

Full Length Research Paper

Ethno- medicinal field study of anti-fertility medicinal plants used by the local people in Keffi Local Government, Nasarawa State, Nigeria

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An ethno-medicinal field study was undertaken to gather information about the use of contraceptive medicinal plants in Keffi Local Government, Nasarawa State, Nigeria. Keffi Local Government was surveyed through interviewing of randomly selected 321 participants using semi-structured questionnaire and regular field visit. The investigations revealed that 27 species of medicinal plants distributed in 22 genera belonging to 26 families used commonly by the local people. The study revealed that the local peoples are using folklore medicinal plants for contraceptive purpose. This survey can be a source for the discovery of novel pharmacologically bio-active compounds.

Key words: Herbal contraceptive, medicinal plants, local people, ethno-medicine, Keffi Local Government, Nasarawa.

INTRODUCTION

The world population has grown enormously over the century. In 2012, the world population passed the seven billion mark, according to Population Reference Bureau (PRB), the latest official current world population estimate, for mid-year 2012, is estimated at 7,057,075,000 and this figure kept on rising (PRB, 2012). Nigeria is the most populous country in Africa with about 140 million people according to National Population Commission (NPC) of Nigeria (NPC, 2006). Birth rate is much higher than the death rate because of the more number of young members of the society. Nigerian population is increasing and there is a fear that in the near future it will create more problems because of the non-serious attitude of controlling population in our country among the married couples and lack of awareness results in high population growth rate. There is need to call for educating the couples on the use of contraceptives. Wang (1990), claimed the inadequacy of the used method of fertility regulation to meet the varied and changing personal needs of couples at different times in their reproductive lives, and in the widely different environmental, social and religious settings that exist around the world. World Health Organisation (WHO) has estimated that 80% of the world's population in

developing countries depends essentially on plants for their primary healthcare due to poverty and lack of access to modern medicine (WHO, 2000). In recent years, use of ethno-botanical information in medicinal plant research has gained considerable attention in segments of the scientific community (Heinrich, 2000). The use of medicinal plants and their products for regulation of fertility in Nigeria and other countries in Africa is still continuing. Recently, plants are important sources for the discovery of novel pharmacologically bio-active compounds, with many successful drugs being derived directly or indirectly from plants (Newman and Cragg, 2007; Li, 2010). However, the benefits of modern drugs are felt primarily in developed countries, leaving almost 85% of the world population without access to the modern health care. Hence developing countries continue to depend on ethno-medicines as their primary medicines (Owoabi et al., 2007). Traditional medicine played a crucial role in combating multiple and complex conditions affecting Africans (Sathiyaraj et al., 2012). This is because of its popularity, accessibility and affordability, more than 80% of the people in the region continued to rely on it for their health care needs (WHO, 2003). Introduction of modern medicine alone does not adequately

provide a comprehensive and integral health care needs of developing countries. Consequently, in many communities, the practice of simultaneous use of traditional and western medicine continues. Indeed it has always been difficult to reach poor people with development aid, particularly in health care where most resources benefit the middle classes in urban hospitals. Thus traditional medicine is often the only affordable and accessible form of health care (Thirumalai et al., 2010). A survey of pharmacopoeias of developed and developing countries was done to determine whether ethno-botanical information did indeed lead to useful drug discovery. The survey showed that from 122 compounds identified in the study, 80% of the compounds were used for the same (or related) ethno-botanical purposes (Sathiyaraj et al., 2012). Information based on long-term use of plants by humans likely helps to isolate safer active compounds from plants than isolating bio-active compounds from plants with no history of human use (Sathiyaraj et al., 2012). Thus, herbs can offer other ways of reducing fertility that would be better than no birth control, folk knowledge helps phyto-chemists and pharmacologists to target plants that may be medicinally useful. The present work was carried out to explore the medical remedies of some medicinal plants used by the local people of Keffi Local Government in Nasarawa State for contraceptive purpose.

MATERIALS AND METHODS

Regular field survey was conducted from January, 2013 to March, 2013 in the area mentioned above. Appropriately, the survey was done for contraceptive purpose. Keffi is a town in Nasarawa State of Nigeria, well-known folk healers and old people of the study area were interviewed to document detailed information on local names, traditional plants, plant parts used and all other kinds of details offered by the informants including the culture, living style and methods mainly style of reproductive treatment. The plants were collected by the author with the help of one of the folk healers of the region. The collected plants were identified at Plant Science and Biotechnology Unit of Biological Science Department in Nasarawa State University, Keffi, Nigeria. The photographs of some plants were also taken during the field tours. Some other information about their culture, living style & methods mainly style of reproductive treatment were also talked over. The data collected is summarised in the table 1 below.

RESULTS

In this paper, I focused mainly on plant species reported by the local people in and around the study area for their therapeutic uses. Presented data are the general results

of the ethno-medicinal survey from 321 participants conducted from January, 2013 to March, 2013. The current research contains 27 species of ethno-medicinal plants distributed in 22 genera belonging to 26 families used commonly as traditional remedies for contraceptive purpose (Table 1). For each of the plant species enumerated and arranged alphabetically with their scientific name, family, local name, plant parts used, mode of action are provided in Table 1. The most frequently used contraceptive plants were *Newbouldia laevis* Seem., *Ricinus communis* L., *Azadirachta indica*, *Crotalaria mucronata* Desv., *Mangifera indica* L., *Securidaca longepedunculata* and *Vernonia amygdalina* Delile.

DISCUSSION

The plants have been a source of medicinal agents for thousands of years and an impressive number of modern drugs have been isolated from plant sources. Plants as contraceptive were well known to the traditional doctors of Nigeria. A variety of medicinal plant extracts have been tested for their anti fertility activity both in male and female animal models activity and the bio-active agents. Many herbs have been used traditionally to decrease fertility, and current scientific research has long-established the true anti-fertility effects in at least some of the plants tested. Herbal contraception may never reach the level of contraceptive protection as the synthetic contraceptives, but it presents an alternative for women who have difficulty with modern contraceptive options or who just want to try a different way. The medical researchers have recorded plants that could be used as anti-fertility agents, antiserotonergic, antioovulating, antispermatogenic and abortifacients (Achola and munenge, 1998; Olatunji- Bello and Aliu, 2000; Updhyay et al., 1990, 1992; Taiwar et al., 1997).

The use of medicinal plants as decoction and infusion may be consistent with phyto-pharmacological effects. So many scientists have already proved plants with male anti fertility properties (Chowdhury et al., 2001; Qian, 1987; Kamal, 2003; Chauhan et al., 2007; Jahan et al., 2009; Sewani-Rusike and Gundidza, 2011; Liu and Lyle. 1987) and the present study shows the additional medicinal plants which can be used for more study on antifertility activities. Recently many laboratories are engaged in developing male contraceptives from plants (Singh and Singh, 2009).

Natural products as contraceptives will be more satisfactory for financial purposes in terms of self-sufficiency and the likely practicability for a male pill approach in countries such as Nigeria where population pressure is high. Studies on the effects of medicinal plants on male reproductive system and fertility are relatively rare and unbelievable. Literature survey of the cited plants confirmed that *Carica papaya* L. (Sathiyaraj et al., 2012; Udoh and Kehinde, 1999), *Azadirachta indica* A. Juss. (Purohit, 1999; Sathiyaraj et al., 2010),

Table 1. List of plants with Anti- fertility activity.

Scientific name	Family	Local name	Plant parts used	Mode of action
<i>Acacia nilotica</i> (L.) Willd. ex Del.	Fabaceae	Bàgààrúúwáá (H)/ gawdi (F)	Seed	Seeds soaked in water are used to reduce sperm count.
<i>Acacia seyal</i> Del.	Fabaceae	Kiiraafi (H)/ ñulki (F)	Leaves, roots	Decoction of leaves and roots are used for contraceptive purpose.
<i>Annona senegalensis</i> Pers.	Annonaceae	Gwándàndààjii (H)/ dukuu-hi (F)	Leaves/ roots	Decoction of leaves and roots is taken orally
<i>Ansellia congoensis</i> Rodigas	Orchidaceae	Màntàúúwáá (H)/	Leaf	The boiled leaves are eaten for contraceptive purpose.
<i>Azadirachta indica</i> A. Juss.	Meliaceae	Dar bejiya ^o (H)/ ganyi (F)	Leaves	Leaves are used for contraceptive purpose.
<i>Calotropis procer a</i> (Aiton) W.T. Aiton	Asclepiadaceae	Tùm fááfiiyáá (H)/ ba(m)bam-bi (F)	Roots	Juice from the leaf is used for contraceptive purpose.
<i>Carica papaya</i> L.	Caricaceae	Gwándà (H)/ dukku-hi (F)	Leaf	Juice from the leaf is used for contraceptive purpose.
<i>Cassia arereh</i> Del.	Fabaceae	Màrgáá (H)/ cabbi maybe(F)	Leaf	The boiled leaves are eaten to contraceptive purpose.
<i>Citrus aurantifolia</i> (Christm.) Swingle	Rutaceae	Lèémóó (H)/ lemoo-re (F)	Leaves, fruit	Leaf and juice is used for contraceptive purpose
<i>Crotalaria mucronata</i> Desv.	Fabaceae	Bii(yà) ráánáá / tsakutsaku (F)	Whole plant	Whole plants are crushed and taken orally.
<i>Cynodon dactylon</i> (L.) Pers.	Poaceae	Karyàgarma (H)/ sirkiyamho (F)	Root	Decoction leaves is taken orally.
<i>Detarium microcarpum</i> Guill. & Perr.	Fabaceae	Táuráá (H)/ konkee-hi (F)	Leaf	Decoction of leaves is taken orally
<i>Gardenia erubescens</i> Stapf & Hutch.	Rubiaceae	Gáudè (H)/ diingaa-li (F)	Roots	The boiled leaves are taken for contraceptive purpose.
<i>Guiera senegalensis</i> J. F. Gmel	Combretaceae	Sààbàràà (H)/ geelooki(F)	Leaf	Decoction of leaves is taken orally.
<i>Hymenocardia acida</i> Tul.	Phyllanthaceae	Jányáárò (H)/ yawasotoje (F)	Leaves	Decoction of leaves is taken orally
<i>Khaya senegalensis</i> (Desr.) A. Juss.	Meliaceae	Mádààcíí (H)/ ñaalee-hi (F)	Leaves	The boiled leaves are taken for contraceptive purpose.
<i>Lawsonia inermis</i> L.	Lythraceae	Lállè (H)/ nalli (F)	Leaf	Decoction of the whole plant is taken internally.
<i>Mangifera indica</i> L.	Anacardiaceae	Màngwàrò (H)/ mangoroo-hi (F)	Leaves	The boiled leaves are taken for contraceptive purpose.
<i>Mitragyna inermis</i> (Willd.) O Ktze.	Rubiaceae	Gííyàyáyáá (H)/ k(w)oo-li (F)	Leaves	The boiled leaves are taken for contraceptive purpose.
<i>Nauclea diderrichii</i> (De Wild. & T. Durand) Merrill	Rubiaceae	Táfááshíyà (H)/	Leaves	The boiled leaves are taken for contraceptive purpose.
<i>Newbouldia laevis</i> Seem.	Bignoniaceae	Àdùrúúkù (H)/ naawdi (F)	Leaves	Decoction taken by mouth before sexual intercourse.
<i>Ocimum gratissimum</i> Linn	Caesalpiniaceae	Dâdđóoyàtágídáá (H)/	Leaf	Juice from the leaves is used for contraceptive purpose.
<i>Ricinus communis</i> L.	Euphorbiaceae	Zùrmàn (H)/ kolakolaa-hi (F)	Seed	Seed is used as a contraceptive.
<i>Securidaca longepedunculata</i> Fres.	Polygalaceae	Sányáá (H)/ aalali (F)	Leaves	The boiled leaves are taken for contraceptive purpose.
<i>Terminalia spp.</i>	Combretaceae	Báushè (H)/ kuula-hi(H)	Leaves	Juice from the leaves is taken orally to reduced sperm count.
<i>Vernonia amygdalina</i> Delile	Asteraceae	Shiwáákáá (H)/ kadkadde (F)	Leaf	Decoction of leaves and roots is taken orally
<i>Waltheria indica</i> L.	Malvaceae	Hànkúfáá (H)/ kafaffi (F)	Leaf	The boiled leaves are taken for contraceptive purpose.

KEY: H= Hausa name
F= Fulani name

Acacia nilotica (L.) Willd.ex Del. (Lampiao, 2013; Lampiao et al., 2011), *Calotropis procera* (Aiton) W.T. Aiton (Malhi and Trivedi 1972; Circosta et al., 2001; Kamath and Rana, 2002), *Citrus aurantifolia* (Christm.) Swingle (Salawu et al., 2010), *Cynodon dactylon* (L.) Pers. (Nayanatara et al., 2012ab; Chidrawar et al., 2011), *Hymenocardia acida* Tul. (Abu et al., 2011), *Lawsonia inermis* L. (Abu et al., 2012), *Mangifera indica* L. (Ibraheem et al., 2007), *Ocimum gratissimum* Linn (Nema et al., 2011; Sripriya et al., 2011), *Ricinus communis* L. (Sandhyakumary et al., 2003; Makonnen et al., 1999), *Terminalia spp.* (Jha and Dixit, 1986), *Vernonia amygdalina* Delile (Oyeyemi et al., 2008) possess strong antifertility effects. Sekar (2010), reported that higher plants produced hundreds to thousands of diverse chemical compounds with different biological activities. Various literature reports regarding the antifertility activity of crude plant extracts and the bioassay-guided fractionation of the yields active principles is known (Deng et al., 2011; Zhang et al., 2007; Jain et al., 2010; Nataraj et al., 2007). Hormonal imbalance, hypertension, and increased risk of cancer and weight gain are the severe side effect present in the synthetic agents (McNamara, 1996). Hence, there is an urgent demand to substitute these synthetic agents by reliable, efficient and efficient complimentary herbal-based anti-fertility agents. Recent advances in areas of biological sciences have overcome some of these problems and now make the manufacture and use of contraceptives possible. They can give a useful alternative to presently available approach of family planning.

CONCLUSION

It was clear from the survey that knowledge of medicinal plants is limited to folk healers and old people in rural areas. From the survey it is concluded that most of the resource persons are old people and the youth lack attention in Keffi local government and have propensity to move to cities for profitable occupation. As a result, likelihood of losing prodigious knowledge seems to be unavoidable. Therefore it is necessary for the documentation and preservation of this wonderful knowledge base on folklore system of medicine.

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