

**ASSESSMENT OF MEDICINAL PLANTS USED IN TREATMENT OF RING WORM
INFECTIONS IN MAGAMAGA TOWN COUNCIL MAYUGE DISTRICT**

BY
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**A RESEARCH REPORT SUBMITTED TO THE DEPARTMENT OF BIOLOGY
IN PARTIAL FULFILMENT OF THE REQUIREMENTS FOR THE AWARD OF
BACHELORS DEGREE OF SCIENCE EDUCATION OF
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DECLARATION

I ISABIRYE DERRICK I declare to the best of my knowledge that the study entitled Assessment of medicinal plants used in the treatment of ring worm infection in Magamaga town council mayuge district, is my original work and has not been submitted to Busitema University or any other University/institution before for the award of a degree or diploma or any other academic perspective or qualification.

Signature.....

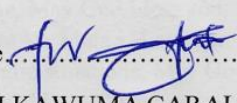
Date.....11th 10 - 2024.....

ISABIRYE DERRICK

APPROVAL

This report entitled Assessment of medicinal plants used in the treatment of Ring worm infection in Magamaga town council Mayuge district, has been submitted for examination with the approval of the following supervisor evidenced by the signature in the consent below:

I have satisfactorily read through the dissertation and consent to its submission to the department of Biology, Nagongera campus for the award of Bachelor of Science and education of Busitema University.

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ABSTRACT

Medicinal plants are highly used by local people in treating many infectious diseases in Uganda and form the basis of health care systems in Uganda. This study was aimed at documenting the medicinal plants used in the treatment of ringworm infections by the people of Magamaga town council Mayuge district, Uganda. An ethnobotanical study was conducted between May and July 2024 in 12 villages of Magamaga town council. Information was obtained from 26 respondents identified using snowball and purposive

sampling techniques and interviewed using semi-structured questionnaires and schedules. Descriptive statistics were used to present the data and quantitative analysis of data was done using percentage respondent knowledge (PRK) indices. A total of thirtyfive (16) medicinal plants were recorded. The plant species classified into 9 families with the predominant ones being asteraceae and fabaceae . Asteraceae was the most represented with seven species (4) species. Plant remedies were mainly prepared crushing the plant leaves then mixed with paraffin or ash solution and 100% administered by direct rubbing of the infected skin part with the paste. plant leaves were highly used in treatment of ringworm infections(60%) followed by plant sap and then flowers. This study recorded plant species with the potential to treat ring worm infections and this is reflected in the high diversity of the recorded species for the medicinal ringworm treatment purpose.

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CHAPTER 1.0: INTRODUCTION

1.1Background

Traditional medicine has been used for centuries by herbalists, healers, spiritualists, hunters and farmers to treat various categories of human diseases(Tchuenguem, Kechia et al. 2017).This traditional knowledge is transmitted from generation to generation is a result of thousands of experiences made by people while being in connection with their nature(Barreau, Ibarra et al. 2016). In the rural areas in Africa, about 80% of the population depends on traditional medicine for their health needs(Pouliot 2011). The use of medicinal plants as a fundamental component of the African traditional healthcare system is possibly the most ancient and assorted of all therapeutic systems(Bhuda and Marumo 2020). Many people rely on the use of medicinal plants based on the fact that they are easily accessed and cheaply available because they are locally made(Gurib-Fakim 2006). People especially traditional healers and herbalists generate income from medicinal plants(Ngezahayo, Havyarimana et al. 2015). 20% of the total population in united states of America uses local herbs of develop(Khan and Ahmad 2019). Local herbs are easily prepared and several researchers have documented that they don't present major side effects of the users, more that is cheap compared to the inorganic medicine in terms of cost in the mark(Aschale, Wubetu et al. 2021).

The knowledge of medicinal plants and their uses in Uganda can be traced to early civilization (Gumisiriza, Sesaazi et al. 2021). Traditional healers have been working together with the government of Uganda (Akol, Moland et al. 2018).that saw the passing of the Traditional and Complimentary Medicines Bill, 2019 (Organization 2019) .

In Uganda, the prevalence of herbal medicine use is estimated to be 60% (Nsibirwa, Anguzu et al. 2020). The consumption is generally higher in rural areas, partly due to limited access to medical facilities, inadequacy and high cost of medical supplies, shortage and low motivation of medical practitioners, and wide acceptance of traditional medicines as having minimal side effects compared to conventional drugs.(Anywar, Van't Klooster et al. 2015)

In Uganda, medicinal plants are mainly collected from the wild using destructive harvesting techniques such as uprooting and debarking that endangers their survival (Bukuluki, Luwangula et al. 2014). Inappropriate harvesting, and consumption of herbal medicine is partly fueled by the increasing proliferation of unregulated herbal medicine trade in urban centers(Alamgir and Alamgir 2017). The indiscriminate collection and overharvesting of medicinal plant species for commercial purposes threatens the conservation of plant diversity (Hazrati, Mohammadi-Cheraghabadi et al. 2023).

Therefore, this study is aimed at documenting the medicinal plants used in the treatment of ring worm infection by the people of Magamaga in Magamaga town council, Mayuge district, Uganda. How the plants are used which includes; the plant parts used, mode of preparation, dosage, administration module the phytochemicals found in each identified plant responsible for treatment of the ring worm infection.

1.2 Statement of the problem

The use of herbal medicines for the treatment of various health challenges continues to expand rapidly across the world(Choudhury, Singh et al. 2023). There is a tremendous surge in acceptance and public interest in natural therapies both in developing and developed countries, with these herbal remedies being available not only in drug stores but also in food stores(Joshi and Jat 2020). Herbal medicinal products

are the primary healthcare source for the large population living in developing countries(Nsagha, Ayima et al. 2020). Thus, traditional medicines have provided a good level of confidence in safety and efficacy as the medicines have been used for thousands of years(Pan, Litscher et al. 2014). There is a growing interest in natural products as a source of new chemical entities for the development of modern drugs and for the use of natural products as dietary supplements, ingredients to food and beverages, phytocosmetics, and other herbal products(Cragg and Newman 2013).

In Uganda, the phytotherapy still maintains an important role in meeting the primary health care needs of more than 80% of the population (Nsagha, Ayima et al. 2020).

Many researchers have documented some of the medicinal plants used by traditional practitioners in most parts of the country and worldwide for treatment of ring worm infections(Anand, Tudu et al. 2022). but not in Magamaga town council and due to the increased use of medicinal plants by the increasing population, plants may easily go to extinction without information being documented.

Therefore, this research was aimed at documenting the medicinal plants used for ring worm infection treatment and management by people of Magamaga town council Mayuge district, how the plants are used in combating of ring worm disease including the plant part used, mode of preparation of the remedies, dosage, mode of administration and how long the treatment is used plus the most commonly used plant.

1.3 Research questions

What are the known medicinal plants used in the treatments of ring worm infections by the people of Magamaga town council Mayuge district.

Which plant part(s) is/ are used in the treatment of ring worm infection.

What is the mode of preparation of the remedy or the form in which the plant part is used?

What is the administration mode of the remedy?

What are the phytochemical components found in each medicinal plant responsible for ring worm treatment?

1.4.0 Objectives

1.4.1 General objective

- To identify the medicinal plants used in treatment of ring worm infection by the people of Magamaga town council Mayuge district

1.4.2 Specific objectives

- To establish how the medicinal plants are used for treatment of ring worm infections; this includes the plant part used, mode of preparation of the remedy, dosage, administration mode and the duration of treatment.
- To find out the known phytochemicals in each of the determined medicinal plants for ring worm infection treatment by people of Magamaga town council Mayuge district

1.5 Hypothesis

1.5.1 Null hypothesis

Few medicinal plants are used in treatment of ring worm by the people of Magamaga town council, Mayuge district.

Medicinal plants are not used in the same way treatment in the treatment of ring worm infection.

1.5.2 Alternative hypothesis

Many medicinal plants are used in treatment of ring worm treatment by the people of magamaga town council,

Medicinal plants are used in the same way for treatment of ring worm infections

1.6 Significance of the study and anticipated outcome

This study was aimed to provide useful information that add value to the plant biodiversity and the findings may serve as a platform for the development of conservation and management interventions of plant species in that area.

The information in this study was also to be useful to those people who are interested in working with medicinal plants in treating various diseases like ring worm infection.

Expected output:

The proposed study was expected to provide a comprehensive review of the literature on the medicinal plants used in the treatment ring worm infections and how the plants are used in the treatment of ring worm infection.

1.7 Scope of the study

The study was to determine the medicinal plants and their use in the treatment of ring worm infections used by the people of Magamaga town council Mayuge district only. The study was also to provide the phytochemicals known to be contained in the determined plants using the related literature reviews about those plants.

Many methods were used to collect the data especially use of interviews, schedules and the specific respondents were determined using snowball method strictly on the herbalists found in Magamaga town council Mayuge district.

CHAPTER 2.0; LITERATURE REVIEW

2.1 Medicinal plants

Traditional medicine has been used for centuries by herbalists, healers, spiritualists, hunters and farmers as a primary health care at community level (Kwame 2016). Herbalist, healers, spiritualists, hunters and farmers use indigenous plants for treating and averting illnesses and are believed to be a basis for primary health care provision (Letsholo 2006). Traditional medicine is seen to be effective and about 60% of rural population depend on it for their primary health care (Nsagha, Ayima et al. 2020). This intensive use of traditional medicine is due to its affordability, availability, accessibility and acceptability (James, Wardle et al. 2018).

Medicinal plants are playing along significant role in treating a wide range of illnesses, including skin diseases, which are not always reported but are self-treated (Van Wyk and Wink 2018). In the last few decades, extensive efforts have focused on documenting medicinal plants to identify species that may be used in drug development (Dutra, Campos et al. 2016). For example, there is documentation of medicinal plants used for skin diseases in southern Africa, Pakistan, the south Balkan, and the eastern Mediterranean regions (Tsioutsiou, Amountzias et al. 2022). Many people in West Africa rely on traditional medicine/medicinal plants due to their accessibility and believe that they are more potent and efficient in curing disease than conventional medicines or healthcare, which is inadequate in the region (Bhuda and Marumo 2020).

According to (Mabona and Van Vuuren 2013) some studies have reports or reviews the plants which used to treat skin diseases around the globe medicinal plants are used as medicine by the native traditional doctors to treat skin diseases by the people of Keffi in Nigeria. Among the different plant parts, the leaves are most commonly used for the treatment of diseases followed by the bark, root, whole plant and seed (Mabona and Van Vuuren 2013). Therefore, quite a number of studies have aimed at documenting plants used to treat skin diseases in different West African countries. For example, the Akwa Ibom state in Nigeria region of the Republic of Benin (Fokou, Nyarko et al. 2015), The northwest region of Cameroon and many others

2.2 Ring worm infections. (Dermatophytes)

Dermatophytosis is superficial fungal infection caused by dermatophytes that invade the keratinized tissue of humans and animals (AL-Khikani 2020). Lesions from dermatophytosis exhibit an inflammatory reaction induced to eliminate the invading fungi by using the host's normal immune function (Gupta, Das et al. 2023). The dermatophytes are classified according to the site of infection which includes tinea corporis (ring worm), tinea capitis (scalp ring worm), tinea unguium (nail infection) and tinea pedis which affects the foot. Ringworm occurs in all animal species in all countries but more commonly where animals are accommodated in dense groups, especially indoors (Dauda and Kuka 2021). Animal susceptibility is determined largely by immunological status, so the young animals are most susceptible (Hoelzer, Pouillot et al. 2012).

However the occurrence of dermatophytic infection (ring worm) is a public health problem especially in children (Adefemi, Odeigah et al. 2011). This is because of the development of antifungal drug resistance of the pathogens and side effects exhibited by the drugs used for fungal diseases. Hence there is a great demand for safer alternative and effective chemotherapeutic agents (Robbins, Wright et al. 2016).

Fungal disease mostly affects skin epidermis, scalp, feet and the groin. Infection on different parts of body caused by different fungus. Example: tinea corporis cause skin infection, tinea capitis cause infection on scalp and tinea cruris on the groin (Shy 2007). It is caused by mold like parasites that cause infection and live on epidermis of skin (Vennewald and Wollina 2005). It may be spread by contact with infected person. . it forms skin blisters and cracks which causes irritation and rashes. It forms circular ring like structure of red color It is usually caused by fungal spores which cause infection (Kotrekova and Kotrekova).

Fungal infections are various, they range from superficial infections (ringworm) a major source of morbidity affecting hair (tinea), nail (onychomycoses), skin (herpes vine) and mucosa (aphthae) to systemic fungal infections (meningitis; pneumonia and bronchopneumonia) that are life-threatening (Laube 2004). Although seemingly a large number of drugs for the treatment of fungal infections are commercially available, only few of them are really effective antifungals (Denning and Bromley 2015).

Treatment removes fungal spores from skin because as long as these spores remain on skin the condition is contagious therefore it is necessary to remove all spores from skin (White 1927). They feed on dead skin cells and in moist and warm environment (Haworth and McElwain 2008). These spores can also live on clothes and beds. It is usually treated with ointments. Scalp infection is serious case and infected person needs oral antifungal tablets. Patient is contagious until all spores eliminated from body. To prevent this contagious infection person should maintain good hygiene (Alter, McDonald et al. 2018).

Here are some of the medicinal plants that are used in different countries and other parts of Uganda in the treatment of ring worm infections with their properties that exhibit the anti-fungal activity according to different literatures as below

***Aloe barbadensis* (asphodelaceae).**

Aloe vera contains 6 antiseptic agents: Lupeol, salicylic acid, urea nitrogen, cinnamonic acid, phenols and sulfur (Kumbhar, Patil et al. 2015). They all have inhibitory action on fungi, bacteria and viruses. Antifungal Aloe extract treatment of guinea pig feet that had been infected with *Trichophyton mentagrophytes* resulted in a 70% growth inhibition compared to the untreated ones (Svitina, Swanepoel et al. 2019).

***Bidenpilosa* (asteraceae)**

Antimycotic activity of *Bidenpilosa* was investigated using four fungal species (*Aspergillus niger*, *Aspergillus flavus*, *Penicillium notatum* and *Candida albicans*) (Angelini, Matei et al. 2021). All fungal cultures were maintained on potato dextrose agar (PDA) (Biolab, Johannesburg, South Africa) and were recovered for testing by subculturing on PDA for 3 days at 25°C prior to bioassay (Marimani). Each extract was vortexed with the molten agar at 45°C to final concentrations of 0.1, 0.5, 1.0, 5.0 and 10.0 mg/ml and poured into Petri dishes. Blank plates containing only PDA or PDA with the respective solvent served as controls. The acetone, methanol and water extracts exhibited low activity against *A. flavus* but suppressed the growth of *P. notatum* 100% at 0.1 mg/ml (Ashafa and Afolayan 2009).

***Allium sativum* (Alliaceae)**

Allium sativum is a perennial flowering plant that grows from a bulb(Mhazo, Ngwerume et al. 2013). The antidermatophytic activity of ethanolic, methanolic and aqueous extracts of garlic was done using agar diffusion method as described by Lino and Deogracious (2006) and according to their findings, the antifungal activity of the aqueous ethanolic and methanolic extract of garlic (*allium sativum*) inhibited the fungi with zones of inhibitions ranging from 4.50-30.67mm the zone of inhibition decreased with the decrease in the concentration of the extract(Mercy, Ijeoma et al. 2014).

***Acacia nilotica*(fabaceae)**

The antifungal activity of *acacia nilotica* was done by preparing one concentration plant extract which was prepared by dissolving 24mg/ml in a solvent dimethylsulfoxide(Nazish, KHAN et al. 2018). The fungi used in this study were *A niger* and *A flavus* and after inoculation and incubation of the sample for about one week, the ethanolic plant extract of *L nilotica* showed 4.91%- and 116-mm growth inhibition against *A niger*. *L nilotica* ethanolic plant extract showed 4.61%and 125mm growth inhibition. These plant extracts were considered as test and control that is with and without extract growth of the fungi(Tafinta, Shehu et al. 2013)

CHAPTER 3.0; METHODOLOGY

3.1 Study area.

Magamaga town council is located in Mayuge district in Eastern part of Uganda along Jinja- Tororo high way about 25km from Jinja city. It is composed of 9 villages (Magamaga A,B,C, Bukoli, Mutukula, Ntokolo A Wabulungu A and B, and Wandago). The population of the Magamaga town council is about 1500 people according to the reports from the town council headquarters. People in this area speak Lusoga language

The major economic activity is farming where the biggest population carry out subsistence agriculture growing sweet potatoes, maize, cassava while other people practice plantation agriculture growing sugar cane as their main cash crop. Some of the people in some villages like Ntokolo A are fisher men but on a small scale carrying out their activities on Lake Victoria.

3.2 Target population and sample

The target population was the herbalists and community elders as the key respondents in Magamaga town council Mayuge district. Villages were selected from Magamaga town council according to the position of the herbalists and the community elders who were also gotten by using purposive and snowball sampling methods as adopted from (Al-Faris, Al-Rowais et al. 2008). The data was only from those elderly people almost above 35 years who have taken some years of experience while using given medicinal plants in ring worm infection treatment unlike the people below 35 years who have less experience in the medical plants and how they are prepared and used.

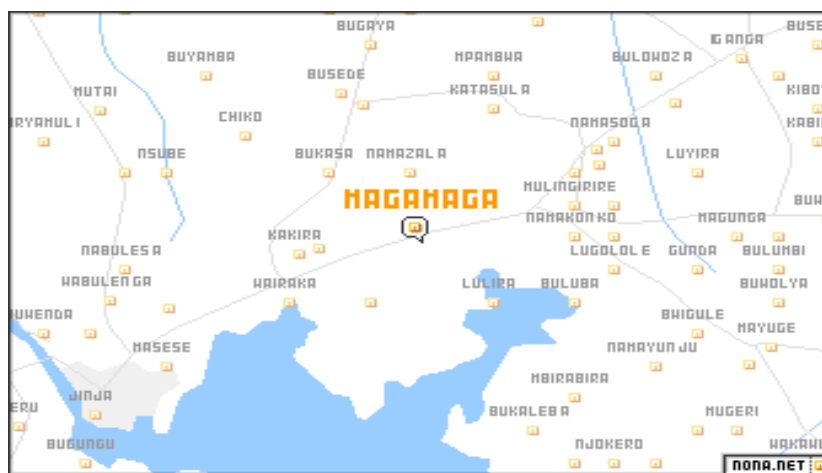


Fig 1.0 map of magamaga town council showing the study area. Adapted from Nona NET

3.3 Design of the study

A cross sectional survey was conducted which involved meeting the local council representatives who were used in identifying the key respondents who are mainly the herbalists and community elders who were later selected using purposive and snowball sampling method as adopted from (Al-Faris, Al-Rowais et al. 2008) the respondents were selected from village on the basis of their reputation and ability to demonstrate good traditional herbal medicine knowledge. For each respondent, questions were asked about personal information like gender, age among others were recorded and also medicinal plants for ring worm infection treatment, plant part used, mode of preparation, administration mode, dosage among

others were also collected using interviews like semi-structured interviews, questionnaires among others as adopted from (Agize, Demissew et al. 2013). Pictures of plants isolated by the herbalist were taken as part of data collected.

3.4 Data analysis

The collected primary data was entered in an excel sheet where percentages and frequencies were used to summarize the ethnobotanical data. Parameters like percentage respondent knowledge (PRK) will be used in data analysis; it is also called percent use-value.

The percentage of respondents who have knowledge (PRK) regarding the use of a species in the treatment of ring worm infection were estimated using the formula below;

$$\frac{\text{number of people interviewed citing the plant}}{\text{total number of respondents interviewed}} \times 100\%$$

The percent use-value index determines the relative importance of plant species as a medicinal plant. High PRK indicates high use reports for a plant implying its relative importance to the local community for health care needs as adopted from (Matongo 2012) hence data will be presented in form of tables, graphs and pie charts as adopted from (Bavdekar 2015).

The phytochemicals contained within the identified medicinal plants will be found out using related literatures about phytochemicals contained in plants for treatment of ring worm infection

3.5 Procedure for Data collection

The biology department Busitema University granted me the permission to go ahead with data collection from the community of Magamaga town council by issuing me an introductory letter. This letter was then presented to the local chairperson visited so as to obtain permission to interact with the people of the target group. Before data collection, voluntary verbal prior informed consent of each of the informants obtained since knowledge is a natural wealth of the local people, they were assured that the data was going to be used only for academic purposes (Tindana, Bull et al. 2012). After explaining the purpose of the study, for each respondent, personal information was recorded on gender, age, marital status, also information on the respondent's location, level of education and how they acquired knowledge about medicinal plants in order to eliminate secondary data. After wards information on medicinal plants, local name, how they are used in treatment in treatment of ring worm infection which includes plant parts used, mode of preparation, dosage, and administration methods will be recorded. This ethnobotanical data was obtained by use of semi-structured interviews, open interviews, questionnaires based on standard ethnobotanical methods as adopted from(Tindana, Bull et al. 2012).

3.5 Plant identification and Nomenclature

The international plant index and the Royal Botanic Garden Kew (Paton, Allkin et al. 2016)will be used to validate plant scientific names, families and authorities. Voucher specimens will be identified by comparing with herbarium specimens at the National herbarium at Makerere University, Kampala, adopted from(Sebuliba 2020).

CHAPTER 4.0: PRESENTATION OF RESULTS AND DISCUSSION

The tables, pie charts, graphs and pictorials were used in data presentation

Table 1: Social demographic factors of the respondents

Variable	Categories	Count	Percentages%
Gender	Male	12	46
	Female	14	54
Age	20-29	3	11
	30-39	7	26
	40-49	10	38
	50-59	6	23
Marital status	Married	18	69
	Single	0	0
	Divorced	4	15
	Widow	4	15
Education	Tertiary	0	0
	Secondary	2	07
	Primary	17	65
	Non	7	26

Among the 26 respondents interviewed in this study, the highest percentage was female 54% and the rest were male (46%). Most of the respondents attained lower education level 17 (65%) had a primary level of education followed by those without 7 (26%), secondary and lastly tertiary level of education. Most of the respondents obtained the plant knowledge from their social elders' parents and grandparents. The highest percentage of the respondents was above 40 years of age 61% and most of the respondents were married according to the table above.

Table 2.

Identification of the medicinal plants used in treatment of Ring worm infections by the people of Magamaga town council, Mayuge district. Their images, number of people who cited the plant and the biological form of the plant or growth habit.

Picture of the medicinal plants	Plant part used	Plant Identification	Growth form	Number of people who cited the plant
	Leaves	<i>Acacia nilotica</i> Fabaceae (Mugacia)	Tree	3
	Leaves	<i>Biden pilosa</i> Asteraceae (Bukala)	Herb	5
	Leaves and flowers	<i>Ehretia microphylla</i> ehretiaceae	Herb	1
	Leaves	<i>Dichrocephala integrifolia</i> Asteraceae (Mpoosa)	Herb	2
	Plant sap	<i>Jatropha curcas</i> Euphorbiaceae (Bilowa)	Tree	4

	Leaves	<i>Laggera crispata</i> Asteraceae (Mageregankoko)	Herb	2
	Plant sap	<i>Euphorbia aphyla</i> Euphorbiaceae (Lukone)	Tree	3
	Leaves	<i>Senna sophera</i> Fabaceae (Muvuvumira)	Shrub	3
	Plant sap	<i>Aloe Vera</i> Bignoniaceae. (Kigajji)	Herb	5

	Flowers	<i>Cleome gynandra</i> Cleomaceae (Yobyoy)	herb	9
	Leaves	<i>Erigeron bonariensis</i> Asteraceae (Kayala)	Herb	7
	Bulb juice	<i>Allium sativum</i> Amaryllidaceae (Garlic)	bulb	2
	Ripened leaves	<i>Musa paradisiaca</i> Musaceae (Bigogo)	Shrub	1

	Leaves	<i>Lantana camala</i> Verbenaceae (Kapanga)	Tree	2
	Fruit sap	<i>Karica papaya</i> Caricaceae Mapapali	Shrub	3

From the table above, it was observed that many medicinal plants are used for treatment of ringworm infections by the people of Magamaga town council, Mayuge district (Table 2).

Therefore, the alternative hypothesis is accepted and the null hypothesis is rejected.

It is also observed that most of the plants being used for the treatment of this disease are herbs taking the highest percentage of (59%) of the plant species identified, this is followed by the shrubs taking up almost percentage of (24%) of the plants used for the treatment of the disease and the rest are shrubs and trees as shown in the above

Table 3

List of medicinal plants used by the people of Magamaga town council for ulcer treatment of ring worm infections; plant part used, mode of preparation, mode of administration, local name and dosage are included

Scientific name	Family name	Local name	Plant part used	Mode of preparation	Mode of application	Expected time of recovery
<i>Musa paradiaca</i>	Musaceae	Bigogo	Ripened leaves	Grind plant leaves together and mix with paraffin	Rubbing the infected skin part with the paste	2 weeks
<i>Allium sativum</i>	Amaryllidaceae	Garlic	Bulb juice	Cut the bulb and Obtain the bulb juice	Direct application on the infected skin part	10 days
<i>Aloe Vera</i>	Bignoniaceae.	Kigajji	Leaves	Cut the leaves and Obtain the sap from leaves	By smearing the infected skin part with the sap	12 days
<i>Cleome gynandra</i>	Cleomaceae	Yobyoy	Leaves	Grind plant leaves and flowers together and mix with paraffin	Smearing the infected skin part with the pest	1 week
<i>Erigeron bonariensis</i>	Asteraceae	Kayala	Flowers	Grinding the flowers and mix with ash solution	Rubbing the infected skin part with the paste	4 days
<i>Senna sophora</i>	Fabaceae	Muvuvumira	Leaves and	Grind plant	Direct rubbing of	2 weeks

			flowers	leaves and flowers together and mix with paraffin	the infected skin part with the paste	
<i>Acacia nilotica</i>	Fabaceae	Mugacia	Leaves	Grind the fresh leaves and mix with paraffin	Direct rubbing of the infected part of the skin	2 weeks
<i>Euphorbia aphylla</i>	Euphorbiaceae	Lukone	Sap	Cut any part of the plant and collect the plant sap	Smearing the infected skin part	1 week
<i>Laggera crispate</i>	Asteraceae	Mageregankoko	Leaves	Grind the fresh leaves and mix with paraffin	Rubbing the infected skin part	2 weeks
<i>Jatropha curcas</i>	Euphorbiaceae	Bilowa	The whole plant	Cut any part of the plant and collect the plant sap	Direct smearing the infected skin part	1.5 weeks
<i>Dichrocephala integrifolia</i>	Asteraceae	Mpoosa	Leaves a	Local application	Rubbing the infected skin part with leaves	2 weeks
<i>Ehretia microphylla</i>	ehretiaceae	Buzza	Leaves	Making a pest with ash solution	Direct rubbing the infected part with the pest	2 week
<i>Karica papaya</i>	Karicaceae	Mapapali	Fruit sap	Cut and obtaining the fruit	Direct smearing the infected	3week

				sap	body part	
<i>Lantana camala</i>	Verbenaceae	Kapanga	Leaves	Local application	Rubbing the infected skin part with the leaves	2 week

According to table 3, it showed that medicinal plants are not used in the same way during the treatment of ring worm infection, therefore, the null hypothesis was rejected and the alternative one was accepted. This was evidenced with many forms of preparation of the medicinal remedy to be used for treatment ringworm infection that is to say, grinding of the plant leaves were used in some of the plants like *Dichrocephala integrifolia*, *Laggera crispate*, *Euphorbia aphylla* among others followed by cutting and obtaining the plant sap where a plant part was cut to obtain the plant sap which was directly smeared to the infected keratinised part of the skin as seen in plants like *Karica papaya*, *Jatropha curcas*, *Euphorbia aphylla* and many others followed by local application

From the table above, it was also observed that the plant leave were highly used in the treatment of the ringworm infection by the people of magamaga town council in treatment of ringworm infections taking a total of about 14 plant species and then followed by the use of the plant flowers and then use of the whole plant with plant sap.

According to the table above, 2 types of mode of preparation were mainly used in the preparation of herbal medicine for the treatment of ringworm infections i.e. grinding of the plant leaves and then mixed together with either paraffin or ash solution with the highest percentage and then cutting the plant part to obtain plant sap or bulb juice.

Table 4:Percentage respondents' knowledge (percentage use-value)

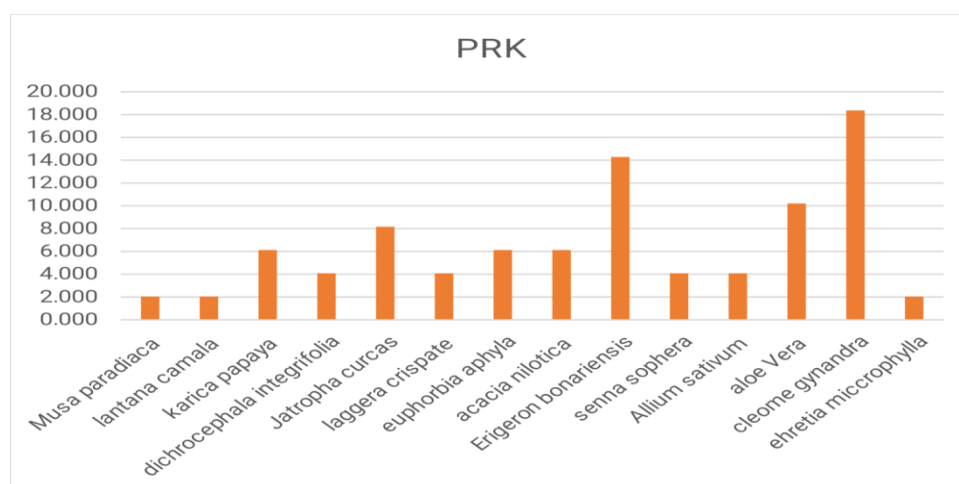
List of plant species and the frequency in number of times each is being cited for the disease and the percentage respondent knowledge for each plant species.

Plant species	Frequency	PRK (100%)
<i>Musa paradiaca</i>	2	4.0816
<i>Lantana camala</i>	1	2.0408
<i>Karica papaya</i>	3	6.1224
<i>Dichrocephala integrifolia</i>	2	4.0816
<i>Jatropha curcas</i>	4	8.1632

<i>Laggera crispate</i>	2	4.0816
<i>Euphorbia aphylla</i>	3	6.1224
<i>Acacia nilotica</i>	3	6.1224
<i>Erigeron bonariensis</i>	7	14.285
<i>Senna sophera</i>	2	4.0816
<i>Musa paradiaca</i>	1	2.0408
<i>Allium sativum</i>	2	4.0816
<i>Aloe Vera</i>	5	10.204
<i>Cleome gynandra</i>	9	18.367
<i>Ehretia microphylla</i>	1	2.0408

Table 4 shows the plants that were mentioned many times contributing to their high frequency by the respondents. The highest cultural importance towards treatment ringworm infection was calculated for *Cleome gynandra*, *Erigeron bonariensis* and *aloe vera* having the highest percentage of 43% of mention by the respondents. However, *Jatropha curcas*, *Euphorbia aphylla*, *Acacia nilotica* also had the second highest percentage of (20%) of mention by the respondents.

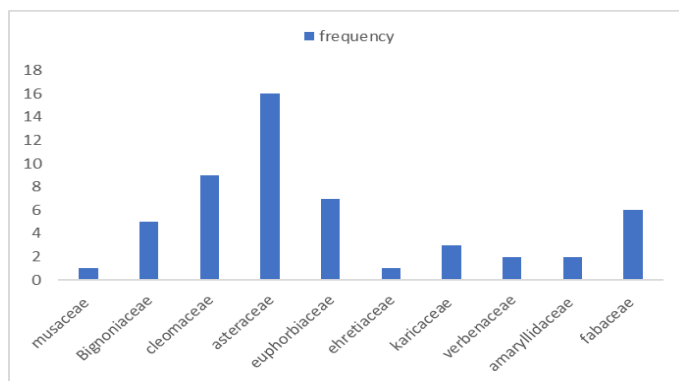
The graph showing the percentages of different types of plant species according to the person respondent's knowledge (PRK)



The graph above shows the percentages of different types of plant species according to the person respondents knowledge (PRK). Some of the plant species were highly cited by the respondents like

Erigeron bonariensis and cleome gynandra had the highest percentage according to the person respondents knowledge followed by aloe Vera and Jatropha curcas and then Musa paradiaca and lantana camala having the least percentage because they were not highly cited by the respondents .This mean that the herbalist of Magamaga town council mostly uses cleome gynandra and Erigeron bonariensis in treatment of ringworm infections signified with the highest frequencies in the graph above. It also indicates that musa paradica lantana, camala and ehretia microphylla are not highly used in the treatment of ringworm as its seen with the least frequency in the figure abov

The graph 2 showing the frequencies of different plant families as cited by different respondents

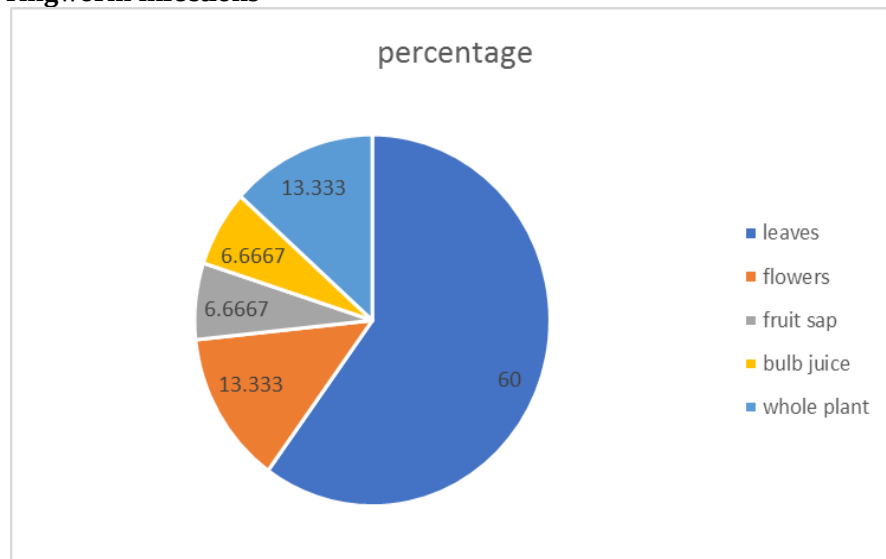


The graph above shows how frequent most different plant families were cited by different respondents. Asteraceae having the highest frequency followed by cleomaceae, fabaceae and euphorbiaceae as the most cited plant families

The family of asteraceae included plants like Laggera crispate (magere gankoko), Dichrocephala integrifolia (Mpoosa) and many others

Cleomaceae included plant species like Cleome gynandra (yobyoy) and it was the most highly cited plant species as the medicinal plant used in the treatment of ring worm infections by the people of magamaga town council Mayuge district.

Figure 5 the pie chart showing the percentages of the different plant part used in the treatment of ringworm infections

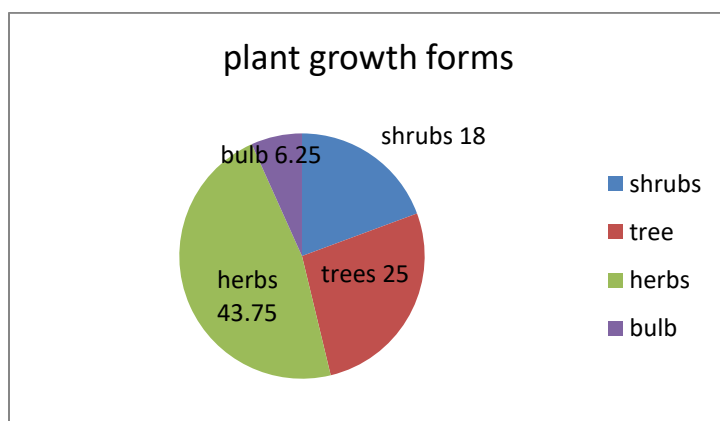


The pie chart above shows the percentages of the different plant parts used in the treatment of ringworm infections by the people of Magamaga town council Mayuge district.

According to the pie chart, it showed that many herbalists use plant leaves in the treatment of ringworm infections as indicated on the pie chart with the highest percentage of 60% followed by use of whole plant and flowers with a percentage of 13.333 each and then use of bulb juice and use of fruit sap each with a percentage of 6.6667 as the least to be used in the treatment of ringworm infection

This shows that the people of Magamaga town council highly use leaves in the treatment of ringworm infections this shows that plant leave are highly useful in treatment of ringworm infections

Figure 3 showing the different plant growth form of the medicinal plants used in the treatment of ringworm infections



From the figure above, most of medicinal plants used in the treatment of ringworm infections are herbs with 43.75% followed by trees with 25%, shrubs with 18%, and lastly bulb with 6.25%

This indicates that herbs are highly used by people of Magamaga town council to treat ringworm infections and lastly use bulbs in treating the infection

CHAPTER 5.0: CONCLUSION AND RECOMMENDATION

This chapter contains the conclusion and the recommendations of the study conducted on the medicinal plants for treatment of ringworm infections

5.1 Conclusion

The people of Magamaga town council Mayuge District widely use medicinal plants to treat ring worm Infections and other various human ailments.

This shows that the preservation and conservation of indigenous knowledge is vital for the sustainable utilization of the plant resources.

There is a need for immediate conservation of the threatened and disappearing plant species to avoid their extinction from the environment.

Plants with high percentage respondent knowledge level values like *Erigeron bonariensis* and *cleome gynandra* can be subjected to further pharmacological studies to validate their traditional uses in ringworm treatment and this can also lead to discovery of new bioactive molecules.

However, the reported ethnobotanical studies by other researchers validate the use of the recorded plants in the treatment of ringworm infections.

A total of 16 medicinal plant species were recorded to treat ring worm infections in this area, mostly asteraceae family and herbs as the major biological growth form, grinding and mixing with either paraffin or ash solution as the main method of remedy preparation, plant leaves as the most plant part used, and information gotten from parents and grandparents hence medicinal plants still play a significant role in the treatment of ulcers in this area.

Recommendations

According to this study. More investigations are needed to be Carried out in areas of pharmacology and toxicology about the recorded plants used in the treatment of ringworm worm infection as well as more research should be carried out in this area to gather more knowledge on medicinal plants used in treatment of ringworm infections before it dies off and also government ought to put strict rules against over exploitation of the medicinal plants due to agriculture and seasonal variations before they can go to extinction.

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