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Ethnomedicinal Survey of Medicinal Plants Used in the Treatment of Male Infertilty among the IFA Nkari People of Ini Local Government Area of Akwa Ibom State, Nigeria

Erhabor J.O.[1] Idu M.[2] and Udo F.O.[1]
[1]Departement of Plant Biology and Biotechnology, University of Benin, P.M.B 1154, Benin City, NIGERIA
[2]Benson Idahosa University, PMB, 110, Benin City, NIGERIA

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Abstract

Over the years plants have been used for the management and treatment of male infertility and it's gradually gaining grounds due to its availability and affordability. Infertility is the inability of a couple to have a pregnancy, after one year of regular sexual intercourse (3 to 4 times per week) without using any contraceptive. This survey was carried out to document medicinal plants used in the treatment of male infertility among the Ifa Nkari people of Ini Local Government Area of Akwa Ibom State, Nigeria. Ethnomedical data were collected by oral interviews using a semi-structured questionnaire. A total of twenty respondents which included nineteen (19) males and one (1) female were interviewed. A record of thirty-one (31) medicinal plants belonging to twenty-four (24) families with their botanical descriptions, folk uses, methods of preparation, reported uses, isolated substances and pharmacological effects were documented. The Poaceae family was the most represented with three species followed by Arecaceae, Cucurbitaceae, Liliaceae, Musaceae and Zingiberaceae families which has two species each and others one species. Leaves and roots were the commonest plant parts used closely followed by seeds, bark and fruits. The use of plants for the treatment of male infertility has been on the increase and the current renewed interest in natural products to sustain health globally cannot be overemphasized. It is therefore recommended that the reported anti-infertility plants be investigated to ascertain their safety and efficacy in order to improve the quality of life of man as well as the well-being of married couples.

Keywords: Ethnomedicine, medicinal plant, male infertility, Ifa Nkari people, Akwa-Ibom State, Nigeria..

Introduction

The World Health Organization in 2001 estimated that eighty percent of the world population use medicinal plants in the treatment of diseases and in African countries, this rate is said to be much higher[1]. It was also estimated that up to 90% of the population in developing countries rely on the use of medicinal plants to help meet their primary health care needs[2]. Again, available report show that more than 300 distinct ethnic groups making up the Nigerian society has its own unique indigenous healing heritage, which has evolved in response to the specific experiences and needs of its people. Currently, it is estimated that traditional medicine is the only healthcare resource accessible to a third of all Nigerians[3]. In Nigeria, traditional medicine is used to treat several health conditions including mental disorder, fractures, insomnia, and infertility[4].

Infertility is the inability of a couple to have a pregnancy, after regular sexual intercourse (3 to 4 times per week) without contraceptive method, during one year[5,6]. Reduced male fertility can be the result of congenital and acquired urogenital abnormalities, infections of the genital tract, increased scrotal temperature (varicocele), endocrine disturbances, genetic abnormalities and immunological factors[7]. A large proportion of infertile men fail to impregnate their female counterpart because of lack of sperm (azoospermia) or too little sperm (oligozoospermia); abnormal sperm morphology (tetratozoospermia) and abnormalities in sperm motility (athenozoospermia)[8]. There are evidences to show that sperm counts have been declining over the last 50 years, with a consequent increase in male infertility[9].

Nevertheless, psychological factors such as stress, guilt, depression, low self esteem and fear of sexual failure cause 10 to 20 percent of male infertility cases. The estimated range of men worldwide suffering from male infertility is from 15 million to 30 million. Reproductive Health care is the second most prevalent health care problem on African Continent[10]. Impotency, premature ejaculation and generally male infertility in the past two decades have been the focus of most research works[11].

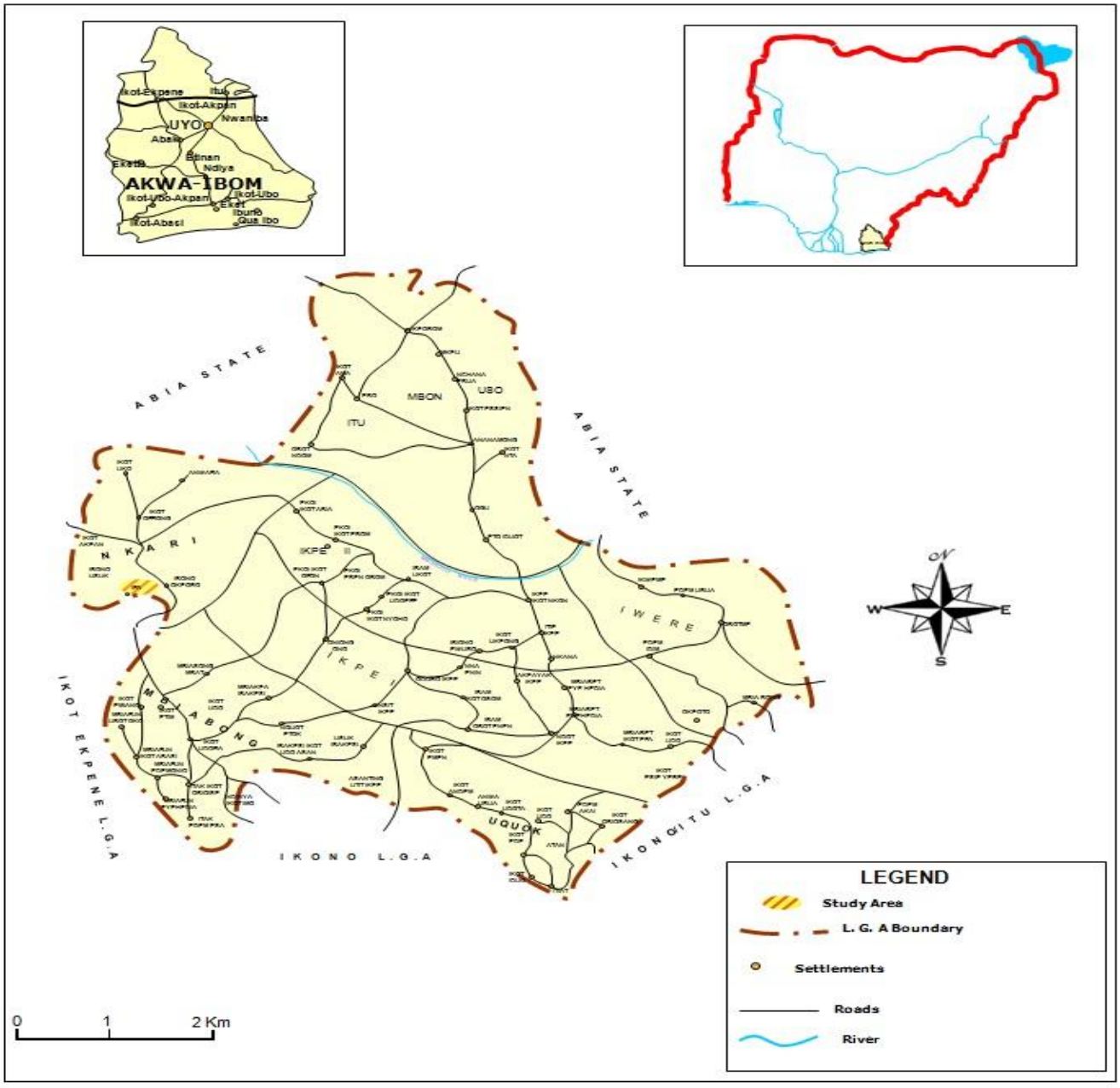
Infertility is a worldwide medical and social problem. Infertility in itself may not threaten physical health but can have serious impact on the mental and social well- being of infertile couple. It is estimated that there are 60 – 80 million infertile couples worldwide and above 10–15 % of married couples are affected. In many countries, the stigma of infertility often leads to marital disharmony, divorce or ostracism[12].

This study was carried out to source for information from traditional medical practitioners on plant remedies used for the management and cure of male infertility among the If a Nkari people with a view to stimulating further chemical and biological screening of the identified plants for the eventual production of drugs that can complement those currently in use in the treatment of the ailment.

Study Area: This survey was carried out in Ifa Nkari in Nkari clan, Ini Local Government Area of Akwa Ibom State,Nigeria. Ifa Nkari is located on the North-West of Ini Local Government Area of Akwa Ibom State, Nigeria. Ifa Nkari is one of the ten villages that make up Nkari Clan in Ini Local Government Area of Akwa Ibom State of Nigeria.

Material and Methods

Ethnomedicinal Information



Source: INI Local Governemnt Area, 2010

Figure-1
MAP of INI Local Government Area Showing Study Area

The ethnomedicinal data were collected through an oral interview of the herbal practitioners, old men and women including young settlers in the community using a semi-structured questionnaire (Appendix 1). Several field trips were planned and conducted between January and July 2012. The total respondents were twenty (of which nineteen were male and one female). Data obtained were collated and tabulated to give the botanical names, common names, families and the vernacular or local names of the various plant species as well as their folk use, method of preparation, application mode, dosage, duration of treatment and the plant part(s) used were recorded. Ethnomedicinal confirmations were carried out using Gill[13] and local names and uses were also confirmed using Etukudo[14].

Species Identification: The indigenous plants collected during the field trips were identified with the assistance of Dr. N.U. Ndaeyo of the Department of Crop Science, University of Uyo, Akwa Ibom State and Mr. J.O. Erhabor of the Department Plant Biology and Biotechnology.

Results and Discussion

A total of thirty–one (31) medicinal plant used by the people of Ifa Nkari for the treatment of male infertility were documented and identified in the study area. The identified plant species belong to twenty-four (24) families and thirty (30) genera. However, in the enumeration, plants are arranged in alphabetical order using the scientific names along with local names, families, the parts used, dosage, method of preparation and ailments treated. Plants identified in this work have been used by the respondents and according to them are quite efficacious. Indigenous medicinal plants form an important component of the natural wealth of the people of Nigeria[13]. The available knowledge on the use of plant preparations in traditional medicine is enormous among the people of Nigeria. The use of medicinal plants for the treatment of male infertility has come a long way since the ancient times and is gaining ground every day. Herbal remedies, ranging from those for promoting sperm production and motility to formulations for increasing testosterone levels, enhancing normal functioning of the male reproductive organs, and strengthening erection and sex drive are easily available in Nigeria[15].

In the enumeration, plants are arranged with scientific names along with local names, families, the parts used, dosage, method of preparation and ailments treated. A total of thirty – one (31) medicinal plant used among the people of Ifa Nkari for the treatment of male infertility were documented and identified in the study area. The identified plant species belong to twenty-four (24) families and thirty (30) genera. Of the twenty respondents, nineteen were male with only one female (table-4). The family (Poaceae) is the most represented with three species followed by Arecaceae, Cucurbitaceae, Liliaceae, Musaceae and Zingiberaceae families which has two species each and the rest with one species (table 2). Most of the preparations of the herbal medications were mainly by grinding, chewing, boiling, either soaked in wine palm or local gin. The administration of herbal medications was mostly by oral means as none was used topically (table 1). Leaves and roots were the commonest plant parts used closely followed by seeds, bark and fruits (table 3). This agrees with the findings of Afolayan and Yakubu[15] on the method of preparation and plant parts used in the management of male infertility. However, the local name of *Sorghum bicolor* could not be ascertained as at the time of this study.

Maud and Hannington[16] reported the use of thirty-three plants used in the management of sexual impotence and erectile dysfunction in western Uganda, while Afolayan and Yakubu[15] reported the use of fourteen plant species used in erectile dysfunction management in Nigeria as against the thirty-one plant species (table 1) encountered during the course of this study. It is deducible that the number of plants species used for the treatment and management of male infertility is rather significantly scarce or few. Therefore there is the need for extensive conservation and massive cultivation of the under study plant species is to prevent and protect them from possible extinction.

Ethnobotanical survey has revealed several reasons for using medicinal plants in the management of male infertility in Nigeria. This incidence of sexual inadequacies in human males has led to the development of a number of available options but unfortunately however, these options are too expensive, not easily available and with some serious side effects[17]. Ariba *et al*[18] reported that 42.3% of the 79 Nigerian clinicians agreed that many patients prefer native medications to modern drugs. This also supports the use of herbs in the treatment of male infertility in Ifa Nkari in Akwa Ibom State.

Moreso, it is paramount to note that several authors have given credence to the use of most of these reported plants on their use traditionally or in folklore in the management and the treatment of male infertility cases. Baljinder *et al*[19] agrees with the use of *Allium sativum, Cissus quadrangularis, Cocos nucifera, Cola acuminata, Cymbopogon citrates, Garcinia kola, Piper guineense, Sesamum indicum, Zingiber officinale* in the treatment of male infertility. Afolayan and Yakubu[15] also agree with the reported use of *Terminalia catapa, Musa paradisiaca, Piper guineense* in the treatment of male infertility. Igoli *et al*[20] reported the use of *Anthocleista djalonensis* and *Newbouldia laevis* in the treatment of male infertility among the Igede people of Nigeria. The use of *Carica papaya, Carpolobia lutea, Citrilus lanatus, Lonchocarpus cyanescence, Spondias mombin, Aframomum melegueta, and Irvingia gabonensis* on the treatment of male infertility has been reported by these respective authors[21, 22, 23, 24, 25].

However, some of the plant species (*Aloe vera, Carica papaya, Eremomastax speciosa, Gossypium hirsutum, Musa sapientum, Raphia hookeri, Sorghum bicolor, Tapinanthus bangwensis, Telfaira occidentalis, Zea mays*) reported in this work has not been reported in literature. These plant species will add to the already existing indigenous knowledge of plants used in the treatment of male infertility in Nigeria and the world at large.

Table-1
Some commonly used plants in the treatment of male infertility among the Ifa Nkari People of Akwa Ibom State,Nigeria.

Botanical names	Family	Common Names	Local names	Plant parts used	Mode of preparations	Dosages	Ailments
Aframomum melegueta K. Schum	Zingiberaceae	Alligator pepper, grains of paradise	Ntuen-ibok	Seed	Seeds are crushed and soak in fresh palm wine (at least a bottle) or local gin.	A glass thrice daily using palm wine and a shot daily for dry gin.	Low libido and weak erection
Allium sativum L.	Liliaceae	Garlic	Etebe-owo inua	Bulbs	Five bulbs of garlic, two bulbs of onion, ten pieces of African red pepper and ginger are crushed and mix with water and honey.	Three tablespoonful thrice daily	Low libido
Aloe vera (L) Webb (A. Barbadensis Miller).	Liliaceae	Aloe vera, Barbados aloe	Akokafid	Roots	The roots are cut into pieces and seven hands full are soaked in half a bottle of dry gin for ten days.	One tablespoonful thrice daily	Low libido
Anthocleista djalonensis A. Chev	Loganiaceae	Cabbage tree	Ibu	Root, Bark and Leaf	Decoction of the roots and barks.	Half a glass thrice daily	General infertility ailments
Carica papaya L.	Caricaceae	Pawpaw	Okpod, popo	Fruit (unripe)	The unripe fruit is cut into cube size and boiled in 8 litres of water.	Half a glass thrice daily	General infertility ailments
Carpolobia lutea G. Don.	Polygalaceae	Cattle stick	Ikpafum	Root	Decoction of the roots or the roots are thoroughly washed and chewed.	Six tablespoonful thrice daily, chew roots until condition improves	General infertility ailments
Cissus quadrangularis L.	Vitaceae	Edible-Stemmed-vine	Oboro-uduk	Root	Decoction of the roots.	Two tablespoonful thrice daily	General infertility ailments
Citrillus lanatus(Thunb.) Matsum and Nakai.	Cucurbitaceae	Melon	Ikon, Okokon	Seed	The seeds are used to prepare melon (egusi) soup and it should be half cooked.	The patient should eat egusi soup regularly	Low sperm count and low libido
Cocos nucifera L.	Arecaceae	Coconut	Isip mbakara	Coconut liquid	The outer layer of the coconut is removed and the nut cracked to obtain the fresh juice.	One glass daily for as long as it is needed	General infertility ailments
Cola acuminata (P. Beauv.) Schott and Endl.	Sterculiaceae	Kola nut	Ibon	Pericarp	Mix ten kola nut pericarps with five raw eggs, two bottles of lime juice, one bottle of water, and one bottle of honey.	One shot thrice daily for three months and alcohol intake should be discontinued during treatment	Low sperm count and weak erection
Cymbopogon citratus (DC) Stapf.	Poaceae	Lemon grass	Ebana	Leaf	The decoction of the Leaves is mix with honey.	Half a glass twice daily	Weak erection and General infertility ailments.
Eremomastax speciosa (Hochst*).*	Acanthaceae	Golden seal, African blood tonic plant	Edem Ididout, Ndana-edem	Leaf	The leaves are washed and juice is extracted by squeezing the leaves in water.	Six tablespoonful twice daily.	General infertility ailments
Garcinia kola Heckel.	Guttiferae	Bitter kola	Efiad	Seed	Seed is crushed and tincture made with gin or fresh palm wine.	Two shot thrice daily	Weak erection
Gossypium hirsutum L.	Malvaceae	Cotton plant	Ikro afor	Leaf	Leaves are washed and boiled in adequate water to extract juice.	Half a glass daily	General infertility ailments
Irvingia gabonensis (Aubry-Lecomte ex O'Rorke) Bail.	Irvingiaceae	Bush mango, African Mango	Uyo	Seed	Grind one tomato tin can of the seeds and mix with 75cl of pure honey.	One spoonful twice daily.	Low sperm count and impotency.
Jatropha gossipifolia L.	Euphorbiaceae	Wild cassada, belly-ache bush	Eto-eko obio nsit	Stem bark	The bark washed thoroughly and tincture made.	A shot three daily	General infertility ailments

Lonchocarpus cyanescens (Schum. and Thonn.) Benth.	Fabaceae	West African Indigo	Awa	Leaf	Leaves are washed and put in a pot of water then boiled.	Two shot thrice daily.	Low sperm count
Musa paradisciaca L.	Musaceae	Plantain	Ukom, Mbrinyon	Root unripe. Fruit, Sucker juice	The root are soaked in palm wine or dry gin. The juice from the stem is taken orally. The unripe fruit can also be roasted and taken orally.	Two shot twice for root tincture, one glass of juice once every three days. Two roasted unripe plantain fruit daily.	Weak erection, low sperm count and aphrodisiac
Musa sapientum L.	Musaceae	Banana	Mboro	Root	The roots are soaked in palm wine or dry gin.	Two shot twice daily.	Weak erection and aphrodisiac
Newbouldia laevis (P. Beauv) Seeman ex Bureau.	Bignoniaceae	Boundary tree, chieftaincy tree	Itumo, Oboti, Oniok	Stem bark	The bark of the stem is soaked in dry gin and allowed for few hours.	Two shot twice a day	General infertility ailments
Piper guineense Schum and Thonn.	Piperaceae	Guinea black pepper	Etinkene, Odusa	Root, leaves and fruits	Decoction of the leaves and roots. A tincture fruits and seeds are also very essential or the seeds could also be used also in preparing pepper soup yam.	Half glass cup daily for leaves and root decoction. One shot daily for the tincture.	Weak Erection and Impotency
Raphia hookeri Mann and Wendland.	Arecaceae	Wine palm	Ukod	Root	The remedy is prepared by making a tincture of the root of the plant using gin or palm wine.	Two shot twice daily	Weak erection and as an aphrodisiac.
Sesamum indicum L.	Pedaliaceae	Sesame, Beniseed	Etekhede, Udot Iyeiye	Seeds	The seeds are eaten or the seeds extract taken orally.	Two teaspoonful daily	General infertility ailments.
Spondias mombin L.	Anacardiaceae	Hog plum, yellow mombin	Nsukakara	Leaf	The remedy is prepared by boiling the leaves	One glass thrice daily	General infertility ailments
Sorghum bicolor L.	Poaceae	Guinea corn		Straw	Guinea corn straw, guava roots, coconut root, male pawpaw root, ginger and green leafy onion are soaked in gin, (brandy) or Soda water.	One shot thrice daily (gin). Half glass thrice daily (soda water).	General infertility ailments
Tapinanthus bangwensis (Engl. and K. Krause)	Loranthaceae	African Mistletoe	Ndot eyong	Leaves, Roots and Stems	The leaves, stems and roots are boiled and allow to cool down.	Two glass twice daily	General infertility ailments
Telfaira occidentialis Hook. F.	Cucurbitaceae	Fluted pumpkin	Ubon, ikon ubon	Leaf	The Leaves of fluted pumpkin and that of Solanum melongena are squeezed in water to extract juice and little honey added.	One glass twice daily	It is used to treat general infertility ailments
Terminalia catapa L.	Combretaceae	Indian almond	Mansang mbakara	Fruits	No preparation	Eat fruit as long as necessary.	Weak erection, premature ejaculation, low sperm count.
Xylopia aethiopica (Dunal) A. Rich.	Annonaceae	African pepper, Ethiopian pepper, Guinea pepper.	Ata	Fruits, seeds, Bark	The fruits, barks and seeds are soaked in palm wine. The fruits and seeds can also be used to prepare pepper soup for the patient.	One glass daily	General infertility ailments
Zingiber officinale Roscoe.	Zingiberaceae	Ginger		Rhizome	The juice extracted from ginger is mixed with honey.	Three table spoonful thrice daily	Weak erection
Zea mays L.	Poceae	Maize, corn	Akpakpa, abakpa, ibokpod.	Seeds	Two cups of maize grains or seeds powdered) are mixed with adequate palm wine and filtered. The filtrate is taken orally.	One glass twice daily.	General infertility ailments

Table-2
Distribution of species among the family of plants collected

Family	Number of species
Acanthaceae	1
Anacardiaceae	1
Annonaceae	1
Arecaceae	2
Bignoniaceae	1
Caricaceae	1
Combretaceae	1
Cucurbitaceae	2
Euphorbiaceae	1
Fabaceae	1
Guttiferae	1
Irvingiaceae	1
Liliaceae	2
Loganiaceae	1
Lorantaceae	1
Malvaceae	1
Musaceae	2
Pedaliaceae	1
Piperaceae	1
Poaceae	3
Polygalaceae	1
Sterculiaceae	1
Vitaceae	1
Zingiberaceae	2

Table-3
Frequency of plant parts used

Plant Parts used	Frequency
Root	9
Leaf	9
Seed	7
Fruit	5
Bark	4
Bulb	1
Coconut liquid	1
Pericarp	1
Rhizome	1
Sucker Juice	1

Table-4
Number of Respondents

No. of Respondents	Male	Female
20	19	1

Conclusion

Nigeria has a vast heritage of medicinal and traditional knowledge. The use of traditional or indigenous knowledge has continues to play a vital role in health care delivery in Nigeria and will continue to play a major role as long as modern health care facilities continues to be an illusion and unavailable to the vast majority of the populace. However, there is an urgent need for the search to preserve our diversity as the rapid extinction of plant species is on the increase. Further investigations and enquiry into the safety and efficacy of these plant species used in the treatment and management of male infertility is strongly recommended.

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