

Original Research Article

## Evaluation of Some Medicinal Plants Diversity and Compendium Information on the Usage in Michika, Adamawa state

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**Abstract:** The study assessed the diversity of the indigenous tree species and also produce of a compendium of information on the various medicinal uses of the indigenous tree species and their parts in Adamawa State, Michika local government seven districts; Bazza, Futu, Garta, Madzi, Michika, Nkafa, Zah. Sample plots method was used in the assessment of the indigenous tree species using questioner. All indigenous Medicinal plants information on ethnomedicinal uses was obtained through oral interviews and the through the questioners. Age group and occupation was considered such as; Local healer, Herbalist, Traditional birth attendance, experienced parents, patients and students were randomly selected for this purpose. Result of the findings indicated that 48 common indigenous medicinal plants species were encountered in all the seven districts inventoried in the study. Results further indicate that *Acacia seyal*, *Parka biglobosa*, *Adonsonia digitata*, *Khaya senegalensis*, *Ziziphus spina-christi*, *Azadirachta indica*, *Moringa oliefera*, *Ficusgnaphalocarpa*, *Mangifera indica*, *Cassipourea congoensis*, *Psidium guajava*, *Vitex doniana*, *Nuclea latifolia*, *Anacardium occidental*, *Nuclea latifolia*, *Carica papaya*, *Annona senegalensis*, *Citrus aurantium*, *Eucalyptus indica*, *Tamarindus indica*, *Vernonia amygdalina*, *Cassia occidentalis*, *Citrus Paradise*, *Momordica charantia*, *Anogeissus*, *leiocapus*, *Ficus vallis*, *Gemlin arborea*, *Borassus aethiopum*, *Abrus precatorius*, *Elaeophorbia drupifera*, *Artemisia maciverae*, *Vitellaria paradoxa*, *Zizipus Mauritania*, *Daniella oliverii*, *Anogeissus leiocarpa*, *Ficus sycomorus*, *Balanites aegyptiaca*, *Conorandus panados*, *Deterium microcarpum*, and *.Balanites aegytiaca* were common to all the districts. While all other species were found in either three, two or one districts. Diversity Index community response on resource and ranking of medicinal plant in the seven districts indicate Nkafa and Zah was observed to have higher ranking. It was observed that the plant parts used for medicinal purposes are roots, barks, leaves, stems, Epiphyte etc. The formulation for medication include; boiling, soaking, etc. Methods of administration include, drinking, bathing, adding to food as spices and chewing. Among the ailments treated are dysentery, diarrhea, diabetes, Tuberculosis, Meningitis, Blood tonic, High blood Pressure, Worms, Typhoid Fever, Cancer, Malnutrition, Tumors, Wound Healing, Jaundice, Epilepsy and Rheumatism. It can thus be concluded that the sharp decrease in disease outbreak in the districts and villages was as to the increasing economic and health values placed on medicinal plants, documentation on ethnobotanical knowledge is a way to understand the use of different plant species to cure various ailments, diseases and means to conserve these natural resources. From the findings of the study the following recommendations are hereby made; the local people need to be trained, encouraged and supported on how to conserve and manage the medicinal plant species, Young generation need awareness to avoid negative impacts on the medicinal plants and associated knowledge in the area, hence, documentation of the medicinal plants of the area needs to continue.

**Keywords:** Evaluation, Medicinal Plants, Diversity, Compendium, Michika, Adamawa state.

## INTRODUCTION

The World Health Organization (WHO) defines traditional medicine to include a diversity of health practices, approaches, knowledge, and beliefs incorporating plant, animal, and/or mineral-based medicines; spiritual therapies; manual techniques; and exercises, applied singly or in combination to maintain well-being, as well as to treat, diagnose, or prevent illness [1].

Knowledge of traditional medicine is an integral part of the indigenous knowledge of local communities which according to Sithole is a complete body of knowledge, know-how and practices maintained and developed by the people, generally in rural areas, who have extended histories of interaction with the natural environment. This interaction sets understandings, interpretations and meanings that are part of a cultural complex [2].

Traditional medicine knowledge is that aspect of indigenous knowledge of people in local communities which relates to the use of plants and other natural resources in the treatment of health related conditions. From time immemorial, plants and its allied products has been used in the treatment of various ailments all over the world especially in local communities in developing countries. Traditional medicine knowledge begins with the study of local plants species to identify edible, medicinal and poisonous ones. Plant forms the main ingredients of medicine in traditional system of healing and has been the source of inspiration for several major pharmaceutical drugs [3].

In African continent, traditional medical practices date as far back as 4000 years. It was the sole medication for the health care in those days before the advent of modern medicine. Traditional medicine in this present era traditional medicine is becoming predominate of which most of the synthesized drugs have their bases from Traditional medicine [4].

Traditional medicine knowledge goes beyond knowledge of what plant species is used for treatment of a particular ailment. According to Nijar, to transform a plant into a medicine, one has to know not just the current specie but also its location, and possibly its local usage [5].

One of the basic features of traditional knowledge is that it is unwritten and exists in the minds of the local people. It is transmitted orally from one generation to another. TK plays a significant role in the lifestyle of the members of the local community and hence an essential resource for any human development process. They form the basis for decisions pertaining to food security, human and animal health, education, natural resource management and other vital activities. Local communities in developing countries in Africa are applying traditional medicine knowledge to respond to and manage the HIV and AIDS pandemic as well as in the treatment of other opportunistic infections and it forms an integral part of the culture and history of local communities and hence their common asset in their effort to gain control of their own lives.

Michika (Mwe-cika) town is the Head quarter of Michika local Government area of Adamawa state of Nigeria. It was located directly across the border from the famous tourist site of Rhumsiki in Cameroon. The principal ethnic group and language in Michika is the Kamue people and Kamue language. The local government was created in 1976. It is located in the northern axis of the state and is bordered on the east by the republic of Cameroon as shown in fig 1. On its north border is Madagali local government, while it shares border to the west by Askira Uba local government of Borno state, to the south by Mubi North and Hong local government. The word Michika is a corrupted word from Mwe-cika as reported by the oral history found around late 17<sup>th</sup> century by Kwada Kwakaa a prince and a royal hunter. Mwe" in the Kamwe language means heaven, sky, hills, or even mountains used by relatives of a bereaved person on their waist and wrist to signify bereavement in connection of some medicinal plants for Protection against disease, ailment and spirit in the course of his duty [6].

Michika people are mainly farmers, hunters and women in fishing. As years pass they were good animals rearing, they rear domestic animals; pigs, cow, goats, and chickens. They are among the best educated community in Adamawa state due to early advents of Missionary Christian to the communities.

Kamwe belief in nature, spirits, ancestors and its connection with trees, stoned and mountains as part of power to heal and harm people and Animals. However, they are not worshipper before the coming of Christianity. There are some people who have the power to communicate with the spirits through media. They are notable and useful people among the communities. They are considered and act as seers and medicine men, claiming to use plants, stone and other means to solve the menace of life. The local government community recognized them as traditional healers because of their close association with trees which mostly grow throughout the years. They have learnt to utilize this resource for various ailment and diseases common among the communities.

## AIM AND OBJECTIVES OF THE STUDY

The study is aimed at surveying and documenting medicinal plants and their potentials in seven district; Bazza, Futu, Garta, Madzi, Michika, Nkafa, and Zah used in the treatment of disease and ailment in the local government.



Fig-1: Map showing Michika Local Government of Nigeria study Area

## METHODOLOGY

### Study Area

The study was carried out in seven district of Michika Local Government Area of Adamawa State, Nigeria. The people have many medicinal tree plants surrounding them.

### Study Design

Districts tours 48 to 50 days duration were planned to cover the seven districts to update the ethno medicinal plant species information. Two thousand one hundred informants were interviewed through questioners regarding the type of medicine plants used by them in their districts. Majority of the people that were interviewed include the full and part time herbalists, old ladies family heads and village heads in order to get a better understanding of the local customs, beliefs and habits.

### Medicinal tree Survey, Department of Biochemistry University Wukari Nigeria (One form should be completed for each tree)

1. Name: \_\_\_\_\_ Age: \_\_\_\_\_ Sex: \_\_\_\_\_
2. Address \_\_\_\_\_
3. Occupation: \_\_\_\_\_
4. Local Nmae \_\_\_\_\_
5. **Stem-bark Characteristics**
7. Latex: Present \_\_\_\_\_ Absent \_\_\_\_\_
8. **Tree plants used in medicine**
9. Roots: \_\_\_\_\_ Stem-bark \_\_\_\_\_ Twig: \_\_\_\_\_ Flowers: \_\_\_\_\_ Fruits: \_\_\_\_\_ seeds: \_\_\_\_\_
10. How a plant is used: Fresh: \_\_\_\_\_ Dried: \_\_\_\_\_ Boiled: \_\_\_\_\_
11. Other parts of tree and Ingredient added: \_\_\_\_\_
12. Method (s) of preparation for use: Powdered \_\_\_\_\_ Water Extraction (cool): \_\_\_\_\_ Water extraction (Hot) \_\_\_\_\_ Water extraction (boiled): \_\_\_\_\_ Extraction with Argye (gin): \_\_\_\_\_ others: \_\_\_\_\_

**13. Mode of administration:**

14. Dosage \_\_\_\_\_

15: Added Information \_\_\_\_\_

16. Community response on resource of Medicinal plant in the district: \_\_\_\_\_ Yes: \_\_\_\_\_ No: \_\_\_\_\_

**Table-1: Demographic structure of respondents showing age range and sex**

Age range	Number of respondents	Male	(%)	Female	(%)
18-23	180	120	66.7	60	33.33
24-29	300	180	60.0	120	40
30-35	350	250	71.43	100	28.57
36-41	350	230	65.71	120	34.29
42-47	410	300	73.17	110	26.83
48-53	300	150	50.0	150	50.0
54-59	310	210	67.74	100	47.62
60-65	300	100	33.33	200	66.66

**Table-2: Community response on resource and ranking of Medicinal plant in the seven districts**

Medicinal plants		Districts of Michika Local Government													
		Bazza		Futu		Garta		Madzi		Michika		Nkafa		Zah	
Ranking		4	3	7	5	6	1	2							
		Yes	No	Yes	No	Yes	No	Yes	No	Yes	No	Yes	No	Yes	No
1. Acacia seyal	Skulye	322	168	245	265	298	212	421	89	452	48	411	99	431	69
2. Parka biglobosa	Lehune	466	44	482	28	477	33	486	24	488	22	488	22	490	10
3. Adonsonia digitata	Mithye	499	1	498	2	499	1	467	33	484	16	491	9	496	4
4. Khaya senegalensis	Chei	388	112	464	56	488	22	456	44	388	112	490	10	497	3
5. Ziziphus spina-christi	Kurnna	364	136	477	23	480	20	432	68	333	167	476	24	485	15
6. Azadirachta indica	Nemmei	432	68	366	134	384	116	410	90	498	2	334	166	234	266
7. Moringa oliefera	Tsaga (Galaganji)	410	90	450	50	460	40	485	15	498	2	456	44	476	24
8. Ficusgnaphalocarpa	Mukurahye	372	128	410	90	400	100	442	58	438	62	411	89	388	12
9. Mangifera indica	Magorea	492	8	488	12	491	9	499	1	499	1	498	2	499	1
10. Cassipourea congoensis	Twentwe	123	377	344	156	112	388	67	453	12	488	338	62	403	97
11. Carrissa macrocarpa	Ndre	324	176	244	256	133	367	388	112	211	289	256	244	237	263
12. Psidium guajava	Gwuavva	477	23	488	12	489	11	476	24	489	11	492	8	494	6
13. Vitex doniana	Shekai	455	45	466	54	472	28	477	23	482	18	478	22	344	156
14. Nuclea latifolia	Tanzhye	23	477	345	155	34	466	12	488	10	490	435	65	344	156
15. Haematostaphis barteri	Drunece	123	377	312	188	144	356	12	488	11	482	342	158	398	102
16. Mangifera indica	Mangoro	456	44	455	45	488	12	486	14	490	10	496	4	466	34
17. Anacardium occidental	Kasheuwe	488	12	491	9	489	11	486	14	485	15	491	9	494	6
18. Nuclea latifolia	Thyampye	133	367	147	353	322	178	297	203	233	267	312	188	344	156
19. Musa sapientum	Ayaba	482	18	488	12	486	14	485	15	488	12	491	9	489	11
20. Annona senegalensis	Dlye	233	267	186	314	291	109	233	267	129	371	188	312	191	309
21. Citrus aurantium	Lamwue	447	53	467	33	477	23	499	1	487	13	489	11	488	12
22. Eucalyptus indica	Zaiti	492	8	234	266	245	255	488	12	498	2	341	59	456	44
23. Tamarindus indica	Mbulla	499	1	498	2	498	2	499	1	499	1	500	0	500	0
24. Vernonia amygdalina	Chuwaka	344	156	133	367	112	388	244	256	456	44	84	418	12	488
25. Cassia occidentalis	yelekachia	441	59	344	156	234	266	299	211	137	363	122	378	156	344
26. Phoenix dactylifera	Dibinowye	12	488	11	499	8	492	3	497	3	497	12	377	12	488
27. Citrus Paradise	Garepe	344	146	388	112	456	44	387	113	466	34	399	101	411	89
28. Jatropha curcas	Kwakwalajie	237	263	311	189	222	278	231	269	322	178	244	256	239	261
29. Momordica charantia	Muchika tyebere	473	27	488	12	479	21	491	9	488	12	497	3	498	2
30. Anogeissuss,leiocapus	Marke	388	112	321	179	383	117	297	203	311	189	366	134	332	168
31. Ficus sp	Baure	459	41	466	34	474	26	477	23	486	14	483	17	458	42
32. Ficus vallis	Ndree	389	111	299	201	299	201	399	101	333	167	341	159	299	201
33. Gemlin arborea	Melina	334	168	329	171	364	138	322	178	299	201	277	223	312	188
34. Borassus aethiopum	Dlye	397	103	378	122	289	211	299	201	300	200	311	189	241	259
35. Abrus precatorius	Ntse kwantikwu	331	169	344	156	354	146	288	212	279	221	355	145	276	224
36. Elaeophorbia drupifera	Hulie	446	54	474	26	457	43	488	12	496	4	498	2	499	1
37. Artemisia maciverae	Tazargade	344	156	277	123	331	169	211	289	235	265	230	270	231	269
38. Vitellaria paradoxa	Fuma	488	12	498	2	497	3	489	11	499	1	500	0	500	0
39. Zizipus Mauritania	Dyivi	489	11	496	4	498	2	499	1	479	21	499	1	500	0
40. Daniella oliverii	Lellekai	455	45	460	40	489	11	476	24	493	7	492	8	499	1
41. Anogeissus leiocarpa	Dyaka	321	179	233	267	211	289	214	286	266	234	274	226	341	159
42. Ficus sycomorus	Mabulme	477	23	467	33	455	45	444	56	477	23	486	14	490	10
43. Ficus asperifolia	Kwadachikwa	357	143	331	169	349	151	299	201	331	169	367	123	388	112
44. Sesamum Indicum	Malashirii	456	44	467	33	457	43	488	12	487	13	490	10	496	4
45. Leptadenia hastata	Yadiya	477	23	487	13	488	12	488	12	499	1	498	2	498	2

46. <i>Conorandus panados</i>	Mnizee	233	267	244	256	256	244	277	223	234	276	320	280	379	121
47. <i>Deterium microcarpum</i>	Tallow	221	279	222	278	198	302	246	254	199	301	266	234	278	222
48. <i>Balanites aegytiaca</i>	Betu (Jachamye)	211	289	156	344	200	300	196	304	211	289	224	276	199	301



**Fig-2: Some of the medicinal plant in Michika Local Government****Table-3: Shows Medicinal plants, parts used and preparation**

Name of plant species	Vernacular Name	Parts used	Preparation	Usage
1. Acacia seyal	Skulye	Leaf, stem-bark, roots	Cool, boiling	Dysentery, malaria, ear drop
2. Parka biglobosa	Lehunie	Leaf, Stem-bark, roots	Boiling, decoctions	Malaria, worms, measles
3. Adonsonia digitata	Miethae	Leaf, stem-bark	Maceration	Placental retention
4. Khaya senegalensis	Chei	Seed, leaf, stem-bark, roots	Decoction	Stomach pain, with kunu
5. Ziziphus spina-christi	Kurnna	Leaf, stem-bark, roots	Maceration	Itching, Bacterial infection
6. Azadirachta indica	Nemmei	Leafs, stem-bark, seeds, and roots	Maceration, boiling	Malaria, fever, fungal, bacteria
7. Moringa oliefera	Galaganjie	Leafs, roots, stem-bark, seeds	Powder, maceration	Blood pressure, diabetic, dysentery
8. Ficusgnaphalocarpa	Mukurahye	Leaf, stem-bark	Boiling	After birth bath
9. Mangifera indica	Magorea	Leaf, stem-bark	Boiling, decoction	Stomach pain, fever,
10. Cassipourea congoensis	Twentwe	Leaf, stem-bark	Maceration	Inflammation
11. Carrissa macrocarpa	Ndre	Twits, leaf	Maceration, powder	Infectious disease, stomach pain
12. Psidium guajava	Gwuavva	Leaf	Decoction	Malaria, fever, inflammation
13. Vitex doniana	Shekai	Stem-bark, leaf	Decoction	Dysentery, worms, fever
14. Nuclea latifolia	Tanzhye	Stem-bark, leaf	Boiling, chewing	Tooth ache, stomach pain
15. Haematostaphis barteri	Drune	Stem-bark, leafs, seeds	Boiling, powder	Stomach pain, inflammation,
16. Mangifera indica	Mangoro	Stem-bark, leaf	Maceration	Wounding healing, inflammation
17. Anacardium occidentale	Kasheuwe	Leaf, stem-bark	Decoction	Malaria, stomach pain
18. Nuclea latifolia	Thyampye	Leaf, stem-bark, roots	Boiling	Inflammation, hypertension, fever
19. Musa sapientum	Ayaba	Leaf	Maceration	Stomach pain
20. Annona senegalensis	Dhye	Leaf	Decoction	Inflammation, dysentery
21. Citrus aurantium	Lamwue	Leaf, stem-bark	Decoction	Malaria, fever, inflammation
22. Eucalyptus indica	Zaiti	Leaf, stem-bark	Maceration	Catarrh, Inflammation
23. Tamarindus indica	Mbwula	Leaf, stem-bark	Boiling, Maceration	Blood pressure, Joint pain, Diabetes
24. Vernonia amygdalina	Chuwaka	Leaf	Maceration	Diabetes, stomach pain, fever
25. Cassia occidentalis	Yelekachia	Leaf, stem-bark	Boiling	Yellow fever, malaria
26. Phoenix dactylifera	Dibinowye	Fruits	Chewing	Stomach pain, dysentery
27. Citrus Paradise	Garepe	Leaf	Boiling	Malaria, headache
28. Jatropha curcas	Kwakwalajie	Leaf, sap, stem-bark	Maceration, secretion	Wound healing, diabetic and ulcer
29. Momordica charantia	Muchika tyebere	Leaf, stem-bark	Boiling, maceration	Stomach pain, fever, food
30. Anogeissus, leiocarpa	Marke	Stem-bark	Powder	skin infections
31. Ficus sp	Baure	Leaf, stem-bark	Leaf, stem-bark	Stomach pain, Headache
32. Ficus vullis	Ndree	Leaf, stem-bark	Leaf	Running nose
33. Gemlin arborea	Melina	Leaf, stem-bark roots	Maceration	Infection diseases, skin, throat,
34. Borassus aethiopum	Dlye	Leaf stem-bark, roots	Boiling, powder	Stomach pain, fever, inflammation
35. Abrus precatorius	Ntse kwantikwu	Leaf stem-bark, roots	Boiling	Bacterial, fungi, diabetes
36. Elaeophorbia drupifera	Hulie	Leaf, sap	Maceration	Infection diseases skin
37. Artemisia maciverae	Tazargade	Leaf, stem-bark, roots	Decoction, Maceration	Antiparasites, stomach pain
38. Vitellaria paradoxa	Fuma	Leaf, stem-bark, roots	Maceration	stomach ache, headaches, fever
39. Zizipus Mauritania	Dyivi	Leaf, stem-bark	Boiling	Blood pressure, cholesterol, anemia.
40. Daniella oliverii	Lellekai	Twist, leaf	Decoction	Bacterial, fungi, diabetes, fatigue
41. Anogeissus leiocarpa	Dyaka	Leaf, stem-bark, roots	Maceration, boiling	Antibacterial, antifungal, stomach pain
42. Ficus sycomorus	Kwadachikwa	Leaf, stem-bark	Maceration, powder	Cardiovascular, potency, stomach pain
43. Ficus asperifolia	Mabulme	Leaf, stem-bark, roots	Boiling, powder	Wound healing, diabetes.
44. Sesamum Indicum	Malashirii	Seed, leafs and roots	Maceration	Infection, Constipation
45. Leptadenia hastata	Yadiya	Stem-bark, leaf	Boiling, Maceration	Inflammation, ulcer, Blood pressure
46. Conorandus panados	Mnizee	Leaf, stem-bark	Decoction	Inflammation, headache
47. Deterium microcarpum	Tallow	Stem-bark	Decoction	Stomach ache, inflammation
48. Balanites aegytiaca	Betu	Stem-bark, leaf	Boiling, Maceration	Inflammation, wound healing,

49. Carica papaya	Mbuposari	Seed, leaf, stem-bark, root	Boiling, Maceration	ulcer Infection, diabetes, blood pressure
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## RESULT AND DISCUSSION

The survey of the ethno medicinal account of 49 plants species as shown in Table 2 and Table 3 with their local names, followed by plants part mode of administration and usage were enumerated. Demographic structure of respondents showing age range and sex were also taken into consideration, in the survey, the herbal practitioner, full and part time herbalists, old ladies, family heads and village heads participated in the survey in order to get a better understanding of the local customs, beliefs, usage and habitat of the medicinal plants. The plants mentioned indicated how rich Michika is in plant diversity, which are used among the district communities of the local government. Kamwue for their daily treatment of diseases, ailment and economical values. Kamwue people enjoy a good reputation in the traditional medicine, despite the efforts of the researcher to intensify modern health practice and the use of synthesized drugs, traditional healers are still playing their parts as the only medication that is potent, cheap and affordable by the less privileged people among the communities living in the remote part of the local government area. These plants are mostly used as medicine and as vegetables.

Table 2 shows the report of respondent of their knowledge of the medicinal plants by indicating yes if you know and have the knowledge of the medicinal plant and No if there is no knowledge at all. With results obtained 85-90% showed a good knowledge of the medicinal plant which resulted to the significant of this research work.

Table 3. Shows the medicinal value as potential agents for treatment of many diseases such as malaria, fever, headache, dysentery, hypertension, diabetes etc. And because some of this plants are seasonal, the resources can be harnessed for the pharmacological investigation by the researcher to be prepared in the form of agents to impede the menace of resistance pathogen and terminal diseases such as cancer, ulcer, diabetic, hypertension and the present pandemic Corona virus (COVID-19).

Figure 2 shows some of the medicinal plant obtained in the seven district of Michika local Government of Nigeria, which are found to halt the diseases and ailment that has been troubling the communities' right from ages. These plants have been used and pass to from generation to regenerations till this day.

## CONCLUSION

The survey has listed some of the medicinal plants obtained among the community of Michika local government. The plants listed was reported by the respondents to be safe from ages as per the recommendation of the traditional healer, and part time herbalists, old ladies, family heads and village heads who participated in the survey. The survey also suggested that some of this plants which are used as ethno-medically throughout the local government to cure various diseases and ailment could be exploited for new agents for many diseases which has become resistance and a menace to the host. From the survey and the respondent shows high evidence of efficacy of the medicinal plants

## RECOMMENDATION

The major challenges to the use of medicinal plants to treat diseases and ailment is the lack of evidence of the standard required dosage of the remedies, established evidence of its potency, safety and significant certainty of the mechanism. Therefore, guidance should be created to give a better understanding of evaluating the dosage, safety, and significance of this medicinal plants, to enable fight the resistance diseases as result of synthesized drugs. we also recommend that a detailed ecological studies should be carried out within the district and other reserved areas in the local government to know their biodiversity status which will later serve as a guide to formulate a better policy and law to protect the extinct of medicinal plants.

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