose of this study was to document medicinal plants used for management of various diseases in Simbo and Ujiji, Kigoma, Tanzania. Structured questionnaires were used to interview the traditional healers on the use of various plants for management of various diseases. Voucher specimens were collected, coded and identification by the Botanist. Previous ethnobotanical literatures were used to compare to the provided information. 54 plant species from 30 families were identified and collected from 5 informants, the family Euphorbiaceae ranked highest (11%) among others. Leaves were the most used plant part and the oral administration predominated. Some of the recorded plants (35.2%) have previously been reported for same use. Study suggests the area as potential site for further ethnopharmacological surveys.

Keywords: Ethnopharmacology, Traditional medicine, Kigoma, Tanzania

INTRODUCTION

Ethnopharmacology is the interdisciplinary scientific exploration of biologically active agents traditionally employed or observed by man [1]. Traditional medicine has a long history of serving peoples all over the world. In many countries and cultures of different races, the use of medicinal plants to treat diseases and maintaining public health is highly prevalent. About 65-80% of the world’s population in developing countries depends essentially on plants for their primary health care [2]. As a result, utilization of national traditional systems of medicine with regulations suited to national health care systems were adopted by a 30th world health assembly [3].

Tanzania is wealthy in terms of medicinal plants, but it is very fortunate that little has been achieved regarding their proper documentation and biological activity evaluation. Moreover, few of these plants have been subjected on safety evaluation [4].

This ethnopharmacological survey was conducted in Ujiji and Simbo wards located in Kigoma region found in the Western Tanzania. Kigoma is located in tropical zone with adequate amount of rainfall and good temperatures for the growth of many plants. The area has culture diversity, good use and practice of traditional medicine. The area is potential for documentation of useful medicinal plants that could be further subjected to biological screening and subsequent bio-guided isolation to identify bioactive phytochemicals.

METHODOLOGY

Study site and design

Study was conducted in Ujiji and Simbo wards in Kigoma region, Western Tanzania. The region is an ideal site for the survey, about 45% of its area is natural forest with tropical climate long wet rainy seasons periodically. It is a gently inclined plateau with steep hills rising very sharply from 800 m. at the level of lake Tanganyika to altitudes of 1, 750 m. to the East descending from the North and East into gently rolling hills with three major perennial rivers of Malagarasi, Luiche and Ruchugi (5), and located at 4.6498° S, 30.5279° E.

The survey was conducted for 14 days (June - July 2018). Informants involved were Traditional healers and/or Elders knowledgeable on traditional medicines. Information on medicinal plants was obtained...
through face to face interview at homes using structured questionnaire followed by herbaria specimen collection at the field areas.

Identification of voucher specimens

Herbaria specimens coded with initials and numbers (RMK01 to RMK54), later identified by a Senior Botanist (Mr. Haji Selemani), Department of Botany, University of Dar es salaam by comparison with other voucher specimens. The voucher specimens deposited in Pharmacognosy department, Muhimbili University of Health and Allies Sciences.

RESULTS

Source of information

Five informants, Traditional Healers/Knowledgeable Elders on traditional medicine practices and use aged 32 to 74 years were interviewed, as some informants were reluctant and refused to participate in the study. Their background history revealed that, all of them obtained their knowledge through succession from family lines. Level of education was standard IV to VII of primary school. Some of the medicinal plants were mentioned by more than one informant.

Recorded Plants and their Medicinal Uses

During the survey, 54 plant species from 30 families were documented and their medicinal uses are presented in Table 1. Euphorbiaceae ranked highest and proportion in percentages among the families is shown in Table 2. Leaves were the most used plant parts with 51.42%, followed by roots 32.86%; bark 7.14% and, 8.58% for exudates, flowers, fruits and seeds jointly.

Among the mentioned plants, 33.3% were claimed to treat more than one disease. Both communicable and non-communicable diseases were mentioned as presented in Table 1. Proportions of plants with supportive data, mono and multi applications are shown in Table 3, where by also 35.2% of plants treatment claims are supported by previous ethnomedical reports and/or scientific investigations. All plants were collected from the wild source.

Dosage forms and routes of administration

Both liquid and solid dosage forms reported, these were prepared by infusions, decoctions, maceration, or as pastes, dry powders, teas and baths. Oral administration most reported route (74.58%), topical/local applications (20.34%) and then, enema (5.08%).

Variations on dosing schedules and scales were observed among the informants. They were unaware on the proper dosing and duration for use which are important parameters for effective therapy. Despite the variations in the dosing pattern, they were all insisting to their clients on the importance usage of plant medicine rationally.

Table 1: Medicinal plants and uses from Ujiji and Simbo wards

| Family         | Botanical Name | Vernacular or Local Name (Language) | Voucher Serial Number | Plant Part(s) | Claimed Ethnomedical Use(s) Preparation and Route of Administration | Previous Ethnomedical uses Pharmacological action(s) / biological activity |
|----------------|----------------|------------------------------------|-----------------------|---------------|---------------------------------------------------------------------|--------------------------------------------------------------------------|
| Anacardiaceae  | Lannea fulva   | Mpapa                              | RMK037                | L             | Fresh leaf decoction is taken orally.                                | Published supporting evidence was not retrieved.                         |
|                | Lannea schimperi | Kabumbu (Kitongwe)                | RMK005                | SB           | Antidote for snake spit eye poisoning. Ground stem barks is macerated for days. The extract is applied as eye drops to treat poisoned eyes. | For management of stomach pains, diarrhoea, and chest problems [10]. Used to treat tuberculosis, skin rashes, herpes zoster, herpes simplex, and chronic diarrhea [7]. |
| Asteraceae     | Rhus natalensis | Mfunguzi                           | RMK045                | L             | Enhances fertility to women. Dried powdered leaf cold infusion is taken orally. Skin conditions and rashes. Treatment of bone fractures (joining) | Strenghened, management of respiratory disorders, stomachic, and malaria [9]. Viral infections especially Herpes Simplex Virus (HSV 1) [10]. |
| Apocynaceae    | Landolphia buchananii | Malandula                 | RMK008                | L             | Fresh leaf paste applied topically on the affected area. Coughs Fresh leaves paste is macerated in water and the extract is taken orally. Stomach discomforts and Dysentery. | Antipyretic [108]. Stomach ache, diarrhea, hernia [111]. Treatment of gonorrhea and bilharzias [12]. |
|                | Landolphia sp  | Msongatinyamata                 | RMK042                | R             | Roots decoction is taken orally or applied by enema.                | General body swelling, rheumatism and pneumonia, management of wounds and itching, arrow poison supplement, hypertension, treatment of gonorrhea and other venereal diseases, treatment of scabies and jigger [12]. |
|                | Rauvolfia sp   | Mundaugoro                       | RMK010                | L             | Treatment of hypertension. Leaves are macerated in water, and the extract taken orally.  | Treatment of syphilis, dysentery and diarrhoea [13]. As mosquito repellent against the Anopheles arabiensis and for management of fever especially in infants [14]. |
|                | Bidens sp      | Magorogombe                      | RMK020                | F             | Treatment of anaemia. Fresh flowers decoction is taken orally.       | Antimalarial [30]. Increases intestinal motility and gastric emptying [19]. Antibacterial, antitumor and antifungal action [17]. |
|                | Vernonia amygdalina | Kilulungunjia               | RMK018                | L             | Typhoid, Malaria, Abortion and Urinary tract infection (UTI).        |                                                                          |
| Family            | Species                          | Location  | Code  | Type | Use                                                                                           |
|-------------------|----------------------------------|-----------|-------|------|------------------------------------------------------------------------------------------------|
| Bignoniaceae      | Kigelia africana                 | Mlemela   | RMK053| R/B  | Fresh leaves decoction is taken orally.                                                         |
|                   |                                  |           |       |      | Tonics, stomach upsets, anaemia, and neuropathy.                                                |
|                   |                                  |           |       |      | Powdered root or bark is added in the porridge or tea.                                         |
|                   |                                  |           |       |      | Managing HIV/AIDS related diseases, syphilis, sore, gonorrhea and other venereal diseases [13, 14].|
|                   |                                  |           |       |      | Antidiarrheal and antimarial [19, 20].                                                          |
|                   |                                  |           |       |      | Antioxidant, cytotoxicity, antifungal activity and antimicrobial activities [21].                 |
|                   |                                  |           |       |      | Managing loss of appetite, alleviating stomach problems, treatment of haematochezia, cough, menstruation, convulsions and bilharzia [22, 23]. |
|                   |                                  |           |       |      | Management of HIV/AIDS and related diseases, malaria and toothache, abdominal pain, tonic, skin |
| Burseraceae       | Commiphora mollis               | Katwala   | RMK003| R    | Roots cold infusion is taken orally.                                                            |
|                   |                                  |           |       |      | Reducing the HIV viral loads                                                                      |
|                   |                                  |           |       |      | Roots infusion is taken orally                                                                    |
|                   |                                  |           |       |      | Increasing CD4 levels                                                                             |
|                   |                                  |           |       |      | Male impotence                                                                                  |
|                   |                                  |           |       |      | Treatment of yellow fever in combination with Rhus vulgari                                      |
|                   |                                  |           |       |      | Treatment of viral hepatitis, skin infections, bronchitis, jaundice, nervous depression, worms,   |
|                   |                                  |           |       |      | management of indigestion, asthma, leucoderma, and dysentery [29].                              |
|                   |                                  |           |       |      | For management of dyspepsia, colic, diarrhoea, cholera, burns and bee stings, colds, coughs and  |
|                   |                                  |           |       |      | headaches, jaundice, fever, antidote as well as antioxidant [30].                                |
|                   |                                  |           |       |      | Management of rheumatism, pneumonia, asthma, contraception, antifertility to women, snake bite,  |
|                   |                                  |           |       |      | anthrax and impotence [31, 32].                                                                 |
|                   |                                  |           |       |      | Treatment of dysentery, diarrhea, promoting lactation, anesthetic effect, skin rashes, oral candidiasis, rheumatism, syphilis and other sexually transmitted diseases [7, 33]. |
|                   |                                  |           |       |      | Treatment of bacterial and viral infections, diabetes, fever, malaria, tumors, anaemia, worms,    |
|                   |                                  |           |       |      | reduces intestinal gas and mild laxative [35, 29, 34].                                          |
|                   |                                  |           |       |      | Treatment of rheumatism, colic, headache, and diarrhoea [25, 33].                                |
|                   |                                  |           |       |      | Treatment of rheumatism, cold, dysmenorrhea, bronchial asthma, fever, diarrhoea, diabetes, coughs,  |
|                   |                                  |           |       |      | malaria, pneumonia, stomach aches, and have antioxidant and antitumor actions [35, 37].           |
|                   |                                  |           |       |      | Asthma                                                                                         |
|                   |                                  |           |       |      | Powdered flower is added in the porridge or tea.                                                |
|                   |                                  |           |       |      | Managing HIV/AIDS related diseases, syphilis, sore, gonorrhea and other venereal diseases [13, 14].|
|                   |                                  |           |       |      | Antidiarrheal and antimarial [19, 20].                                                          |
|                   |                                  |           |       |      | Antioxidant, cytotoxicity, antifungal activity and antimicrobial activities [21].                 |
|                   |                                  |           |       |      | Managing loss of appetite, alleviating stomach problems, treatment of haematochezia, cough, menstruation, convulsions and bilharzia [22, 23]. |
|                   |                                  |           |       |      | Management of HIV/AIDS and related diseases, malaria and toothache, abdominal pain, tonic, skin |
|                   |                                  |           |       |      | Treatment of yellow fever in combination with Rhus vulgari                                      |
|                   |                                  |           |       |      | Treatment of viral hepatitis, skin infections, bronchitis, jaundice, nervous depression, worms,   |
|                   |                                  |           |       |      | management of indigestion, asthma, leucoderma, and dysentery [29].                              |
|                   |                                  |           |       |      | For management of dyspepsia, colic, diarrhoea, cholera, burns and bee stings, colds, coughs and  |
|                   |                                  |           |       |      | headaches, jaundice, fever, antidote as well as antioxidant [30].                                |
|                   |                                  |           |       |      | Management of rheumatism, pneumonia, asthma, contraception, antifertility to women, snake bite,  |
|                   |                                  |           |       |      | anthrax and impotence [31, 32].                                                                 |
|                   |                                  |           |       |      | Treatment of dysentery, diarrhea, promoting lactation, anesthetic effect, skin rashes, oral candidiasis, rheumatism, syphilis and other sexually transmitted diseases [7, 33]. |
|                   |                                  |           |       |      | Treatment of bacterial and viral infections, diabetes, fever, malaria, tumors, anaemia, worms,    |
|                   |                                  |           |       |      | reduces intestinal gas and mild laxative [35, 29, 34].                                          |
|                   |                                  |           |       |      | Treatment of rheumatism, colic, headache, and diarrhoea [25, 33].                                |
|                   |                                  |           |       |      | Treatment of rheumatism, cold, dysmenorrhea, bronchial asthma, fever, diarrhoea, diabetes, coughs,  |
|                   |                                  |           |       |      | malaria, pneumonia, stomach aches, and have antioxidant and antitumor actions [35, 37].           |
| Family                | Genus                        | Species                        | Common Name                  | Description                                                                                                                                                                                                 |
|-----------------------|------------------------------|--------------------------------|------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Loganiaceae           | Strychnos                    | potatorum                      | Mshindwi                     | RMK039                                                                                                                                          |
|                       |                              |                                |                              | Fever, Urinary Tract Infection.                                                                                                                                                                             |
|                       |                              |                                |                              | Leaf or root decoction is taken orally.                                                                                                                                                                     |
|                       |                              |                                |                              | Has antimicrobial and antiplasmodial activity, treating the eye and urinary tract infections, gonorrea [39]. Management of fainting conditions [40].                                                                 |
|                       |                              |                                |                              | Dilates cervix in pregnant women.                                                                                                                                                                           |
|                       | Libuaje                      | (Kitongwe)                     | Makanwe                      | RMK022                                                                                                                                          |
|                       |                              |                                |                              | Impotence.                                                                                                                                                                                                 |
|                       |                              |                                |                              | Treatment of snake bites, ulcers, wounds, headache, gastric and intestinal problems, venereal diseases, leprosy, diarrhea, fever, management of liver damage [40]. Analgesic during labour, treatment of gonorrea, snake bites, and worms infestations [41, 42]. |
| Malvaceae             | Sida                        | acuta                          | Tevere                       | RMK028                                                                                                                                          |
|                       |                              |                                |                              | Diabetes                                                                                                                                     |
|                       |                              |                                |                              | Leaf decoction is taken orally.                                                                                                                                                                             |
|                       |                              |                                |                              | Management of different skin conditions, asthma, cough, fever, arthritis, obesity, snakebite, dysentery, jaundice, heart and blood pressure conditions. Analgesic, anti-inflammatory, antipyretic, antinflammatory, antiantigen, antimalarial, bronchodilator, antifebrility, and antimicrobial activities [43, 44]. |
|                       | Cissampelos                  | pareira                        | Mlangamia                    | RMK029                                                                                                                                          |
|                       |                              |                                |                              | Skin conditions                                                                                                                                |
|                       |                              |                                |                              | Clean fresh leaf paste is applied topically.                                                                                                                                                               |
| Menispermaceae        | Cissampelos                  | sp                             | Shubiri                       | RMK025                                                                                                                                          |
|                       |                              |                                |                              | Stomach aches, Hernia. Powedered seeds are added in porridge and mixed with honey, then taken orally using table spoon.                                                                             |
| Mimosaceae            | Acacia                       | seyal                          | Kasemele                     | RMK043                                                                                                                                          |
|                       |                              |                                |                              | Pneumonia.                                                                                                                                   |
|                       |                              |                                |                              | Diarrhoea, dysentery, toothache, and body pains [34, 49].                                                                                      |
|                       | Ficus                        | sp                             | Kabukobuko                   | RMK011                                                                                                                                          |
|                       |                              |                                |                              | Viscous decoction of root or bark is taken orally.                                                                                              |
| Moraceae              |                              |                                |                              | Treatment of worms infestation, diarrhoea, abdominal pains and gastric ulcers [42, 43]. Stomachache in kids, food, toxic, constipation and backache [5, 21].                                                  |
| Olacaceae             | Ximenia                      | americana                      | Busantu                      | RMK048                                                                                                                                          |
|                       |                              |                                |                              | Treatment of dysentery.                                                                                                                                                                                     |
|                       |                              |                                |                              | Treatment of worms and asthma.                                                                                                                                                                             |
|                       |                              |                                |                              | Leaf or bark infusion is taken orally.                                                                                                                                                                     |
|                       | Abrus                        | precatorius                    | Msikesike or Muraruru        | RMK050                                                                                                                                          |
|                       |                              |                                |                              | Treatment of worms infestation, diarrhoea, abdominal pains and gastric ulcers [42, 43]. Stomachache in kids, food, toxic, constipation and backache [5, 21].                                                  |
|                       |                              |                                |                              | Powdered leaf or fruit decoction is mixed up with honey and then taken orally.                                                                                                                              |
|                       | Erythrina                    | sp                             | Mlinzi                       | RMK032                                                                                                                                          |
|                       |                              |                                |                              | Treatment of worms and asthma.                                                                                                                                                                             |
|                       |                              |                                |                              | Kidney diseases. Leaf decoction is taken orally.                                                                                                                                                            |
|                       |                              |                                |                              | Mosquito repellent [51]. Treatment of malaria and shown to have antimicrobial, antidiabetic, anticancer, hypotensive, diuretic, antioxidant, laxative, antiinflammatory, analgesic, antipyretic, anxiolytic, antidepressant and sedative activities [30-32]. |
|                       | Lonchocarpous                 | capasssa                       | Kapara/Muwasha               | RMK031                                                                                                                                          |
|                       |                              |                                |                              | Stomach upsets. Root decoction is taken orally.                                                                                                                                                             |
|                       |                              |                                |                              | Treatment of worms infestations, gonorrea, snake bites, and worms infestations associated with HIV/AIDS and reported to have antibacterial, analgesic, antimalarial, antiallerge, antiinflammatory, antithrombotic, antioxidant, vasodilation, antitryptosomiasis, antidepressant, and aphrodisiac activities [33, 42, 53]. |
|                       | Senna                        | siamea                          | Msonobali or Mjohoro         | RMK030                                                                                                                                          |
|                       |                              |                                |                              | Worms                                                                                                                                                                                                     |
| Polygalaceae          | Securidaca                   | longipedanculata               | Doktere                      | RMK046                                                                                                                                          |
|                       |                              |                                |                              | Worms, hernia and stomach aches.                                                                                                                                                                           |
|                       |                              |                                |                              | Powdered leaf or root is added in porridge or tea.                                                                                                                                                         |
|                       |                              |                                |                              | Treatment of worms infestations, gonorrea, snake bites, and worms infestations associated with HIV/AIDS and reported to have antibacterial, analgesic, antimalarial, antiallerge, antiinflammatory, antithrombotic, antioxidant, vasodilation, antitryptosomiasis, antidepressant, and aphrodisiac activities [33, 42, 53]. |
|                       |                              |                                |                              | Worms, hernia and stomach aches.                                                                                                                                                                           |
|                       |                              |                                |                              | Mosquito repellent [51]. Treatment of malaria and shown to have antimicrobial, antidiabetic, anticancer, hypotensive, diuretic, antioxidant, laxative, antiinflammatory, analgesic, antipyretic, anxiolytic, antidepressant and sedative activities [30-32]. |
| Ranunculaceae         | Clematis                      | brachiata                      | Ange                         | RMK013                                                                                                                                          |
|                       |                              |                                |                              | Joining of broken bones.                                                                                                                                                                                    |
|                       |                              |                                |                              | Treatment of sYPHILIS, diarhoea, unspecified skin disorders, sore throats, headache, malaria, abdominal anasarcoma, syphilis, meningitis, coughs, tuberculosis, oral candidiasis [33, 42, 53]. |
| Family             | Genus                      | Species                | Code   | Use                                                                 |
|--------------------|---------------------------|------------------------|--------|----------------------------------------------------------------------|
| **Rhamnaceae**     | **Ziziphus**               | macronata              | RMK009 | Clean fresh leaf paste mixed with palm oil is applied topically to the broken areas. *Joint pains, headaches, dizziness, blurred vision and impotence.* Root infusion is taken orally. *Diabetes, tonic, anemia, stomach problems, and neuropathy. (Mostly used in combination with Kigelia africana).* Root infusion is taken orally. *Management of anaemia and tonic.* Powered leaf used as tea. *Impotence.* Antidote for any poison. Leaf infusion is taken orally. *Delays ejaculation in men.* Root decoction is taken orally for several days twice every day. The duration depends on type and level of the individual’s problem. *Increases fluidity of the vagina during sex.* Fresh leaf paste applied in the vagina just before intercourse or leaf decoction taken orally about two hours before intercourse. *Treatment of heart burn and peptic ulcers.* Peeled dry root powder is added to hot porridge or tea which then mixed with either, a chicken egg, two tablespoon of honey or lamb oil. The concoction taken orally before three times a day before meals. Treatment of haemorrhoids. Powder of dried leaves is applied topically. *Dilating cervix to aid easy delivery/reducing dryness.* Paste prepared from clean fresh leaves is mixed with palm oil (or other vegetable oil) is applied through the vagina. *Management of hypertension and diuretic.* Leaf infusion is taken orally. *Manage diabetes, treatment of wounds and malaria.* |
| **Rosaceae**       | **Parinari**               | curatellifolia          | RMK021 | Root infusion is taken orally. *Management of anaemia and tonic.* Powered leaf used as tea. *Impotence.* Antidote for any poison. Leaf infusion is taken orally. *Delays ejaculation in men.* Root decoction is taken orally for several days twice every day. The duration depends on type and level of the individual’s problem. *Increases fluidity of the vagina during sex.* Fresh leaf paste applied in the vagina just before intercourse or leaf decoction taken orally about two hours before intercourse. *Treatment of heart burn and peptic ulcers.* Peeled dry root powder is added to hot porridge or tea which then mixed with either, a chicken egg, two tablespoon of honey or lamb oil. The concoction taken orally before three times a day before meals. Treatment of haemorrhoids. Powder of dried leaves is applied topically. *Dilating cervix to aid easy delivery/reducing dryness.* Paste prepared from clean fresh leaves is mixed with palm oil (or other vegetable oil) is applied through the vagina. *Management of hypertension and diuretic.* Leaf infusion is taken orally. *Manage diabetes, treatment of wounds and malaria.* |
| **Rubiaceae**      | **Mohledentia**            | crassa                 | RMK040 | Treatment of theleriosis. *Management of diabetes, treatment of dental problems, anticonvulsion, malaria, gastrointestinal disorders, gonorrhea, lung diseases, diarrhoea, rheumatism, worms, aphrodisiac, analgesic, skin conditions, febrifuge, cancer, diuretic, tonic, febrifuge, antihemorrhoids, and stimulant.* Convulsion, infertility, stomachache. |
| **Rutaceae**       | **Zanthoxylum**            | sp                    | RMK012 | Treatment of ulcers, inflammation, wounds, rheumatism and gout, sciatica, bruises, swellings, fever, asthma, bronchitis, fever recreational and parkinsonism. *Skin disorders (Datura stramonium in combination with mustard oil), cough, fever, asthma, analgesic, purgative and mosquito repellent action.* Abortion, management of diabetes, treatment of wounds and malaria. |
| **Solanaceae**     | **Datura**                 | stramonium             | RMK047 | *Tranquillizer.* Fresh leaf/root paste is applied topically on the forehead of an individual. Treatment of haemorrhoids. Powder of dried leaves is applied topically. *Dilating cervix to aid easy delivery/reducing dryness.* Paste prepared from clean fresh leaves is mixed with palm oil (or other vegetable oil) is applied through the vagina. *Management of hypertension and diuretic.* Leaf infusion is taken orally. *Manage diabetes, treatment of wounds and malaria.* |
| **Sterculiaceae**  | **Sterculia**              | quinqueloba            | RMK007 | Management of skin, earaches, diarrhoea and venereal diseases, fungal and mycobacterium infections. Anaemia, asthma, constipation, fever, anorexia, cardiac pains, amoebic dysentery, hemorrhoids, female and male infertility, coughs, aphrodisiac, epigastric pain, malaria, rectal prolapsed, headache, epilepsy, kidney pain, purgative. |
| **Tiliaceae**      | **Grewia**                 | sp                    | RMK024 | Antidote for common poisons. Powder the leaves; mix with freshly boiled and cooled water, then drink. *Treatment of worms and fever.* Leaf or root powder decoction is taken orally. *Antidote for snake poisoning.* Leaf infusion is taken orally. Vermifuge, ophthalmic solution, anticonvulsant, and diuretic. |
| **Umbelliferae**   | **Steganaotaenia**         | araliaceae             | RMK001 | Management of epilepsy. *Dental hygiene.* |
In many societies, knowledge on traditional medicine and practices are left to old generations leading to knowledge gap between generations and pose the risk of losing these vital informations [77]. More or less similar case has been observed in our study. To preserve this knowledge, necessary scientific efforts of documentation through ethnopharmacological surveys to be conducted regularly. Simultaneously, voluntary succession of this knowledge to younger generations should be encouraged. To facilitate active participation of traditional healers, incentives should be provided and a proper mode of giving feedback to the traditional healers in a language they understand to be done. Their attitude towards researchers is built by feeling of being valued.

The most exploited plant parts reported to be used as medicine in our study were leaves followed by roots. Leaf medicinal plant drugs are environmentally favoured and friendly as they allow harvesting without destroying the wild plant when not over-exhausted. Mahonge et al., 2006 [74], has reported a similar trend on leaf drugs predominate other plant parts. Although in some instances, roots have been reported as the predominant plant part being used [74, 77]. In some places, the root drug is believed to contain high proportion of the active constituents [77]. To avoid flora extinction, it is better to avoid root drugs harvesting, unless necessary, should not over harvested. For the purpose of enhancing this, knowledge on effective utilization of natural resources especially plants is very important to these traditional healers.

There are different modes of traditional medicine drug administration employed, depending on the purpose and disease/condition of the patient. In our study, internal oral administration was the most common route of administration stated. The trend has also been reported by Šavíkín et al., 2013 [76]. Though, enema and other topical routes of drug administration were also reported in our study.

The variations in dose and dosage observed are challenging, and the units of measures used were neither validated nor individualized. This could potentially lead to serious life threatening health conditions to clients as a high number of toxic medicinal plants available [77]. Knowledge on proper dose scaling is important to traditional healers to prevent lethal effects to clients.

**CONCLUSION**

Traditional medicine serves as a primary health care in various remote areas. Plants reported in our study, also have been reported to be used in various areas for different health conditions indicating their potential in therapy. Necessary measures are needed to be in place to protect and preserve the future use of these plants. Scientific studies should be carried out for the purpose of drug discovery and development as well as formulation of standardized herbal medicines.

**Acknowledgements**

Authors are grateful to Mr. and Mrs. Bakari Zimbwe for their kind introduction to respective informants. Mzee Hamadi, Mzee Utepa, Mama Mayangaa, Mama Mudi and Ahmad Kigongo are acknowledged for the willingness to unfold their useful informations that have made a great contribution towards accomplishing this work and Mr. Haji Selemani for botanical identification of the plants.

**Conflict of interest**

Authors declare no conflict of interest

**Funding**

No funding was received for this study.

**REFERENCES**

1. Heinrich M, Gibbons S. Ethnopharmacology in drug discovery: an analysis of its role and potential contribution. J Pharm Pharmacol. 2001; 53(4):425-32.
2. Mesfin K, Tekle G, Tesfay T. Ethnobotanical Study of Traditional Medicinal Plants Used by Indigenous People of Gembad District, Northern Ethiopia. J Med Plants Stud 2013; 1(4):32-7.
3. Lino A, Deogracious O. The invitro antibacterial activity of Annonna senegalensis, Saururidaceae longipediculata and Steganotaema araliacea. Uganda medicinal plants. J African Heal Sci. 2006; 9 (1, 1):31-5.
4. Maregesi SM, Mwakalukwa R. Ethnopharmacological Study on Medicinal Plants Used to Treat Infectious Diseases in the Rungwe District, Tanzania. Int J Med Plants Nat Prod. 2015; 1(3):15-23.
5. Planning Commission, Regional Commissioners Office. Kigoma Region Socio-Economic Profile, 2010.
6. Jeruto P, Lukhoba C, Ouma G, Otieno D, Mutai C. Herbal treatments in Aldai and Kaptumo divisions in Nandi district, Rift Valley Province, Kenya. African J Tradit Complement Altern Med. 2008; 5(1):103-5.
7. Kisangau DP, Lyaruu HVM, Hosea KM, Joseph CC. Use of traditional medicines in the management of HIV/AIDS opportunistic infections in Tanzania: A case in the Bukoba rural district. J Ethnobiol Ethnomed. 2007; 3:1-8.
8. Kimondo J, Miaron J, Mutai P, Ngaju P. Ethnobotanical survey of food and medicinal plants of the Ilkisonko Maasai community in Kenya. J Ethnopharmacol. 2015; 175:463-9.
9. Mugisha MK, Asiiwwe S, Namutebi A, Borg-Karlson AK, Kakudidi EK. Ethnobotanical study of indigenous knowledge on medicinal and nutritious plants used to manage opportunistic infections for HIV/AIDS [77].
infections associated with HIV/AIDS in western Uganda. J Ethnopharmacol. 2014; 155(1):194-202.

10. Nithiga P, Kamau J, Safari V, Mwonzoria J, Mburu D, Ngugi M. Antipyretic Potential of Methanolic Stem Bark Extracts of Harrisonia abyssinica Oliv and Landolphia Buchananii (Haller F.) Stapf in Wistar Rats. J Appl Pharm. 2016; 8(3):1-7.

11. Amri E, Kisangau DP. Ethnobotanical study of plants used in villages around Kimboza forest reserve in Morogoro, Tanzania. J Ethnobiol Ethnomed. 2012; 8:1-9.

12. Omino EA, Kokware JO. Ethnobotany of Apocynaceae species in Kenya. J Ethnopharmacol. 1993; 40(3):167-80.

13. Naidoo D, Van Vuureen SF, Van Zyl RL, De Wet H. Plants traditionally used individually and in combination to treat sexually transmitted infections in northern Maputaland, South Africa: Antimicrobial activity and cytotoxicity. J Ethnopharmacol. 2013; 149(3):656-67.

14. Augustino S, Hall JB, Makonda FB, Ishengoma RC. Medicinal Resources of the Miombo woodlands of Ummuwa, Tanzania: Plants and its uses. J Med Plants Res. 2011; 5(27):6352-72.

15. Ramadhani SON, Denis Z, Mainen JM, Paul E, Samuel W, Moses NN et al. Ethnobotanical survey and in vitro antiplasmodial activity of medicinal plants used to treat malaria in Kagera and Lindi regions, Tanzania. J Med Plants Res. 2015; 9(6):179-92.

16. Alawa CBL, Adamu AM, Gefu JO, Ajanusi OJ, Abdu PA, Chieze NY et al. In vitro screening of two Nigerian medicinal plants (Vernonia amygdalina and Annona senegalensis) for anthelmintic activity. Vet Parasitolit. 2003; 113(1):73-81.

17. Erasto P, Griersson DS, Afolayan AJ. Bioactive sesquiterpene lactones from the leaves of Vernonia amygdalina. J Ethnopharmacol. 2006; 106(1):117-20.

18. Chinsembu KC, Hedimbi M. An ethnobotanical survey of plants used to manage HIV/AIDS opportunistic infections in Katima Mulilo, Caprivi region, Namibia. J Ethnobiol Ethnomed. 2010; 6(25):1-9.

19. Bandeira SO, Gaspar F, Pagula FP. African Ethnobotany and Healthcare: Emphasis on Mozambique. Pharm Biol. 2001; 39(sup1):70-3.

20. Yetien MH, Houessou LG, Loughbignon TO, Teko O, Tente B. Ethnobotanical study of medicinal plants used for the treatment of malaria in plateau of Allada, Benin (West Africa). J Ethnopharmacol. 2013; 146(1):154-63.

21. Shen T, Li GH, Wang XN, LouHX. The genus Commiphora: A review of its traditional uses, phytochemistry and pharmacology. J Ethnopharmacol. 2012; 142(2):319-30.

22. Mahwasane ST, Middleton L, Boaduo N. An ethnobotanical survey of indigenous knowledge on medicinal plants used by the traditional healers of the Lwamondo area, Limpopo province, South Africa. South African J Bot. 2013; 88:69-75.

23. Maroey A. An ethnobotanical survey of medicinal plants used by the people in Nhema communal area, Zimbabwe. J Ethnopharmacol. 2011; 136(2):347-54.

24. Amusa TO, Jimoh SO, Aridanpi P, Haruna M. Ethnobotany and conservation of plant resources of Kainji Lake National Park, Nigeria. Ethnobot Res Appl. 2010; 8(2005):181-94.

25. Odonne G, Valadeau C, Alban-Castillo J, Stien D, Sauvain M, Bourdy G. Medical ethnotaxonomy of the Chayahuita of the Paranapura basin (Peruvian Amazon). J Ethnopharmacol. 2013; 146(1):127-53.

26. Moshi MJ, Oiteno DF, Weisheit A. Ethnomedicinal of the Kagera Region, north western Tanzania. Part 3: Plants used in traditional medicine in Kikuku village, Muleba District. J Ethnobiol Ethnomed. 2012; 8:1-5.

27. Cock IE. The medicinal properties and phytochemistry of plants of the genus Terminalia (Combretaceae). Inflammapharmacology. 2015; 23(5):203-29.

28. Fahmy N, Al-Sayed E, Singab A. Genus Terminalia: A phytochemical and Biological Review. Med Aromat Plants. 2015; 04(05):1-21.

29. Durairapandiyan V, Kannan P, Ignacimuthu S. Antimicrobial Activity of Sphaeranthus indicus L. 2009; 4(1):1-6.

30. Thambiraj J, Paulsamy S, Suvukumperumal R. Evaluation of in vitro antioxidant activity in the traditional medicinal shrub of western districts of Tamilnadu, India, Acalypha fruticosa Forssk. (Euphorbiaceae). Asian Pac J Trop Biomed. 2012; 2(1):5127-30.

31. Seifu T, Asres K, Gebre-Mariam T. Ethnobotanical and ethnopharmaceutical studies on medicinal plants of Chifira District, Afar Region, North Eastern Ethiopia. Ethioph Pharm J. 2006; 24(1):41-58.

32. Hiremath SP, Rudresh K, Badami S, Patil SB, Patil SR. Post-coital antifertility activity of Acalypha indica L. J Ethnopharmacol. 1999; 67(3):253-8.

33. Panda SP, Sahoo HK, Subudhi NH, Sahu AK. Potential Medicinal Plants of Odisha Used in Rheumatism and Conservation. Am J Ethnomedicine. 2014; 1(4):260-5.

34. Singh D, Dutt N, Kumar D, Singh S, Mahajan R. Taxonomy, Ethnobotany and Antimicrobial Activity of Croton bonplandianum, Euphorbia hirta and Phyllanthus fraternus. J Adv Dev Res. 2011; 2(1):21-9.

35. Dhawan NG, Khan AS, Srivastava P. A General Appraisal of leonotis nepetifolia (L): R. Br: An Essential Medicinal Plant. Bull Environ Pharmacol Life Sci. 2013; 2:118-21.

36. Veerabhadran U, Venkatraman A, Souprayane A, Narayanasamy M, Perumal D, Elumalai S et al. Evaluation of antioxidant potential of leaves of Leontis nepetifolia and its inhibitory effect on MCF7 and Hep2 cancer cell lines. Asian Pacific J Trop Dis. 2013; 3(2):103-10.

37. Moabe MA, Gatebe E, Gitu L, Rotich R. Preliminary Phytochemical Screening of Eight Selected Medicinal Herbs Used for the Treatment of Diabetes, Malaria and Pneumonia in Kisii Region, Southwest Kenya. Eur J Appl Sci. 2013; 5(1):1-6.

38. Mallikharjuna PN, Seetharam YN. In vitro antimicrobial screening of alkaloid fractions from strychnos potatorum. J-Ethnopharm. 2009; 6(4):1200-4.

39. Sanjeev KK, Sasidharan N, Sajeev KK. Ethnobotanical observations on tribals of Chinna wildlife sanctuary. Anc Sci Life. 1997; 16(4):284-92.

40. Isa AI, Awouafack MD, Dzoyem JP, Aliyu M, Magaji RA, Ayo JO et al. Some Strychnos spinosa (Loganiaceae) leaf extracts and fractions have good antimicrobial activities and low cytotoxicities. BMC Complement Altern Med. 2014; 14(456):1-8.

41. Focho DA, Nkeng EAP, Lucha CF, Ndam WT, Afagenu A. Ethnobotanical survey of plants used to treat diseases of the reproductive system and preliminary phytochemical screening of some species of malvaceae in Ndop Central Sub-division, Cameroon. J Med Plants Res. 2009; 3(4):301-14.

42. Diehl MS, Atindehou KK, Térel H, Betschart B. Prospect for anthelmintic plants in the Ivory Coast using ethnobotanical criteria. J Ethnopharmacol. 2004; 95(2):3-277-84.

43. Semwal DK, Semwal RB, Vermaak I, Viljoen A. From arrow poison to herbal medicine - The ethnobotanical, phytochemical and pharmacological significance of Cissampelos (Menispermaceae). J Ethnopharmacol. 2014; 155(2):1011-28.

44. Meckes M, Villarreal ML, Tortoriello J, Berlin B, Berlin E a. A microbiological evaluation of medicinal plants used by the Maya people of southern Mexico. Phyther Res. 1995; 9(1):244-50.

45. Musa MS, Abdelraaouf PE, Elsheikh EA, Ahmed LAMN, Mahmoud ALE, Yagi SM. Ethnobotanical study of medicinal plants in the Blue Nile State, South-eastern Sudan. J Med Plants Res. 2011; 5(17):4287-97.

46. Diallo A, Traore MS, Keita SM, Balde MA, Keita A, Camara M, et al. Management of diabetes in Guinean traditional medicine: An ethnobotanical investigation in the coastal lowlands. J Ethnopharmacol. 2012; 144(2):353-61.

47. Mpianta PT, Mudogu V, Tshibangu DST, Kitwa EK, Kanangila AB, Lumbu JBS et al. Antisickling activity of anthocyanins from Bombax pentadrum, Ficus capensis and Ziziphus mucronata: Photodegradation effect. J Ethnopharmacol. 2008; 120(3):413-8.

48. Jiofack T, Fokunang C, Guedje N, Kemeuze V, Fongnzossie E, Nkongmeneck B, Afo et al. Environ Pharmacol Life Sci. 2013; 2(3):67-90.
Ethnobotanical study on traditional use of medicinal plants against the Anopheles arabiensis mosquito in a rodent model. Malar J. 2010; 9(1):1-8.

Kamagaté M, Koffi C, Mathieu Kouamé goran, Akoubet A, Alain Roland Yao guessan, Maxime Die-Kakou H. Ethnobotany, phytochemistry, pharmacology and toxicology profiles of Cassia siamea Lam. J Phytopharm. 2014; 3(31):57-76.

Chinsembu KC, Hijarunguru A, Mbangu A. Ethnomedicinal plants used by traditional healers in the management of HIV/AIDS opportunistic diseases in Rundu, Kavango East Region, Namibia. South African J Bot. 2015; 100:33-42.

Twileley D, Langhansová L, Palaniswamy D, Lall N. Evaluation of traditionally used medicinal plants for anticaner, antioxidant, anti-inflammatory and anti-viral (HPV-1) activity. South African J Bot. 2017; 112:494-500.

De Wet H, Nzauma VN, Van Vuuren SF. Medicinal plants used for the treatment of sexually transmitted infections by lay people in northern Maputaland, KwaZulu-Natal Province, South Africa. South African J Bot. 2012; 78:12-20.

Olujuyibe OO, Afolayan AJ. Phenolic content and antioxidant property of the bark extracts of Ziziphus mucronata Wild. subsp. mucronata Wild. BMC Complement Altern Med. 2011; 11(13):30.

More G, Tshikalange TE, Lall N, Botha F, Meyer JJM. Antimicrobial activity of medicinal plants against oral opportunistic diseases in Rundu, Kavango East Region, Namibia. South African J Bot. 2017; 112:494-500.

Osborne PM, Murphy EK, Nwagwu GO, Opara UI, Achiogho OE, Okpokwasili PW, et al. Potential Source of Bioactive Compounds. Rasooli I, editor. Potential Source of Bioactive Compounds in Phytomedicine. InTech; 2012 185.

Yeboah AA, Odamtten GT, Simmonds MSJ. Ethnobotanical study of medicinal plants used in the management of diabetes mellitus and viral (HPV-1) activity. South African J Bot. 2017; 112:494-500.

Mahonge CP, Nsenga J, Mtengeti E, Mattee A. Utilization of Medicinal Plants by Waluguru People in East Uluguru Mountains Tanzania. African J Tradit Complement Altern Med. 2006; 3(4):121-34.

Kitula RA. Use of medicinal plants for human health in Udzungwa Mountains Forests: A case study of New Dabaga Ulongambi Forest Reserve, Tanzania. J Ethnobiol Ethnomed. 2007; 3:2-5.

Savicin K, Zduníc G, Menković N, Ćujić N, Tereščenko M et al. Ethnobotanical study on traditional use of medicinal plants in South-Western Serbia, Zlatibor district. J Ethnopharmacol. 2013; 146(3):803-10.

Brouhham M, Merthfouri FZ, Elachoui M, Legssyer A, Mekhfi H, Lammaouer D et al. Toxic effects of some medicinal plants used in Moroccan traditional medicine. Moroccan J Biol. 2006; 3(2):21-30.

HOW TO CITE THIS ARTICLE
Kingo RM, Maregesi SM. Ethnopharmacological Study on Some Medicinal Plants Used in Ujjii, Kigoma, Tanzania. J Phytopharmacol 2020; 9(2):102-109.