



## Commonly Used Plants for Various Health Conditions in Mlangali Ward, Ludewa District, Tanzania

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### Author's contribution

*The study was designed, analyzed and discussed by the author. The author takes full responsibility for the whole study including data collation, manuscript drafting and editing.*

### Article Information

DOI: 10.9734/JSRR/2016/10081

#### Editor(s):

- (1) Corina Carranca, National Institute of Agricultural Research and Veterinary (INIAV), Research Unit of Environment and Natural Resources (UIARN), Portugal.  
(2) Luigi Rodino, Professor of Mathematical Analysis, Dipartimento di Matematica, Università di Torino, Italy.

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(2) Anonymous, West Indies.  
(3) Sunday Johnson Ameh, National Institute for Pharmaceutical Research and Development (NIPRD), Abuja, Nigeria.

Complete Peer review History: <http://sciencedomain.org/review-history/11635>

Original Research Article

Received 14<sup>th</sup> March 2014  
Accepted 11<sup>th</sup> September 2014  
Published 29<sup>th</sup> September 2015

### ABSTRACT

**Background:** Although most rural communities in developing countries (DCs) use medicinal plants (MPs) for various health conditions, not enough studies have been conducted to ascertain their vernacular and scientific names, and their specific indications.

**Aim:** The present study aimed to ascertain the vernacular and scientific names; and the specific indications for plants used in healthcare at Mlangali ward, Tanzania.

**Methodology:** A structured interview format was used to sample and obtain vital data on plants used in healthcare in the area under study. The specimens collected were then compared with "similar or the same" plants described in pertinent literature. In all cases, both the vernacular and scientific names of the commonly used medicinal plants (CUMPs) were confirmed by a botanist at the Institute of Traditional Medicine, Muhimbili University of Health and Allied Sciences.

**Results:** A total of 30 plants with their names and uses were obtained. Of these, 13 plants (43.3%) were confirmed by 9 (60%) respondents to be the CUMPs in the area under study. No previous documentation on these CUMPs were found in the community.

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**Conclusions:** All the 30 plants sampled were used in health care in Mlangali ward, but it seemed that because the 13 CUMPs were being commonly used, this has resulted in them being overharvested, with no application of good agricultural practice (GAP) and other conservationist policies. Many of the 13 plants were commonly and similarly used in many developing countries as in the study area. Some had different uses in different cultures and countries; but most had multiple uses in countries where these CUMP were being used. Based on the foregoing, the study recommended that necessary effort be summoned and exerted to document the medicinal uses of the 30 plants, especially the CUMPs, as a forerunner to programs aimed at sustainable conservation of these plants for future uses, including the search for and development of new drugs.

*Keywords: Tanzania; medicinal plants; Ill-health; healthcare.*

## 1. INTRODUCTION

The use of medicinal plants (MPs) for treating illness is probably the oldest existing human healthcare practice. It is many millennia old, and continues to be used in both developed and developing countries [1-6]. Some of these plants used for herbal remedies by the community include *Aloe* species, *Allium sativum*, *Eucalyptus* species, and Ginger (*Zingiber officinale*) [7]; they act as first aid on the onset of the health problems even today in rural areas [5,6,8]. These known herbal plants by the community might fall in the category of popular sector on healthcare that comprises the lay, non-professional domain where illness is first recognized and treated using natural resources [9,10]. It is in this sector where self-care takes place [6,10,11]. Popular sector healthcare remedies in rural African countries include remedies that families have passed knowledge down over several generations and are known by many people in their respective community [11,12]. Utilizing some herbal remedies prohibits certain behaviours in the community; in other words, it is also a cultural control mechanism of unwanted behaviours in the community [11,13-15]. Herbal remedies are woven in cultural tradition settings; and had little ground in scientific knowledge because nobody was interested or knowledgeable to evaluate their value in scientific terms [13,14].

In developing countries, (Tanzania included) herbal remedies are used even in places where health facilities are available [1,6,8,16,17]. It is in rural areas that more than 80% of the population of developing countries use traditional medicine (TRM) [1,18]. However, when the illness/disease does not respond to these herbal remedies, then two options are available in Tanzania [16,19]. Patients or relatives go to consult traditional healers (THs) for general health problems and/or traditional birth attendants (TBAs) for

reproductive health problem [13,19,20]. The other option is to a health facility; but choice of this option is affected by the distance to the health facility, availability of the bus fare, consultation fee (user charge), cost of laboratory investigation and money to buy drugs [5,6,16,19,21]. Most of the people in rural areas do not have money for such charges and therefore turn to traditional health practitioners (THPs), both THs and TBAs, who therefore are of much significance for health care in these communities [6,21,22].

World Health Organization (WHO) [1] shows that worldwide there has been a global increase on the use of herbal remedies over the past few years. The possible reasons for increasing use of herbal remedies are: Inadequate decentralization of health services, isolation of some rural communities, shortage of drugs and other medical supplies, higher user charges, long waiting period to see the medical personnel, lack of competent medical personnel, abusive language from medical personnel and persistence regarding pathology-resistance of diseases to conventional medicine [1,16,22,23,24]. However, some literature reviewed, shows that people even today have strong belief on TRM with their practitioners, and that traditional herbs works better than conventional medicine. Even in places where health facilities are within reach, yet such people go to traditional health practitioners [16,17,19]. The importance of TRM for healthcare cannot be ignored because there is already an increasing number of people who are using it worldwide [1,8]. Even though these herbal remedies are commonly known by their respective communities and have been used successfully and safely for years; many of these common used medicinal plant (CUMP) remedies are not yet known to scientists nor have been evaluated for safety and efficacy according to 'modern'

methods [1,9]. In order to have high quality livelihood of the people worldwide, including the absence of abject poverty in developing countries, there is a strong need to know the scientific names of CUMPs that are being used by many people; and subject traditional recipes using them to suitable evaluation of safety and efficacy in order to be sure that these herbal remedies are safe for human beings. In addition, this exercise can lead to the discovery of new drugs for diseases that have become resistant to conventional drugs like malaria, skin infections and respiratory diseases.

## 2. CONCEPTS

### 2.1 Conceptual Framework

Globally, both knowledge and management of ill-health are as old as humankind [1,8,11]. As intelligent beings, humans have through trial-and-error and others (through dreams, intuitive or spiritual knowledge including observation as shown in zoopharmacognosy studies [25-27], have developed herbal remedies with potential for managing health problems. Zoopharmacognosy is a behaviour in which non-human animals self-medicate by selecting and ingesting or topically applying plants, soils, insects, and psychoactive drugs to treat or prevent illness/disease [28]. Observers from these studies have noted that some species ingest non-foods such as clay, charcoal, and even toxic plants to ward off parasitic infestation or poisoning [29].

Potential herbal plants were scrutinized with traditional methods for their safety and efficacy as a remedy. These activities together, likely led to the discovery and establishment of natural herbal remedies that could alleviate/treat health problems occurring in their respective community [25,26,27].

Natural phytochemicals found in wild biodiversity are naturally occurring substances that are considered valuable in their relatively unmodified (natural) form as supplied by nature. Herbal plants are part of the diversity; and most important healthcare resource commonly consumed as therapy to alleviate suffering or cure illness/diseases suffered in many developing countries [1,24,30]. Herbal remedies are made with plants which include crude plant material such as leaves, flowers, fruit, seed, stems, wood, bark, roots, rhizomes or other plant parts, which may be entire or fragmented [24].

The established herbal remedies are culturally controlled through beliefs and taboos; they are products of culture. In any community, not all knowledge of CUMPs is made public [11,19,31]. In the same manner some herbal remedies in the community, especially on the knowledge of utilization, is restricted to a special few people, which in most cases are THPs and elderly people of specific clan entrusted with that knowledge [32,33]. Other herbal remedies, on the other hand, are common and their utilizations are known to many people. These herbal remedies are used immediately on the onset of illnesses/disease as first aid and provision of primary healthcare. This study was interested to know the CUMPs for healthcare through in-depth interview at rural village specifically on:-

- i. Vernacular and scientific names of CUMPs by many people on the onset of the health conditions.
- ii. Specific health conditions these CUMPs claimed to alleviate/treat
- iii. To compare information of the plants collected in this study with that found in literature on the specific health conditions claimed to treat.

The ultimate goal was to come up with a list of vernacular and scientific names of CUMPs with their specific health conditioned claimed to alleviate/treat by using the data collected in Mlangali ward, Ludewa district, Njombe region, Tanzania.

### 2.2 Research Methodology

A qualitative study was carried at Mlangali ward, Ludewa District, Njombe region. The ward was randomly picked among 22 wards of Ludewa district. The ward has a total population of 12,977 and of these 53% were women [34]. The average size of household was 4 members. The major occupation of people in this ward was peasant farming growing food crops (maize,beans,wheat) and cash crop (coffee). The main means of transport to health facilities were both by bus or bodaboda (motorbike), and sometimes on foot. The common health problems in the ward were pneumonia, headache, diarrhoea, flu, coughs, respiratory diseases, reproductive health problems to women during pregnancy period, tuberculosis and in recent years AIDS both to youths and old people. Mlangali ward was one of the wards in the district that were highly infected with HIV and AIDS.

The target population was old people and THPs who had knowledge of CUMPs for treating health problems. The sample size was purposefully chosen with assistance from village executive officers and other government officers in respective villages. Only those who have lived more than ten years and could express clearly on knowledge of CUMPs with specific illnesses/diseases treated, willing and consented to participate in the study were picked. An interview guide was prepared covering CUMPs and illnesses/diseases claimed to treat; and if there were contraindications for users, to whom, availability and who were the prescribers.

The reported information was qualitatively analyzed using sociological and anthropology methods by the researcher as shown in Grounded Theory Procedures and Techniques [35]. Only those CUMPs reported by 60% of the respondents were assumed to be used on the onset of health problems. In the process of analyzing the information, axial coding was used. Data were put according to identified categories and subcategories; and in that way making connection between central idea of the research and categories and subcategories. The collected specimens of CUMPs were identified by botanist Boniface Mhoro at the Institute of Traditional Medicine, Muhimbili University of Health and Allied Sciences. The analyzed reports were re-screened several times ensuring important information was included in the report. The analyzed data were given to other independent researcher expert on qualitative study for evaluation and validation of the analyzed data and gave comments. The results and including valid comments from the reviewer were summarized and are presented below.

### 3. RESULTS

#### 3.1 Socio-demographic Characteristics of the Participants

Fifteen informants were sampled for this study; and of these eight were males and the rest were females. Among the participants four were THPs- two being THs and three were TBAs. The age ranged between 40 to 60 years and above. All respondents were from the Wapangwa ethnic group; and ten of them had primary education and the rest were illiterate. The sampled informants were cooperative and had a wide knowledge of CUMPs in the wards on various health conditions.

#### 3.2 Common Herbal Remedies Used by Many People on the Onset of the Health Condition

A list of 30 plants with their respective specific health conditions alleviated or cured was obtained. Thirteen (43.3%) CUMPs were mentioned by 9 (60%) informants and were assumed to be used in the study area; and are shown in Table 1. Some of CUMPs had names of diseases or ill-health conditions. For example "mkoda kwa" means medicine for named health problem. The CUMPs reported were related to health problems occurring in the ward like cough, dysentery, diarrhoea, pneumonia, HIV and AIDS symptoms, infants' health problems, and respiratory diseases. Some of the CUMPs had multiple uses, and sometimes were used in combinations of two or four CUMPs. The parts of a herbal plants commonly used in treatments by order as mentioned by the respondents were fresh leaves, roots, barks; none of the respondents mentioned stem.

The findings have shown the prescribers of the CUMPs were either self prescribed, or by friend or relative or neighbours who had shown the medicinal plant(s). For the cases of reproductive health problems to women and infants any of the following mother, mother-in-law, aunt, senior sister and sister in laws prescribed the treatment or were consulted for treatment. Whereas for men, mostly were the father, grandparents and uncles who were consulted. The routes of administration were mainly oral both infusion and decoction; and topical application; incisions where the pain was and then smeared with grounded herbal remedy; and sometimes bathing. Regarding availability, the findings showed some of CUMPs were reported to be found in far places of about two to three hours walking distance. None mentioned that CUMPs were planted/grown near the houses except to healers' places, where two or more plants were seen.

The sources of information of CUMPs were from parents, grandparents, relatives and friends when encountered with a health problem. One of the respondents who had a child with repeated fevers and stunted growth reported:

*"A friend told me to use "mkoda kwa degedege" (medicine for infant convulsion) and I should crush the leaves and soak into water for half an hour and then administer to the child with a dose of food spoonful in the*

*morning, afternoon and in the evening. I used it and after one week the fevers stopped and child recovered from the illness”.*

The other respondent who was a female said:

*“We learn the useful herbal plants from friends, elder people and relatives when we have health problems. At present I know several herbal plants for “nyavana” (infant periodic fevers) illnesses which are difficult to cure in health facilities”.*

The researcher was interested to know if there were rituals involved in the CUMPs. One of the healers who participated in this study said:

*“CUMPs do not have rituals to be performed when managing health problems. These are CUMPs to all people. However, some the CUMPs have rituals when used to treat health problems believed to be caused by transgressing cultural norms or associated with witchcraft. These rituals are performed with special healers for such kind of health problems”.*

During the interview another healer said:

*“Mkoba wa dawa” (bag of medicine) cannot be given to anybody but few selected by “mzimu” (ancestors) in the respective clan. This may be a female or male, but preferable male.*

The other healer, on the other hand, was concerned with new emerging diseases like HIV and AIDS, cancer, and diabetics. The healer argued that those were new diseases to their community. The approaches used to manage those new health problems were associated symptoms of known diseases and the new one. For example, sexually transmitted diseases like syphilis and gonorrhoea had some symptoms similar with those of HIV and AIDS such as abnormal discharge to women, sores and open ulcers at the anus, inside the mouth and loss of hair. He said some of the remedies used to treat syphilis and gonorrhoea were also tried on HIV and AIDS patients and were shown to alleviate the suffering of patients, but he did not mention the herbal plants. Among the 13 CUMPs listed, none of the respondents reported any contra indication for any person who ever used it.

In general, respondents showed that the CUMPs were very useful to manage common health

problems because drugs and other medical supplies in health facilities were available only on the first two weeks of the month. Whenever they went to the health facility for health services they were asked to go to buy the prescribed drugs in the medical store. The drugs in the medical stores were too expensive; and most people in the ward could not afford them especially old people who had no children to assist them to buy such drugs. Some of the medical stores were owned by health providers. One of old respondents stressed:

*“The only hope is from the herbal plants that we inherited from our forefathers and grandparents and others that we discover now. But also these CUMPs are now diminishing with increasing number of people who are cultivating even the marginal land and sources of water where some CUMPs were found”.*

In this study it was also learnt there was strong belief that some health problems like *nyavana* (undefined health problems to Infants), *degedege* (infant convulsion), fertility and some maternal health problems and illness caused by transgressing cultural norms were better managed by medicinal plants and by special traditional health practitioners who were experts on the named health conditions.

Cross-checking the information with some healthcare providers in the ward, they agreed that drugs and other medical supplies were mostly available in the first two weeks of the month; and the only option was to request relatives of the patients to buy the prescribed drugs from medical stores.

### **3.2.1 Comparison of field information of common herbal plants with same plants found in literatures reviewed**

The CUMPs were found and used everywhere for healthcare in developing countries and also in developed countries [1,36]. CUMPs reported medicinal use in this study was compared with other studies of the “same herbal plants” published in journals, books, and websites in different countries of the world. The general observation from the present study findings, and those from literature reviewed, was that most CUMPs had multiple uses (see Table 1). Besides the general observation, the comparison also revealed some of CUMPs had similar medicinal uses with those found in literature reviewed in

different developing countries. For example, *Psidium guajava* leaves in this study were found to treat diarrhoea. Similar health treatment was also reported in the Philippine and elsewhere [37]. In addition some CUMPs found in this study were found to be used throughout Africa. For example “mkoda kwa degedge” was commonly used in TRM throughout tropical Africa with different uses. In literature reviewed, “mkoda kwa ngerakha” remedy, a decoction of the aromatic leaves or roots was widely drunk to treat gastrointestinal disorders, fever, pneumonia, headache, sore throat and sinusitis, and as an anthelmintic against various kinds of worms [17,35] (see Table 1). But how was this knowledge on the use of CUMPs in the past with limited means of communication and transport shared from one country to another?

#### 4. DISCUSSION

Data of common used medicinal plants (CUMPs) for various health problems from fieldwork compared with the same herbal plants from literature review on their uses has been presented and analysed. The vernacular names of the CUMPs and health conditions treated at Mlangali ward were identified (Table 1).

At the herbarium of ITM, the botanist identified scientific names of collected specimen samples of CUMPs. Some of the vernacular names were names of ill health conditions e.g, “mkoda kwa ngerakha” for cataracts (Table1). This creates problems to identify which plant was used if specimen of the plant is not shown since there might be many plants treating the same kind of ill health conditions and taking the same name “mkoda kwa ngerakha”. The role of the botanist is crucial in such situation to differentiate herbal plants by using scientific names.

The identified CUMPs at Mlangali ward treated/alleviated common health problems occurring at the ward like diarrhoea, dysentery, cough, headache, women health problems, stomach ache, flu and infant health problems. Even though these ill health conditions could be managed by the health facilities, there were no drugs and other medical supplies, a common cry to many rural areas in developing countries [16,22,68]. Thus, CUMPs and THPs become the only options for people living in rural areas [18,69-72]. This creativity of humankind on managing health problems by using herbal plants found within his environment in this study is likely to be appearing in other rural wards/villages

worldwide where medical drugs and other supplies are inadequate or not available [71-72]. The key question is how safe are these unknown herbal remedies from “modern scientists”?

Based on the long time of use of CUMPs remedies, this very likely has led to the establishment of common useful herbal plants for alleviating/treating common health problems occurring in the community [10,11]. The knowledge of CUMPs was then passed from one generation to another till present times as cultural products [1,17,18,32,70-72]. Further findings show creativity goes hand in hand with sharing knowledge of CUMPs with neighbours, relatives and friends for managing health problems just on their onset. In this way, the knowledge of useful CUMPs are disseminated and stored within the community. Besides the above, the findings also seem to suggest that not all knowledge of how to use CUMPs of the community is made public. There is some special knowledge of how to use CUMPs which is entrusted to a few people, mostly THPs or specific clan members in the community for fear of being misused/abused [13,14,32]. As shown in this study, some treatment using the same plants were empowered with special rituals that may involve long litany of prayers [19,33]. The present findings underscore other researchers that the custodians of special knowledge of TRM are THPs [19,32,33]. All in all, the most important point to be underscored is community responsibility for maintaining health of its members. This should be the focus for primary healthcare programs when designing an intervention program.

The useful knowledge so developed over centuries needs to be documented where other users can obtain access. In this study, there was no place in the ward where CUMPs and associated remedies were documented. The present observation of not documenting useful CUMPs in the community is likely to be found in other communities which take for granted that the CUMPs are known by everybody. But people with knowledge of CUMPs and how to use them for different ailments are aging and dying before their knowledge is passed on verbally or in written form [17]. It has to be stressed that knowledge of useful CUMPs is with the old people and it is very likely to be lost if not documented now from the few existing indigenous experts on CUMPs and the practice of TRM [15,17,18,20]. Children who are supposed to inherit the knowledge and practice

**Table 1. Commonly used medicinal plants (CUMP) and associated herbal remedies used in the Mlangali ward as compared to reviewed literature**

Sn	Description on medicinal plants	Field work results on medicinal use	Medicinal use of the herbal plants in literature review
1	<p>Botanical name: <i>Rumexhymenosepalus</i>                      Family: <i>Polygonaceae</i>.                      Vernacular name: "Mdoda."                      "Mdoda" is a perennial growing to 100cm (31/2ft). The flowers are hermaphrodite (have both male and female organs) and are pollinated by Wind. Herb ca. 1 m tall, growing on farmland</p>	<p><u>Leaves</u>                      cooked as vegetable in Mlangali ward together with leaves which have a bitter and sour taste, like <i>Solanum</i> sp., to reduce the sourness.  <u>Stems and leaves</u>                      used to treat diabetes, pneumonia and stomach ache.  <u>Roots</u>                      pounded and smeared on the wounds., treating sexual transmitted diseases, and preventing diarrhoea</p>	<p><u>Ethnomedicine:</u>                      A tea made from this plant is used to treat colds [ 37]  <u>Leaves</u>                      An infusion of the stems and leaves used as a wash for sores, ant bites and infected cuts. [37]  <u>Roots</u>                      Are astringent. Infusion used in treatment of diarrhoea, as a gargle to treat coughs, sore mouths and throats, chewed in the treatment of coughs and colds, dried, powdered roots used as a dusting powder and dressing on burns and sores.[38,39]</p>
2	<p>Botanical name:: <i>Dissotis rotundifolia</i>                      Family: <i>Melastomataceae</i>                      Vernacular name: "Ling'eng'ena"                      Shrub growing in forests and open woodlands. A variety, "Mng'enge'na", is endemic and is a perennial shrub herbal plant.</p>	<p><u>Roots</u>                      boiled in water, taken orally to prevent and treat diarrhoea during hot period</p>	<p><u>Ethnomedicine:</u>  <u>Leaves of <i>D. rotundifolia</i></u>                      used ethnomedically across Africa [40] mainly for treatment of rheumatism and painful swellings. Relieve stomach ache, diarrhoea, dysentery, cough, stop abortion, conjunctivitis, circulatory problems, venereal diseases [40-42], treatment of bilharzias rheumatism, yaws and as an antihelmintic [43]  <u>Laboratory investigation:</u>                      Hot water extract of <i>D. rotundifolia</i> given orally is used for hookworm infestations [43].                      Ethanol extracts of <i>D. rotundifolia</i> demonstrated antimicrobial activity against clinical strains of selected microorganisms[36]                      Potential for application in the treatment of diarrhoea, thereby justifying its usage across Africa [36,43].</p>
3	<p>Botanical name: <i>Eucalyptus globules</i>                      Family Name: <i>Myrtaceae</i>                      Venacular name: "Mlingoti"                      "Mlingoti" is perennial tree and in Tanzania it grows successfully at altitudes above 1600 m and latitudes less than 10° S and is among the major species adopted for planting by most small-holder forest practitioners in Tanzania [38 ].</p>	<p><u>Leaves</u>                      used for treating flue.                       Also used was in one of the dispensaries in the ward for treating flu.</p>	<p><u>Ethnomedicine:</u>                      Eucalyptus leaf is used for infections, fever, upset stomach, and to help loosen coughs, respiratory tract infections, whooping cough, asthma, pulmonary tuberculosis, osteoarthritis, joint pain (rheumatism), acne, wounds, poorly healing ulcers, burns, bacterial dysentery, ringworms, liver and gallbladder problems, loss of appetite, and cancer [44-46]                      Oil is a good pain reliever for sore muscles and arthritis pain[46].                      Credited for its antispasmodic, anti-inflammatory, antibacterial, antiseptic, decongestant, and other medicinal properties.                      May be chewed to strengthen the teeth and harden the gums, used as natural insect spray [46]</p>

Sn	Description on medicinal plants	Field work results on medicinal use	Medicinal use of the herbal plants in literature review
4.	<p>Botanical Name: <i>Psidium guajava</i>            Family: <b>Myrtaceae</b>            Kiswahili name: “<b>Mpera</b>”            Mpera is a small perennial plant that can grow up to 3 m tall with greenish-brownish smooth bark. The round globular bayabas fruit starts as a flower and is usually harvested and eaten while still green. The fruit turns yellowish-green and soft when ripe.</p>	<p><u>Leaves</u>            Pounded and soaked in water for treating diarrhoea, fevers</p>	<p><u>Laboratory investigation:</u>            Can be used to treat respiratory and sinus infections, viral infections (herpes), <i>Candida</i>, acne, bronchitis, rheumatism and arthritis, muscle aches and pains, diabetes, measles, migraines, ulcers, wounds, ear inflammation and iris inflammation. Dilute 50:50. Can be used as a dietary supplement. Approved by the FDA as a Food Additive (FA) or Flavouring Agent [46]  <u>Contra indication:</u>  <b>not</b> advised for children less than 6 years of age [46]</p> <p><u>Ethnomedicine:</u>            almost all parts of the plant have medicinal qualities, natural cure for fevers, diabetes, epilepsy, worms, and spasms [47]  <u>Leaves</u> decoction            effective to cure several ailments, including treatment of uterine haemorrhage, swollenness of the legs and other parts of the body, chronic diarrhoea, dysentery, gastroenteritis, inflammation of the kidneys, cleaning and disinfecting wounds used as astringent, wash for uterine and vaginal problems, and is good for ulcers [ 48, 49]  <u>Laboratory investigation:</u>            Antiseptic, astringent &amp; anthelmintic            - Kills bacteria, fungi and amoeba            - Used to treat diarrhoea, nosebleeding            - For hypertension, diabetes and Asthma            - Promotes menstruation [47]  <u>Fresh Leaves</u> are used to facilitate the healing of wounds and cuts, prevent infection, toothaches.            The fruit, contains nutritional values with a very high concentration of vitamin A and vitamin C. [47]  <b>Caution:</b> <i>Psidium guajava</i> leaf extract can cause constipation when consumed in excess [47].</p>
5.	<p>Botanical name: <i>Vernonia colorata</i> (Willd.) Drake            Family name: <b>Compositae</b>            Vernacular name: “<b>Lifufundu</b>”              “Lifulufundu” is perennial plant about 1-2 m tall, growing on open woodland.</p>	<p><u>Leaves</u>            Pounded, soaked into water and filtered/squeezed to obtain liquid.              The decoction is used for abdominal pain and disturbed stomach and diarrhoea.              Drips of juice from the pounded leaves are applied on wounds.</p>	<p><u>Ethnomedicine:</u>            In Africa, <i>Vernonia colorata</i> is well known in treatment of diabetes, skin rashes, and acute hepatitis.            commonly used in the treatment of <i>schistosomiasis</i>, the epileptiform seizures, fevers, diarrhoea and hypertension [50,51].  <u>Laboratory investigation:</u>            Antimicrobial tests prove that <i>Vernonia colorata</i> leaf extract can develop bactericidal activities on resistant gram-positive and gram-negative germs such as <i>S. aureus</i> resistant to methicillin and <i>P. aeruginosa</i> resistive to <i>ceftazidime</i> and <i>imipenem</i> [52].</p>



Sn	Description on medicinal plants	Field work results on medicinal use	Medicinal use of the herbal plants in literature review
6.	<p>Botanical name: <b><i>Stegonotaenia araliacea</i></b> Hochst.                      (= <i>Peucedanumar aliaceum</i> Benth. &amp; Hook. f. ex Vatke)                      Family: <b><i>Umbelliferae</i></b>                      Vernacular name: “<b>Liniongambembe</b>”                      Shrub growing in forests and woodlands.</p>	<p><u>Leaves</u>                      Soaked into hot water; then used for massaging the patients who has paralysis.  <u>Leaves and the bark</u>                      decoction is drunk for treatment of abdominal pain, diarrhoea, sore throat, is used for treating AIDS, sexual transmitted diseases, infant and children illness particularly general weakness and loss of body weight  <u>Stem with its leaves</u>                      used as snake repellent.  <u>Roots</u>                      The extract in hot water of roots</p>	<p><u>Leaves</u>                      are rubbed on wounds as general disinfectant [53]  <u>Bark</u>                      is chewed for fever.                      decoction, prepared by boiling the bark for one hour, is added to milk and administered orally to adults as a remedy for stomach ache/dysentery [53]  <u>Twigs</u>                      used in dental care as toothbrushes and bark used to prepare a medication for a heart complication [53].  <u>Roots and bark</u>                      used to cure sore throat [53].  <u>Roots</u>                      are used to treat snake bites and the tree trunk is reported to have snake deterring activity. The roots are used in treating painful chest conditions [53].  <u>Laboratory investigation:</u>                      Saponins isolated from the leaves of <i>S. araliacea</i> have shown antileukaemic activity [53]</p>
7.	<p>Botanical name: <i>Parinaricura tellifolia</i>                      Family: <b><i>Chrysobalanceae</i></b>                      Vernacular name: “<b>Lisaula</b>”                      Tree growing in open woodlands; fruits egg-like, with yellow inner layer.</p>	<p><u>Leaves</u>                      young leaves lisaula and mng'eng'ena treat any fever especially to children under five.  <u>Roots</u>                      Lisaula root infusion is drunk to treat chest pain and sexual transmitted diseases.  <u>Fruit</u>                      Pulp and the nuts are edible. The nut is roasted, then ground: the creamy, oily mass is added to food as spices.</p>	<p><u>Ethnomedicine:</u>                      Is used in traditional medicine for the treatment of pneumonia, cataracts, earache, wound infections, fever, dressing of fractures and dislocation [54-56].  <u>Laboratory investigation:</u>                      Phytochemical screening revealed the presence of anthraquinones, tannins, saponins, flavonoids, cardiac glycosides, terpenoids, and carbohydrates. Antibacterial activity of the extracts may be attributable to the presence of these compounds in the extracts [54- 56].  <u>Bark</u>                      The extract found to be potentially useful in the treatment of the species of snakes that causes increase blood pressure, tachycardia and neurotoxicity in their victims [56].</p>
8.	<p>Botanical Name: <b><i>Clausena anisata</i></b> Hook. f..                      Family: <b><i>Rutaceae</i></b>                      Vernacular name: “<b>Mkodakwadegedege</b>.”                      A deciduous shrub or small tree, 4(-10) m tall; bark smooth, grey-green changing to brownish and becoming mottled; young twigs short-hairy. Leaves alternate, imparipinnate, up to 30 cm long; stipules absent; leaflets 11-37, alternate or almost opposite, ovate to narrowly elliptical,</p>	<p><u>Leaves</u>                      Pounded and soaked into the water drunk to accelerate child delivery, treat infants and children with unknown fevers assumed to be <i>degedge</i> (Infant/ child convulsion) leading to poor child growth.  <u>Roots</u>                      Extract in hot water is drunk to treat headache, irregular menses to women,</p>	<p><u>Ethnomedicine:</u>                      commonly used in traditional medicine throughout tropical Africa. Aromatic leaves or roots is widely drunk to treat gastro-intestinal disorders, fever, pneumonia, headache, sore throat and sinusitis, and as an anthelmintic against various kinds of worms [57,58]  <u>Leaves</u>                      Antiseptic and analgesic; treat wounds, aching teeth and other mouth infections, otitis, itch, sores, abscesses, burns, haemorrhoids, rheumatism and other body pains., maggot-infested wounds in domestic animals., snake-bite antidote, venereal</p>

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		sexual transmitted diseases	<p>diseases and as an aphrodisiac, strengthen infants and prevent rachitis, treat hypotension and a sore throat. Leaves are poultice on boils and spots. [58]</p> <p><u>Root:</u> Taken as a tonic by pregnant women, facilitates child birth and cleanses the uterus; control convulsions; treats indigestion, whooping cough, malaria, syphilis and kidney, given to women after childbirth to promote milk production; treats irregular menses, threatening abortion, skin diseases and epilepsy [58].</p> <p><u>Laboratory investigation:</u> <u>Leaves essential oil exhibited</u> significant antibacterial activity against <i>Salmonella typhimurium</i>, <i>Pseudomonas aeruginosa</i>, <i>Alcaligenes faecalis</i>, <i>Bacillus subtilis</i>, <i>Flavobacterium suaveolens</i>, <i>Leuconostoc cremoris</i> and <i>Serratia marcescens</i>. <i>Clausenol</i> showed significant activity against a range of Gram-positive and Gram-negative bacteria and fungi. significant antifungal activity against <i>Alternaria alternata</i>, <i>Aspergillus parasiticus</i>, <i>Geotrichum candidum</i>, <i>Phytophthora palmivora</i> and <i>Penicillium citrinum</i>; also possesses moderate antioxidant activity <i>In vitro</i> [56].</p> <p><u>Leaves extracts</u> showed strong antifungal activity against the fungi causing oral candidiasis and fungal infections of the skin, <i>Candida albicans</i>, <i>Candida glabrata</i>, <i>Candida tropicalis</i>, <i>Candida parapsilosis</i>, <i>Candida krusei</i> and <i>Cryptococcus neoformans</i> [58].</p> <p><u>Root extract</u> showed molluscicidal activity in a bioassay with <i>Bulinus globosus</i>, <i>Schistosomiasis</i>, <i>Coumarins heliottin</i> and <i>imperatorin</i> were more toxic to the test snail than other coumarins used in the bioassay.</p> <p>showed moderate hypoglycaemic activity in laboratory rats [58]</p>
9	<p>Botanical Name: <b><i>Spermacoce dibrachiata</i></b> Oliver Family: <b>Rubiaceae</b> Vernacular name: "Mkodakwangerekha". Grass, shrub, tree growing in open grasslands</p>	<p><u>Leaves</u> for treating "Mtowajicho" (cataract). The leaves are bruised and the juice is dropped in the eyes.</p>	<p>Very few studies have been done on this plant. Shangwa [59] has reported it to be one of the useful plants for managing Menstrual disorder.</p>
10	<p>Botanical name: <b><i>Vangueria infausta</i></b> Burch. Family: <b>Rubiaceae</b> Vernacular name: <b>Msada</b>. Shrub 2-3 m tall or small tree growing in open woodland; flowers white; ripe fruits brown, roundish.</p>	<p><u>Roots</u> Extract in hot water drunk for treating vomiting, gynaecological and sexual transmitted diseases, AIDS and gonorrhoea, coughing, stomach disorders and diarrhoea.</p>	<p><u>Ethnomedicine:</u> <u>Fruits</u> eaten by both people and wild animals <u>Different parts of this plant</u> Used traditionally for treatment of wounds, menstrual and uterine problems, chest ailments like pneumonia, as purgatives, toothache treats ring worms and genital swellings among others [60-62].</p> <p><u>Laboratory Investigation:</u> Recent pharmacological reports have shown that extracts from leaves and roots of</p>

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11	<p>Botanical Name: <b><i>Launaea cornuta</i></b> (Hochst. ex Oliv. &amp;Hiern) C. Jeffrey            Family name: <b>Asteraceae</b>            Vernacular name: <b>Mchungu</b>            Herb ca. 0.5-1 m tall; flowers yellow; weed in farmland.</p>	<p><u>Whole plant</u>            Pounded and soaked into water or boiled. The extract drunk for treating worms, impotence and stomach problems, sexual transmitted diseases and AIDS. Children are washed with the decoction for treating measles.  <u>Leaves</u>            used to feed rabbits and chicken.</p>	<p>this plant exhibited significant antiplasmodial activity [63]  <u>Ethnomedicine:</u>            Decoction of the whole plant of <i>L. cornuta</i>, used to treat cancer of breast and prostate glands, epilepsy, fever, cancer of breast and prostate glands,  <u>Young shoots of <i>L. cornuta</i> and <i>Mangifera indica</i></u>            young shoots of <i>L. cornuta</i> and <i>Mangifera indica</i> are used to treat diabetes [64,65]</p>
12	<p>Botanical Name: <b><i>Dichrocephala integrifolia</i></b>            Family name: <b>Compositae</b>            (l. f.) Kuntze            Vernacular name: "Mkodakwafivamba".            Herb growing as a weed in farmland and also in woodland.</p>	<p><u>Leaves</u>            Pounded and the juice is dropped/smeared on the parts affected by sores, herpes zoster and fire burns, and for treating wounds</p>	<p><u>Ethnomedicine:</u>  <u>Leaves</u>            used to <i>treat</i> indigestion, dyspepsia, indigestion, as an antiphlogistic, and an antiemetic, to treat gastro-intestinal parasite[65]  <u>Laboratory:</u>            ethanolic extracts of <i>D. integrifolia</i> contained compounds with ovicidal andlarvicidal properties [66].</p>
13	<p>Botanical name: <b><i>Thunbergia</i></b>            Family: <b>Acanthaceae</b>            Vernacular name: "Mkodakwalileme"            Herb growing in open woodland and on farmland.</p>	<p><u>Leaves</u>            used against stomach ache, and abdominal disorders.</p>	<p><u>Leaves</u>            are crushed and added to water and given to children with wounds in the mouth and tongue.  <u>Buds</u>            Buds may also be pounded and mixed with ghee, then used for treating backache and joint pains [67]</p>

of how to use CUMPs are at boarding school and colleges; and some may not be interested in the practice of TRM [17]. For continual use of the CUMPs for the common health problems in the community in future, and for scientific studies, this information needs to be documented. The documentation should have a herbarium sample linked to the scientific and common names of the plant, a picture of the plant, where found, parts used as remedy and how to prepare, dosage, how to administer to clients; and show if there are some contra indications for safe use. In this way the knowledge and the cultural component woven in the CUMPs is stored and transmitted to the next generation.

Further, the findings have shown most of the CUMPs were collected within a day, or the very day when needed; and hence being fresh with leaves being green. Seldomly, dried herbal plants were used for treating common health problems. The process in a phytochemistry laboratory that involves drying, using solvents and purification of sample studied makes it likely that some of active compounds to the named illness/diseases might be lost. In order to capture the traditional methods of preparing remedies from medicinal plants, ethno information like when to collect, processing and prescription for the patients should be collected while collecting the sample specimen. The hit and run approaches done by most researchers [17,73,74] for benefit of time, will end up losing essential information of herbal plants that might be active.

Comparing the analysis of identified scientific names of medicinal plants and their uses in this study with same herbal plants from other studies reviewed; show some of the medicinal plants are being used worldwide for managing the same health problems. For example, illness/disease treated by *Clausena anisata* Hook., *Stegonotaenia araliacea* Hochst. (*Peucedanum araliaceum* Benth. & Hook.), *Vernonia colorata* (Willd.) Drake, *Psidium guajava* (mpra), *Dissotis rotundifolia* and *Rumexhy menosepalus* in this study are similar health conditions reported in other studies reviewed [10,36,37,40,41,47]. Again, some medicinal plants in this study and those reviewed have multiple uses in managing health problems worldwide [36,37,45]. For example, *Clausena anisata*, *Dissotis rotundifolia* and *Psidium guajava* ethnomedicinal information show that these medicinal plants are used everywhere in the world with multiple uses [36,45,56]. It is very likely when these herbal remedies are used for

targeted health problem, they might as well be treating other ailments whose symptoms have not manifested - thus the holistic aspect of the medicinal plants. For very diverse and distant countries to have similar medicinal plants and remedies, suggests that these plants are actually healing the ailments claimed to treat. Some of these CUMPs noted in this study have been screened for active ingredients (Table 1).

The CUMPs in the study are likely to be facing threat of extinction as an impact of population growth who cultivates even the marginal land for livelihood. As shown in the present study, some useful plants were obtained at two hours or more walking distance (about 7-9 kilometres from home place). Other threats are periodic bush fires and unsustainable harvesting of the herbal plants. Similar findings of threats of CUMPs have been shown by other studies [17,21,75-77]. However the magnitude of threats posed in the present study and in those reviewed were not established.

## 5. CONCLUSION

The analysis and discussion presented in this study suggested what was happening in rural areas on the management of various health problems in resources poor countries like Tanzania and other developing countries. World Health Organization shows that more than 80% of population in developing countries live in the rural areas and needs healthcare services for management of various health problems happening in their respective communities. The analysis and discussion presented above have revealed that in rural areas there was inadequate human resource, drugs and medical supplies in most of health facilities [22,68]. Therefore the only option for people living in rural areas was the commonly used medicinal plants (CUMPs) and traditional health practitioners (THPs) for management of various health problems in rural settings. There are some diseases that are resistant to conventional medicine like malaria, skin infections and respiratory diseases caused by bacteria. Also there are some cases of mental illness, infertility both for males and females. The alleviation of suffering and sometimes even cure in rural setting is from CUMPs and THPs. Furthermore, there are undefined health conditions mostly affecting infants and women when pregnant and after delivery are partly being believed by rural people in Tanzania and other developing countries to be better managed by CUMPs with THPs than in conventional health

facilities [19,33,70]. It follows, therefore, for high quality of livelihood worldwide including the absence of abject poverty in developing countries as issues to be achieved by the Millennium Development Goals (MGDs) [78]; health planners and workers have to see the role CUMPs and THPs through the lens of primary healthcare in financially resource-poor developing countries. This in turn would accelerate the speed to meet 4<sup>th</sup>-6<sup>th</sup> MGDs [78] in developing countries. This means that the most reported CUMPs in wards/villages at a regional level should be subjected to screening for safety and efficacy. It is being acknowledged that herbal plants are a promising area for discovery of new drugs for HIV and AIDS, cancer, TB, diabetes and now for the growing emergence of antibiotic restraint forms of pathogens. On the bases of intellectual property, villages from which the herbal remedies would come, that lead to discovery of new drugs should sign a memorandum of understanding which states what percentage they would get from the sales of drugs as partners in new drug discovery.

## COMPETING INTERESTS

Author has declared that no competing interests exist.

## REFERENCES

1. World health organization guidelines for assessing quality of herbal medicines with reference to contaminants and residues, World health organization, Geneva; 2007.
2. Addis G, Abebe D, Urga K. A survey of traditional medicinal plants in Shirka District, ARSI zone. *Ethio. Ethio Pharm J.* 2001;19(2):30-35.
3. Duncan A, Okunji C. New Antimicrobials of plant origin, IN: J. Janick (ed), *Perspectives on new crops and new uses.* Alexandria, VA: ASHS PRESS. 1999; 6:457-462.
4. Asres K, Taddese S, Gebremariam T. *In vitro* antimicrobial activities of some selected topically applied medicinal plants of Ethiopia. *Ethio Pharm J.* 2003;21:34-45.
5. Mahonge CP, Nsenga JV, Mtengeti EJ, Mattee AZ. Utilization of medicinal plants by Waluguru people in east Uluguru Mountains in Tanzania. *African Journal of Traditional Complementary and Alternative Medicines.* 2006;3(4):121-134.
6. Kitula R. Use of medicinal plants for human health in Udzungwa Mountains Forests: A case study of New Dabaga Ulongambi Forest Reserve, Tanzania. *Journal of Ethnobiology and Ethnomedicine.* 2007;3:7. DOI:10.1186/1746-4269-3-7.
7. Thomson Learning. *Physician Desk Reference (PDR) for herbal Medicine*, 4<sup>th</sup> ed. Book News. inc. Portland Or; 2008. Available:<http://www.thefreelibrary.com/PDR+for+herbal+medicines%2c+4th+ed.-a0179651575>
8. WHO. *World health report 2008 Primary healthcare (now than ever) world health organization, Geneva; 2008.*
9. Klienman A. *Patients and healers in the context of culture: An exploration of the borderland between anthropology, medicine, and psychiatry comparative studies of health systems and medical care of Quantum Book University of California Press.* 1980;3.
10. der Van Geest Sjaak. Is there a role for traditional medicine in Basic health services in Africa? A plea for community Perspective, *Tropical medicine and International health.* 1997;2(9):903-9111.
11. Znaniecki Florian. *Cultural Sciences. Their Origin and Development, University of Illinois; 1963.*
12. Kayombo EJ, Febronia C, Uiso. zacharia Mbwambo, Rogassian L, Mahunnah, Mainen J, Moshi and Yasin H. Mgonda. Experience in initiating collaboration of traditional heallers in managing HIV/AIDS in Tanzania. *Journal of Ethnobiology and Ethnomedicine.* 2007;3:6.
13. Kayombo EJ. Tambiko a healing Therapy in Tanzania, Chapter in S. Ntomchukuu Madu, Peter Kakubeie Baguma and Alfred Pritz Editors *Psychotherapy in Africa, First Investigations, World Council for Psychotherapy; 1996.*
14. Kayombo EJ. Impact of training traditional birth attendants on maternal mortality and morbidity in Sub-Saharan African countries. *Tanzania Journal of Health Research.* 2013;15(2).
15. Langwick Starcy. *Bodies, politics and african healing, the matter of maladies in Tanzania.* Indian University Press; 2011.
16. Kayombo EJ, Uiso FC, Mahunnah RLA. Experience on healthcare utilization in seven administrative Regions of Tanzania. *Journal of Ethnobiology and Ethnomedicine.* 2012;8:5.

17. Mahunnah Rogasian LA, Febronia C Uiso, Kayombo Edmund J. Documentary of traditional medicine in Tanzania, a traditional Medicine Resource Book, Dar-es-Salaam University Press (DUP); 2012.
18. Busia K, Kasilo OMJ. Collaboration between traditional health practitioners and conventional health practitioners; some country experiences, The African Monitor Special Issue. 2010;13.
19. Kayombo EJ. Traditional healers and treatment of HIV/AIDS patients in Tanzania. A case of Njombe Rural Areas District, Iringa Region Ph.D. Dissertation Wien; 1999.
20. Cosminsky S. Traditional Midwifery and Contraception: In: Bannerman RH, John Burton, Che'n Wen -Chieh (eds.) Traditional Medicine and Health Care coverage. WHO, Geneva; 1983.
21. Institute of Traditional medicine. Muhimbili University of Health and Allied Sciences, Institute Profile. 2005;23.
22. Chudi, Ibekwe Perpetus. Healthcare problems in developing countries. Medical Practice and Reviews. 2010;1(1):9-11.
23. The United Republic of Tanzania. Ministry of Health and Social Welfare; Primary Health Services Development Programme 2007– 2017; United Republic of Tanzania; 2007.
24. The United Republic of Tanzania. Ministry of Health and Social Welfare: In-depth assessment of the medicines supply system in Tanzania; United Republic of Tanzania; 2008.
25. Huffman MA Current evidence for self-medication in primates: A multidisciplinary perspective. Yearbook of Physical Anthropology. 1997;40:171–200.
26. Engel C. Wild health: How animals keep themselves well and what we can learn from them. Harcourt Mifflin Harcourt, New York; 2002.
27. Raman R, Kandula S. Zoopharmacognosy: Self-medication in wild animals. Resonance. 2008;13:245–253.
28. Wikipedia. Zoopharmacognosy; 2014. Available:<http://en.wikipedia.org/wiki/Zoopharmacognosy>
29. Biser Jennifer A. Really wild remedies— medicinal plant use by animals; 1998. National Zoological Park. Available:[nationalzoo.si.edu](http://nationalzoo.si.edu) (Retrieved. 2005-01-13).
30. WHO. Annex 3 Supplementary guidelines on good manufacturing practices for the manufacture of herbal medicines WHO Technical Report Series, Geneva. 2006;937.
31. UNAIDS. Collaboration with Traditional healers for HIV/AIDS prevention and Care in sub-Saharan Africa: Practical guidelines for programme, UNAIDS; 2005.
32. Iwu MM. Forward, In Sarah Laird (editor) Introduction from biodiversity and traditional Knowledge: Equitable Partnership in Practice; A WWF/UNESCO/Kew People and Plants Conservation Manual. Earthscan Publications; 2001.
33. Kayombo EJ. KupingaTego in Southern Highlands of Tanzania: A case of one African Traditional Methods of Healing. In: Psychotherapy in Africa, Third Issue edited by Sylvester NtomchukwuMadu, Peter Kakubeire Alfred Pritz, Pietersburg. 1999;20-34.
34. The United Republic of Tanzania. National population census 2010, United Republic Tanzania, Dar-es- Salaam. 2012;201.
35. Barney G. Glaser, Anselm L. Strauss. The Discovery of Grounded Theory. Strategies for Qualitative Research; 1967.
36. Tavs A Aberere, Pius E Okoto, Freddy O Agoreyo. Antidiarrhoea and toxicological evaluation of the leaf extract of *Dioscorea rotundifolia* triana (*Melastomataceae*) BMC Complementary and Alternative Medicine. 2010;10:71. DOI:10.1186/1472-6882-10-71.
37. Horizon herbs. Canaigre (*Rumex hymenosepalus*), packet of 100 seed; 2013. Available:<https://www.horizonherbs.com/product.asp?specific=2657>
38. Moerman DE. Native American Ethnobotany. Timber Press, Portland, OR; 1998.
39. Munz A. California Flora. University of California Press; 1959.
40. Gill LS. Ethnomedical uses of plants in Nigeria. University of Benin Press; 1992.
41. Noumi E, Yomi A. Medicinal plants used in intestinal diseases in Mbalmayo Region. Fitoterapia. 2001;1992;246-254. PubMed Abstract/Publisher Full Text.
42. Watt JM, Breyer-Brandwijk MG. The medicinal and poisonous plants of Southern and Eastern Africa. Volume137. 2<sup>nd</sup> edition. E & S Livingstone Ltd, Edinburgh & London. 1962;744.
43. Kokwaro JO. Medicinal Plants of East Africa, Kenya Literature Bureau, Nairobi; 1976.

44. Munisi W, Said R, Mushi DE, Bwire JM, Sendalo DS, Mkonyi JI. The role of savings and credits cooperative societies in sustainable dairy goats production: Experience from Dodoma in central Tanzania. Proceedings of the 31st Scientific Conference of Tanzania. Soc. Anim. Prod. 2004;31:27.
45. Web MD. Find a Vitamin or Supplement EUCALYPTUS; 2009. Available:<http://www.webmd.com/vitamins-supplements/ingredientmono-700-EUCALYPTUS.aspx?activeIngredientId=700&activeIngredientName=EUCALYPTUS>.
46. Annies Remedy. Eucalyptus Eucalyptus globules; 2013. Available:[http://isearch.avg.com/search?q=Eucalyptus+globules++annies+remedy&sa\\_p=](http://isearch.avg.com/search?q=Eucalyptus+globules++annies+remedy&sa_p=)
47. Gutiérrez, Rosa Martha Pérez. Sylvia Mitchell, Rosario Vargas Solis, Psidium guajava: A review of its traditional uses, phytochemistry and pharmacology, Journal of Ethnopharmacology. 2008;117:1-27.
48. Batick MJ. Ethnobotany of Palms in the Neotropics. In: Prance GT, Kallunki JA. (Eds.), Advances in Economic Botany: Ethnobotany in the Neotropics. New York Botanical Garden, New York, USA. 1984;9-23.
49. Khan MLH, Ahmad J. A pharmacognostic study of *Psidium guajava* L. International Journal of Crude Drug Research. 1985; 23:95-103.
50. Ohigashi H. Toward the chemical ecology of medicinal plant use in chimpanzees: The case of *Vernonia amygdalina* Del., a plant used by wild chimpanzees, possibly for parasite-related diseases. Journal of Chemical Ecology. 1994;20:541-553. Cross Ref.
51. TraBi FH, Koné MW, Kouamé NF. Antifungal activity of erigeron floribundus asteraceae from Côte d'Ivoire, West Africa Tropical Journal of Pharmaceutical Research. 2008;7(2):975-979.
52. Sy GY, Cissé A, Nongonierma RB, Sarr M, Mbodj NA, Faye B. Hypoglycaemic and antidiabetic activity of acetonic extract of *Vernonia colorata* leaves in normoglycaemic and alloxan induced diabetic rats. Journal of Ethnopharmacology. 2005;98:171-175.
53. Orwa C, Mutua A, Kindt R, Jamnadass R, Anthony S. Agroforestry Database: A tree reference and selection guide version 4.0. World Agroforestry Centre, Kenya; 2009. Available:<http://www.worldagroforestry.org/resources/databases/agroforestry>
54. Maharaj V, HF GlenKZN. *Herbarium Perinari Curatellifolia* Planch. ex Benth; 2008. Available:[http://www.plantzafrica.com/plant\\_nop/parinaricurat.htm](http://www.plantzafrica.com/plant_nop/parinaricurat.htm)
55. Halilu ME, Akpulu IK, Agunu A, Ahmed A, EM Abdurahman. Phytochemical and Antibacterial Evaluation of *Parinari curatellifolia* Planch Ex Benth (*Chrysobalanaceae*) Journal of Applied Science. 2008;16.
56. Ogunbolude Y, Ajayi MA, Ajagbawa TM, Igbakin AP, Rocha JBT, Kade IJ. Ethanolic extracts of seeds of *Parinari curatellifolia* exhibit potent antioxidant properties: A possible mechanism of its antidiabetic action. Journal of Pharmacognosy and Phytotherapy. 2009;1(6)067-075.
57. Omale SA, Auta Banwat SB, Amagon KI, Thomas YP. Effects of the ethanolic extract of *Parinari curatellifolia* on cat blood pressure and rabbit jejunum preparations. IJPFR. 2011;1(2):39-44.
58. Tchinda AT. *Clausena anisata* (Willd.) Hook.f. ex Benth. In: Schmelzer G.H, Gurib-Fakim A. (Editors). Prota 11(2): Medicinal plants/Plantesmédicinales 2. [CD-Rom]. PROTA, Wageningen, Netherlands; 2011.
59. Shangwa Annie. The Girl-Child and Menstrual Management in Zimbabwe-part two Harare; 2011. Available:[http://www.wsscc.org/sites/default/files/publications/annieshangwa\\_mhm\\_report2\\_zimbabwe\\_2011.pdf](http://www.wsscc.org/sites/default/files/publications/annieshangwa_mhm_report2_zimbabwe_2011.pdf)
60. Karin Behr. *Vangueria infausta* Burch. Subsp. *infausta* Pretoria National Botanical Garden; 2004. Available:[http://www.plantzafrica.com/plant\\_tuv/vanguarinfaust.htm](http://www.plantzafrica.com/plant_tuv/vanguarinfaust.htm)
61. Chhabra SC, Mahunnah RLA, Mshiu EN. . Screening Tanzanian medicinal plants for antimalarial activity. J Ethnopharmacol. 1984;11:157.
62. Chhabra SC, Mahunnah RLA, Mshiu EN. Plants used in traditional medicine in Eastern Tanzania V. *Angiosperms* (Passifloraceae to Sapindaceae) Ethnopharmacol. 1991;33:143.
63. Mbukwa Elbert, Musa Chacha, Runner R. T. Majinda Phytochemical constituents of *Vangueria infausta*: Their radical scavenging and antimicrobial activities ARKIVOC. 2007;9:104.

- Available:<http://www.arkat-usa.org/get-file/23047/>
64. Hedberg IO, Hedberg PJ, Madati KE, Mshigeni EN Mshiu, Samuelsson G. Inventory of plants used in traditional medicine in Tanzania. I. Plants of the families Acanthaceae–Cucurbitaceae. *Journal of Ethnopharmacology*. 1982;6:29–60.
  65. Kareru PG, Kenji GM, Gachanja AN, Keriko JM, Mungai G. Traditional medicine among the Embu and Mbeere peoples of Kenya. *African Journal of Traditional, Complementary and Alternative Medicines*. 2007;4(1):75–86.  
Available:<http://journals.sfu.ca/africanem/index.php/ajtcam/article/view/160/172>
  66. WaboPoné J, Payne VK, Mbogning Tayo Gertrude, Marie Claire Komtangi, Yondo Jeannette, Alidou M, Ngangout, Mpoame Mbida, Bilong CF Bilong. *In vitro* anthelmintic efficacy of *Dichrocephala integrifolia* (Asteraceae) extracts on the gastro-intestinal nematode parasite of mice: *Heligmosomoides bakeri* (Nematoda, Heligmosomatidae). *Asian Pac J Trop Biomed*. 2013;3(2):100–104.
  67. UNEP. Traditional Medical Practices and Medicinal Plants in Kenya and East Africa; 2008.  
Available:<http://www.unep.org/ik/Pages2.aspx?id=Traditional%20Medical%20Practices&content=Kenya&subcat=Traditional%20Medical%20Practices%20in%20Kenya>
  68. Rahman SU, Smith D K. Deployment of Rural Health Facilities in a Developing Countries. *Journal of Operational Research Society*. 1999;50:892-902.
  69. Chokevivat Vichai. The role of Thai Traditional Medicine in Health Promotion 6 g c h p Bangkok Thailand; 2005.
  70. Kayombo EJ. Traditional Methods of protecting the Infants and Child illness/ Diseases Amongthe Wazigua at Mvomero Ward, Morogoro Region, Tanzania. *Alternative and Integrative Medicine*. 2013;2(1).
  71. Veena Bhasin. Gaddis' Folk Medicine: A Source of Healing, *Ethno-Med*. 2008; 2(1):1-27.
  72. Haile Yineger, Delenasaw Yewhalaw. Traditional medicinal plant knowledge and use by local healers in Sekoru District, Jimma Zone, Southwestern Ethiopia, *Journal of Ethnobiology and Ethnomedicine*. 2007;3:24.
  73. Patton MQ. *Qualitative research and evaluation methods* (3<sup>rd</sup> ed.). Thousand Oaks, CA: SAGE Publications; 2002.
  74. Wexler Mark. For Many U.S. Scientists, the Days of Hit-and-Run Research Are Over; 1999. Available: <https://www.nwf.org/News-and-Magazines/National-Wildlife/Animals/Archives/1999/Building->
  75. Agyei: Yvonne. Deforestation in Sub-Saharan Africa, *African Technology Forum*; 2001.  
Available:<http://web.mit.edu/africantech/www/articles/Deforestation.htm>
  76. The United Republic of Tanzania. The National Environment Management Council (NEMC): National Environmental Action Plan-1994, Tanzania, Zinazofanana; 1994.
  77. The United Republic of Tanzania. Ministry of Natural Resources and tourism: Forest management Programme National Environmental management Council, Tanzania 1994. National Conservation Strategy for sustainable Development, United Republic of Tanzania; 2000.
  78. United Nations. Millennium Development Goals; 2000.  
Available:[www.un.org/millenniumgoals](http://www.un.org/millenniumgoals)

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Peer-review history:  
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