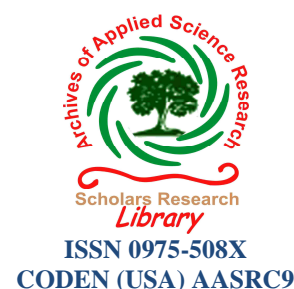




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Ethnobotanical survey of anti-diarrheal medicinal plants among Tiv people of Nigeria

Gera Y.¹, Ume E. U.¹, Tor-Anyiin T. A.² and Iheukwumere C. C.¹

¹Dept. of Biological Sciences, University of Agriculture, Makurdi, Nigeria

²Dept. of Chemistry, University of Agriculture, Makurdi, Nigeria

ABSTRACT

An ethnobotanical survey for documentation of antidiarrheal medicinal plants of Tiv speaking people of Benue state of Nigeria has revealed a wealth of knowledge on medicinal plants and their uses. Informants which included local traditional medical practitioners and elders have provided the information through a standard questionnaire. A total of 31 species of plants from seventeen families were enumerated with scientific names, families, method of preparation and dosage. Caesepiniaceae was found the dominant family. Use Value of the plants were calculated with Detarium microcarpum having the highest use value. The study revealed that knowledge on medicinal plants is shrinking because of restriction from religion and lack of interest by the younger generations on uses of medicinal plants. The study calls on the Government to take proactive steps aimed at encouraging the documentation of ethnobotanical information in order to preserve this great natural resource from getting lost forever.

Key words: Ethnobotany, Tiv, Extracts, Anti microbial ,

INTRODUCTION

The role played by plants in health promotion and medicine is on the increase. Throughout history man has used various plants for the relief of certain illness and to confer protection against a variety of diseases and disorders. The Plant kingdom is well endowed with a variety of phytochemicals that are important in health promotion, disease prevention and has remained the bedrock for the discovery of new drugs [1-3] .

Man and animals have depended on plant for the cure of most illness till introduction of chemotherapeutic agents, until then indigenous people of all lands discovered and developed medicinal uses of native plants. [4] carried out ethnobotanical survey on medicinal plants of people of Plateau State of Nigeria. [5] documented the medicinal uses of plants amongst Iggede people of Benue State.

Several authors have made efforts to document the medicinal uses of plants in Tiv land against infectious diseases. For instance [6] carried out an ethnobotanical survey and documented several medicinal plants used among Tiv people of central Nigeria for the treatment of malaria infection. Several species of plants were noted from different families. A similar survey was carried out by [7] who documented the medicinal plants used by the Tiv people for antivenomous applications.

From generation to generation, the Tivs have used traditional medicine as the first line of action in outbreak of illnesses. The young ones learn from the adults who possess a good knowledge of plants that cure a variety of illness including diarrheal, which is an infection of the bowel.

Diarrheal is a topical health threat in Nigeria, and other developing nations causing 18 % of all deaths in children under five years, and accounts for two million deaths in developing countries each year [8]. Just like other infectious diseases diarrheal is a problem among Tiv people, and because of lack of conventional medical infrastructure and poor economic conditions they take to practice and patronize alternative system of medicine to treat the infection.

The almost complete lack of systematic ethnobotanical records of the Tiv people on this important infection is noteworthy. With the increasing challenge in the use of chemotherapeutic agents in the treatment of most microbial infections, researchers are increasingly turning attention to folk medicine in search of new leads to develop better drugs [9], [10]. Documentation of medicinal plants especially of indigenous community like the Tiv people of Nigeria is crucial and important.

Generally indigenous knowledge is the main resource of all ethnobotanical investigations. But the continuation of this knowledge is endangered when transmission between older and the young generation is no longer connected [11]. Therefore documentation of traditional ethnobotanical knowledge through ethnobotanical studies is important for the conservation and utilization of biological resources [12].

The goal of this research was to document information on the plants and recipes used by the Tiv people of central Nigeria for the treatment of infectious diarrheal, and to carry out the antibacterial efficacy of some of these plants, with the aim of determining the most active ingredient.

MATERIALS AND METHODS

An ethnobotanical survey was conducted among the Tiv people of Central Nigeria, using oral interviews and a questionnaire. To ensure effective survey coverage, the study area was divided into six zones (Table 1) and a selected sample population of sixty questionnaires was administered in each zone. The sample population was, principally, traditional medicine practitioners or herbalists (also known as native doctors or traditional healers) with, as judged by natives, thriving practices. In a few cases farmers and hunters (> 60 years old), that patronized these “doctors” at one time or another were also interviewed.

Information sought in the questionnaire and during the interview included the following: Local names of plant(s) and part(s) used as medicine, mode of preparation and extraction, dose and duration of administration, state of part(s) used (fresh, dried, or powdered), time of plant collection, and availability (occurrence) of the plant(s). The information gathered was crosschecked with other practitioners in the locality. Plants use value which is a quantitative measure of the relative importance of species known locally was calculated using the expressions prescribed by [13].

Subsequently, the interviewers were accompanied to the field to ensure the collection of the plant specimen, for more proper identification. Collected specimens were identified systematically at Department of Forestry and Wildlife university of Agriculture Makurdi. The materials provided by [14], [15], [16]; [17], served as a ready guide to identification. Voucher herbarium specimens were deposited in the Department’s laboratory.

Table 1: Surveyed Area of Tiv land in Zones

Zones	Local Government Area
A	Vandeikya, Konshisha, (Obodu, Ogoja in Cross River State)
B	Kwande, Usongo
C	Gboko, Tarka, Buruku
D	Katsina Ala, Ukum, (Wukari, Ibi Donga and Takum in Taraba State.)
E	Logo, Guma, Makurdi
F	Gwer, Gwer-West (Awe, Lafia, Kiana and Doma in Nasarawa State.)

Note: The Zones here are for convenience of this research.

RESULTS

A total of 360 questionnaires were distributed across the six zones (A-F) and 320 were returned, representing response rate of 94.12 percent. Results of the questionnaire showed that indeed medicinal plants are effectively used in Tiv land as anti-diarrheal recipes. Thirty one species of plants from seventeen families were identified, with Caesalpiniaceae family being the most dominant. Details on the recipes, preparation methods, and treatment regimes, are summarized in Table 2.

Table 2: Anti-Diarrheal Medicinal Plants of Tiv people of Benue St. Nigeria

Botanical Name of Plant! (Family).	Local Name of Plant	Part use and preparation method	Treatment	Remarks
<i>Terminalia avicennoides</i> . Guil. (Combretaceae)	Kuegh	Uproot, wash and boil with little water, filter the extract and allow to cool	Children 1 tea spoon twice daily for 2 days. Adult 200 mL 2 times daily for 2 days	
<i>Detarium microcarpum</i> Guil (Cesalpiniaceae)	Agalyem	Remove bark or cut stem, then boil; and filter the extract	Children; 1 tea spoon for two times daily. Adult 100 mL three times a day.	
<i>Spondias Mombin</i> L (Anacardiaceae)	Kon-kuaa	Remove the bark, wash and boil in H ₂ O	Children, give full tea spoons twice daily for 2 days. Adults; 200 mL taken with pap and honey, morning and evening, for 2 days.	
<i>Piliostigma thonningii</i> . sehum milne. Redhead (Caesalpiniaceae)	Nyihar.	Cut stems and wash; boil in water and filter	Children; take 50 mL thrice for two days Adults; 250 mL daily for 2 days.	
<i>Erythrina Senegalensis</i> . DC (Papilionoideae)	Ishohov	Remove bark and boil carefully in water filter	Children, 2 tea spoons twice daily for 2 days. Adult; 200 mL twice for 2 days	
<i>Daniellia oliveri</i> (Poje) Hatchet Data (Caesalpiniaceae)	Chaha	Cut the tender parts boil in water to a desired thickness	Children, 25 mL twice daily for 2 days; Adult; 250 mL 2 twice daily for 2 days.	
<i>Tamarindus indica</i> . L (Caesalpiniaceae)	Tsamiya	Cut the root and boil in water	As above for children and adult	
<i>Sterculia setigera</i> . L (Sterculiaceae)	Kumeduur	Remove the bark, wash and boil in water	Children, 50 mL twice daily for three days Adults; 200 mL twice daily.	
<i>Pericopsis Laxiflora</i> Menth. (Papilionoideae)	Tserama	Uproot, wash and keep in cold water for 30 — 60min. then drink	Children 2 tea spoons twice daily for 2 days Adult 200 — 300 mL twice daily for 3 days.	
<i>Burkea africana</i> . (Caesalpiniaceae)	Gbagbogum	Obtain the bark and boil in water	Children, 50 mL twice daily for 2 days. Adults 200-250 mL twice daily for 2 days.	
<i>Carica papaya</i> L (Caricaceae)	Mbuee.	Uproot and wash properly, then boil in water	Children, 2 tea spoons twice daily Adults: 200 mL twice daily for 3 days.	
<i>Sida alba</i> L (Malvaceae)	Chan cha	Uproot, wash and boil, then filter	Children, 25 mL daily for 2 days Adult; 200 — 250 mL 2 times daily for 2 days	
<i>khaya gradiflora</i> . Guil. (Meliaceae)	Haa.	Scrap the bark and grind to powder and soak in water	Take a tea spoon full of powder twice daily for 2 days; for children Adult; take a table spoon full of powder thrice for 2 days.	More effective combined with <i>Parkia biglobosa</i>
<i>Parkia biglobosa</i> (Jacq) Benth. (Mimosaceae)	Nune.	Remove the bark dry it and grind to powder	Children; a tea spoon full of powder twice daily for 2 days. Adult; a full table spoon full of powder twice 2 days.	More effective when combined with <i>Khaya grandiflora</i> .
<i>Sar cocophalus latifolius</i> L. (Rubiaceae)	Hor kura	Cut the bark, wash and boil to produce the extract	Children take 50 mL thrice daily for 2 days. Adult; 250 mL twice for 3 days.	
<i>Vitellaria paradoxa</i> L (Sapotaceae)	Chamegh.	Remove the bark and grind it to powder or paste	Children; 50 mL twice daily for 3 days. Adult: take 1 table spoon twice for 2 days.	You may add salt to improve taste.
<i>Cassytha filiformis</i> , Lin. (Lauraceae)	Gbaaondo	Cut the stem and then boil to produce sap	Children: 25 mL twice daily for 2 days; Adult: 200 — 250 mL twice daily for 2 days.	
<i>Anacardium occidentale</i> L (Anacardiaceae)	Ishase.	Obtain the leaves, wash, squeeze and allow to stay in water for 3 hours or boil the leaves	Children; 20 mL twice daily Adult 250 mL twice daily, for two days.	
<i>Crossopteryx Febrifuga</i> Benth (Rubiaceae)	Irkwa	Obtain the tender parts and boil in water	Children: 50 mL twice daily for 2 days. Adults: 250 mL twice for two days.	
<i>Sarcocaphalus latifolius</i> Atzer.ex Sabine. (Rubiaceae)	Ikyura Ukase	Uproot, wash and boil in H ₂ O	Children 50 mL twice daily for two days Adult; 250 mL twice for 3 days.	
<i>Sorghum bicolor</i> . L. moench (Poaceae)	Wua	Obtain the roots and boil in water	Children 50 mL twice daily for two days Adults; 250 mL twice daily for two days.	More effective when combined with <i>Terminalia avicennoides</i>
<i>Chromolaena odorata</i> .Lin. (Asteraceae)	Bokpai	Cut the tender leaves, squeeze them properly and soak in H ₂ O, for 30mm	Children; 50 mL twice daily for 2 days; Adults: 250 mL twice daily for 2 days.	

<i>Ficus spp.</i> L (Moraceae)	Atur	Remove the roots and boil till it is done	Children 1 tea spoon twice daily. Adults 250 mL twice daily	
<i>Mangifera indica</i> L. (Anacardiaceae) <i>Entada africana</i> Linn. (Mimosoideae) <i>Stereospermum kunthianum</i> - Cham. (bigniniaceae) <i>Sena occidentalis</i> Linn. (Caesalpinoideae) <i>Tridax procumbens</i> Linn. (Asteraceae) <i>Erythrophleum suaveolens</i> . Linn. (Euphorbiaceae) <i>Jatropha curcas</i> Linn. (Euphorbiaceae)	Mongolo Lyemen Umanatumba Tsetsa Ambiaikomou Kor Gyedam	Remove the bark and boil to thicken and drink. Remove the roots , wash properly boil and drink Cut the stems with the leaves and boil to drink Remove the roots and boil to drink Collect the leaves squeeze to remove the juice and then drink Remove the roots and boil to drink Cut the stem into pieces and boil to drink	Children: 25 mL twice daily, for 2 days ; Adult: 200 mL twice daily for 2 days. Children: 50 mL twice daily for 2 days; Adults: 250 mL twice daily for 2 days. Children: 25 mL twice daily for 2 days; Adult: 200 — 250 mL twice daily for 2 days Children: 25 mL twice daily for 2 days; Adult: 200 — 250 mL twice daily for 2 days One teaspoon thrice a day for children. Children: 25 mL twice daily for 2 days; Adult: 200 — 250 mL twice daily for 2 days Children: 25 mL twice daily for 2 days; Adult: 200 — 250 mL twice daily for 2 days	

TABLE: 3. Antidiarrheal medicinal plants in tiv land and their use value

Scientific Name	Distribution State/ LAGs	Citation	Use value
<i>Danielia Oliveri</i>	13,9,11, 1	12	0.0352
<i>Terminalia avicennioides</i>	1-17	10	0.0294
<i>Fiscus spp</i>	1-17	13	0.0352
<i>Erythrina sengalensis</i>	1-17	14	0.0411
<i>Deuterium microcarpum</i>	12, 15, 1, 10, 11, 2, 16	30	0.0880
<i>Gmelina arborea</i>	11, 2, 1, 15, 16, 17	8	0.0255
<i>Pilliosigma thornmingii</i>	21, 7, 8, 9, 10	8	0.0235
<i>Crossopteryx febrifuga</i>	8, 7, 2, 3	10	0.0235
<i>Sida alba</i>	3, 2, 10, 15, 17	14	0.0294
<i>Burkia Africana</i>	1-17	12	0.0411
<i>Carica papaya</i>	1-17	12	0.0352
<i>Parkia biglobosa</i>	1-17	12	0.0352
<i>Khaya grandiflora</i>	3, 10, 15	12	0.0352
<i>Sterculia setigera</i>	1-17	6	0.0178
<i>Chromoleana odorata</i>	1-17	8	0.0235
<i>Anarcordium occidentale</i>	1-17	12	0.0352
<i>Sarcocephalus latifolius</i>	7, 8, 1, 2, 10	6	0.0178
<i>Nuclea latifolia</i>	7, 8, 3, 10, 11, 12	6	0.0178
<i>Pericopsis laxiflora</i>	7, 13, 8	6	0.0178
<i>Vitellaria paradoxa</i>	1-17	6	0.0178
<i>Sorghum bicolor</i>	1-17	6	0.0178
<i>Psidium guajava</i>	15, 2, 1, 10, 11, 9	14	0.041
<i>Mangiferi indica</i>	2, 1, 6, 10, 11, 9, 17	12	0.0352
<i>Cassytha filiformis</i>	1, 2, 3, 11, 7	6	0.01470
<i>Tamarinus indica</i>	1, 13, 14, 8	5	0.01470
<i>Entada africana</i>	1, 2, 3, 11	6	0.0178
<i>Stereospermum kunthianum</i>	1-17	10	0.0294
<i>Sena occidentalis</i>	1-17	6	0.0178
<i>Tridax procumbens</i>	1-17	18	0.0529
<i>Euphorbia kamerunica</i>	2, 3, 11, 1	6	0.0178
<i>Erythrophleum suaveolens</i>	10, 4, 5, 9, 2	4	0.0117
<i>Jathropha curcas</i>	1-17	12	0.0352

Key Buruku 1, Gboko 2, Guma 3, Gwer East 4, Gwer West 5, Kastina-Ala 6, Kwande 7, Konshisha 8, Logo 9, Makurdi 10, Tarka 11, Ukum 12, Ushongo 13, Vandeikya 14, Taraba State 15, Nassarawa State 16, Cross River State 17.

DISCUSSION

This survey clearly showed that most of the identified plants and recipes were used in Tiv land for treatment of diarrheal infection. In most cases one single plant is enough to cure the infection, in others two plants were used jointly, water usually being the common extraction medium, The plants are either boiled or macerated to obtain the extract.

Majority of herbalists contacted claimed that a little quantity of the extracts is to be taken by both adults and children, since these are capable of inhibiting even normal defecation. A little quantity as tea spoonful or (10 mL) twice a day for two days normally should correct the bowel problem.

Some plants *D. microcarpum*, *D. oliveri* are used by other tribes for the treatment of diarrheal and other gastrointestinal infections [5].

Result showed that many plants were indigenous for the Tiv; according to the testimony of the herbalists, some were however not indigenous and were brought in by foreigners or by interaction with herbalists from other lands. For example *Mangifera indica* is indigenous to India, [15] .

This interaction between herbalists is healthy enough for it is capable of bringing harmony and commonness and providing variety in the tradomedical practice. Government has in recent times shown concern at encouraging such associations.

Now that attention is geared towards supplementing orthodox medical practice with traditional practice, such associations are critical to providing a pool of available plants to pick from. This becomes imperative if the campaign for integration of traditional medical practice into our national primary health care system is to work, harmonization of the operations of herbalist as medicinal formulations is crucial.

None of the identified plants were administered on any patient as a test case for efficacy. However patients were seen receiving treatment in the communities around University of Agriculture south core area; during the last outbreak of diarrheal infection in Makurdi. The children in particular were treated with the plant *Spondias mombin* (konkua) and all patients administered admitted it worked for them. This indicates that the recipes were efficacious, also judging from the fact that the traditional medicine practitioners were highly patronized attest to the efficacy and safety of the recipes.

The use value of the plants were also calculated Table 3, the use value gives an indication of the respondents consensus or agreement on the efficacy of a plant. Thus a plant with the highest consensus factor has highest use value, it can be seen from Table 3 that *Detarium microcarpum* has the highest use value, indicating that many of the respondents signal it as been useful and efficacious. A plant with low use value indicates that it is not effectively used across the zones and may be less efficacious.

The importance of this kind of survey is not far fetched, First of all by carefully documenting folkloric medicinal practices that has been conserved over the years is highly beneficial. Through this approach extracts of these plants could be subjected to appropriate *in vitro* and *in vivo* pharmacology assay, [18] .

The fact that modern civilization especially Christianity has created a disinterest in the youth concerning these traditional practices, this kind of documentation will help to preserve information about this plants for future generations. With the current trends of destruction of tropical forest habitats there is need to survey and document the medicinal plants of indigenous communities.

CONCLUSION

With a total of 31 species of plants spread across 17 families, ethnomedicine among Tiv people remains a potential source of new lead compounds in the development of active therapeutic tools. Some herbs were found to be more effective when used in combination with other preparations. Synergistic interaction between the active phytochemicals of crude preparation and associated herbs could be responsible for the increased efficacy. Careful phytochemical and pharmacological Tests should carried out on the preparations to discover the active biomolecules. Isolated compounds may be useful in future drug discovery programs.

Though some of these plants may have been reported earlier [5] the ones reported here are mainly those used for the treatment of diarrheal infection.

REFERENCES

- [1] D J Newman, G M Cragg, Natural products as sources of new drugs over the last 25 years, **2007**, 70:46 -47.
- [2] M S Butler, The role of Natural product chemistry in drug discovery **2004**, 67(2) :141-215.
- [3] A Ganesan, The impact of natural products on modern drug discovery **2008**, 12 (3): 306-317.
- [4] V O Nkechi, M. Sunday, , L.E. Ishaku, ,S. David. Ethnobotanical survey of medicinal plants used in the treatment of animal diarrhea! in plateau state ,Nigeria,**2011**, 7:36-42.
- [5] J O Igoli, K Igwe and NP. Igoli Traditional medicinal practices amongst the Igede people of Nigeria, **2003**, 10 (4) 1-10.

- [6] J O Igoli, , O.G Ogaji,, Tor-Anyiin, N.P. Igoli, Traditional medicine practice amongs Igede people of Nigeria. Part II, **2005**, 2 (2): 134-152
- [7] T A Tor-Anyiin, R Shaato, HOA Oluma, Ethnobotanical survey of anti-malarial medicinal plants amongs the Tiv people of Nigeria, **2003**, 10(3): 6 1-74
- [8] J O Igoli, S N Tsenongu, T A Tor-Anyiin, .A survey of anti- venomous, Toxic and other plants used in some parts of Tiv land, Nigeria, **2011**, 1(3) 240-244
- [9] **World health organization**, (WHO)., (1996) . The world health organization report **1996**. Fighting diseases Fostering Development. Report of Director General world health organization.
- [10] B E Van Wyk, (2002), A review of ethanobotanical Research in Southern Africa, **2002**, 68: 1 — 13.
- [11] Teklehaymano, Tilahum, Giday, Mirutse (2007). Ethanobotanical study of medicinal plants use by people in Zegie peninsula Ethiopia:
- [12] M Kargioglul, , S Cenkei, ., M S Kok, An ethnobotanical survey of inner west Anatolia, Turkey, **2008**, 36: 763-777.
- [13] C Muthu, M Ayanar, Raja, N., (2006), Medicinal plants used by Traditional healers in Kancheepuram district of Tamil Nadu , India
- [14] E C Agishi, (2004), Etulo, Idoma, Igede, Tiv and Hausa name of plants. Agitab publishers Ltd Makurdi Nigeria. pp 13-26.
- [15] H M Burkill, (1985), The useful plants of west tropical Africa. 2nd ed. Vol 1. Royal botanic gardens Kew 960pp.
- [16] E M Adjanahoun, , R A, Ahyi ,L Ake –ASSI, K Dramana , J E Ekewade , S O Fadoju, Z O Gile E Goudote , A O Olatunji, ad E A , Sofowora (1991). *Traditional medicine and pharmacopoeia* A contribution to ethanobotanical foristic studies in western Nigeria . Organisation of African unity scientific, technical and research commission , OAU, STRC publication. Lagos Nigeria 420pp.
- [17] J Hutchison, and J M Dalziel, (1954) Flora of tropical Africa. Vol. 1 part1. Second ed. (Revised by R.J. W.Kenyi, Crown agents for over sea Governments in administration) , London 544p.
- [18] T Flaster, (1996), Ethanobotanical approaches to the discovery of bioactive compounds. In proceedings of the third national symposia ASHS press, Alexandria pp 561 — 565
- [19] S M Musa ,FE Abdelrasool E A, Eleikh, L LA, Ahmed, M.N, MahmoudA.L.E, and S M Yagi, Ethanobotanical study of Medicinal plants in the Blue Nile state, Southeastern sudan, **2011**, 5(17),4287-4297.