J Multidisciplinary Scientific Journal

MDPI

Article

Ethnobotanical Study of Traditional Medicinal Plants Used for the Treatment of Infectious Diseases by Local Communities in Traditional Authority (T/A) Mbelwa, Mzimba District, Northern Region, Malawi

Wilfred A. Chisamile [1,2,*], Mubo A. Sonibare [1] and John F. Kamanula [3]

[1] Medicinal Plants and Drug Development Programme, Faculty of Pharmacy, Department of Pharmacognosy, Pan African University Life and Earth Sciences Institute (Including Health and Agriculture), University of Ibadan, Ibadan 200005, Nigeria

[2] Faculty of Agriculture, Basic Sciences Department, Lilongwe University of Agriculture and Natural Resources (LUANAR), P.O. Box 219, Lilongwe 207236, Malawi

[3] Faculty of Science, Technology, and Innovations, Department of Chemistry, Mzuzu University, Private Bag 201, Mzuzu 105200, Malawi

* Correspondence: wilfredchisamile@gmail.com or wchisamile@luanar.ac.mw; Tel.: +265-9974-99268

Abstract: Local communities in Mzimba District, Malawi, have limited access to healthcare services and often rely on traditional medical practice and medicinal plants (MPs) for most of their medical care. However, phytomedicines' use has not been well documented. This study aimed to identify and document medicinal plants and the associated ethnobotanical knowledge. Ethnobotanical data were collected in seven localities (19 villages) in the T/A Mbelwa, Mzimba, from May to June 2021. Forty traditional healers, herbalists, and farmers selected purposively and by snowball sampling were interviewed through semi-structured interviews, field observations, group discussions, and guided field walks. Quantitative indices, viz. relative frequency of citation (RFC), use value (UV), relative importance (RI) values, informant consensus factors (ICFs), and fidelity levels (FLs), were used to analyze the data. Eighty MPs belonging to 43 families and 77 genera were recorded. The Leguminosae family showed the highest number of species (16), followed by Solanaceae, Rubiaceae, and Phyllanthaceae. Trees (35 species) and roots (62%) accounted for the most significant habit and part, respectively. Washing (29%) was the most common preparation method. The most cited plant was *Zanthoxylum chalybeum* (RFC = 0.80, UV = 0.28, RI = 1.66), followed by *Cassia abbreviata* (RFC = 0.68, UV = 0.35, RI = 1.50). Respiratory disorders showed the highest ICF (0.53), followed by general and unspecified disorders (0.31). *Z. chalybeum*, *C. abbreviata*, and *Oldfieldia dactylophylla* showed maximum FLs (100%) for treating malaria and dysentery. Phytochemical, bioassay, toxicity, and conservation studies are needed to assess medicinal plants' safety, efficacy, and quality as steps toward discovering new promising therapeutic leads without neglecting conservation programs for their sustainable utilization.

Keywords: medicinal plants; infectious diseases; phytomedicines; traditional medicinal knowledge; T/A Mbelwa; conservation

Citation: Chisamile, W.A.; Sonibare, M.A.; Kamanula, J.F. Ethnobotanical Study of Traditional Medicinal Plants Used for the Treatment of Infectious Diseases by Local Communities in Traditional Authority (T/A) Mbelwa, Mzimba District, Northern Region, Malawi. *J* **2023**, *6*, 115–139. https://doi.org/10.3390/j6010009

Academic Editor: James David Adams

Received: 8 January 2023
Revised: 7 February 2023
Accepted: 9 February 2023
Published: 23 February 2023

1. Introduction

Infectious diseases still account for high mortality rates in Africa [1]. Malawi in particular is characterized by a huge burden of diseases with high prevalence rates, such as malaria, tuberculosis, HIV/AIDS, and other tropical diseases, leading to higher child and adulthood mortality rates [2]. The malaria prevalence rate is at 24% and afflicts over 30% of outpatients. In 2017, malaria incidence was 32.3%, signifying a 33% reduction from 484 per 1000 in 2010 [2]. About 8.8% of the population aged 15–49 years lives with HIV/AIDS; yearly, about 34,000 new HIV infections are estimated to occur. Additionally, though tuberculosis cases and incidence have declined over the past decade, the prevalence rate is still high at 36% of all ages (general population). Furthermore, Malawi recorded 61,552 confirmed cases of COVID-19, which led to 2281 deaths due to COVID-19 between the recording of its index case in Malawi on 3 January 2020 and 30 September 2021 [3]. Worse still, antimicrobial resistance (AMR) is on the rise and poses a severe threat in Sub-Saharan Africa, including Malawi [4]. Up to 80% resistance has been reported to commonly used drugs such as chloramphenicol, ampicillin, tetracycline, trimethoprim/sulfamethoxazole, gentamicin, and erythromycin among *Staphylococcus aureus*, *Escherichia coli*, *Salmonella* species, and *Streptococcus pneumoniae* isolates [5]. Extended-spectrum beta-lactamase (ESBL) resistance also rose from 0.7% to 30.3% in *E. coli*, from 11.8% to 90.5% in *Klebsiella* spp., and from 30.4% to 71.9% in other *Enterobacteriaceae.* Similarly, resistance to ciprofloxacin also rose from 2.5% to 31.1% in *E coli*, from 1.7% to 70.2% in *Klebsiella* spp., and from 5.9% to 68.8% in other *Enterobacteriaceae* between 2003 and 2016 [6].

Like most rural African communities, local communities in Mzimba District, Malawi, have limited healthcare services and often rely on traditional medical practice and medicinal plants (MPs) for most of their medical care [7]. From prehistoric times until now, medicinal plants have remained the cornerstone of traditional herbal medicine among rural communities worldwide [8] in preventing and treating several ailments [9]. About 80% of the Malawian national population relies on traditional medicine for primary healthcare [10].

Several ethnomedicinal surveys have been conducted worldwide on traditional uses of plant species as a starting point for plant-derived products [11]. Based on such surveys, traditional herbs have been reported to present a remarkable pool of active ingredients in about 25% of all present-day Western medicine therapies. Well-known examples are salicylic acid (derived from *Salix alba*), quinine (derived from *Cinchona succirubra*), and digitoxin and digoxin (derived from *Digitalis purpurea*) [12]. More than 50% of the 25 best-selling drugs worldwide are related directly to natural products [13]. There is no doubt that Africa is blessed with vast species of plants, which have both economic and medicinal importance [14]. However, market and public demand for herbal medicine has risen gradually and posed a significant risk that many medicinal plants today may face either continuous rarity or imminent extinction [15].

In Mzimba, Malawi, tobacco farming, charcoal burning, and unsustainable harvesting of medicinal plants occur at a large scale, and these pose significant risks to the survival of medicinal plants [7]. These agricultural practices make medicinal plants vulnerable to either continuous rarity or imminent extinction and result in a loss of traditional knowledge (TK), some of which may have taken thousands of years to build up [16]. Currently, there is a dearth of published ethnobotanical literature which specifically addresses plant categories such as geophytes, orchids, and fruit trees in Malawi [17–21]. Furthermore, there is not extensive documentation on the use of diverse plant species available in local communities such as Mzimba. Worse still, since most ethnobotanical knowledge is memorized and typically passed down verbally from one generation to the next, the data are easily misinterpreted [12]. Such valuable traditional knowledge on the use of plants needs to be documented, with the plants accurately identified and conserved for future generations. Thus, this study documented the traditional medicinal flora and knowledge used in treating infectious diseases by local community people in the Traditional Authority (T/A) Mbelwa, Mzimba District, Malawi.

2. Materials and Methods

2.1. Study Area

Mzimba is not only the largest among the six districts in the Northern Region of Malawi but also the largest district in Malawi [7]. It lies at latitude 11°29′59.99″ S and longitude 33°29′59.99″ E. As of 2018, the district had a population of 951,119 and the population is projected to have risen since then. The most commonly spoken language is Chitumbuka, followed by Chichewa. The district is headed by the District Commissioner and has 10 T/As, namely Mbelwa, Mzukuzuku, Mzikubola, Mabilabo, Khosolo, Chindi, Mpherembe, Kampingo Sibande, Mtwalo, and Jaravikuba. Each T/A is further divided into group village heads and village heads. This study was carried out particularly in the T/A Mbelwa, Mzimba District, where it was noted that traditional medical practitioners, herbalists, and farmers frequently use plant-based remedies based on a study conducted within the district. It was also discovered that most custodians of traditional medicines spent time living in the T/A Mbelwa area. Maps of Malawi, Mzimba District, and the locations where data were collected are shown in Figure 1.

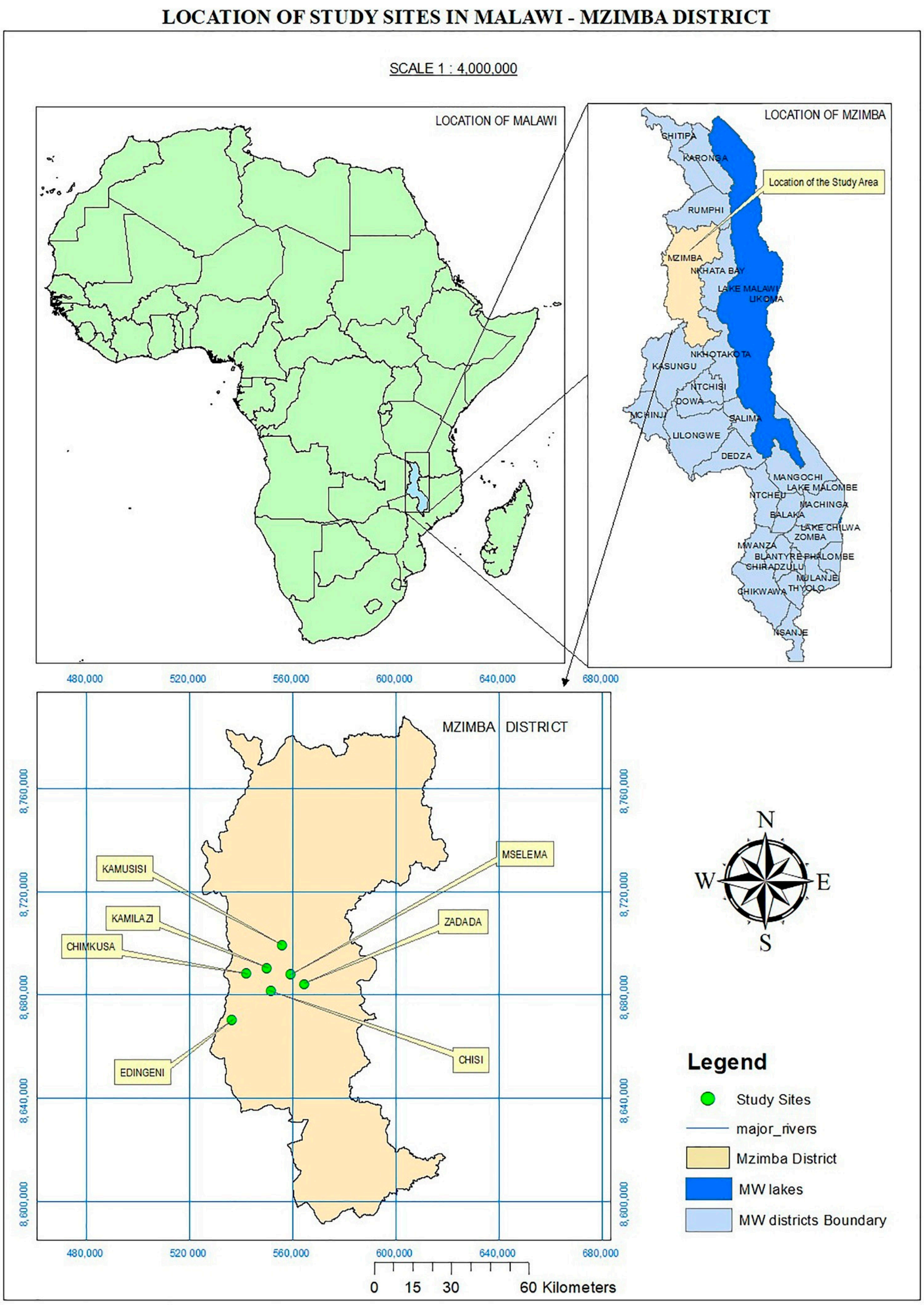

Figure 1. Maps showing study area and visited localities.

2.2. Data Collection

Forty traditional medical practitioners/healers, herbalists, and farmers in the T/A Mbelwa, Mzimba District, were selected purposefully and through snowball sampling between May and June 2021 to assist in traditional medicine knowledge documentation. Specific ailments were identified based on the informant's differential diagnosis and a Western medical practitioner's etiology and diagnosis of diseases. Pictures of patients' disease conditions were also used where necessary for misconceived ailments. Semi-structured questionnaires designed in the English language were translated into the native Chitumbuka language for ease of communication [11,20,22]. The four sections of the semi-structured questionnaires (social demographic data, medicinal plants and their uses, capacity building, and conservation status of the plant species) were developed by selecting questions relevant to the research objectives. Questionnaires in both languages were pre-tested on a sample of comparable respondents to assess the clarity and accuracy of the responses [20]. Focus group discussions, observations, and a guided field walk were also used to gather and triangulate ethnobotanical knowledge [10,11,20]. Before the survey, ethical approvals were obtained from the Plant Use Research Ethics Committee (PUREC) and the Mzuzu University Ethics Committee (MZUNIREC) in Nigeria and Malawi, respectively. Participants' informed consent was obtained before interviews, and the ethical guidelines set by the International Society of Ethnobiology http://www.ethnobiology.net (accessed on 4 February 2021) were followed [23]. The diseases treated by the medicinal plants were classified according to the International Classification of Primary Care of the WHO [24].

Plant Collection

Plant collection was performed based on similar studies in Malawi and elsewhere [10,11,20,23,25]. With assistance from the respondents, 3–5 specimens of each species were collected. Information about their description, such as habitat, altitude, latitude, longitude, vegetation type, and plant morphology (e.g., plant height, the color of flowers, and even taste in some known plants), and the collection date were recorded. Scientific and local names were recorded on the label, set by the National Botanical Garden and Herbarium of Malawi (NBGH). Plant specimens were deposited at the Mzuzu National Botanical Gardens and Herbarium Center. The collected medicinal plants were identified in terms of their family and genus with the help of Mr. M. S. Thela and Prof P. Munyenyembe, working with the Mzuzu National Botanical Garden and Herbarium Center and Mzuzu University, respectively. Flora of Malawi, Zimbabwe, South Africa, and Mozambique and herbarium-stored voucher specimens were also used to identify and authenticate the collected plant specimens. The scientific names of the medicinal plants and their families were checked on https://www.ipni.org/ (accessed on 1 February 2023) for possible name/family changes.

2.3. Statistical Analysis

Statistical Package for the Social Sciences (IBM SPSS v21) with Microsoft Excel 2013 was used to analyze the ethnobotanical descriptive statistics using frequencies and percentages. Quantitative ethnobotanical indices such as relative frequency of citation (RFC), fidelity level (FL), informant consensus factor (ICF), and relative importance (RI) value were also analyzed [26,27].

2.3.1. Quantitative Ethnobotanical Indices

Use Value (UV)

UV was employed to reveal the relative importance of known species to the informants. The following formula was used to calculate UV: $UV = \Sigma Ui/N$, where Ui is the number of uses mentioned by each informant for a given species and N is the total number of informants. UV is important in determining the plants/animals with the highest use (most frequently indicated) in the treatment of a disease [26,28].

Informant Consensus Factor (ICF)

The informant consensus factor (ICF) was computed to assess the efficacy of the therapeutic plants in each disease category [28]. The following formula was used to calculate the ICF: ICF = (Nur − Nt)/(Nur − 1), where Nur is the number of individual reports of use of the plant for a particular ailment category and Nt is the total number of medicinal plant species used by all informants in a given ailment category.

Fidelity Level (FL)

FL was used to indicate the percentage of informants claiming to use a certain animal/plant species for the same medicinal purpose. It was calculated using the following formula: FL (%) = (Np/N) × 100, where Np is the number of respondents that claim the use of a plant/animal species to treat a particular ailment and N is the number of respondents that claim the use of a plant/animal species as medicine to treat any ailment.

Relative Frequency of Citation (RFC)

The relative frequency of citation (RFC) of reported species was determined to reveal the local importance of each medicinal plant species among respondents, using the following formula: RFC = FC/N, where FC represents the number of respondents that mentioned the medicinal plant species use and N represents the overall sum of respondents taking part in the study [29]. RFC values range from 0 to 1. Frequency of citation (FC) is usually used to determine the most cited plants.

Relative Importance (RI) Value

The RI of plant species mentioned by informants was computed in the following way: RI = PP + AC, where PP is the number of pharmacological properties attributable to a species divided by the maximum number of properties attributable to the most resourceful species, and AC is the number of ailment categories addressed by a specific species divided by the most resourceful species' maximum number of ailment categories. A score of 2 indicates the most versatile species with the most significant number of therapeutic characteristics, while a value of 1 indicates the least versatile species [28].

3. Results

3.1. Demographic Data of the Respondents

Forty people (24 males and 16 females) participated in the data collection (data as shown in Table 1). Participants were 30–89 years old, with the majority in the 60–69-year age range, representing 35%, and the fewest people in the 50–59- and 80–89-year ranges, representing 7.5%. Regarding their family sizes, 82.5% had 1–10 persons per household, 15% had 11–20 persons per household, and 2.5% had 21–30 persons per household. Twenty-four of the total respondents were traditional medical practitioners/traditional healers, twelve were herbalists, and four were farmers, representing 60%, 30%, and 10%, respectively. Only three (7.5%) of the total respondents obtained secondary school education, while the majority (37, 92.5%) obtained primary school education. Eight of the respondents (20%) had 15–19 years of experience, and only one (2.5%) had 50–54 years of experience. Nine (22.5%) of the respondents earned MWK 50,0000–60,000 (equivalent to USD 95), depending on the patient's health and the type of therapy they received. Most respondents hailed from the group village heads Kafoteka and Mungoni (17.5%), with 2.5% each coming from Ng'onoma, Kamzoli, Msangula, Nsayulandolo, Maluzu, and Chunga. In terms of their villages, 7 (17.5%), 5 (12.5%), and 5 (12.5%) were from Mungoni, Zebediya, and Kamatundu, respectively.

Table 1. Demographic data of respondents in the T/A Mbelwa, Mzimba District, and their localities.

Demographic Feature	Number (40)	Proportion (100%)
Age (years)		
30–39	6	15
40–49	10	25
50–59	3	7.5
60–69	14	35
70–79	4	10
80–89	3	7.5
Gender		
Male	24	60
Female	16	40
Marital status		
Married	35	87.5
Divorced	3	7.5
Widowed	2	5
Education level		
Primary	37	92.5
Secondary	3	7.5
Occupation		
Traditional healers	24	60
Herbalists	12	30
Farmers	4	10
Years of experience		
0–4	2	5
5–9	7	17.5
10–14	5	12.5
15–19	8	20
20–24	2	5
25–29	2	5
30–34	5	12.5
35–39	2	5
40–44	4	10
45–49	2	5
50–54	1	2.5
Monthly net income (MWK)		
0–10,000	7	17.5
10,001–20,000	5	12.5
20,001–30,000	4	10.0
30,001–40,000	1	2.5
40,001–50,000	1	2.5
50,001–60,000	9	22.5

Table 1. *Cont.*

Demographic Feature	Number (40)	Proportion (100%)
60,001–70,000	2	5.0
70,001–80,000	1	2.5
80,001–90,000	4	10.0
90,001–10,000	2	5.0
Over 100,000	4	10.0
Family size (persons)		
1–10	33	82.5
11–20	6	15
21–30	1	2.5
Location	**Group village head**	**Village head**
Chimkusa	Chanunkha (5)	Nehemiya (2)
		Kasoti
		Kadulila
		Maolezimba
	Kafoteka (7)	Kamatundu (5)
		Mgezuru
		Mugeme
Chisi	Kazezani (5)	Zebediya (5)
	Makamo	Mutajiri
	Zikoti	Muzgezge
Zadada	Ndawandawa (2)	Nkuna (2)
	Chunga	Mateyo
Kamilazi	Yesaya (5)	Msimuko (5)
Edingeni	Jere (2)	Bascor
		Phiri
Mselema	Mungoni (7)	Mungoni (7)
Kamusisi	Maluzu (3)	Sambo (2)
		Ginyi
	Kamzoli	Pandamayere

NB: The number in brackets indicates the number of respondents that hailed from the cited village/group village. MWK, Malawian kwacha.

3.2. Diversity of Medicinal Plants in T/A Mbelwa, Mzimba District

A total of 80 species of medicinal plants belonging to 43 families and 77 genera were recorded (data as shown in Figure 2). The highest numbers of plant species recorded belonged to the family Leguminosae (16 species), followed by Solanaceae, Rubiaceae, Phyllanthaceae (four species in each category), Moraceae, Euphorbiaceae, Anarcadiaceae, Myrtaceae (three species in each category), and Celastraceae (two species).

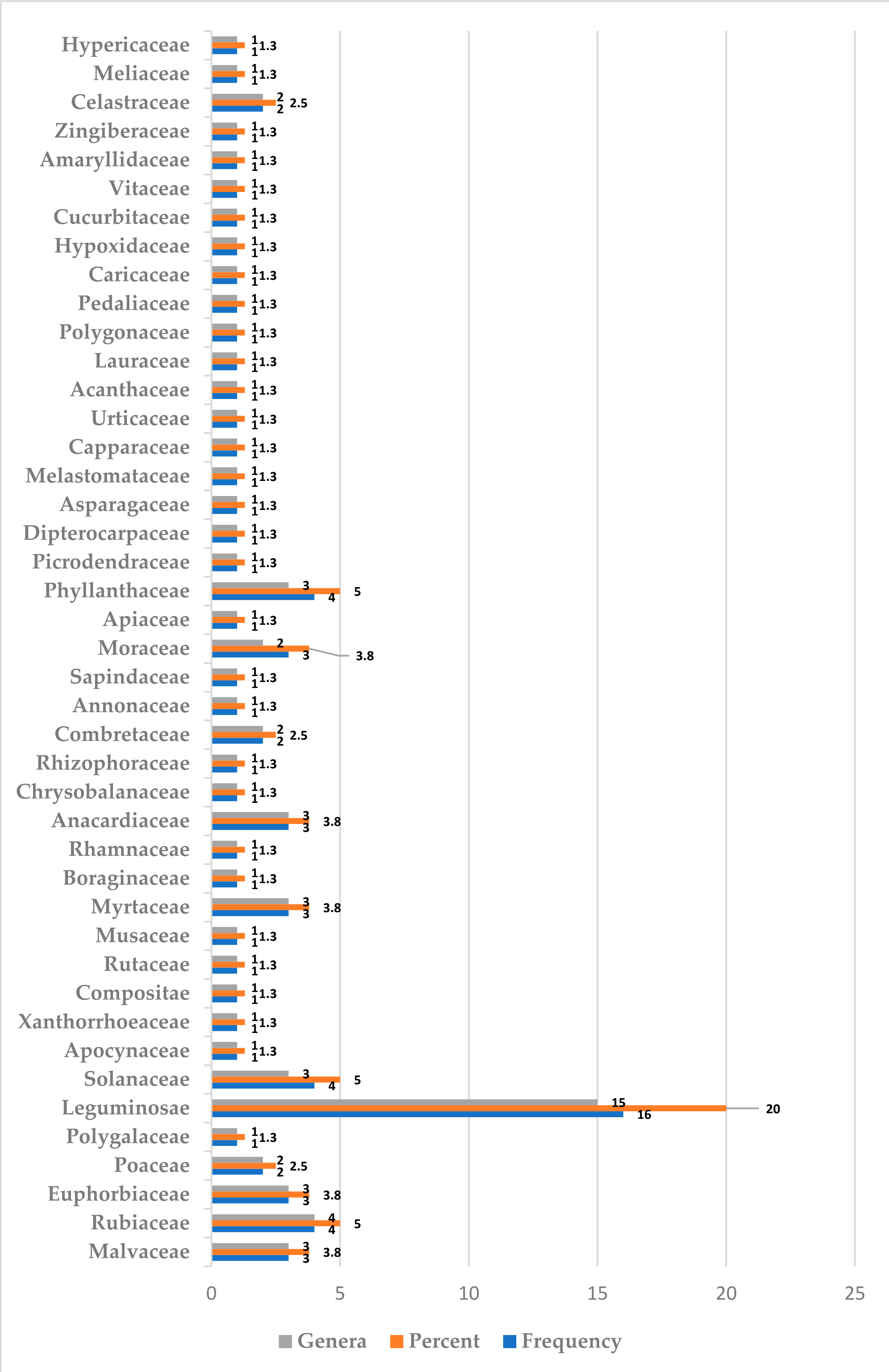

Figure 2. Medicinal plant families and their genera.

3.3. Medicinal Plants, Their Parts Used, and Collection/Harvesting Methods

As found in this study, trees (35 species, 43.8%) accounted for the most significant number (data as shown in Figure 3A), followed by shrubs (25 species, 31.3%) and herbs (13 species, 16.3%). Twining vines (two species, 2.5%), grass (two species, 2.5%), woody vines, succulent shrubs (one species, 1.3%), and prostrate herb (one species, 1.3%) accounted for the least common plant habits. Almost half (47%) of the participants claimed that they harvested plant materials by digging with a hoe, while 33% used hand plucking and 20% performed barking with a hand axe (data as shown in Figure 3B). Roots (62.1%) are most widely used among the participants, followed by leaves (12.1%). The least used plant parts (one species in each category representing 1%) are corms, rhizomes, bulbs, and tassels (data as shown in Figure 3C).

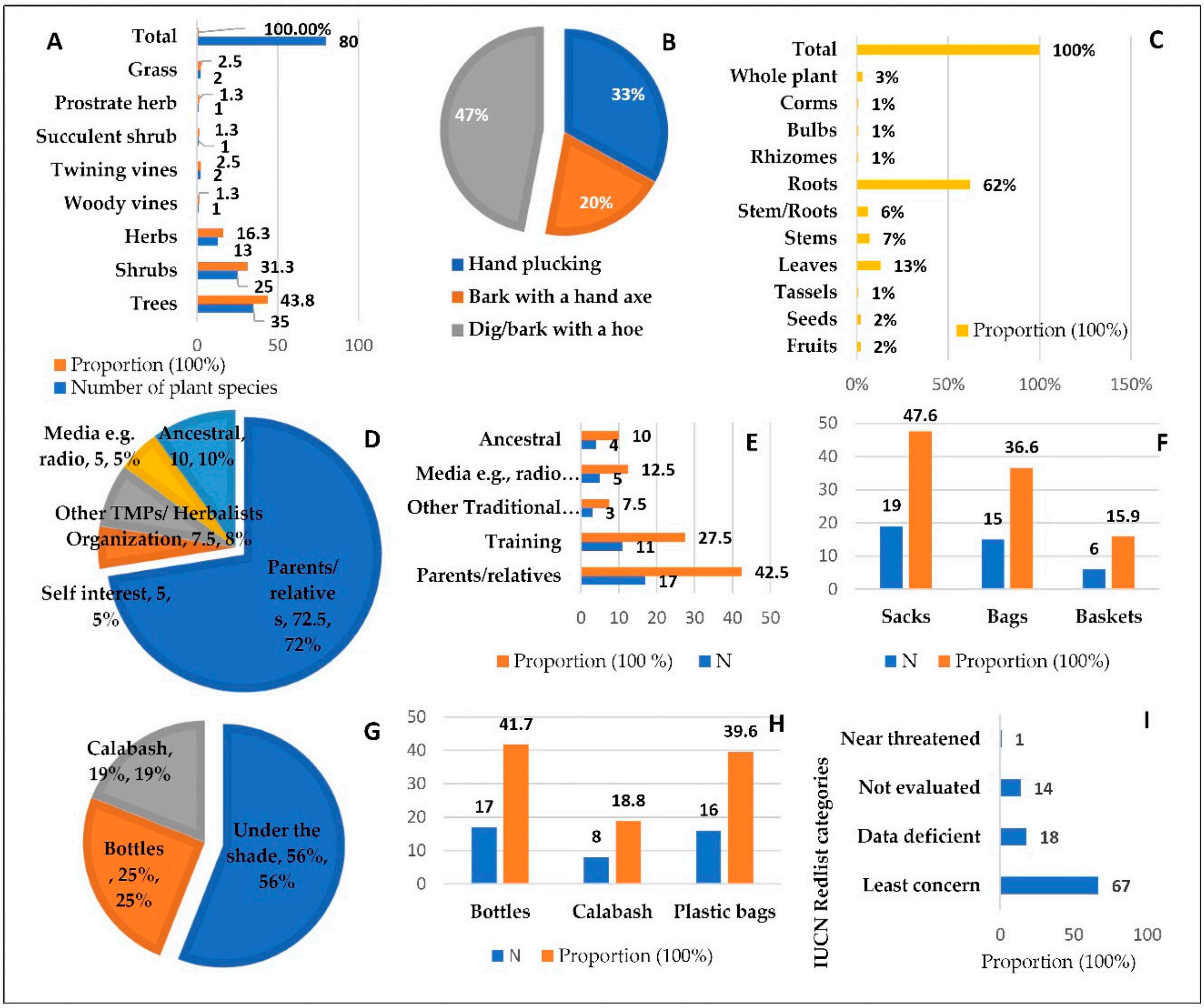

Figure 3. (**A**) Plant habits of the 80 documented medicinal plants; (**B**) methods of collecting/harvesting plant material; (**C**) medicinal plant parts used by participants in this study; (**D**) sources of TK on phytomedicines' use; (**E**) sources of TK on harvesting/collection of medicinal plants; (**F**) modes of collecting/harvesting medicinal plants; (**G**) modes of storage of unprocessed medicinal plants; (**H**) modes of storage of processed medicinal plants; (**I**) IUCN Red List categories of the documented plants.

3.4. Source of TK on Phytomedicines' Use and Harvesting/Collection of Medicinal Plants

Most of the participants (72%) acquired knowledge on the use of plants as medicines from parents/relatives. Meanwhile, 10% learned from ancestors, 8% learned through other traditional healers/herbalists' organizations, 5% learned through the media (e.g., radio programs), and 5% learned through self-interest (data as shown in Figure 3D). Regarding the means of learning/acquiring knowledge on harvesting/collecting MPs, the majority of respondents (42.5%) learned from parents, followed by 27.5% who acquired knowledge and skills through training organized by the National Traditional Healers Umbrella Organization (NTHUO), the Forestry Department, and other NGOs; 13% who learned through media (e.g., radio programs); 10% who claimed they acquired TK ancestrally; and 8% who learned through other traditional healers (data as shown in Figure 3E).

3.5. Transportation of Harvested/Collected MPs and Their Storage (Unprocessed and Processed)

The majority of the participants (47.6%) claimed that they use sacks to transport their MPs, while 36.6% transport them in bags and 15.9% in baskets (data as shown in Figure 3F). As regards the participants' storage of unprocessed plant materials, 56% store them under shade (data are shown in Figure 3G), 25% store them in bottles, and 19% store them in calabash. For processed plant materials, 17 people (41.7%) store them in bottles (data as shown in Figure 3H), 16 people (39.6%) store them in plastic bags, and 8 people store them in calabash (18.8%).

3.6. Method of Preparation of Medicinal Materials and Administration

Washing of the plant material (29%) was indicated as the most commonly used preparation method, followed by crushing/drying (28%), soaking (20%), boiling (10%), using fresh materials (5%), blending with other agents (4%), and charring (4%) (data as shown in Figure 3A). Overall, 68% of medicinal plant preparations are administered orally, followed by 14% administered topically (which includes genital wash), 9% administered subcutaneously through an incision in the skin, 4% administered through inhalations, 3% administered ocularly, and 2% administered orally (data as shown in Figure 3B).

3.7. Safety, Efficacy, and Quality (SEQ) Tests for Phytomedicines and Patient Recovery

None of the participants expressed that their phytomedicines were tested for safety, efficacy, and quality (SEQ) (data as shown in Figure 4C). All the participants expressed interest in their phytomedicines being tested for SEQ. Of them, 33% were eager to win clients' trust through scientific evidence, and 30% were keen to ascertain the safety of phytomedicines for short/long-term use. Additionally, 27% claimed that they wished to improve their quality, 5% wanted to integrate phytomedicines into Malawi's health system, and 5% expected that their phytomedicines would be registered by regulatory bodies (data as shown in Figure 4D), such as the Malawi Bureau of Standards (MBS) and the Pharmacy, Medicines, and Poisons Board (PMPB). Regarding patients' recovery (data as shown in Figure 4E), 42% of the respondents claimed to visit patients at home, 25% claimed to refer patients to the hospital for confirmatory tests about their recovery, 25% claimed to call the patient on the phone when the patient/client hails from a distant place, and 8% of the respondents claimed to monitor the patient on-site. In cases when the patients/clients have not healed yet (data as shown in Figure 4F), 43% indicated that they try to change their herbal medicines/phytomedicines. Here, 37% claimed that they refer the patients/clients to the hospital, and 20% reported that they refer the patients/clients to another TMP/herbalist for further healing.

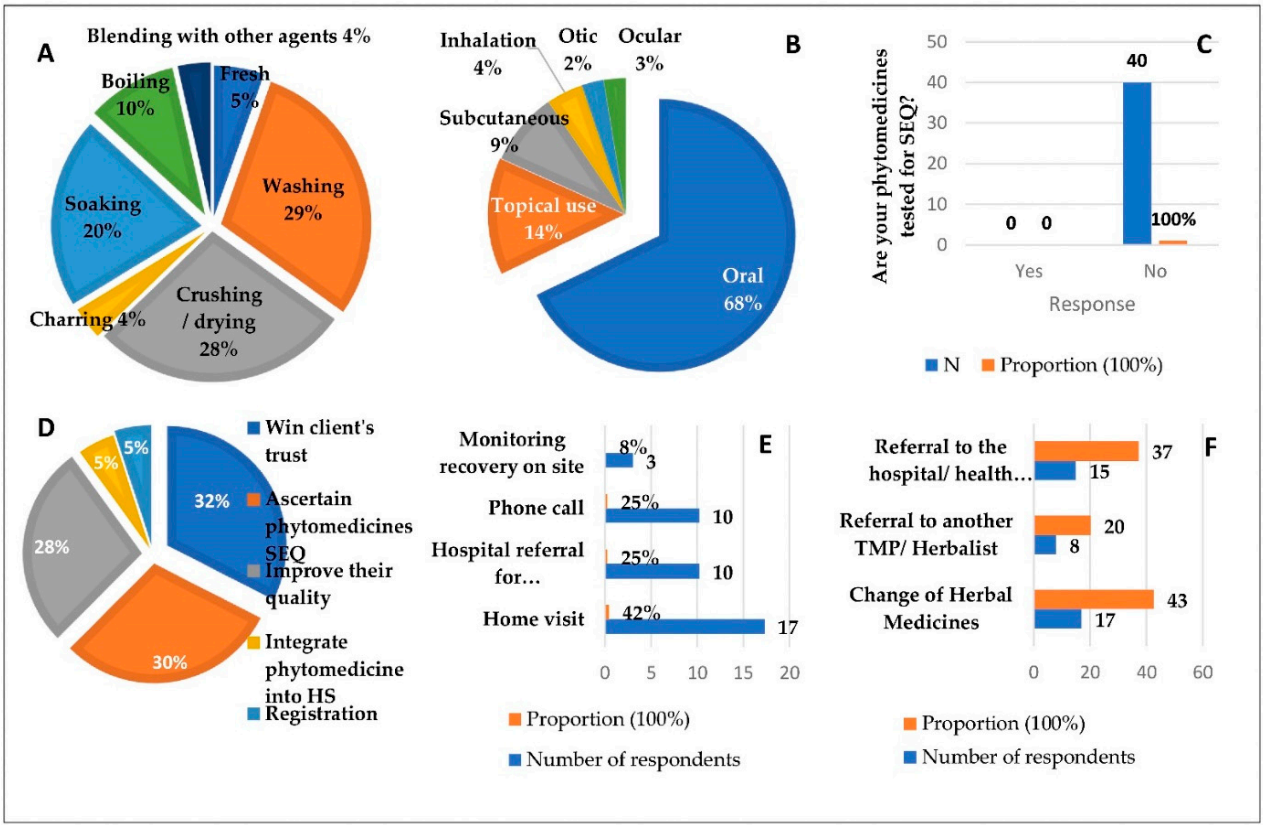

Figure 4. (**A**) Methods of plant material preparation; (**B**) modes of administration; (**C**) participant's response if their phytomedicines were tested for SEQ; (**D**) advantages of testing phytomedicines for SEQ; (**E**) patient recovery determination; (**F**) next decision taken if the patient has not healed yet.

3.8. Sources of Medicinal Plant Species and Their Conservation

Among the documented medicinal plants, 65 species are harvested from the wild, 15 are cultivated, and 28 are either cultivated or harvested from the wild (data as shown in Supplementary Table S1). Overall, 67% of the medicinal plants fall into the Least Concern category, 18% are in the Data Deficient category, 14% are in the Not Evaluated category, and 1% are in the Near Threatened category based on the IUCN Red List (data as shown in Supplementary Table S1; Figure 3I). Furthermore, 43% of the respondents claimed that there had been conservation efforts by the Government of Malawi (GoM) and non-governmental organizations (NGOs), such as the Forest Research Institute of Malawi (FRIM) and World Vision Malawi, while 57% of the respondents claimed that there had been minimal efforts toward medicinal plant conservation and suggested some of the conservation efforts that can be put forth (data as shown in Table 2).

Table 2. Conservation efforts of MPs used by local people in T/A Mbelwa, Mzimba district.

Conservation Efforts of MPs	If Yes, A Conservation Effort by Govt/NGOs	N	Proportion
Yes (N = 17, 43%)	Provision of tree seedlings	10	59
	Civic education/training on sustainable use of forest and their products	7	41
	If no, suggested MP conservation efforts		
No (N = 23, 58%)	Afforestation and re-afforestation	6	26
	Training local people on sustainable utilization of forests and their products	6	26
	Enforcing local laws through stiff punishments/fines	6	26
	Provision of incentives/alternative livelihood sources	5	22

3.9. Quantitative Indices

In this study, the relative frequency of citation (RFC) ranged from 0.8 to 0.03 (data as shown in Supplementary Table S1). The most frequently mentioned medicinal plants include *Zanthoxylum chalybeum* Engl. (RFC = 0.80), *Cassia abbreviata* Oliv. (RFC = 0.68), *Ozoroa insignis* Delile (RFC = 0.65), *Zingiber officinale* Roscoe (RFC = 0.65), *Baccharoides adoensis* (Sch. Bip. ex Walp.) H.Rob. (RFC = 0.63), *Eucalyptus camaldulensis* Dehnh. (RFC = 0.63), *Allium sativum* L. (RFC = 0.63), *Oldfieldia dactylophylla* (Welw. ex Oliv.) J.Léonard (RFC = 0.63), *Hypoxis nyasica* Baker (RFC = 0.58), *Aloe christianii* Reynolds (RFC = 0.58), *Zea mays* L. (RFC = 0.55), and *Carica papaya* L. (RFC = 0.525) (data as shown in Supplementary Table S1). The use values (UVs) ranged from 0.35 to 0.03 (data as shown in Supplementary Table S1). The most commonly used medicinal plants included *C. abbreviata* (0.35), *Z. chalybeum* (0.28), *O. dactylophylla* (0.23), *O. insignis* (0.23), *Psorospermum febrifugum* Spach. (0.23), *Ziziphus abyssinica* A. Rich. (0.23), *B. adoensis* (0.20), *H. nyasica* (0.20), and *A. christianii* (0.2).

Z. chalybeum showed the highest relative importance (RI) value (1.66), followed by *C. abbreviata* (1.50), *O. insignis* (1.39), *O. dactylophylla* (1.27), and *P. febrifugum* (1.27). *Abelmoschus esculentus* (L.) Moench, *Arachis hypogaea* L., *Cassipourea malosana* (Baker) Alston, *Catunaregam spinosa* thub (Thunb.) Tirveng., *Datura stramonium* L., *Eriosema ellipticum* Baker, *Luffa cylindrica* (L.) M. Roem., *Memecylon flavovirens* Baker, *Pouzolzia mixta* Solms, and *Solanum lycopersicum* L. showed the lowest RI values (0.20) (data as shown in Supplementary Table S1).

Respiratory disorders (0.53) had the highest informant consensus factor (ICF), followed by general and unspecified disorders (0.31), which had a moderate ICF. Eye conditions, musculoskeletal disorders/neurological disorders, skin conditions, digestive disorders, urinary disorders, and digestive disorders had appreciable ICFs. Male/female genital disorders, blood-forming organs, and immune mechanisms had the lowest ICF values. The fidelity levels (FLs) of plant species for treating specific diseases in the study area varied between 68% and 100% (data as shown in Table 3). Three plants, namely *C. abbreviata*, *Z. chalybeum*, and *O. dactylophylla*, had the maximum FL of 100% for treating malaria and dysentery.

Table 3. Informant consensus factor (ICF), fidelity level (FL), pharmacological activities, and phytochemistry of the recorded medicinal plant species.

Disease Category	ICF	Ailment	Preferred Species	FL (%)	Previous Citations	Pharmacological Activity	Phytochemistry
General and unspecified	0.31	Malaria	*Cassia abbreviata* Oliv.	100	[30–32]	Antiplasmodial, antioxidant, antimicrobial, and laxative activities [32,37]	2,4-*trans*-7,40- dihydroxymethoxyflavan, flavan 2 derivative, and Cassinidin A and B [32,37]
			Zanthoxylum chalybeum Engl.	100	[33–36]	Antimalarial, trypanocidal, antimicrobial, and anti-helminthic activities [38,39]	2, 3-epoxy- 6,7-methylenedioxyconiferyl alcohol, dihydrochelerythrine, alkaloids, flavonoids, terpenoids, tannins, and anthraquinones [40,41]
Respiratory disorder	0.53	COVID-19	*Carica papaya* L.	94	[42–44]	Antioxidant, immune-stimulating, expectorant, carminative, antimicrobial, and diuretic activities [44]	Phenolic compounds, carotenoids, alkaloids, quercetin, kaempferol, cyanogenic compounds, and benzyl glucosinolate [44]
		Pneumonia	*Zingiber officinale* Roscoe	92	[42,45,46]	Antioxidant, anticough, antimicrobial, anti-inflammatory, antidiabetic, and hepatoprotective activities [49,50]	Phenolic compounds, flavonoids, carbohydrates, proteins, alkaloids, glycosides, saponins, steroids, terpenoids, and tannins [49,50]
			Eucalyptus camaldulensis Dehnh	68	[42,45]	Antioxidant, antimicrobial, larvicidal, cytotoxic, – pesticidal, and anti-dermatophyte [51]	Eucalyptanoic acid, flavonoids, acylated pentacyclic triterpenoids, and essential oils [51]
			Ziziphus abyssinica Hochnst. ex A. Rich.	80	[47,48]	Antioxidant, antimicrobial, anti-inflammatory, antidiabetic, and antinociceptive [52,53]	Alkaloids, saponins, flavonoids and polyphenolics, tannins, sterols, and steroids [52,53]
Male or female genital/blood/blood-forming organs/immune mechanism	0.02	Syphilis	*Cassia abbreviata* Oliv	85	[31]	Antibacterial, antifungal, antioxidant, antimalarial, and anti-helminthic [31]	Anthocyanins, anthraquinones, polyphenols, tannins, and proanthocyanidins (Cassinidin A and Cassinidin B) [31]

Table 3. *Cont.*

Disease Category	ICF	Ailment	Preferred Species	FL (%)	Previous Citations	Pharmacological Activity	Phytochemistry
		Candidiasis	*Hypoxis nyasica* Baker	80	[54–57]	Antimicrobial, antioxidant, antiviral, and antidiabetic [55–57]	Mononyasines A and B, hypoxoside, nyasoside, nyasicoside, nyaside, and hypoxoside [55–57]
Skin	0.20	Ringworms	*Hypoxis nyasica* Baker	86	[35,58]	Antimicrobial, antioxidant, antiplasmodial, antitrypanosomal, antileishmanial, and anti-ulcer [58]	Alkaloids, flavonoids, free sugars, glycosides, phenols, proanthocyanidin, saponins, steroids, tannins, and terpenoids [35,58]
Digestive disorders	0.19	Diarrhoea	*Baccharoides adoensis* (Sch.Bip. ex Walp.) H. Rob	95	[35,58]	Antimicrobial, antioxidant, antiplasmodial, antitrypanosomal, antileishmanial, and anti-ulcer [58]	Alkaloids, flavonoids, free sugars, glycosides, phenols, proanthocyanidin, saponins, steroids, tannins, and terpenoids [35,58]
		Dysentery	*Ozoroa insignis* Delile	96	[59–61]	Antimicrobial, anti-helminthic, antioxidant, cytotoxic, and anti-lipoxygenase [59,60,64]	Alkyl, alkenylphenols, essential oils, anacardic acid, and ginkgolic acid [59]
			Cassia abbreviata Oliv.	85	[31,32]	Antifungal, antibacterial, antioxidant, and antiplasmodial [31,32]	4-trans-7,40- dihydroxymethoxyflavan, flavan 2 derivative, Cassinidin A and B, and chelerythrine [31,32]
			Oldfieldia dactylophylla (Welw. ex Oliv.) J.Léonard	100	[22]	-	-
		Helminths	*Acacia amythethophylla* Steud.ex A.Rich	90	[62,63]	Anti-helminthic, antimicrobial, antioxidant, antiulcer, and hypoglycemic activities [62,63]	Flavonoids, terpenoids, tannins, cardiac glycosides, and saponins [62,63]

Table 3. *Cont.*

Disease Category	ICF	Ailment	Preferred Species	FL (%)	Previous Citations	Pharmacological Activity	Phytochemistry
Eye	0.25	Conjun-ctivitis	*Asparagus buchananii* Baker	75	[65–67]	Antibacterial and anti-plasmodial activities [65–67]	Alkaloids, isoflavonoids, steroidal glycosides, triterpene saponin, and asparagalin A [68]
Musculoskeletal disorder/neurological disorder	0.25	Polio	*Ziziphus abyssinica* Hochst.ex A. Rich.	85	[47,69]	Antibacterial, antifungal, antiviral, antioxidant, and anti-mycobacterial [47]	Phenolic acids, flavonoids terpenoids, quinones, and peptide alkaloids [47]
			Zanha africana (Raslk.) Exell	86	[70,71]	Anti-inflammatory, antimicrobial, antidiabetic, insecticidal, antitrypanosomal, and cytotoxic activities [70,71]	Zanhasaponins A, B, and C and nor-hopanes [70,71]
Urological disorders	0.17	Bilharzia	*Zea mays* L.	90	[72,73]	Antioxidant, anti-prostatitis, and anti-inflammatory activities [73]	Saponins, phlobatannins, phenols, proteins, vitamins, flavonoids, steroids, carbohydrates, and volatile components [73]

General and unspecified: malaria, tuberculosis, and chickenpox; respiratory disorder: whooping cough, COVID-19, pneumonia, common cold, and strep cough/throat; male or female genital/blood/blood-forming organs/immune mechanism: candidiasis, gonorrhea, chancroid, syphilis, and HIV/AIDS; skin: skin abscess, athlete's foot, shingles, scabies, chickenpox, and ringworms; digestive disorders: diarrhea, dysentery, cholera, ulcers, yellow fever, and intestinal worms/helminths; eye: conjunctivitis and river blindness; musculoskeletal disorders/neurological disorders: polio, meningitis, and elephantiasis; urological disorders: urinary tract infection and bilharzia.

4. Discussion

4.1. Demographical Data of Participants

Male dominance in the population of phytomedicine practitioners is surprisingly unexpected. This is because it has been reported that most males in Mzimba District migrate to Zambia, Zimbabwe, and South Africa in search of greener pastures [4]. However, the dominance may be associated with the cultural and traditional practices of the people, which assign men the duty for more complex and labor-intensive tasks such as farming, gravedigging, and hunting. This finding aligns with a similar study in Guizhou Province of China, which reported that females spend more time at home than males, who perform more fieldwork learning about phytomedicines [74].

In addition, it was found that there were no youths among the respondents. This is slightly contrary to a similar study in Zomba, Malawi, which reported that only one herbalist was in the youth category [20]. Another study in Pakistan's alpine and sub-alpine regions revealed that old-aged people are custodians of traditional knowledge and skills in phytomedicine [29]. Most respondents in this study claimed that they started practicing gradually during their young age after gaining the knowledge from their elders/parents. They claimed that they had witnessed recovery from a life-threatening ailment, and that their curiosity, running of errands, and farming contributed to their acquisition of knowledge in the practice. The transfer of traditional knowledge on the use of traditional medicinal plants is decreasing among younger generations due to acculturation and the belief that traditional knowledge is associated with superstition and inferior or primitive life. This situation, which is in line with a similar study in the alpine and sub-alpine regions of Pakistan [29], is a serious concern as traditional knowledge is on the verge of being lost, since the demise of the custodians will imply that the next generation(s) to come will possess little or no traditional knowledge.

Again, the educational levels of the participants were generally low, and the majority had no (advanced) formal education. This is in line with a similar study in the Naxi Dongba Sutras [23]. However, the reliability of the results was not compromised, possibly due to the acquisition of traditional knowledge as time passed. Clients could make service payments instantly to some practitioners, while some would prefer payment after the therapy/treatment. For others, phytotherapy payment is not compulsory but upon free will and is considered a token of appreciation. These findings are in harmony with a similar study conducted in Zomba, Malawi [11]. In addition, payments could also be non-cash. For example, chickens, goats, cows, maize, etc., could be given as a form of payment. The practitioners commonly had relatively large family sizes. This could be attributed to the accommodation of other relatives/individuals who are interested in being trained as traditional medical practitioners or herbalists.

4.2. Diversity of Medicinal Plants in the T/A Mbelwa, Mzimba District

The study reported various plant families used in traditional medicine to treat infectious diseases (data as shown in Figure 2 and Supplementary Table S1). The genera *Senna, Solanum, Uapaca*, and *Ficus* had two species each, namely *Senna singueana* and *Senna spectabilis* (Senna), *Solanum lycopersicum* and *Solanum panduriforme* (Solanum), *Uapaca sansibarica* and *Uapaca kirkiana* (Uapaca), and *Ficus sycamorus* and *Ficus natalensis* (Ficus). The abundance of tree species reported in the study attests to their presence in the primary forests on customary land known as village forest areas (VFAs). Mzimba has 167 VFAs covering an area of 785.02 hectares, with the largest VFAs found in the T/A Mzikubola followed by the T/A Mbelwa [7]. This can be explained by the prevalence of *Brachystegia* woods, which constitute a significant portion of Mzimba District and are dominated by the Leguminosae (or Fabaceae) family [7]. The Leguminosae family was dominant amongst the documented medicinal plants, and this aligns with a similar study in Zomba, Malawi [11]. This is possibly due to most of its medicinal plant species being available throughout the year and easy adaptation to their environment.

4.2.1. Medicinal Plant Parts Used and Collection/Harvesting Methods

The local people in the T/A Mzimba hold TK that different medicinal plants have different therapeutic effects, hence the variation in the use of the plant parts and even collection/harvesting methods. Although digging plant materials such as roots and the whole plant is common in the T/A Mbelwa, Mzimba, harvesting/collecting medicinal plants' leaves and flowers or buds is better, as digging roots causes more damage to the existence of MPs. Similar studies by Tembo et al. [20] and Novotna et al. [75] also reported the wide use of roots in ethnomedicine. However, the persistent use of roots poses a threat to the existence and even imminent rarity of medicinal plant species due to poor harvesting methods and overharvesting (refer to Figure 5C,D). In addition, the struggle to collect medicinal plants due to the hardness of the soil, which makes digging tedious during the dry season, also influences the plant part used against similar or different ailments. Repeated harvesting/collection of MPs for a wide range of uses can eventually lead to the death of the plants, as there is a reduced flow of plant nutrients and other dissolved substances that pass through the vascular tissues once the whole bark is removed (see Figure 5A,B) [76]. Usually, the development periods of flowers, fruits, and underground plants such as rhizomes and tubers are long. As a result, they are seldom used as medicinal parts. Therefore, the use of their leaves can be an ideal alternative [77].

Figure 5. (**A**,**B**) Partial sustainable harvesting of stem bark as the stem is almost completely girdled or stripped of its bark; (**C**) sustainable harvesting of root bark; (**D**) unsustainable harvesting of root bark.

4.2.2. Source of Traditional Knowledge (TK) on Phytomedicine Use and Harvesting/Collection of MPs

The finding that the main means of TK acquisition is from parents suggests that the majority of participants started to learn at an early age through running errands and farming. This is in line with a similar study by Li in the Naxi Dongba Sutras [23]. Only a few participants attributed their acquisition of TK to self-interest. For these few, their interest may have stemmed from curiosity, observations of animals, and other doctrines of signatures. This is in line with a similar report by Ozioma, Chinwe, and Li [23,78]. As regards the acquisition of knowledge on the use and harvesting/collection of MPs through the media, a rural radio resource pack on MPs disseminated by the CTA Technical Centre for Agricultural and Rural Co-operation, for example, has targeted rural communities in Malawi for raising awareness about the opportunities and challenges relating to the harvesting and cultivation of these plants [79]. It is also noteworthy that divinity-evoking traditional healers are few and are regarded as superior in seeking treatment as they involve both explicable and inexplicable methods for diagnosing and eliminating physical, mental, or social diseases in patients. In an African traditional setting, ailments are believed to have origins based on natural causes, gods or ancestors, witchcraft/sorcery, and inherent causes [80].

4.3. Preparation of Medicinal Materials and Administration

Most participants used water, which is quite common and available in supply, as their preferred solvent, because other solvents such as alcohol can be expensive and volatile to obtain locally [81]. Two respondents indicated blending plant medicines with other materials of animal origin, such as *Mylabis* spp. (an insect) and monkey bones for management of HIV/AIDS and blending of an antelope's skin, snail's shell, and vegetable oil with plant medicines for the treatment of athlete's foot. Other means of formulating medicinal preparations included edible oils, porridge, and honey. A similar study in the Naxi Dongba Sutras reported that wine and water were commonly used solvents [23]. In this study, oral administration methods included boiling in water, washing in warm water/infusions, preparing porridge, and drinking after soaking. A similar study in Kerman province, southeast Iran, reported that the oral route is the most common phytomedicine administration mode, followed by the topical route [27].

4.4. Transportation of Harvested/Collected MPs and Their Storage (Unprocessed and Processed)

Folk healers in the T/A Mbelwa, Mzimba, follow good agricultural and collection practices (GACPs) for medicinal plants as documented by the WHO [76]. Collected/harvested plant materials are placed in dry sacks, clean baskets, or other well-aerated containers and carried to a central point for transport to the processing facility/home (data as shown in Figure 6). The findings in this study are also in consonance with a study by Nahashon [82] in Tanzania, where Maasai men were dominant market traders supplying and transporting raw materials in 50 kg sacks. In a similar study, Maliwichi [12] also reported that *Berberis holstii*, the only African endemic barberry, is also stored under the shade and kept in bottles, among other storage techniques.

Figure 6. (**A**,**B**) Storage of processed plant materials in bottles and plastic bags; (**C**) storage of unprocessed plant materials under a shade.

4.5. Safety, Efficacy, and Quality (SEQ) Tests for Phytomedicines and Patient Recovery

As regards SEQ, the findings are in line with the WHO policy guidelines that push for the development of national policy and regulations as essential indicators of the level of integration of traditional, complementary, and alternative medicine into national healthcare systems in countries. These policy guidelines seek to address the increasingly widespread use of traditional medicine [83]. Ghana has spearheaded the integration of traditional medicine into its national healthcare system. Other African countries such as Nigeria, Mali, Togo, and Kenya have taken significant steps in this direction as well [84]. In most of the in-home visits conducted in this study, it was revealed that most clients/patients live within the vicinity of the folk healers' homes where primary healthcare service is rendered. It is also noteworthy that as with orthodox medical practitioners who are usually specialists in a particular illness category, some traditional medical practitioners in this study were also referred to as specialists on particular ailments such as polio, HIV/AIDS, shingles, elephantiasis, and river blindness. Thus, it is expected that indigenous healing practitioners should understand their limitations in specific ailments and situations. Traditional medicine practitioners in the T/A Mbelwa, Mzimba, are eager to refer patients/clients among one another to possibly try out their phytomedicines depending on their level of experience/expertise, the efficacy of the phytomedicines, and the nature of the patient/client illness. Importantly, it is noteworthy to mention that traditional/herbal medicines and TK are shrouded in secrecy among traditional healers and other practitioners [78].

Moreover, it is also noteworthy that traditional medicine practitioners are eager to work with Western medical practitioners by sending clients/patients for further confirmatory tests to prove their therapeutic services. Three traditional healers cited that if a patient's blood level is low, they first send the patient to Mzimba District Hospital for blood tests and intravenous blood infusion before administering their phytomedicines. This further justifies the willingness of traditional medicine practitioners to work hand in hand with biomedical scientists in clinical pharmacognosy. However, integration of traditional/herbal medicine with the conventional biomedical health system is still lagging in Malawi [85]. Simultaneously, biomedical practitioners could do much better in learning about cultural and religious healing and beliefs among patients and indigenous people, which also play a role in healing.

4.6. Sources of Medicinal Plant Species and Their Threats

This study revealed that most medicinal plants are harvested from the wild (data as shown in Supplementary Table S1). A similar inference can be drawn from a study conducted in Tanzania [82]. Medicinal plants such as *Carica papaya*, *Solanum lycopersicum*, *Morus alba*, *Allium sativum*, *Capsicum annuum*, *Phaseolus vulgaris*, *Musa x paradisiaca*, *Abelmoschus esculentus*, *Mangifera indica*, *Zea mayz*, *Parinari curatellifolia*, *Zingiber officinale*, *Annona senegalensis*, *Arachis hypogaea*, *Psidium guajava*, *Ziziphus abyssinica*, *Azanza garckeana*, and *Uapaca kirkana* are cultivated for their nutritional value. Other medicinal plants such as *Aloe christianii*, *Datura stramonium*, *Luffa cylindrica*, *Pterocarpus angolensis*, *Azadirachta indica*, *Cassia abbreviata*, *Erthrophleum suaveolens*, *Cascabela thevetia*, *Zanthoxylum chalybeum*, and *Eucalyptus camadulensis* are cultivated for their timber values. A similar study conducted in Tanzania reported that the conservation and persistence of *Z. chalybeum* look uncertain due to unsustainable harvesting in the wild and conservation efforts [82]. *E. suaveolens*, *C. abbreviata*, *S. longipedunculata*, and *P. angolensis* are categorized as Least Concern (LC), on the IUCN Red List. However, locally in the T/A Mbelwa, Mzimba, they are rare and less abundant, such that people walk for long distances to access their plant materials. Therefore, there is a dire need for conservation efforts. It is also noteworthy that *E. camadulensis* is in the Near Threatened category, signifying the dire need for conservation locally. Some traditional medicinal practitioners have successfully cultivated *E. suaveolens* and *P. angolensis* close to their homes for medicine and timber production. This was the same in another study conducted in southern and central Malawi [86]. On the contrary, little or no effort has been put in place towards the conservation of *C. abbreviata* and *S. longipedunculata*. This shortcoming may be attributed to a lack of data on their trade, rate of exploitation, and regeneration statistics, as well as a propensity to designate protected status based on a species' wood worth [86].

Regarding medicinal plant conservation efforts, various institutions in Malawi, both governmental and non-governmental, have a mandate to monitor and regulate the harvesting and transportation of wildlife and forest resources in and out of protected areas. Unfortunately, the corruption in the African forestry sector has remained a menace to battle with. Government officials and regulatory authorities are continuously being bribed to allow forest products to be illegally harvested and transported across the border without the mandatory inspection of permits [86]. A similar study in central and southern Malawi recommended that local communities should be taught about the need to develop local-level institutional structures such as 'Village Natural Resources Management Committees' (VNMRCs) to guarantee that medicinal plant conservation practices are included in their responsibilities [86]. The usage of medicinal plant species will continue and is expected to rise significantly as the human population grows and the demand from both local and worldwide markets grows [82]. However, if the conservation efforts suggested in this study are effectively implemented and combined with other in situ and ex situ conservation strategies, medicinal plant conservation might be a viable option.

4.7. Quantitative Indices

4.7.1. Relative Frequency of Citation (RFC), Use Values (UVs), and Relative Importance (RI) Values

The RFC shows the local importance of every species concerning informants who cited these plant species [87]. High RFC values depict plants that are predominantly used and commonly known by the local people and could be attributed to the wide range of distribution of the medicinal plants, easy availability, and easy access to the indigenous culture of using these species for treating various ailments. Such intuitions create space in academic disciplines for future drug discovery and the sustainable use of the plants in therapy [29]. High RFC ranking medicinal plant species should be subjected to phytochemistry and biological assays to evaluate their efficacy and determine their toxicology. In addition, overharvesting of such plants poses serious threats to their population in the wild. Hence, they should be prioritized. A similar study in Tanzania revealed that large urban and international demands for medicinal plant species supplied by vendors and exporters are a major threat, specifically to destructively harvested species such as *Cassia abbreviata*, *Zanthoxylum chalybeum*, and other species [82]. The plants with more use reports (URs) presumably also have high UVs, while plants with fewer URs from informants have low UVs. It was also observed that plants which are used in a repetitive manner are more likely to be biologically active [28,29]. *Z. chalybeum*'s high relative importance (RI) score might indicate its great availability and affordability in the Mzimba District. *Z. chalybeum* contains an array of phytochemicals such as alkaloids, flavonoids, terpenoids, tannins, and anthraquinones. The presence of phytochemicals accounts for its antimalarial, anti-helminthic, anticancer, antimicrobial, and anti-inflammatory activities [33,36].

4.7.2. Informant Consensus Factors (ICFs) and Fidelity Levels (FLs)

Folk healers' quest for alternative plant-based medicines to manage the global COVID-19 crisis informed the highest ICF values of respiratory disorders (data as shown in Supplementary Table S1). Medicinal plants with high ICF values indicate that the community has a well-defined selection criterion and that information is shared among informants about their effectiveness [28]. Furthermore, a high ICF was always paired with a few specific plants with high use reports for treating a single disease category. General and unspecified disorders had moderate ICFs due to the considerable use values of malaria, which is also prevalent in Mzimba District [7]. A similar study in the alpine and sub-alpine regions of Pakistan reported that low ICF values are always associated with many plants with almost equal or high use reports. This suggests a lower level of agreement among the informants in using plant species to treat a particular disease category [29]. This could be because medicinal plants with low ICF values were picked randomly or informants did not discuss their use [28]. Similar inferences can be drawn from a study conducted in the T/A Chikowi in Zomba, Malawi, highlighting that traditional medical practitioners employ phytomedicines in such secrecy [11]. Plant species with a high FL are utilized for the same therapeutic purpose, whereas those with a low FL are used for various ailments. According to a literature review, a *Cassia abbreviata* root and stem back decoction is used in Tanzania and Mozambique to treat malaria, dysentery, diarrhea, abdominal aches, fever, wounds, syphilis, impotence, and snake bites [31]. Anthocyanins, anthranoids, anthraquinones, polyphenols, and tannins have been characterized by root ethanol extract. Cassinidin A and B, two novel trimeric proanthocyanidins, were recently identified from *C. abbreviata* root bark [31,32]. The antiplasmodial activity of 2,4-*trans*-7,4′-dihydroxy-4-methoxyflavan isolated from the root bark of *C. abbreviata* was 8.12 and 8.89 g/mL against antiplasmodial D6 and antiplasmodial W2, respectively [37].

Zanthoxylum chalybeum root bark aqueous extract, commonly used to treat malaria in East Africa, showed a chemosuppressive antimalarial activity of 81.45%, which was not substantially different from that of chloroquine [38]. Chelerythrine, a chemical molecule extracted from *C. abbreviata*, has antibacterial and antifungal action against *Staphylococcus aureus* and *Candida albicans*, with IC_{50} values of 12.5 g/mL and 50 g/mL, respectively [88]. *Oldfieldia dactylophylla* has also been used to treat abdominal pain, malaria, pneumonia, and general body pain as well as sexually transmitted diseases (STDs) such as syphilis and gonorrhea in the Mubanga area, Chitipa [22]. However, *O. dactylophylla*'s phytochemical composition and bioassay evaluation are not well known. This could be attributed to its geographical distribution in northern Malawi and Tanzania. More attention and research are recommended into the phytochemical and pharmacological actions of medicinal plants such as *O. dactylophylla* and other favored plant species and their efficacy and authenticity, as reported in a similar study in Shinile District, Somali Region, Ethiopia [25]. According to previous ethnobotanical studies, plants with FLs of 80% or more have significant therapeutic significance [26]. However, certain plant species that have a low FL should not be abandoned. Rather, efforts should be made towards preventing a decrease in their abundance and preventing their progressive extinction, which could put future generations at risk [29]. Thus, in order to scientifically support traditional ethnobotanicals and ensure their continued use, it is required to assess their bioactivity and, eventually, research their phytochemistry and pharmacological profile [23].

5. Conclusions

As medicinal plants play a crucial role in the existence and survival of people in Mzimba, Malawi, with 80% of the Malawian national population relying on traditional medicine for their primary healthcare, urgent steps need to be taken for their conservation. It is also noteworthy that despite their limited education levels, the local people of the T/A Mbelwa, Mzimba District, have a wealth of medicinal plant knowledge and traditional medicinal expertise. Therefore, this also calls for the establishment and expansion of the trade and marketing of therapeutic plants, which would serve as a valuable source of income while adhering to sound and sustainable harvesting and conservation standards. At the same time, phytochemical, bioassay, toxicity, and conservation studies are needed to assess medicinal plants' safety, efficacy, and quality as steps toward discovering new promising therapeutic leads without neglecting conservation programs for their sustainable utilization in the T/A Mbelwa, Mzimba District.

Supplementary Materials: The following supporting information can be downloaded at: https://www.mdpi.com/article/10.3390/j6010009/s1, Table S1: Ethnomedicinal data of medicinal plants recorded in T/A Mbelwa, Mzimba District.

Author Contributions: Conceptualization, W.A.C., M.A.S. and J.F.K.; methodology, W.A.C., M.A.S. and J.F.K.; formal analysis, W.A.C.; data curation, W.A.C.; validation, M.A.S. and J.F.K.; writing—original draft preparation, W.A.C.; writing—review and editing, W.A.C., M.A.S. and J.F.K.; visualization, supervision, M.A.S. and J.F.K.; project administration, M.A.S. and J.F.K.; funding acquisition, W.A.C. All authors have read and agreed to the published version of the manuscript.

Funding: This research was funded by the African Union, grant number "PAU0103009MB" and the APC was funded by PAULESI.

Institutional Review Board Statement: Ethical approvals were obtained from the Plant Utilization Research Ethics Committee (approval number UI-PUREC 1001), Nigeria, and the Mzuzu University Research Ethics Committee (approval number MZUNIREC/DOR/21/16), Malawi.

Informed Consent Statement: Informed consent was obtained from all subjects involved in the study.

Data Availability Statement: The data presented in this study are available on request from the corresponding author.

Acknowledgments: The authors are grateful to the local people of the T/A Mbelwa, Mzimba (traditional medical practitioners/traditional healers, herbalists, and farmers), who participated in the study. We also thank the Mzuzu National Botanical Garden and Herbarium and Mzuzu University Biological Science Department staff members M.S. Thela and P. Munyenyembe, respectively, for plant identification. Much appreciation is given to T. Tandwe, a conservation biologist at Mzuzu University, for identifying animal drug sources blended with plant drugs. Many thanks also go to A. Akinmurele, B. Mwamatope, and M. Kamanula for grammatical reviews and scientific expertise in putting together this manuscript.

Conflicts of Interest: The authors declare no conflict of interest.

References

1. Boutayeb, A. The Impact of Infectious Diseases on the Development of Africa. In *Handbook of Disease Burdens and Quality of Life Measures*; Springer: Berlin/Heidelberg, Germany, 2010; pp. 1171–1188. [CrossRef]
2. World Health Organization. *Mozambique Country Cooperation Strategy at a Glance*, 3rd ed.; WHO: Geneva, Switzerland, 2008; pp. 154–196. Available online: http://apps.who.int/iris/bitstream/handle/10665/136935/ccsbrief_mwi_en.pdf?sequence=1 (accessed on 2 January 2021).
3. World Health Organization. *WHO Coronavirus Disease (COVID-19) Dashboard with Vaccination Data WHO Coronavirus (COVID-19) Dashboard with Vaccination Data*; World Health Organization: Geneva, Switzerland, 2021. Available online: https://covid19.who.int/%0Ahttps://covid19.who.int/region/searo/country/bd (accessed on 1 October 2021).
4. WHO. Antimicrobial Resistance: Global Report on Surveillance. In *WHO Library Cataloguing-in-Publication Data*; WHO: Geneva, Switzerland, 2014. Available online: https://apps.who.int/iris/handle/10665/112642 (accessed on 15 January 2021).
5. Makoka, M.H.; Miller, W.C.; Hoffman, I.F.; Cholera, R.; Gilligan, P.H.; Kamwendo, D.; Malunga, G.; Joaki, G.; Martinson, F.; Hosseinipour, M.C. Bacterial Infections in Lilongwe, Malawi: Aetiology and Antibiotic Resistance. *BMC Infect. Dis.* **2012**, *12*, 6–8. [CrossRef] [PubMed]
6. Musicha, P.; Cornick, J.E.; Bar-Zeev, N.; French, N.; Masesa, C.; Denis, B.; Kennedy, N.; Mallewa, J.; Gordon, M.A.; Msefula, C.L.; et al. Trends in Antimicrobial Resistance in Bloodstream Infection Isolates at a Large Urban Hospital in Malawi (1998–2016): A Surveillance Study. *Lancet Infect. Dis.* **2017**, *17*, 1042–1052. [CrossRef] [PubMed]
7. M'Mbelwa District Council. *M'Mbelwa District Council Socio Economic Profile 2017–2022*; M'Mbelwa District Council: Mzimba, Malawi, 2017; pp. 1–211. Available online: https://global-uploads.webflow.com/6061a9d807f5368139d1c52c/610b12ffd09b837e524d4b18_Cleared-Mzimba-SEP-10-06-2018-v2.pdf (accessed on 2 January 2021).
8. Doughari, J.H. *Phytochemicals: Extraction Methods, Basic Structures and Mode of Action as Potential Chemotherapeutic Agents*; INTECH Open Access Publisher: Rijeka, Croatia, 2014; pp. 1–32. [CrossRef]
9. Ogbole, O.O.; Gbolade, A.A.; Ajaiyeoba, E.O. Ethnobotanical Survey of Plants Used in Treatment of Inflammatory Diseases in Ogun State of Nigeria. *Eur. J. Sci. Res.* **2010**, *43*, 183–191. Available online: https://www.researchgate.net/publication/288417018_Ethnobotanical_survey_of_plants_used_in_treatment_of_inflammatory_diseases_in_Ogun_State_of_Nigeria (accessed on 8 January 2023).
10. Maliwichi-Nyirenda, C.P.; Maliwichi, L.L. Medicinal Plants Used for Contraception and Pregnancy-Related Cases in Malawi: A Case Study of Mulanje District. *J. Med. Plants Res.* **2010**, *4*, 2121–2127. [CrossRef]
11. Chikowe, I.; Mnyenyembe, M.; Jere, S.; Mtewa, A.G.; Mponda, J.; Lampiao, F. An Ethnomedicinal Survey of Indigenous Knowledge on Medicinal Plants in the Traditional Authority Chikowi in Zomba, Malawi. *Curr. Tradit. Med.* **2019**, *6*, 225–241. [CrossRef]
12. Maliwichi, C. The Conservation Biology of Berberis Hilstii Engl. in Nyika National Park, Malawi. Ph.D. Thesis, University of Plymouth, Plymouth, UK, 2008; pp. 1–259. Available online: https://pearl.plymouth.ac.uk/bitstream/handle/10026.1/1625/CECILIA%20PROMISE%20MALIWICHI%20NYIRENDA.PDF?sequence=1 (accessed on 17 January 2021).
13. Neghabi-hajiagha, M.; Aliahmadi, A.; Taheri, M.R.; Ghassempour, A. A Bioassay-Guided Fractionation Scheme for Characterization of New Anti- Bacterial Compounds from *Prosopis cineraria* Aerial Parts. *Iran. J. Microbiol.* **2016**, *8*, 1. Available online: https://www.ncbi.nlm.nih.gov/pmc/articles/PMC4833735/pdf/IJM-8-1.pdf (accessed on 20 January 2021).
14. Sonibare, M.A.; Abegunde, R.B. In Vitro Antimicrobial and Antioxidant Analysis of *Dioscorea dumetorum* (Kunth) Pax and *Dioscorea hirtiflora* (Linn.) and Their Bioactive Metabolites from Nigeria. *J. Appl. Biosci.* **2012**, *51*, 3583–3590. Available online: https://www.m.elewa.org/JABS/2012/51/4.pdf (accessed on 20 January 2021).
15. Sonibare, M.; Abegunde, R. Ethnobotanical Study of Medicinal Plants Used by the Laniba Village People in South Western Nigeria. *Afr. J. Microbiol. Res.* **2012**, *6*, 1726–1732. [CrossRef]
16. Oladele, A.T.; Alade, G.O.; Omobuwajo, O.R.; Medicine, H. Medicinal Plants Conservation and Cultivation by Traditional Medicine Practitioners (TMPs) in Aiyedaade Local Government Area of Osun State, Nigeria. *Agric. Biol. J. N. Am.* **2011**, *2*, 2151–7517. [CrossRef]
17. Mwafongo, E.; Nordal, I.; Magombo, Z.; Stedje, B. Ethnobotanical Study of Hyacinthaceae and Geophytes in Selected Districts of Malawi. *Ethnobot. Res. Appl.* **2010**, *8*, 75–93. Available online: www.ethnobotanyjournal.org/vol8/i1547-3465-08-075.pdf (accessed on 21 January 2021). [CrossRef]

18. Maliwichi, C.; Maliwichi, L.; Franco, M. Medicinal Uses of *Berberis holstii* Engl. (Berberidaceae) in Malawi, the Only African Endemic Barberry. *J. Med. Plants Res.* **2011**, *5*, 1367–1373. Available online: https://academicjournals.org/journal/JMPR/article-full-text-pdf/62F726C16697 (accessed on 2 February 2021).
19. Bundschuh, T.V.; Hahn, K.; Wittig, R. The Medicinal Plants of the Woodlands in Northern Malawi (Karonga District). *Flora Et Veg. Sudano-Sambesica* **2011**, *14*, 3–8. Available online: https://d-nb.info/1097210375/34 (accessed on 22 January 2021). [CrossRef]
20. Tembo, N.; Lampiao, F.; Mwakikunga, A.; Chikowe, I. Ethnobotanical Survey of Medicinal Plants Used for Cervical Cancer Management in Zomba District, Malawi. *Sci. Afr.* **2021**, *13*, e00941. [CrossRef]
21. Mng'omba, S.A.; Akinnifesi, F.K.; Mkonda, A.; Mhango, J.; Chilanga, T.; Sileshi, G.; Ajayi, O.C. Ethnoecological Knowledge for Identifying Elite Phenotypes of the Indigenous Fruit Tree, *Uapaca kirkiana* in the Miombo Woodlands of Southern Africa. *Agroecol. Sustain. Food Syst.* **2015**, *39*, 399–415. [CrossRef]
22. Manda, L. Status and Uses of *Oldfieldia dactylophylla* (Euphorbiaceae) in Malawi CBM MASTER THESES SERIES. Master's Thesis, International Master Programme at the Swedish Biodiversity Centre, Uppsala, Sweden, 2007. No. 38. pp. 1–51. Available online: https://www.slu.se/globalassets/ew/org/centrb/cbm/dokument/publikationer-cbm/masteruppsatser/leonard-manda-thesis.pdf (accessed on 18 March 2022).
23. Li, H.; Li, Z.; Zhang, X.; Yang, S.; Chen, C.; Yang, Q.; He, C. Ethnobiological Study on Traditional Medicinal Plants and Fungi Recorded in the Naxi Dongba Sutras. *J. Ethnobiol. Ethnomed.* **2021**, *8*, 32. [CrossRef]
24. World Organization of Family Doctors (WONCA): International Classification of Primary Care. Available online: https://www.globalfamilydoctor.com/site/DefaultSite/filesystem/documents/Groups/WICC/International%20Classification%20of%20Primary%20Care%20Dec16.pdf (accessed on 18 April 2022).
25. Mesfin, A.; Giday, M.; Animut, A.; Teklehaymanot, T. Ethnobotanical Study of Antimalarial Plants in Shinile District, Somali Region, Ethiopia, and in Vivo Evaluation of Selected Ones against *Plasmodium berghei*. *J. Ethnopharmacol.* **2012**, *139*, 221–227. [CrossRef]
26. Al-Fatimi, M. Wild Edible Plants Traditionally Collected and Used in Southern Yemen. *J. Ethnobiol. Ethnomed.* **2021**, *17*, 49. [CrossRef]
27. Hosseini, S.H.; Bibak, H.; Ghara, A.R.; Sahebkar, A.; Shakeri, A. Ethnobotany of the Medicinal Plants Used by the Ethnic Communities of Kerman Province, Southeast Iran. *J. Ethnobiol. Ethnomed.* **2021**, *17*, 31. Available online: https://www.ncbi.nlm.nih.gov/pmc/articles/PMC8082778/ (accessed on 18 November 2021). [CrossRef]
28. Mootoosamy, A.; Fawzi Mahomoodally, M. Ethnomedicinal Application of Native Remedies Used against Diabetes and Related Complications in Mauritius. *J. Ethnopharmacol.* **2014**, *151*, 413–444. [CrossRef]
29. Kayani, S.; Ahmad, M.; Sultana, S.; Khan, Z. Ethnobotany of Medicinal Plants among the Communities of Alpine and Sub- Alpine Regions of Pakistan Ethnobotany of Medicinal Plants among the Communities of Alpine and Sub-Alpine Regions of Pakistan. *J. Ethnopharmacol.* **2015**, *164*, 186–202. [CrossRef]
30. Connelly, M.P.E.; Fabiano, E.; Patel, I.H.; Kinyanjui, S.M.; Mberu, E.K.; Watkins, W.M. Antimalarial Activity in Crude Extracts of Malawian Medicinal Plants. *Ann. Trop. Med. Parasitol.* **1996**, *90*, 597–602. [CrossRef] [PubMed]
31. Mongalo, N.I.; Mafoko, B.J. *Cassia abbreviata* Oliv. A Review of Its Ethnomedicinal Uses, Toxicology, Phytochemistry, Possible Propagation Techniques and Pharmacology. *Afr. J. Pharm. Pharmacol.* **2013**, *7*, 2901–2906. [CrossRef]
32. Erasto, P.; Majinda, R. Bioactive Proanthocyanidins from the Root Bark of *Cassia abbreviata*. *Int. J. Biol. Chem. Sci.* **2011**, *5*, 2170. [CrossRef]
33. Musila, M.F.; Dossaji, S.F.; Nguta, J.M.; Lukhoba, C.W.; Munyao, J.M. In Vivo Antimalarial Activity, Toxicity and Phytochemical Screening of Selected Antimalarial Plants. *J. Ethnopharmacol.* **2013**, *146*, 557–561. [CrossRef]
34. Koudouvo, K.; Karou, D.S.; Kokou, K.; Essien, K.; Aklikokou, K.; Glitho, I.A.; Simpore, J.; Sanogo, R.; De Souza, C.; Gbeassor, M. An Ethnobotanical Study of Antimalarial Plants in Togo Maritime Region. *J. Ethnopharmacol.* **2011**, *134*, 183–190. [CrossRef]
35. Stangeland, T.; Wangensteen, H.; Katuura, E.; Lye, K.A.; Paulsen, B.S. Antioxidant and Anti-Plasmodial Activity of Extracts from Three Ugandan Medicinal Plants. *J. Med. Plants Res.* **2010**, *4*, 1916–1923. [CrossRef]
36. Nalule, S. In Vitro Anthelmintic Potential and Phytochemical Composition of Ethanolic and Aqueous Crude Extracts of *Zanthoxylum chalybeum* Engl. *Afr. J. Pharm. Pharmacol.* **2013**, *7*, 1604–1614. [CrossRef]
37. Kiplagat, D.M.; Akala, H.M.; Liyala, P.O.; Wangui, J.M.; Odhiambo, R.A.O.; Omolo, J.O. Antiplasmodial Activity of Flavan Derivatives from Rootbark of *Cassia abbreviata* Oliv. *J. Saudi Chem. Soc.* **2016**, *20*, S140–S144. [CrossRef]
38. Kiraithe, M.N.; Nguta, J.M.; Mbaria, J.M.; Kiama, S.G. Evaluation of the Use of *Ocimum suave* Willd. (Lamiaceae), *Plectranthus barbatus* Andrews (Lamiaceae) and *Zanthoxylum chalybeum* Engl. (Rutaceae) as Antimalarial Remedies in Kenyan Folk Medicine. *J. Ethnopharmacol.* **2016**, *178*, 266–271. [CrossRef] [PubMed]
39. Okagu, I.U.; Ndefo, J.C.; Aham, E.C.; Teodor, E. *Zanthoxylum* Species: A Review of Traditional Uses, Phytochemistry and Pharmacology in Relation to Cancer, Infectious Diseases and Sickle Cell Anemia. *Front. Pharmacol.* **2021**, *12*, 713090. [CrossRef] [PubMed]
40. Anza, M. A Coniferyl Alcohol Derivative from the Roots of *Zanthoxylum chalybeum*. *J. Coast. Life Med.* **2014**, *2*, 970–974. [CrossRef]
41. Nguta, J.; Kiraithe, M. In Vitro Antimicrobial Activity of Aqueous Extracts of *Ocimum willd*, *Plectranthus barbatus* Andrews and *Zanthoxylum chalybeum* Engl. against Selected Pathogenic Bacteria. *Biomed. Biotechnol. Res. J.* **2019**, *3*, 30. [CrossRef]
42. Chikowe, I.; Mtewa, A.G.; Tembo, D.; Smith, D.; Ibrahim, E.; Mwamatope, B.; Nkhungulu, J.; Kumpalume, P.; Maroyi, A. Potential of Malawi's Medicinal Plants in Covid-19 Disease Management: A Review. *Malawi Med. J.* **2021**, *33*, 85–107. [CrossRef] [PubMed]

43. Priyadarshi, A.; Ram, B. A Review on Pharmacognosy and Pharmacological Activity of *Carica papaya* (Linn.) Leaf. *Int. J. Pharm. Sci. Res.* **2018**, *9*, 4071–4078. [CrossRef]
44. Saeed, F.; Arshad, M.U.; Pasha, I.; Naz, R.; Batool, R.; Khan, A.A.; Nasir, M.A.; Shafique, B. Nutritional and Phyto-Therapeutic Potential of Papaya (*Carica papaya* Linn.): An Overview. *Int. J. Food. Prop.* **2014**, *17*, 1637–1653. [CrossRef]
45. Semenya, S.S.; Maroyi, A. Ethnobotanical Survey of Plants Used by Bapedi Traditional Healers to Treat Tuberculosis and Its Opportunistic Infections in the Limpopo Province, South Africa. *S. Afr. J. Bot.* **2019**, *122*, 401–421. [CrossRef]
46. Khadka, D.; Dhamala, M.K.; Li, F.; Aryal, P.C.; Magar, P.R.; Bhatta, S.; Thakur, M.S.; Basnet, A.; Cui, D.; Shi, S. The Use of Medicinal Plants to Prevent COVID-19 in Nepal. *J. Ethnobiol. Ethnomed.* **2021**, *17*, 26. [CrossRef]
47. Mongalo, N.I.; Mashele, S.S.; Makhafola, T.J. *Ziziphus mucronata* Willd. (Rhamnaceae): It's Botany, Toxicity, Phytochemistry and Pharmacological Activities. *Heliyon* **2020**, *6*, e03708. [CrossRef] [PubMed]
48. Chinsembu, K.C. Ethnobotanical Study of Plants Used in the Management of HIV/AIDS-Related Diseases in Livingstone, Southern Province, Zambia. *Evid.-Based Complement. Altern. Med.* **2016**, *2016*, 4238625. [CrossRef]
49. Kumar, G.; Karthik, L.; Bhaskara Rao, K.V. A Review on Pharmacological and Phytochemical Properties of *Zingiber officinale* Roscoe (Zingiberaceae). *J. Pharm. Res.* **2011**, *4*, 2963–2966. Available online: https://nupo.com/en/wp-content/uploads/sites/37/2020/03/A-review-on-Pharmacological-and-Phytochemical-properties-of-Zingiber-officinale-Roscoe.pdf (accessed on 20 June 2022).
50. Raja, W.; Pandey, S.; Hanfi, S.; Khan, A.; Author, C. Evaluation of Antibacterial and Anticough Forming Effects of *Zingiber officinale* Extract. *Int. J. Chem. Pharm. Res.* **2012**, *1*, 141–147. Available online: https://www.researchgate.net/publication/265339103_Evaluation_of_Antibacterial_and_Anticough_Forming_Effects_of_Zingiber_officinale_Extract/link/540961830cf2718acd3d0966/download (accessed on 24 June 2022).
51. Ghareeb, M.A.; Habib, M.R.; Mossalem, H.S.; Abdel-Aziz, M.S. Phytochemical Analysis of *Eucalyptus camaldulensis* Leaves Extracts and Testing Its Antimicrobial and Schistosomicidal Activities. *Bull. Natl. Res. Cent.* **2018**, *42*, 16. [CrossRef]
52. El Maaiden, E.; El Kharrassi, Y.; Qarah, N.A.S.; Essamadi, A.K.; Moustaid, K.; Nasser, B. *Genus Ziziphus: A Comprehensive Review on Ethnopharmacological, Phytochemical and Pharmacological Properties*; Elsevier B.V.: Amsterdam, The Netherlands, 2020; Volume 259. [CrossRef]
53. Nyaberi, M.O.; Onyango, C.A.; Mathooko, F.M.; Maina, J.M.; Makobe, M.; Mwaura, F. Evaluation of Phytochemical, Antioxidant and Antibacterial Activity of Edible Fruit Extracts of *Ziziphus abyssinica* A. Rich. *J. Anim. Plant Sci.* **2010**, *6*, 623–629. Available online: https://www.m.elewa.org/JAPS/2010/6.2/2.pdf (accessed on 8 January 2023).
54. Ncube, B.; Ndhlala, A.R.; Okem, A.; Van Staden, J. *Hypoxis* (Hypoxidaceae) in African Traditional Medicine. *J. Ethnopharmacol.* **2013**, *150*, 818–827. [CrossRef]
55. Msonthi, J.; Hostettmann, K.; Maillard, M. Phytochemical Studies of Medicinal Plants from Malawi. In *Chemistry, Biological and Pharmacological Properties of African Medicinal Plants*; University of Zimbabwe Publications: Harare, Zimbabwe, 1996. Available online: https://opendocs.ids.ac.uk/opendocs/bitstream/handle/20.500.12413/10199/Msonthi%2C%20JD%2C%20Hostettman%2CK%26Millard%2CM%20Phytochemical%20studies%20of%20medicinal%20plants%20%28book%20chapter%29.pdf?sequence=1 (accessed on 15 July 2022).
56. Nicoletti, M.; Galeffi, C.; Messana, L.; Marini-Bettolo, G.B. Hypoxidaceae. Medicinal Uses and the Norlignan Constituents. *J. Ethnopharmacol.* **1992**, *36*, 95–101. [CrossRef]
57. Betto, P.; Gabriele, R.; Galeffi, C. Determination of the Norlignan Glucosides of Hypoxidaceae by High-Performance Liquid Chromatography. *J. Chromatogr. A* **1992**, *594*, 131–135. [CrossRef]
58. Maroyi, A. Review of Pharmacological Properties, Phytochemistry and Medicinal Uses of *Baccharoides adoensis*. *J. Pharm. Nutr. Sci.* **2020**, *10*, 205–212. [CrossRef]
59. Liu, Y.; Abreu, P.J.M. Long Chain Alkyl and Alkenyl Phenols from the Roots of *Ozoroa insignis*. *J. Braz. Chem. Soc.* **2006**, *17*, 527–532. [CrossRef]
60. Ahmed, A.S.; Mcgaw, L.J.; Moodley, N.; Naidoo, V.; Eloff, J.N. Cytotoxic, Antimicrobial, Antioxidant, Antilipoxygenase Activities and Phenolic Composition of *Ozoroa* and *Searsia* Species (Anacardiaceae) Used in South African Traditional Medicine for Treating Diarrhoea. *S. Afr. J. Bot.* **2014**, *95*, 9–18. [CrossRef]
61. Pare, D.; Hilou, A.; Ouedraogo, N.; Guenne, S. Ethnobotanical Study of Medicinal Plants Used as Anti-Obesity Remedies in the Nomad and Hunter Communities of Burkina Faso. *Medicines* **2016**, *3*, 9. [CrossRef]
62. Subhan, N.; Burrows, G.E.; Kerr, P.G.; Obied, H.K. *Phytochemistry, Ethnomedicine, and Pharmacology of Acacia*, 1st ed.; Elsevier B.V.: Amsterdam, The Netherlands, 2018; Volume 57. [CrossRef]
63. Adamu, H.M.; Ushie, O.A.; Lawal, D.S.; Oga, I.A. Phytochemical Screening of Fruit of *Azanza garckeana* and Root of *Acacia macrothyrsa*. *Int. J. Tradit. Nat. Med.* **2013**, *3*, 19–25. Available online: https://modernscientificpress.com/journals/ViewArticle.aspx?+Mc3krJiu0rRKsgS85dvRbjjVupRxbkOBBaFWBeQCaDDZP55j7kEct9b27jrJ0/RLDn1CTXtpaJ8A30t9u0bcw== (accessed on 2 August 2022).
64. Coulibaly, A.Y.; Alexandre, P.; Djifaby, E.; Hashim, R.; Sulaiman, S.F.; Sulaiman, O.; Zuin, L.; Ang, P.; Kiendrebéogo, M.; Nacoulma, O.G. GC-MS Analysis and Antibacterial Activities of *Feretia apodanthera* Del. (Rubiaceae) and *Ozoroa insignis* Del. *J. Dis. Med. Plants* **2019**, *5*, 52–59. [CrossRef]
65. Moshi, M.J.; Mbwambo, Z.H. Experience of Tanzanian Traditional Healers in the Management of Non-Insulin Dependent Diabetes Mellitus Experience of Tanzanian Traditional Healers in the Management of Non-Insulin Dependent Diabetes Mellitus. *Pharm. Biol.* **2002**, *40*, 552–560. [CrossRef]

66. Omwenga, E.O.; Hensel, A.; Shitandi, A.; Goycoolea, F.M. Ethnobotanical Survey of Traditionally Used Medicinal Plants for Infections of Skin, Gastrointestinal Tract, Urinary Tract and the Oral Cavity in Borabu Sub-County, Nyamira County, Kenya. *J. Ethnopharmacol.* **2015**, *176*, 508–514. [CrossRef]
67. Machaba, T.C.; Mahlo, S.M. Antifungal Activity of Medicinal Plants Used Traditionally for the Treatment of Fungal Infections and Related Ailments in South Africa. *Int. J. Pharmacol. Pharm. Sci.* **2017**, *11*, 395–400. [CrossRef]
68. El-Seedi, H.R.; El-Shabasy, R.; Sakr, H.; Zayed, M.; El-Said, A.M.A.; Helmy, K.M.H.; Gaara, A.H.M.; Turki, Z.; Azeem, M.; Ahmed, A.M.; et al. Anti-Schistosomiasis Triterpene Glycoside from the Egyptian Medicinal Plant Asparagus Stipularis. *Rev. Bras. Farmacogn.* **2012**, *22*, 314–318. [CrossRef]
69. Okello, S.V.; Nyunja, R.O.; Netondo, G.W.; Onyango, J.C. Ethnobotanical Study of Medicinal Plants Used by Sabaots of Mt. Elgon Kenya. *Afr. J. Tradit. Complement. Altern. Med.* **2010**, *7*, 1–10. [CrossRef]
70. Maroyi, A. *Zanha africana* (Radlk.) Exell: Review of Its Botany, Medicinal Uses and Biological Activities. *J. Pharm. Sci. Res.* **2019**, *11*, 2980–2985. Available online: https://www.jpsr.pharmainfo.in/Documents/Volumes/vol11issue08/jpsr11081933.pdf (accessed on 23 August 2022).
71. Stevenson, P.C.; Green, P.W.C.; Veitch, N.C.; Farrell, I.W.; Kusolwa, P.; Belmain, S.R. Nor-Hopanes from *Zanha africana* Root Bark with Toxicity to Bruchid Beetles. *Phytochemistry* **2016**, *123*, 25–32. [CrossRef]
72. Lans, C.A. Ethnomedicines Used in Trinidad and Tobago for Urinary Problems and Diabetes Mellitus. *J. Ethnobiol. Ethnomed.* **2006**, *2*, 45. [CrossRef]
73. Solihah, M.A.; Rosli, W.W.I.; Nurhanan, A.R. Phytochemicals Screening and Total Phenolic Content of Malaysian *Zea mays* Hair Extracts. *Int. Food Res. J.* **2012**, *19*, 1533–1538. Available online: https://core.ac.uk/download/pdf/83541532.pdf (accessed on 26 August 2022).
74. Wang, Q.; Zhao, L.; Gao, C.; Zhao, J.; Ren, Z.; Shen, Y.; Yao, R.; Yin, H. Ethnobotanical Study on Herbal Market at the Dragon Boat Festival of Chuanqing People in China. *J. Ethnobiol. Ethnomed.* **2021**, *17*, 19. [CrossRef]
75. Novotna, B.; Polesny, Z.; Pinto-Basto, M.F.; Van Damme, P.; Pudil, P.; Mazancova, J.; Duarte, M.C. Medicinal Plants Used by 'Root Doctors', Local Traditional Healers in Bié Province, Angola. *J. Ethnopharmacol.* **2020**, *260*, 112662. [CrossRef] [PubMed]
76. WHO. *WHO Guidelines on Good Agricultural and Collection Practices (GACP) for Medicinal Plants*; WHO: Geneva, Switzerland, 2003; 80p. Available online: https://apps.who.int/iris/bitstream/handle/10665/42783/9241546271.pdf?sequence=1 (accessed on 8 January 2023).
77. Chen, S.L.; Yu, H.; Luo, H.M.; Wu, Q.; Li, C.F.; Steinmetz, A. Conservation and Sustainable Use of Medicinal Plants: Problems, Progress, and Prospects. *Chin. Med.* **2016**, *11*, 37. [CrossRef] [PubMed]
78. Ozioma, J.E.; Chinwe, N.O. *Herbal Medicines in African Traditional Medicine*; Intech Open: London, UK, 2019; pp. 191–214. [CrossRef]
79. CTA Technical Centre for Agricultural and Rural Co-operation. Medicinal Plants. *WRENmedia* **2007**, *3*, 1–43. Available online: https://core.ac.uk/download/pdf/132675062.pdf (accessed on 13 September 2022).
80. Mozhui, L.; Kakati, L.N.; Meyer-Rochow, V.B. Entomotherapy: A Study of Medicinal Insects of Seven Ethnic Groups in Nagaland, North-East India. *J. Ethnobiol. Ethnomed.* **2021**, *17*, 17. [CrossRef] [PubMed]
81. Das, K.; Tiwari, R.K.S.; Shrivastava, D.K. Techniques for Evaluation of Medicinal Plant Products as Antimicrobial Agent: Current Methods and Future Trends. *J. Med. Plants* **2010**, *4*, 104–111. [CrossRef]
82. Nahashon, M. Conservation of Wild-Harvested Medicinal Plant Species in Tanzania. *Exam. I Hållbar Utveckl.* Master Thesis E, in Sustainable Development, Uppsala, Sweden. **2013**, *24*, 1–55. Available online: http://www.diva-portal.org/smash/get/diva2:615493/FULLTEXT01.pdf (accessed on 14 September 2022).
83. WHO. WHO Expert Committee on Specifications for Pharmaceutical Preparations. In *WHO Guidelines on Good Herbal Processing Practices for Herbal Medicines*; WHO: Hong Kong, China, 2017; pp. 83–149. Available online: https://apps.who.int/iris/bitstream/handle/10665/272452/9789241210195-eng.pdf (accessed on 15 September 2022).
84. WHO-AFRO. *The African Health Monitor: African Traditional Medicine Day, 31 August*; WHO-AFRO: Kano, Nigeria, 2010; pp. 1–104. Available online: https://www.afro.who.int/sites/default/files/2017-06/ahm-special-issue-14.pdf (accessed on 20 September 2022).
85. Simwaka, A.; Peltzer, K.; Maluwa-Banda, D. Indigenous Healing Practices in Malawi. *J. Psychol. Afr.* **2007**, *17*, 155–161. [CrossRef]
86. Meke, G.S.; Mumba, R.F.E.; Bwanali, R.J.; Williams, V.L. The Trade and Marketing of Traditional Medicines in Southern and Central Malawi. *Int. J. Sustain. Dev. World Ecol.* **2017**, *24*, 73–87. [CrossRef]
87. Musa, M.S.; Abdelrasool, F.E.; Elsheikh, E.A.; Ahmed, L.A.M.N. Ethnobotanical Study of Medicinal Plants in the Blue Nile State, South-Eastern Sudan. *J. Med. Plants Res.* **2011**, *5*, 4287–4297. Available online: http://www.ethnopharmacologia.org/prelude2020/pdf/biblio-hm-52-musa.pdf (accessed on 27 September 2022).
88. Anza, M.; Endale, M.; Cardona, L.; Cortes, D.; Eswaramoorthy, R.; Cabedo, N.; Abarca, B.; Zueco, J.; Rico, H.; Domingo-Ortí, I.; et al. Cytotoxicity, Antimicrobial Activity, Molecular Docking, Drug Likeness and Dft Analysis of Benzo[c]Phenanthridine Alkaloids from Roots of *Zanthoxylum chalybeum*. *Biointerface Res. Appl. Chem.* **2022**, *12*, 1569–1586. [CrossRef]