

Medicinal vegetal use by traditional healers in Ekiti State of Nigeria for diabetes treatment

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Received: 03.05.18, Revised: 03.06.18, Accepted: 03.07.18

ABSTRACT

The aim of this work was to know the effective plants therapy for the cure and prevention of diabetes by traditional healers. Also to understand the knowledge of traditional healers about diabetes before administering herbal medicine for cure or prevention. Twenty three plant samples were identified for diabetes treatment by the traditionalists. These plants could be common among the healers because they are found all over the places and could be of faster activity than other. The healers prepared their remedies in concoction and decoction of plant part or combination of plants' parts. For commercial purpose, the remedies are prepared to smooth powder in well packaged containers with instructions for use. The traditional healers relied and believed in their diabetic remedies and so, treat solely with natural herbal preparations.

Keywords : Diabetic, remedies, herbs, traditionalist, Ado Ekiti.

INTRODUCTION

Recent record shows that about 371 million people worldwide are affected with diabetes according to the International Diabetes Federation (1). This figure indicates that there is high increase in diabetes infection from year to year. Quite numbers of people have been reported to have died from diabetes disease in 2011, which of course will still result to death of many people on yearly bases. Due to high infection of this disease all over the world, researchers have estimated that by 2030, millions of people will have the disease. Blood sugar is regulated by a hormone called insulin (2). Manifestation of diabetes disease results when there is malfunction of pancreas, thereby not able to produce sufficient insulin or the insulin produced can not be used effectively by the body. However, raised blood sugar level in circulation of body system is an indication of diabetes infection not controlled and do cause damages mainly to nerves and blood vessels (2). Research data have indicated that in 2012, death of 1.5 million was as a result of diabetes disease and 8.5% of people in the age of 18 years and above had the disease in 2014 (3). Increase of diabetes mellitus in Nigeria, has increased from 2.2% as reported by Akinkugbe in 1997 from a national survey to 5.0% as estimated by the International Diabetes Federation (IDF) in 2013 (4,1). Complications of diabetes are common at the time of presentation in Nigeria: neuropathy 56%, erectile dysfunction 36%, nephropathy 9%, and retinopathy 7% (5). This is partly because diabetes is a progressive illness with an initial asymptomatic phase associated with on-going tissue damage and decline in pancreatic beta cell mass and

function. However, despite the available modern and traditional means of treatment, this disease could have increased more than the population reported in 2013.

Diabetes type 1

Type 1 diabetes is seen in children due the body not able to produce enough insulin for sugar utilization which then requires the intake of insulin supplements for regulation (2). Though the cause is still unknown, this disease can not be prevented at the moment. People with this type of diabetes disease do have frequent urination, dehydration that leads to loss of body weight and extreme tiredness.

Diabetes type 2

The diabetes type 2 is found in adults and it is as a result of the body system not able to utilize insulin produced from the body (2). This type of diabetes disease which is as a result of excess body weight physical inactivity, is identified more in diabetic patients all over the world. People with this type of disease could also have frequent urination, dehydration and body weight loss. This type of diabetes disease may not be known on time until after complication of the disease. Though it is more in adults, it is now also found in young ones. Recent studies designed according to EBM prove that a type 2 diabetic patient is in danger of serious cardio-cerebrovascular complications before the disease presents with a clinical and even biochemical symptomatology. For whole decades, classic glucose-tolerance test has been considered a method which allows the very early diagnosis of a prediabetic (6)

Gestational diabetes

This disease is a type of diabetes disease where glucose value in body circulation is above the permissive standard level and below the permissive level during pregnancy for diabetic patients (4). Pregnant women diagnosed for this type of disease are at risk even at delivery. People of this type of infection with their born children are at risk of type 2 diabetes in the future. Reported symptoms are not useful for diagnosis of this type of diabetes but prenatal screening is most ideal. Diabetes mellitus disease is of three types in diagnosed patients. The type 1 diabetes, where sufficient insulin is not produced for body utilization of sugar and therefore have decreased frequency of histocompatibility antigens (HLA) on islet-cell antibodies and chromosome 6 (7). This type of diabetes disease is common among children. Patients with type 2 diabetes are not prone to ketosis. However, both of these diabetes disease have symptoms of frequent urination as a result of insensate taste and excessive hunger, blurriness in vision loss in

weight and fatigue. In impaired glucose tolerance, other examples are tumor of the pancreas that produces excessive amounts of insulin (insulinoma) or when the glucose level in the body is above 130 mg/dL (8).

Methods of Study

The study was conducted in Ado metropolis of Ekiti State in Nigeria. Ado Ekiti is the headquarter of Ekiti State and belongs to the same geographical zone with Ondo, Osun, Oyo and Lagos States of Nigeria. Indigenes are among the Yoruba speaking ethnic groups and the State has numerical strength of over 5 million people. The Ado people outside their high knowledge in education indulge in farming. They are known for their traditional beliefs because it is a common practice among the aged, youths and children. Many hospitals are within the Ado town but this has not stopped them from practicing traditional healing where many are renowned traditional healers.



Data collection

Medicinal plants collection for this study was conducted between June and July, 2015. The local healer was randomly consulted within Ado metropolis. A total of 5 traditional healers were identified for their history of using herbs in the management of diseases. However, 4 out of the 6 identified traditional healers, declared their capability in healing diabetes with several plant remedies. Data was collected through questionnaire and direct interview with the 4 traditional healers that have remedies for diabetes, providing information on bio, herbs with anti diabetes functions, local plant names, preparation and administration of formulations herbs. They were also asked of their methods of diagnosis for diabetes before commencement of anti diabetes remedy, their decision or submission if the anti diabetes herbal formulation becomes ineffective on patients and why the ineffectiveness, if their patients are referred to the hospital or other traditional healers if

they are not able to cure a patient from an illness and if patients are at a time referred to them from the hospital. These interactions were successful because there was no need for language interpretation as all of them have former education and can speak English language. This indeed eliminated the ideology of misinterpretation of statement for wrongful understanding. From the data, anti diabetes plants used by the different healers were compared. To physically know these plants, random walk in the forest was conducted and plants were harvested by the traditional healers themselves. The plant voucher specimens (AD1 – AD10) were deposited in the herbarium for identification. The plants with their local names were identified and also crosschecked and updated with online Google search for confirmation. Ethical approval was obtained from the traditional healers for this study.

Results

Detail from respondents

The traditional healers with diabetes remedies comprised of 3 men and 1 woman. Their age ranged between 45 - 62. They were all educated personnel with secondary school education as the least. All of them manage one business or the other alongside their healing practice and one of them was a retired secondary school principal and well established in herbal medicine for many ailments. The men traditional healers are diviners and are well known herbalist within and outside the community while the only female was not a diviner but well rooted into the use of herb for healing (Table 1).

Table 1: Information on respondents (n = 4).

| Information | Frequency |
|----------------------------|-----------|
| Male | 3 |
| Female | 1 |
| Formal Education | |
| Primary 4 | 3 |
| Secondary | 1 |
| Tertiary | |
| Years of experience | |
| 5-10 | 0 |
| 11-15 | 0 |
| 16-20 | 2 |
| 21-25 | 1 |
| 26-30 | 1 |

Anti diabetic plants

Twenty three plant samples as shown in Table 2 were identified for the treatment of diabetes by the herbalists. All plant specimen were identified in the herbarium and all the plants are within the reach of the common man but their uses and preparation are certainly unknown by the populace. The random walk in the forest for the search and collection of plants made the physical identification of the plants easy hence it was only their local names that were provided for us by the traditional healers. Out of the plants identified and collected for this study, tree has the highest number with 43%, followed by shrubs with 30% and was least in the climber group of plants (13%). The plants belong to 18 families, where Leguminosae contributes 12%, Anacardaceae, Apocynaceae and Cucurbitaceae contributes 8% each and other 14 families shared one species each. The flower and fruits of plants are majorly use for prevention sake while other parts of plants are for cure.

Preparation and administration of anti diabetic herds

The healers prepared their remedies in concoction and decoction of plant part or combination of plants' parts. For commercial purpose, the remedies are prepared to smooth powder in well packaged containers with instructions for use. Most of the plants identified are not used singly but in mixtures of one or two plant parts.

The reason being that, why some are acting as the main potency for diabetes others are working as ingredients for remedying kidney and other urogenital organs that have been affected with the disease. Meanwhile, about 70% of the plant species are used in a single form to affectively treat diabetes. Also pertinent is that, where some healers prefer to use the leaves of a particular plant for healing, others may prefer to use the stem bark or roots. The reason given was that the root and stem bark of plants have the storage organs in plants where the potential ingredients for any disease treatment are in larger portion than the leaves of plant where manufactured foods are released back to the stem and roots. This denotes that larger chemical portions effective for healing will be of more concentration. While this is so, those that preferred using the leaves relished a contrary opinion that root of plants are always loaded with soil pollutions and pathogenic microorganisms that will have interference on the potency of herbal remedies. Both sides have idea but it is rather most unfortunate that this is not a forum for debate but diabetes treatment with traditional medicine. Which ever part of the plant employed for remedy, a full teaspoon, a full table spoon or a cup of about 20 – 25 ml is recommended for imbibing the remedies twice or thrice in a day; and mostly after meal or before meal. This continues until the patient is totally healed from the ailment. Most of these herbal remedies have different dosages and the reason was that some remedies are more concentrated than others and to avoid over dose that could result to dizziness and stomach disorder, care must be managed over dosage. The remedies are of bitter or no taste and for this, most patients find it difficult to swallow once the taste is felt on their tongues and so, may discontinue the use of the remedy or take it at random which is part of the problems for not achieving rapid or successful treatments with some patients.

Causes, diagnosis and symptoms of diabetes

Fifty percent of the herbalists admitted that consumption of too much sugar caused diabetes and they linked they believe to regular drinking of beer, soft drinks and carbohydrate foods. Carbohydrate foods are the staple foods for the common man in Nigeria and Africa as a whole where some families are proudly living on three square meal of no other than carbohydrate. This notwithstanding, when eaten with bitter soup or local spiced soups prepared with edible leaves could help reduction in the disease. The other 50% believes that diabetes is caused by poverty and also with age when the human system is not able to synthesize most foods for the body absorption. The traditional healers have common view in the diagnosis of patients with diabetes. Frequent urination, losing of weight and dryness in the throat are the most common symptoms among the healers. As diabetes has different

stages, most of the traditional healers, do not attend to patients with chronic stage of infection but refer them to hospital for the fear that the patient might die in the process of treatment. The very poor that cannot afford hospital bill stay in their homes and remedies are

administered as required to relief or cure them of the illness. When improvement is not certain, they are referred to most experienced herbalist for trial.

Table 2: Identified plants with antidiabetic properties

| Scientific name | Local name | Common name | Family | Parts used | Growth form (Yoruba) |
|-------------------------------------|----------------|-------------------------|-----------------|-------------------------------------|----------------------|
| <i>Anacardium occidentale</i> | Kasu | Cashew | Anacardiaceae | Leaves, Fruits, bark | As a tree |
| <i>Anthocleista djalonesis</i> | Shapo | Cabbage tree | Longaniaceae | Bark, Leaves | As a tree |
| <i>Bridelia ferruginea</i> | Ira | Ira | Euphorbiaceae | Leaves ,Barks, Roots, Fruits | As a tree |
| <i>Carica papaya</i> | Ibepe | Pawpaw | Caricaceae | Leaves, seeds, fruits. | As a tree |
| <i>Cattaranthus roseus</i> | Apadida pupa | Rose periwinkle | Apocynaceae | Leaves, Whole plant | Shrub |
| <i>Ceiba pentandra</i> | Araba | White silk cotton | Bombacaceae | Lowers, Bark, Leaves | In tree form |
| <i>Costus afer</i> | Ireke-omode | Ginger lily | Zingberaceae | Stem, roots, fruit juice | Shrub |
| <i>Dioscorea phylum cumminsii</i> | Omuaja | Serendipity berry | Mennispermaceae | Leaves, roots, fruits, stem bark | In tree form |
| <i>Enthandrophragma cylindricum</i> | Ijebo | Cedar mahogany | Meliaceae | Stem bark | In tree form |
| <i>Hoslundia opposita</i> | Efinrin-oso | Hoslundia | Labiatae | Whole plant, leaves | As a shrub |
| <i>Momordica charantia</i> | Ejirinwere | African cucumber | Cucurbitaceae | Whole plant, leaves, roots, seeds | Climber |
| <i>Napoleona vogelii</i> | Ito, Gbogbori | Napoleona | Lecythidaceae | Bark, seeds, twigs, root, fruits | Climber |
| <i>Ocimum gratissimum</i> | Efinrin-nla | Tea bush, balsam | Labiatae | Whole plant, leaves, fruits, seeds | As a shrub |
| <i>Parkia biglobosa</i> | Igi-iru | West Africa locust bean | Leguminoseae | Leaves, bark, fruit pulp, seeds | In tree form |
| <i>Picalima nitida</i> | Erin eso Abere | Picalima | Apocynaceae | Roots, seeds, bark | As a shrub |
| <i>Senna arabica</i> | Kashia | Gum Arabic | Leguminoseae | Leaves, bark | In tree form |
| <i>Senna fistula</i> | Adantoro | Indian laburnum | Leguminoseae | Leaves, Pod | In tree form |
| <i>Spondias mombin</i> | Akikan, Iyeye | Yellow mombin | Anacardaceae | Roots, Bark, Fruit juice and Leaves | In tree form |
| <i>Syzygium guineense</i> | Adere | Water-berry | Myrtaceae | Seeds and leaves | As a shrub |
| <i>Thaumatococcus</i> | Ewe-eeran | Miracle berry | Marantacea | Plant fruits | As a shrub |

| | | | | | |
|------------------------------|---------------|---------------|--------------|-----------------------------|------------|
| <i>danielli</i> | | | | | |
| <i>Tithonia diversifolia</i> | Agbale, Jogbo | Tree marigold | Asteracea | Leaves, Whole plant , roots | As a shrub |
| <i>Vernonia amygdalina</i> | Ewuro | Bitter leaf | Compositae | Stem, Roots and Leaves | As a shrub |
| <i>Viscum album</i> | Afomo | Mistletoe | Loranthaceae | Stem Whole plant | As a shrub |

Discussion

Insight about diabetes as a disease

The disease that affect man for displeasure, irritation and even death, have been and even before the advent of modern medicine. Man in his residual knowledge through mistakes and deliberate acts has discovered effective herbal remedies for treating and preventing microbial origin and non microbial origin diseases. This practice exist so much among the Ekiti State indigenes where Ado is located and the capital city of Ekiti State. This phenomenon become practiceable because plants for disease treatment are many in the Nigerian flora and are easily reached without costs. In Ado town of Ekiti State, there is quality government and private well established health care centres, but this has not stopped the people from the use of herbal remedies to treat minor or chronic diseases. This is not because they cannot afford hospital bills for treatment or the purchase of available modern medicine, but for the use of herbal remedies by traditional healers has gained ground for their competent and effectiveness in diseases treatment. The traditional healers are comprised of both male and female but with a little percentage of the women to men. This practice is not what any body can do for it is inherence from one lineage to the other in the families that practice such. The believe of Africans is that traditional healers should be solely male business. (9, 10) but it has been discovered that most female traditional healers are vast in traditional medicine practice than male because they are careful and don not like bye passing any protocol to achieve what must to be addressed in the desired aim for the understanding of everyone. From the understanding that so many modern medicine are becoming ineffective in the treatment of some diseases they are meant for, these traditional healers do not campaign against the use of modern medicine but only confidently advertises their herbal remedies for recognition and general acceptance. As the traditional healers believe that high sugar consumption results to diabetes, some added that some individual'spancreases and insulin are not properly developed and so function half hazard and pack up even at early age. The symptoms of diabetes reported

by the traditional healers which are frequent urination, dryness in the throat and losing weight. (11, 12). This however, make known that the traditional healers have the true knowledge about diabetes infection and who is to be administered with anti diabetic herbal remedy. None of the healers claimed 80% or perfection in healing of their patients from the inception of their practice. When improvement of healing is not observed in their patients, they are either referred to amore vast traditional healer within the same locality or to the hospital for proper diagnosis because the symptoms of some diseases may be similar or with a little difference which critical diagnosis can only point out. They also claimed that the diagnostic methods is basically physical observations and through interactions as they have no equipment or kits for diagnosis. Despite these traditional healers are not against the use of modern medicine, they find it secondary to refer their patients to hospital instead a more powerful or vast healer than themselves within the same community or out their community. Their submission to this was that they have confident in their herbal remedies and if it is failing on a patient, the illness may be back up with evil spirit which need to addressed by a more powerful and vast healer. In this case, referring a patient to a hospital is an issue complicated. However, some of them mentioned that in some occasions, though very rear, patients are referred to them from hospital. These are majorly critical cases that available modern medicine could not solve, no visible diagnosis result and lack of money to settle hospital bills. The remedies by these traditional healers are never in form of capsule, tablet or injection liquid. They are only drank orally in water solutions (13, 14). Like earlier mentioned, the stem bark and roots of plants are most preferred for formulations by some of the healers. However, the leaves of plants are more preferred (14). The plants' names for anti diabetes remedy were indeed shown to us and plants were collected from the field but were not allowed to know the mixtures of plants in their parts and preparation before consumption. They could not be blamed for this act because they tried to cleverly patent their formulations as it is a hard work to become a traditional healer and it is not a practice for every one. Different methods of preparation even of same plant

party were observed among the traditional healers. While some will collect and use immediately, others will place the collected plants on containers outside over night before preparation.

Literature review of some plants used in healing diabetes by traditional healers

Vernonia amygdalima has been found effective on blood glucose and triglyceride levels in *Rattus rattus* induced with alloxan (15) *Vernonia amygdalima* in anti diabetic of albino rats induced with alloxan (16) Three Nigerian medicina plants (*Gongronema latifolia*, *Vernonia amygdalina* and *Viscus album*) in comparative Hypoglycemia on diabetic rats induced with alloxan (17) *Ocimum gratissimum* aqueous leaf extract on the safety and hypoglycaemic properies on rats induced with streptozocin (18). *Ocimum gratissimum* aqueous leaves extract effects on the bllod glucose levels of diabetic Wistar rats induced with streptozocin (19). Combined effects of the extracts of *Ocimum gratissimum* and *Vernonia amygdalina* on the enzyme converting activity of angiotensin, antioxidant and hypolipidemic parameters in diabatic rats induced with streptozotocinh (20) Crude leaf extracts of *Ocimum gratissimum* in anti diabetic effect on neonatal rats induced with streptozotocin for type 2 diabetes (21) *Anacardium occidentale* leaves extract in demonstration of anti-diabetic effect regulation of cholesterol on Wistar rats (*Rattus novergicus*) (22) Effect of the leaves of *Anacardium occidentale* Linn grown in Nigeria on Albino rats with normoglycemic (23) Chemistry of anti-diabetic effects of *Momordical charantia*: The active contituents and mode of actions (24) Effect of ethanolic extract and fraction of *Anthiocleista djalonensis* in antidiabetic activities (25) Extract and fraction of the stem bark of *Anthocleista vogelii* (Planch) in hypoglycemic activity (26) Hypoglycemic and biochemical comparative study of *Catharanthus roseus* (Linn) g. Apocynaceae (Madagascar periwinkle and chlorpropamide (diabenese) on diabetic rats induced with alloxan (27) Antidiabetic effect and hematological evaluation profile of *Ceiba pentandra* G (Malvaceae) stem bark methanol extract on diabatic rats induced with alloxan (28) Activity of *Dioscoreophyllum cummisnsii* (Stapf) Diels aqueous leaf extracts in antidiabetic and antidyslipidemic (29) Survey of medical plants for treating diabetes mellitus in Ekiti South Senatorial distric of Nigeria (30) Essential oil of *Hoslundia oppositta* Vahl as antidiabetic agent. (31). *Napoleoma vogelii* (Lecythidaceae) Hook and Planch leaf methanol extract and antidiabetic and hypolipidemic in rats induced with alloxan for Diabetes mellitus disease (32) Antidiabetic and antihyperlipidaemic possibility with fermented *Parkia biglobosa* (JACQ) extract in diabetic rats induced with alloxan (33). Effects of ethanolic

extracts of *Spondias mombin* Linn and *Parinari polyandra* Benth, seeds in histological changes of diabetic rats induced with alloxan (34) *Syzygium guineense* leaf methanol extract as antidiabetic potentials (35). Ethanol leaf extract of *Thuamatococcus daneilli* (ELETD) as hypoglycemic effect in diabetic Wistar rats induced with (36) *Tithonia diversffolia* aqueous leaf extracts effects in hypoglycaemic and hypolipidaemic (37) Improvement of carbohydrate metabolism and hyperlipidemia with African mistleto (*Viscum album*) in diabetic rats induced with streptozotocin (38). Leaf extract of a Nigerian species *Viscum album* (mistleto) leaf on the blood pressure of normotensive and doca-induced hypertensive rats. (39) Activity of the extracts of *Picalima nittida* Stapf (Apocyanaceae) seed in hypoglycemic evaluation of glycosides and alkaloids (40). Effects of *Carica papaya* leaves in streptozotocin diabetic rats for long term anti-diabetic, anti-hyperlipidaemic and anti-antherogenic (41).

Conclusion

Despite the availability of modern medicines for the cure and prevention of some chronic diseases, some communities still rely strongly on natural herbal remedies. This is possible because effective plant materials for healing diseases are accessible and have potentials for disease healing even with no or mild side effect. Plants could be mixed and parts from the same plant could also be mixed for effective healing. Though the details in preparations were not declared, this study has helped to identify some of the plants used as antidiabetic remedy. Study about these plants will make known their compounds for effective antidiabetic properties. This will further validate the use of plants for healing by traditional healers. Incidence of healing failures with a known plant or plants can not be concluded upon as evil spirit back up with disease because, there are variability in the composition of plants. The possibility to formulate herbal remedy from these plants for effective treatment of diabetes is understudy by the HAPU team of ABUAD under the supervision of Professor E. A. Aderoba, the Director of Technical Development.

Acknowledgement

This study is one of the projects under the Directorate of Technological Development (DTD) of Afe Babalola University, Ado Ekiti. We thank the management for their financial support of this project, the volunteered traditional healers in Ado Ekiti metropolis for their assistance that lead to the collection and identification of valuable plants with antidiabetic properties, there preparations and administration.

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