



# Ethnobotanical Survey of Plants Used in the Traditional Treatment of Female Infertility in Southwestern Nigeria

Mike O. Soladoye, Emmanuel C. Chukwuma,  
Olatunji M. Sulaiman, and Roseline T. Feyisola

## Research

### Abstract

An ethnobotanical survey of plants used in the traditional treatment of infertility in females in three southwestern states of Nigeria (Oyo, Ogun, and Osun) was conducted through a structured questionnaire. Herbalists, herb sellers, and aged couples were interviewed, and their responses were documented. In all, 75 plant species belonging to 41 families of angiosperms were said to be useful in the traditional management of infertility. Some of the recipes, methods of preparation, and administration were also documented.

### Introduction

The practice of herbal medicine is fast becoming more accepted in the world of conventional medicine as clinical research, analysis, and quality control are capable of demonstrating the treatment value of herbal medicine (Falsetto 2009). According to Bussmann & Glenn (2011), traditional medicine is used globally and has a rapidly growing economic importance. WHO (2002) also reported that in developing countries, it is often the only accessible and affordable treatment available.

As defined by Agomuo and Samuel (2004), infertility is a condition in which a man is unable to make a woman pregnant or a condition in which a woman is unable to become pregnant as a result of some biological or disease-induced factors. Similarly, Ola *et al.* (2010) recently reported that, the World Health Organization described infertility as the inability of couples of reproductive age to impregnate or conceive and carry a pregnancy to live birth within two years of exposure to the risk of pregnancy. While women are most fertile in their early twenties, their fertility often starts ebbing after they reach thirty as reported by Etuk (2009). In Nigeria, surveys have shown that the prevalence

of infertility has continued to increase and currently affects 30% or more of the women (Rutstein & Shah 2004), and causes of infertility have been attributed to previous exposure to sexually transmitted diseases (STDs) and infections occurring after unsafe abortions (Okonofua 1999, Omo-Aghoja *et al.* 2007). It must be stated that abortion is not permitted under the law in many African countries including Nigeria. Ojeme (2011) also reported that 60% or more of gynecologic clinic consultants in Nigeria are infertility-related which is also attributed to the high incidence of tubal damages in our society and, thus, responsible for the majority of infertility problems in the region. In some parts of Nigeria, however, studies have shown that rates of infertility could be as high as 20% (Okonofua 2003) and 45% (Adetoro & Ebomoyi 1991). Etuk (2009) also pointed out clearly that about 40% of infertility cases in Africa are attributed to male factors, another 40% are due to female

### Correspondence

Mike O. Soladoye, Faculty of Pure and Applied Sciences, Southwestern University Nigeria, Okun-Owa, Ogun State, NIGERIA. [debosoladoye@yahoo.co.uk](mailto:debosoladoye@yahoo.co.uk).

Emmanuel C. Chukwuma, Forest Herbarium Ibadan (FHI), Forestry Research Institute of Nigeria, Jericho Hills, Ibadan, Oyo State, NIGERIA. [chukwumaemma@yahoo.com](mailto:chukwumaemma@yahoo.com)

Olatunji M. Sulaiman, Department of Plant Science and Applied Zoology, Olabisi Onabanjo University, Ago-Iwoye, Ogun State, NIGERIA. [muhadej@yahoo.com](mailto:muhadej@yahoo.com)

Roseline T. Feyisola, Department of Plant Science and Applied Zoology, Olabisi Onabanjo University, Ago-Iwoye, Ogun State, NIGERIA. [toluoso2002@yahoo.com](mailto:toluoso2002@yahoo.com)

Ethnobotany Research & Applications 12:081-090 (2014)

Published: 15 March 2014

[www.ethnobotanyjournal.org/vol12/i1547-3465-12-081.pdf](http://www.ethnobotanyjournal.org/vol12/i1547-3465-12-081.pdf)

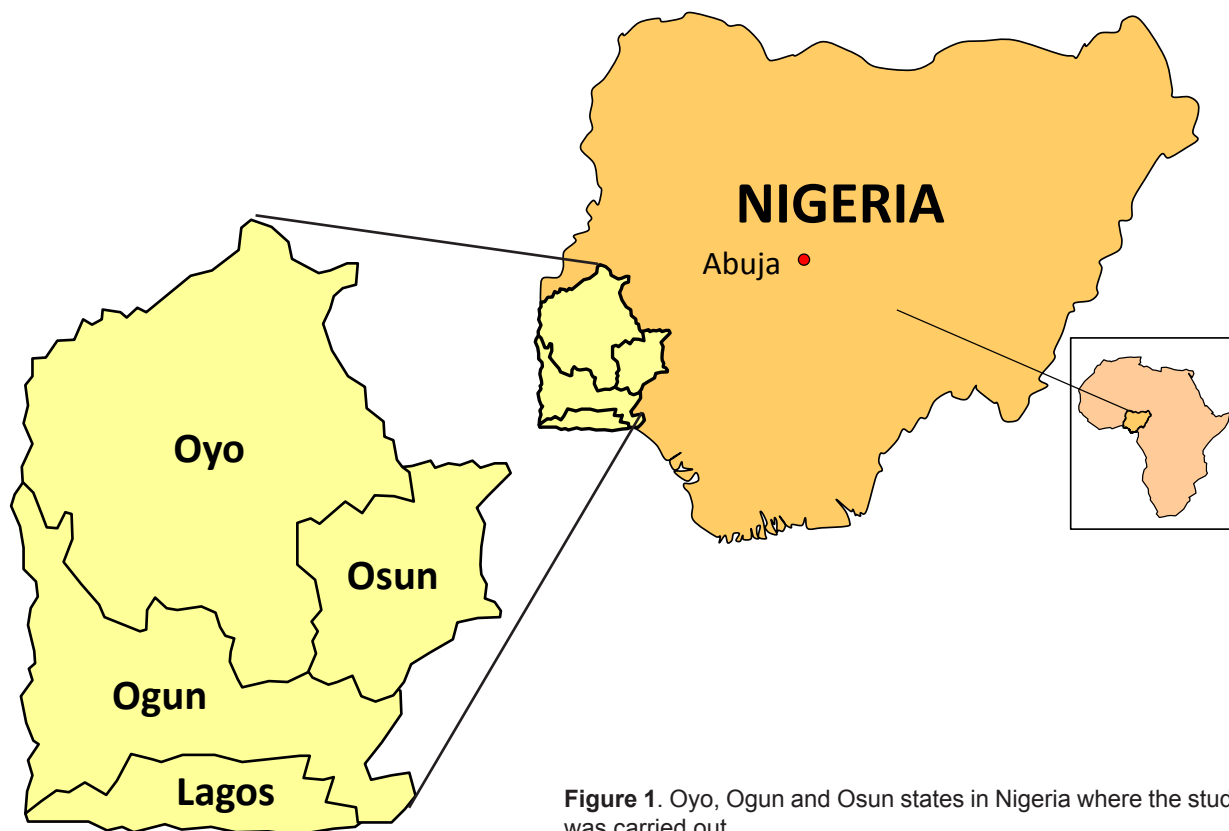
factors, 15% are due to factors present in both partners, and the remaining 5% are due to cases where no causes are found in either partner after extensive investigations, thus, unexplained infertility.

Unlike male sterility which is caused by venereal diseases, diabetes, azoosperma, asthenozoosperma, tetrazoosperma, premature ejaculation (Llewellyn-Jones 1998), and hemorrhoid/pile (Olapade 2002), to mention a few, female infertility is caused by leukorrhoea, menopause (Llewellyn-Jones 1998), menstrual disorder (Ago-muo & Samuel 2004), and faulty uterus and ovaries. High incidence of sexually transmitted infections, particularly chlamydia and gonorrhoea, are also very much responsible for the latter. The quest of infertile women to resolve the problem of infertility has resulted in the patronage of various treatment outlets which is determined by social, cultural, and behavioral factors. Traditional medical practitioners using indigenous medicinal herbs have continued to play a major role in the treatment of female infertility in Nigeria. These healers have been treating this medical condition before the advent of orthodox medicine. Plants that were once considered of no value are now being investigated, evaluated, and developed into drugs, with little or no side effects (Adedeji *et al.* 2006).

This work therefore focuses on the identification and proper documentation of ethnomedicinal plants and recipes used in the treatment of female infertility in southwestern Nigeria, and it is hoped that further research work would be carried out to ascertain the bioactive compounds responsible for their potency.

## Materials and Methods

The study was carried out in Oyo, Ogun, and Osun states, all in the southwestern region of Nigeria (Figure 1). Ethnobotanical information on medicinal plants found to be useful in the treatment of infertility in females were obtained through interviews conducted within the study area. Such interviews were conducted with the herb sellers, herbalists, aged couples, and other individuals who have deep knowledge about the use of plants around them or have inherited the knowledge from their forefathers. Generally, respondents were selected randomly from the three states based on their knowledge about the subject matter and its traditional management systems that have been found to be effective. Some of the interviewees, particularly the herbalists and herb sellers, were remunerated, thus encouraging them to give out relevant information. Some of the topics covered in the administered questionnaire include: cause and symptoms of infertility, plants/plant parts



**Figure 1.** Oyo, Ogun and Osun states in Nigeria where the study was carried out.

**Table 1.** Distribution of respondents according to their age group in Southwestern Nigeria.

Age Groups	Categories				
	Aged Couples	Herbalists	Herb Sellers	Others	Total
26–30	-	1	-	-	1
31–35	1	-	2	3	6
36–40	1	1	7	4	13
41–45	22	7	5	30	64
45 and above	18	11	15	-	44
Total	42	20	29	37	128

used for management, method of preparation, and mode of administering the herbal recipes. A total of 26 questions were asked to gather enough information regarding the subject matter.

With the help of the senior author who is a professional plant taxonomist, living specimens of the plants obtained from the interviews were collected from the wild, together with their floral/fruitlet parts when available for herbarium specimens. The specimens were carefully pressed, dried, fumigated, and mounted on standardized herbarium sheets. Specimens were taken to the Forest Herbarium, Ibadan (FHI), for confirmation of identification before they were deposited at the Elikaf Herbarium of Olabisi Onabanjo University, Ago-Iwoye, Ogun State. Elikaf Herbarium is not an internationally recognized herbarium as it is not listed in Holmgren *et al.* (1990).

## Results

In all, 43 men and 85 women were interviewed and their responses were carefully recorded on the questionnaires (Table 1).

Seventy-five (75) plant species belonging to 41 families (Table 2) were reported as being useful in the treatment of female infertility within the study area. Table 2 also shows their local names in Yoruba and the plant parts used. Table 3 shows the number of species in each plant family while Table 4 highlights some of the recipes and their method of preparation and administration.

Results obtained from this work showed that Apocynaceae and Fabaceae have the highest numbers of species occurrence (each 8.0%), followed by Cucurbitaceae

**Table 2.** Medicinal plants used in the treatment of female infertility in southwestern Nigeria. FHI = Forest Herbarium, Ibadan. EH = Elikaf Herbarium, Olabisi Onabanjo University, Ago-Iwoye. Parts used: bark (B), bulb (Bu), corm (C), fruit (F), leaf, (L), root (R), seed, (Se), stem (St).

Botanical name	Family	Voucher	Local name (Yoruba)	Parts used
<i>Acacia nilotica</i> (L.) Delile	Fabaceae	FHI14634	Booni	Se
<i>Acanthus montanus</i> (Nees) T.Anderson	Acanthaceae	FHI107529	Ahon ekun	L
<i>Aedesia glabra</i> (Klatt) O.Hoffm.	Asteraceae	FHI67400	Ope-kaua kaua	L
<i>Aframomum melegueta</i> K.Schum.	Zingiberaceae	EH B0065	Ataare	Se
<i>Alchornea laxiflora</i> (Benth.) Pax & K.Hoffm.	Euphorbiaceae	FHI108333	Ijun	B, F
<i>Allium ascalonicum</i> L.	Amaryllidaceae	EH B0027	Alubosa onisu	Bu
<i>Alstonia boonei</i> De Wild.	Apocynaceae	FHI109449	Ahun	F
<i>Amaranthus spinosus</i> L.	Amaranthaceae	EH B0006	Dagunro	L
<i>Anacardium occidentale</i> L.	Anacardiaceae	EH B0029	Kaju	L
<i>Anthocleista djalensis</i> A.Chev.	Gentianaceae	FHI107912	Sapo	B
<i>Antiaris toxicaria</i> var. <i>africana</i> Scott-Elliot ex A.Chev.	Moraceae	FHI109519	Ooro	L
<i>Aristolochia repens</i> Mill.	Aristolochiaceae	FHI101137	Ako-igun	F
<i>Calotropis procera</i> (Aiton) Dryand.	Apocynaceae	EH B0033	Bomubomu	F
<i>Capsicum annum</i> L.	Solanaceae	EH B0070	Atawewe	F
<i>Cassia fistula</i> L.	Fabaceae	EH B0004	Asunwon	L
<i>Chasmanthera dependens</i> Hochst.	Menispermaceae	FHI103383	Agba-ato	L

Botanical name	Family	Voucher	Local name (Yoruba)	Parts used
<i>Cissampelos owariensis</i> P.Beauv. ex DC.	Menispermaceae	FHI106764	Jokojee	L
<i>Cissus populnea</i> Guill. & Perr.	Vitaceae	FHI109459	Ogbole	R
<i>Citrullus colocynthis</i> (L.) Schrad.	Cucurbitaceae	EH B0046	Bara	F
<i>Citrus aurantifolia</i> (Christm.) Swingle	Rutaceae	EH B0024	Osanwewe	F
<i>Corchorus olitorius</i> L.	Malvaceae	EH B0084	Ewedu	L
<i>Cucumeropsis mannii</i> Naudin	Cucurbitaceae	FHI61841	Itogho	L
<i>Curculigo pilosa</i> (Schumach. & Thonn.) Engl.	Hypoxidaceae	FHI52223	Epakun	C
<i>Cyathula achyranthoides</i> (Kunth) Moq.	Amaranthaceae	FHI58831	Opapara/esupupa	L
<i>Diospyros suaveolens</i> Gürke	Ebenaceae	FHI14738	Esunsun	L
<i>Elaeis guineensis</i> Jacq.	Arecaceae	FHI107987	Oran ope	F (oil)
<i>Euphorbia convolvuloides</i> Hochst. ex Benth.	Euphorbiaceae	FHI94628	Emile	L
<i>Ficus exasperata</i> Vahl	Moraceae	EH B0028	Epin	L
<i>Garcinia kola</i> Heckel	Clusiaceae	FHI109481	Orogbo	Se
<i>Glyphaea brevis</i> (Spreng.) Monach.	Malvaceae	FHI108898	Atori	L
<i>Gongronema latifolium</i> Benth.	Apocynaceae	FHI58439	Madunmaro	R
<i>Gossypium barbadense</i> L.	Malvaceae	EH B0171	Owu akese	L
<i>Hybanthus enneaspermus</i> (L.) F.Muell.	Violaceae	FHI97227	Abiwere	L
<i>Ipomoea pileata</i> Roxb.	Convolvulaceae	FHI106641	Alukere	L
<i>Jatropha gossypifolia</i> L.	Euphorbiaceae	FHI108195	Lapalapa	L
<i>Khaya grandifoliola</i> C.DC.	Meliaceae	FHI108076	Oganwo	B
<i>Kigelia africana</i> (Lam.) Benth.	Bignoniaceae	FHI108257	Pandoro	B
<i>Lagenaria breviflora</i> (Benth.) Roberty	Cucurbitaceae	EH B0025	Tagiri	B
<i>Lawsonia inermis</i> L.	Lythraceae	EH B0101	Laali	L
<i>Mangifera indica</i> L.	Anacardiaceae	EH B0087	Mangoro	B
<i>Markhamia tomentosa</i> (Benth.) K.Schum. ex Engl.	Bignoniaceae	FHI108297	Oruru	L
<i>Microdesmis puberula</i> Hook.f. ex Planch.	Pandaceae	FHI107169	Aringo	L
<i>Momordica charantia</i> L.	Cucurbitaceae	EH B0086	Ejinrin	L
<i>Morinda lucida</i> Benth.	Rubiaceae	EH B0067	Oruwo	R
<i>Mucuna pruriens</i> (L.) DC.	Fabaceae	FHI107803	Esis	L
<i>Musa acuminata</i> × <i>balbisiana</i> Colla	Musaceae	FHI109552	Ogede agbagba	F
<i>Nymphaea lotus</i> L.	Nymphaeaceae	FHI106987	Osibata	L
<i>Ocimum gratissimum</i> L.	Lamiaceae	EH B0059	Efinrin	L
<i>Pergularia daemia</i> (Forssk.) Chiov.	Apocynaceae	FHI107772	Kole-oro	L
<i>Physalis angulata</i> L.	Solanaceae	FHI108789	Koropo	L
<i>Piper guineense</i> Schumach. & Thonn.	Piperaceae	FHI107249	Iyere	F
<i>Plumbago zeylanica</i> L.	Plumbaginaceae	FHI48067	Inabiri	R
<i>Polygala arenaria</i> Oliv.	Polygalaceae	FHI101030	Ose	F
<i>Pseudocedrela kotschyi</i> (Schweinf.) Harms.	Meliaceae	FHI106873	Akodinrin	L
<i>Psidium guajava</i> L.	Myrtaceae	EH B0169	Guafa	L
<i>Raphia mambillensis</i> Otedoh	Arecaceae	-	Alugbanko	F
<i>Ricinus communis</i> L.	Euphorbiaceae	FHI108461	Laa	F

Botanical name	Family	Voucher	Local name (Yoruba)	Parts used
<i>Sarcocephalus latifolius</i> (Sm.) E.A.Bruce	Rubiaceae	EH B0109	Egbesi	R
<i>Secamone afzelii</i> (Roem. & Schult.) K.Schum.	Apocynaceae	FHI103034	Ailu	L
<i>Senna alata</i> (L.) Roxb.	Fabaceae	FHI88147	Asunrin	L
<i>Sesamum indicum</i> L.	Pedaliaceae	FHI78777	Beni/eluru	L
<i>Sida hyssopifolia</i> C.Presl	Malvaceae	FHI83492	Isekotu	L
<i>Sorghum bicolor</i> (L.) Moench	Poaceae	FHI47514	Okababa	Pod
<i>Sphenocentrum jollyanum</i> Pierre	Menispermaceae	FHI108283	Akerejupon	B
<i>Spondias mombin</i> L.	Anacardiaceae	FHI107897	Iyeye	L
<i>Stephania abyssinica</i> (Quart.-Dill. & A.Rich.) Walp.	Menispermaceae	FHI30322	Gbejedi	L
<i>Tacca leontopetaloides</i> (L.) Kuntze	Dioscoraceae	FHI78817	Adosu	B
<i>Telfairia occidentalis</i> Hook.f.	Cucurbitaceae	FHI107121	Ugu	F, L
<i>Terminalia avicennoides</i> Guill. & Perr.	Combretaceae	FHI64363	Idi	B, St
<i>Tetrapleura tetraptera</i> (Schum. & Thonn.) Taub.	Fabaceae	EH B0039	Aidan	R, F
<i>Tylophora sylvatica</i> Decne.	Apocynaceae	FHI67142	Isigun	R
<i>Uraria picta</i> (Jacq.) DC.	Fabaceae	FHI107765	Alupayida	L
<i>Uvaria afzelii</i> G.F.Scott-Elliot	Annonaceae	FHI56875	Gbogbonse	R
<i>Xylopia aethiopica</i> (Dunal) A.Rich.	Annonaceae	EH B0026	Eru alamo	B, L
<i>Zingiber officinale</i> Roscoe	Zingiberaceae	-	Atale funfun	F

(6.7%), while Euphorbiaceae, Malvaceae, and Menispermaceae each represent 5.3% of the total number of species identified. Observations from this work also showed that the aged couples made up 33% of the total respondents, herbalists 15%, herb sellers 23%, and other individuals who were interviewed made up 29% (Table 1).

## Discussion

Results showed that *Xylopia aethiopica* (Dunal) A.Rich., *Ficus exasperata* Vahl, *Allium sativum* L., and *Citrus colocynthis* (L.) Schrad. are dominant in the recipes, which are indicative of their importance in the treatment of infertility problems. Some of the plants listed in this work

**Table 3.** Distribution within plant families of medicinal plant species used in the treatment of female infertility in southwestern Nigeria.

Family	Species	Family	Species	Family	Species
Acanthaceae	1	Dioscoraceae	1	Nymphaeaceae	1
Amaranthaceae	2	Ebenaceae	1	Pandaceae	1
Amaryllidaceae	1	Euphorbiaceae	4	Pedaliaceae	1
Anacardiaceae	3	Fabaceae	6	Piperaceae	1
Annonaceae	2	Gentianaceae	1	Plumbaginaceae	1
Apocynaceae	6	Hypoxidaceae	1	Poaceae	1
Arecaceae	2	Lamiaceae	1	Polygalaceae	1
Aristolochiaceae	1	Lythraceae	1	Rubiaceae	2
Asteraceae	1	Malvaceae	4	Rutaceae	1
Bignoniaceae	2	Meliaceae	2	Solanaceae	2
Clusiaceae	1	Menispermaceae	4	Violaceae	1
Combretaceae	1	Moraceae	2	Vitaceae	1
Convolvulaceae	1	Musaceae	1	Zingiberaceae	2
Cucurbitaceae	5	Myrtaceae	1		

**Table 4.** Recipes using medicinal plant species in the treatment of female infertility in southwestern Nigeria. Parts used: bark (B), bulb, (Bu), corm (C), fruit (F), juice (J), leaf, (L), root (R), seed, (Se), stem (St).

Recipes	Plant names		Parts used
	Scientific	Vernacular	
<b>A</b>	<i>Citrullus colocynthis</i> (L.) Schrad.	Bara	F
	<i>Kigelia africana</i> (Lam.) Benth.	Pandoro	B
	<i>Curculigo pilosa</i> (Schumach. & Thonn.) Engl.	Epakun	C
	Preparation: The plant materials are boiled together with potash ( <b>kahun</b> – Yoruba) into decoction for about 40 minutes.		
	Dosage and application: One small cupful should be taken orally twice a day for about two weeks.		
<b>B</b>	<i>Alstonia boonei</i> De Wild.	Ahun	B
	<i>Allium cepa</i> L.	Alubosa	L
	<i>Tetrapleura tetraptera</i> (Schum. & Thonn.) Taub.	Aidan	F
	<i>Xylopia aethiopica</i> (Dunal) A.Rich.	Eru Alamo	Se
	<i>Ficus exasperata</i> Vahl	Epin	L, R
	Preparation: The plant materials are boiled into decoction with clean sterilized water for 45 minutes.		
Dosage and application: Two glass cupfuls (15 ml) should be taken orally twice daily for two weeks. Some of the decoction should be used to bathe the patient daily.			
<b>C</b>	<i>Sorghum bicolor</i> (L.) Moench	Okababaa	Pod ( <b>poporo</b> )
	<i>Ipomoea pileata</i> Roxb.	Alukereese	L
	<i>Mucuna pruriens</i> (L.) DC.	Esis	L
	<i>Corchorus olitorius</i> L.	Ewedu	Se
	Preparation: The ingredients are put together in a pot, cooked until burned to ashes, cooled, and ground to powder.		
Dosage and application: One teaspoonful mixed with a cup of hot pap is taken orally twice daily.			
<b>D</b>	<i>Amaranthus spinosus</i> L.	Tete elegun	L
	<i>Xylopia aethiopica</i> (Dunal) A.Rich.	Eru Alamo	S
	<i>Ocimum gratissimum</i> L.	Efinrin	L
	Preparation: The dried and pounded ingredients are properly mixed with black soap.		
Dosage and application: A new sponge is used with the mixture to wash both breasts once or twice a day for 7 consecutive days.			
<b>E</b>	<i>Aframomum melegueta</i> K.Schum.	Ataare	Se
	<i>Piper guineense</i> Schumach. & Thonn.	Iyeye	F
	<i>Xylopia aethiopica</i> (Dunal) A.Rich.	Eru Alamo	Se
	<i>Microdesmis puberula</i> Hook.f. ex Planch.	Aringo	L
	<i>Allium sativum</i> L.	Ayuu	L
	<i>Elaeis guineensis</i> Jacq.	Epo	F
	<i>Capsicum annuum</i> L.	Atawewe	F
	Preparation: The plants parts are ground together, mixed with <i>Capsicum</i> , and cooked with catfish ( <b>eja aro</b> – Yoruba), palm oil, and salt.		
Dosage and application: The prepared ingredient is eaten as meal by the patient and to be taken once daily for 3 days.			

Recipes	Plant names		Parts used
	Scientific	Vernacular	
<b>F</b>	<i>Ficus exasperata</i> Vahl	<b>Epin</b>	L
	<i>Acacia nilotica</i> (L.) Delile	<b>Booni</b>	Se
	<i>Xylopi aethiopica</i> (Dunal) A.Rich.	<b>Eru Alamo</b>	F
	<i>Terminalia avicenoides</i> Guill. & Perr.	<b>Idi</b>	B
	Preparation: The ingredients are put together in a pot, cooked until burnt to ashes, cooled, and ground to powder.		
	Dosage and application: Three teaspoonfuls with 15 ml glass water to be taken with solid pap. Half-glass cup is taken once daily.		
<b>G</b>	<i>Ficus exasperata</i> Vahl	<b>Epin</b>	L
	<i>Jatropha gossypifolia</i> L.	<b>Lapalapa</b>	L
	<i>Pseudocedrela kotschy</i> (Schweinf.) Harms.	<b>Emigbegiri</b>	St
	<i>Garcinia kola</i> Heckel	<b>Orogbo</b>	R
	Preparation: The ingredients are put together in a pot, cooked until burned to ashes, cooled, and ground to powder.		
Dosage and application: One teaspoonful is mixed with one bottle of dry gin. Small glass cup to be taken orally once or twice a day for about 7 days.			
<b>H</b>	<i>Kigelia africana</i> (Lam.) Benth.	<b>Pandoro</b>	F
	<i>Tetrapleura tetraptera</i> (Schum. & Thonn.) Taub.	<b>Aidan</b>	R
	<i>Allium sativum</i> L.	<b>Ayuu</b>	Bu
	<i>Aristolochia repens</i> Mill.	<b>Akogun</b>	R
	Preparation: The ingredients are boiled together in clean water for about 50 minutes.		
Dosage and application: One small glass cup to be taken twice daily.			
<b>I</b>	<i>Citrus aurantifolia</i> (Christm.) Swingle	<b>Rutaceae</b>	J
	<i>Xylopi aethiopica</i> (Dunal) A.Rich.	<b>Eru Alamo</b>	Se
	<i>Citrullus colocynthis</i> (L.) Schrad.	<b>Bara</b>	F
	<i>Lagenaria breviflora</i> (Benth.) Roberty	<b>Tagiri</b>	L
	Preparation: Juice of <i>Citrus</i> is mixed with dried, ground remaining ingredients.		
Dosage and application: One teaspoonful to be taken orally every morning for 9 days.			
<b>J</b>	<i>Lawsonia inermis</i> L.	<b>Laali</b>	L
	<i>Aframomum melegueta</i> K.Schum.	<b>Ataare</b>	Se
	Potash	<b>Kahun</b>	
	Preparation: The ingredients are put together in a pot, cooked until burned to ashes, cooled, and ground to powder.		
Dosage and application: One teaspoonful mixed with a cup of hot pap should be taken orally once daily for about 2 weeks.			

have also been experimentally verified: *Lawsonia inermis* L. (Gills 1992), *Aframomum melegueta* K.Schum., and *X. aethiopica* (Olapade 2002) and have been found to be quite effective.

Some of the listed plants in this work have also been earlier reported in the same study area to be useful in the management of other ailments such as: diabetes (*Lagenaria breviflora* (Benth.) Roberty, *Alstonia boonei* De Wild., *Amaranthus spinosus* L., *Anthocleista djalonenis* A.Chev., *Calotropis procera* (Aiton) Dryand., *Cucumeropsis mannii* Naudin, *Elaeis guineensis* Jacq., *F. exasperata*, *Garcinia kola* Heckel, *Morinda lucida* Benth., *Musa acuminata* × *balbisiana* Colla, *Nymphaea lotus* L., *Pergularia daemia* (Forssk.) Chiov., *Sorghum bicolor* (L.) Moench), hemorrhoids (*A. spinosus*, *Chasmanthera dependens* Hochst., *C. colocynthis*, *Curculigo pilosa* (Schumach. & Thonn.) Engl., *Ocimum gratissimum* L., *Momordica charantia* L., *Ricinus communis* L., *Spondias mombin* L., *X. aethiopica*, *Zingiber officinale* Roscoe), and cancer (*A. melegueta*, *Allium ascalonicum* L., *C. procera*, *Capsicum annum* L., *Citrus aurantifolia* (Christm.) Swingle, *Kigelia africana* (Lam.) Benth., *Mangifera indica* L., *Terminalia avicennoides* Guill. & Perr.) (Soladoye *et al.* 2010a, 2010b, 2012). Duplication of such species indicates that a plant may have several medicinal properties if well-utilized.

During our interaction with the interviewees, it became obvious that the aged couples did not know the cause of the infertility unless told by experts and healers. According to these healers, the major cause of infertility is attributed to tubal damages and STDs such as gonorrhoea if not properly treated.

Although infertility is not very high on the agenda of policy makers in Nigeria, the Nigerian reproductive health strategy does not seek to reduce the prevalence or impact of infertility but instead aims to reduce the high fertility rate (van Balen 2000, Butler 2003), and this is alarming. Research in Nigeria (Aghanwa *et al.* 1999, Orji *et al.* 2002) and South Africa (Dyer *et al.* 2005) has also shown that women are suffering from the social and psychological implications of infertility and little is known about the impact on infertile men as well as the treatment-seeking behavior of infertile men and women in sub-Saharan Africa as reported by Nieuwenhuis *et al.* (2009).

The strength of traditional medicine and the wide varieties of medicinal recipes utilized by traditional healers is dependent on the diversity of the flora (Adjanohoun *et al.* 1991). The socio-economic life of the rural people depends on natural vegetation from where they derive all their material requirements such as timber, food, fuelwood, and medicine among others, and there is no doubt that most of the available raw materials are harvested from the wild plant resources without replacement. These users uproot the plants making it detrimental to conservation. As a result, commonly used and effective herb-

al plants become very rare and endangered and are on the verge of extinction. The high number of species (75) found useful for the traditional management of female infertility as reported in this work is enormous, and their collection is not controlled (Gbile *et al.* 1988, Soladoye *et al.* 2006). Urgent conservation measures must be taken to avert degradation of the ecosystems where these medicinal plants thrive.

Criticisms and arguments have been advanced to discredit the practice of traditional medicine in Nigeria by orthodox medical practitioners. The attitude of the modern medical practitioner that he has everything to teach others about health, diseases, and treatments but nothing to learn from them needs to be re-examined in the face of tremendous successes claimed by the traditional healers involved in the treatment of infertility and attested to by patients.

## Conclusion

From the interviews conducted, 75 plant species belonging to 41 families have been identified to be useful in the treatment of female infertility within the southwestern region of Nigeria. Research efforts could be directed to the families Apocynaceae and Fabaceae with the highest number of species for the traditional treatment of female infertility to determine the compound(s) responsible for the effectiveness of the species. In general, pharmacognostic research could be applied to isolate and characterize the bioactive compounds likely responsible for these species being used for treating infertility.

## Literature Cited

- Adedeji, O.S., G.O. Farinu, S.A. Ameen, & J.B. Olayemi. 2006. Effects of bitter kola (*Garcinia kola*) as a growth promoter in broiler chicks from day old to four weeks old. *Journal of Animal and Veterinary Advances* 5(3):191–193. <http://medwelljournals.com/abstract/?doi=javaa.2006.191.193>
- Adetoro, O.O. & E.W. Ebomoyi. 1991. The prevalence of infertility in a rural Nigerian community. *African Journal of Medicine and Medical Science* 20:23–27.
- Adjanohoun, E., M.R.A. Ahyi, L. Aké Assi, K. Dramane, J.A. Elewude, S.U. Fadoju, Z.O. Gbile, E. Goudote, C.L.A. Johnson, A. Keita, O. Morakinyo, J.A.O. Ojewole, A.O. Olatunji & E.A. Sofowora. 1991. *Traditional Medicine and Pharmacopoeia: Contribution to ethnobotanical and floristic studies in western Nigeria*. OAU/ST & RC, Lagos, Nigeria.
- Aghanwa, H.S., F.O. Dare & S.O. Ogunniyi. 1999. Sociodemographic factors in mental disorders associated



- with infertility in Nigeria. *Journal of Psychosomatic Research* 46(2):117–123.
- Agomuo, V.E. & K.C. Samuel. 2004. *Fruit of the Womb*. Prevail Concepts Publication, Ikeja, Nigeria.
- Bussmann, R.W. & A. Glenn. 2011. Medicinal plants used in northern Peru for the treatment of bacterial and fungal infections and inflammation symptoms. *Journal of Medicinal Plants Research* 5(8):1297–1304.
- Butler, P. 2003. *Assisted Reproduction in Developing countries: Facing up to the issues. Progress in reproductive health research*. World Health Organization, Geneva, Switzerland. 63:1.  
[www.who.int/reproductivehealth/publications/infertility/progress63.pdf](http://www.who.int/reproductivehealth/publications/infertility/progress63.pdf)
- Dyer, S.J., N. Abrahams, N.E. Mokoena, C.J. Lombard & Z.M. van der Spuy. 2005. Psychological distress among women suffering from couple infertility in South Africa: A quantitative assessment. *Human Reproduction* 20(7):1938–1943. <http://dx.doi.org/10.1093/humrep/deh845>
- Etuk, S.J. 2009. Reproductive health: Global infertility trend. *Nigerian Journal of Physiological Sciences* 24(2):85–90. [www.bioline.org.br/pdf?np09014](http://www.bioline.org.br/pdf?np09014)
- Falsetto, S. 2009. *The Practice of Plant Medicine: Herbal medicine, homeopathy, naturopathy and aromatherapy*. Accessed June 2009. <http://sharonfalsetto.suite101.com>
- Gbile, Z.O., M.O. Soladoye & S.K. Adesina. 1988. Plants in traditional medicine in West Africa. Pp. 343–349 in *Modern Studies in African Botany*. Edited by P. Goldblast & P.P. Lowry. Missouri Botanic Gardens Press, St. Louis, Missouri, U.S.A.
- Gills, L.S. 1992. *Ethnomedical Uses of Plants in Nigeria*. University of Benin Press, Benin City, Edo, Nigeria.
- Holmgren, P.K., N.H. Holmgren & L.C. Barnett. 1990. *Index Herbariorum. Part I: The herbaria of the world*. eighth edition. Regnum Vegetabile, Volume 120. New York Botanical Garden, Bronx, New York, U.S.A.
- Llewellyn-Jones, D.L. 1998. *Every Woman: A gynecological guide for life*. Penguin Books Limited, New York, New York, U.S.A.
- Nieuwenhuis, S.L., A.A. Odukogbe, S. Theobald & X. Liu. 2009. Impact of infertility on infertile men and women in Ibadan, Oyo State, Nigeria: A qualitative study. *African Journal of Reproductive Health* 13(3):85–98.
- Ojeme, V. 2011. *Infertility in Nigeria at 60% - Gynaecologist*. Accessed June 2011. [www.vanguardngr.com/2011/06/infertility-in-nigeria-at-60-gynaecologist/](http://www.vanguardngr.com/2011/06/infertility-in-nigeria-at-60-gynaecologist/)
- Okonofua, F.E. 1999. Infertility and women's reproductive health in Africa. *African Journal of Reproductive Health* 3(1):7–12.
- Okonofua, F.E. 2003. Infertility in sub-Saharan Africa. Pp. 128–156 in *Contemporary Obstetrics and Gynaecology for Developing Countries*. Edited by F. Okonofua & L. Odunsi. Women's Health and Action Research Centre, Benin City, Nigeria.
- Ola, T.M., F.O. Aladekomo & B.A. Oludare. Olapade, E.O. 2002. *The Herbs for Good Health*. NARL Specialist Clinic, Ibadan, Nigeria.
- Omo-Aghoja, L.O., F.E. Okonofua, S.O. Onemu, U. Larsen & S. Bergstrom. 2007. Association of Chlamydia trachomatis serology with tubal infertility in Nigerian women. *Journal of Obstetrics and Gynecology* 33(5):688–695.
- Orji, E.O., O. Kuti & O.B. Fasubaa. 2002. Impact of infertility on marital life in Nigeria. *International Journal of Gynecology & Obstetrics* 79:61–62.
- Rutstein, S.O. & I.H. Shah. 2004. *Infecundity, infertility, and Childlessness in Developing Countries*. DHS Comparative Reports No 9. MEASURE DHS+ (Demographic and Health Surveys), U.S. Agency for International Development (USAID), Maryland, U.S.A., and World Health Organization (WHO), Geneva, Switzerland.  
[www.measuredhs.com/pubs/pdf/CR9/CR9.pdf](http://www.measuredhs.com/pubs/pdf/CR9/CR9.pdf)
- Soladoye, M.O., E.C. Chukwuma & F.P. Owa. 2012. An 'avalanche' of plant species for the traditional cure of diabetes mellitus in South-Western Nigeria. *Journal of Natural Product and Plant Resources* 2(1):60–72. <http://scholarsresearchlibrary.com/JNPPR-vol2-iss1/JNPPR-2012-2-1-60-72.pdf>
- Soladoye, M.O., F.A. Yakubu, K. Kola-Oladiji, D.A. Alabi & Y.O. Agbomeji. 2006. *The Collection, Conservation and Cultivation of Local Medicinal Plants for Natural Medicine Production*. Paper presented at the Seminar/Workshop and Exhibition of Natural Medicine Products. 19–23 September 2006. Nigeria Traditional Medical Association, Ijebu-North, and Faculty of Science, Olabisi Onabanjo University, Ago-Iwoye, Nigeria.
- Soladoye, M.O., M.O. Adetayo, E.C. Chukwuma & .A. Adetunji. 2010a. Ethnobotanical survey of plants used in the treatment of haemorrhoids in South-Western Nigeria. *Annals of Biological Research* 1(4):1–15.  
<http://scholarsresearchlibrary.com/ABR-vol1-iss4/ABR-2010-1-4-1-15.pdf>

- Soladoye, M.O., N.A. Amusa, S.O. Raji-Esan, E.C. Chukwuma & A.T. Ayanbamiji. 2010b. Ethnobotanical survey of anti-cancer plants in Ogun State, Nigeria. *Annals of Biological Research* 1(4):261–273.  
<http://scholarsresearchlibrary.com/ABR-vol1-iss4/ABR-2010-1-4-261-273.pdf>
- van Balen, F. 2000. Interpreting infertility: Social science research on childlessness in a global perspective. *African Journal of Reproductive Health* 4(1):120–122.
- WHO. 2002. *WHO Traditional Medicine Strategy, 2002–2005*. World Health Organization, Geneva, Switzerland.