

## Ethnobotanical Survey of Medicinal Plants Used As Remedy For Female Infertility and Menstrual Disorder in Southwestern Nigeria

A. D. OGUNLAKIN<sup>A-E</sup>, M. A. SONIBARE<sup>\*A-F</sup>

Department of Pharmacognosy, Faculty of Pharmacy, University of Ibadan, Ibadan. Nigeria

---

A – research concept and design; B – collection and/or assembly of data; C – data analysis and interpretation; D – writing the article; E – critical revision of the article; F – final approval of article.

---

### Abstract

**Background:** In Sub-Saharan Africa, more than 30% of premenopausal women are affected with secondary infertility. Nigerian (Yoruba) women show a higher tendency towards exaggerated ovarian (PCOS) response to stimulation for assisted conception associated with a higher prevalence of Polycystic Ovary Syndrome.

**Objective:** Identify and document medicinal plants traditionally used to treat female infertility and menstrual disorders among Yoruba ethnic group.

**Materials and Methods:** Data on medicinal plants traditionally used to manage menstrual disorders and female infertility were collected through interviews and Focus group discussions (FGDs).

**Results:** Twenty nine plant species belonging to 20 families were mentioned for management of infertility and menstrual disorder. Plant families mostly used were Euphorbiaceae (20%), Cucurbitaceae (15%), Bignoniaceae (10%), Apocynaceae (10%), Arecaceae (10%) and Solanaceae (10%).

**Conclusion:** This study provides documentation of medicinal plants used in the management and treatment of infertility and menstrual disorder in Southwestern Nigeria.

**Keywords:** Female infertility, Menstrual disorder, Medicinal plants, Bioactive constituents.

### INTRODUCTION

Reproductive health problem is the prominent cause of global morbidity and mortality among premenopausal women (United Nations, 2012). Several researchers have reported that menstrual morbidity influenced health status, quality of life, social integration and educational status of women in developing countries (Tjon, 2007). However, most discussions are focused on male reproductive health issues, such as erectile dysfunction, neglecting the reproductive problems, which affect women of reproductive age. The assessment and management of reproductive health conditions in women are often neglected thus limiting

clinical studies on this subject (Ozcan and Sahin, 2009). Women, constituting 51% of Africa's population, still remain the pillars of Africa's economic development (Rogombe, 1985). Unfortunately, the women folk is plagued by many health challenges, some of which include infertility. Zegers--Hochschild *et al.* (2009) defined infertility as failure to achieve a clinical pregnancy after 12 months (or more) of regular unprotected sexual intercourse. Women with irregular menstrual cycles have been reported to be victims of infertility (Wise *et al.*, 2011). Menstrual disorder is an important risk marker for other reproductive complications such as oligomenorrhea, amenorrhea, polycystic ovary

syndrome and recently, gynaecological cancers (Engman *et al.*, 2005).

About 15% of reproductive aged couples are affected by infertility globally (WHO, 2010). In Sub-Saharan Africa, not less than 30% of premenopausal women are affected with secondary infertility. Wada *et al.* (1994) reported the high prevalence of infertility among Nigerian (Yoruba) women. Nigerian (Yoruba) women show higher propensity towards exaggerated ovarian response to stimulate assisted conception which has been linked with a higher occurrence of Polycystic Ovary Syndrome (Wada *et al.*, 1994). Reproductive health can be improved by either medications or by fertility control (Siedlecky, 2001). In Western countries, where menstrual irregularity and infertility and/ or subfertility are repeatedly presented as a medical condition, treatment includes hormonal therapy (including contraception) or non-steroidal anti-inflammatory drugs. Some of these medical interventions aside being beyond the reach of many rural women come with serious side effects. In low-income countries where medical treatments are sometimes unavailable or unaffordable, especially in the rural areas, affected women never sought any medical help until the condition becomes severe. Women in these tropical countries, which are blessed with abundant flora prefer traditional medicine for their health challenges including menstrual disorders or family planning (Levin, 2001; Castle, 2003; Bearinger *et al.*, 2007; Williamson *et al.*, 2009; Sonibare and Ayoola, 2015).

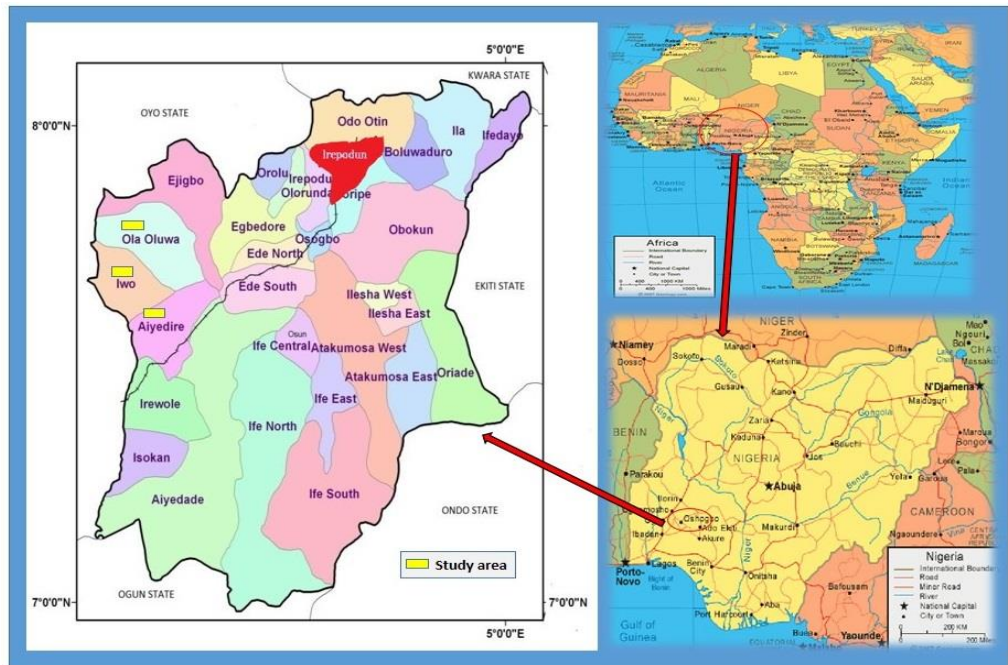
## METHODOLOGY

### Study area

The study was conducted in Iwo metropolis of Osun State, South-western Nigeria. Osun State with a landmass of 14,875 Km<sup>2</sup> can be located between latitude 7.0° N to 8.0° N and longitude 04°10'E to 05°05'E. The annual rainfall of the southern part differs from that of the Northern part with values of 1125 mm and 1475 mm per annum respectively (Abe, 1995). The forest reserve vegetation lies in the lowland rain forest zone of South-Western Nigeria and the derived savannah covering Iwo and Osogbo (Abe, 1995). Three local government areas (LGAs) in Iwo metropolis were selected as study area. Figure 1 shows

The use of botanicals in such women has been found to increase the rate of conception in women affected by infertility (Zhao, 2011). Several Nigerian plants have been documented through ethnobotanical studies as effective for reproductive health (Soladoye *et al.*, 2014; Nduche *et al.*, 2015; Fasola, 2015). The herbal treatment, mostly administered in form of powder, tea, tonic or tincture, has effectively enabled the body to readjust the menstrual cycle (Nduche *et al.*, 2015; Fasola, 2015). In line with this, interest has been generated towards the scientific validation of the medicinal claims on some of these botanicals. The qualitative chemical assessment of bioactive constituents of some of the common medicinal plants have been reported to show that they possess constituents that could elicit pharmacological effects such as cytotoxicity, antioxidant activity and correction of hormonal imbalance, thereby justifying their folkloric uses. Several beneficial effects of Isoflavones in human have been documented. Several data support the general belief that soy consumption, an isoflavone-rich diet, prevents cardiovascular ailments and post-menopausal effects such as osteoporosis (Rice-Evans and Packer, 2003; Malińska and Kiersztan, 2004). Therefore, this study was designed to identify, document and to assess (qualitatively) the isoflavone constituents of a number of botanicals conventionally used to treat menstrual disorders and female infertility among Yoruba ethnic group in Iwo metropolis of Osun State, Nigeria.

the study areas namely: Aiyedire LGA (Oluponna, Railway station); Iwo LGA (Iwo town) and Olaoluwa LGA (Obamoro, Ikonifin). Identification of some villages without access to modern health facilities in the study area necessitated the advancement of traditional health care system, which justifies the vast understanding of medicinal plant's application in this metropolis. The indigenes of this community are Yorubas hosting nomadic Fulanis, Hausas, Ibos and farmers from other countries such as Togo and Benin Republic. The women and men in this region are traders, farmers, civil servants and craftsmen.



**Figure 1. Map showing the study areas in Southwestern Nigeria**

**Data Collection**

Data on traditional use of medicinal plants known for managing menstrual disorders and female infertility were documented through interviews and Focus group discussions (FGDs) with herb sellers (38.8%), herbalists (12.7%), community chiefs (4.8%), hunters (19.0%) and traditional religious leaders (24.6%) in Iwo metropolis. Collection of data was done between June 4 and September 16, 2016. One hundred and twenty six people fully participated in the study. Interviews and Focus Group Discussions were conducted with prior permission of the potential participants, aged between 21 and 68 years, in Yoruba language. The list of plants known to be efficacious in the management of menstrual disorders and female infertility in the community and their methods of preparation were documented. The associations of herb sellers, herbalists and hunters in each LGA were visited at separate times during their meeting where the intention of the survey was made known to all members. All the members were met after the meeting for interviews to collect names of medicinal plants with their modes of preparation and administration. Community chiefs and traditional religious leaders were visited in their various houses to seek further clarifications on some of the plants mentioned at

FGDs. Some of these plants were planted in their courtyard. Other uses of the plants mentioned in this survey were also documented. The local and scientific names of medicinal plants mentioned during the survey were validated with research journals.

**Data Analysis**

All data obtained were analysed and presented in proportion, percentages and frequencies. The significance level of each species of the medicinal plants mentioned was evaluated and ranked with use value, UV (Phillips and Gentry, 1993) and use mentions index, UMI (Andrade-Cetto, 2009). Use value is the ratio of the number of uses mentioned by a respondent for a particular species ( $U_{is}$ ) and number of interviews by the informant ( $n_{is}$ ), while use mention index (UMI) is the ratio of number of use mentioned for a particular plant and the number of entire population interviewed. Fidelity level (expressed in percentage) was calculated as the ratio of the number of respondents that mentioned a plant species for a particular ailment ( $I_p$ ) and the total number of respondents who knows the same plant for management of any ailment ( $I_u$ ) (Friedman *et al.*, 1986).

**RESULTS AND DISCUSSION**

Of the 126 respondents, 39.7% were males and 60.3% females. Almost 49.0% were between 31 and 40 years old, while 19.0% and 70.6% had primary education

and secondary school education, respectively. None of the participants had tertiary education. The hunters and herb sellers consulted were registered members of their various associations at the local government

level. About 61.0%, 31.0% and 14.0% were practicing Islam, traditional and Christian religions, respectively. Table 1 shows the demographic characteristics of all the participants interviewed via semi-structured

questionnaires and FGDs. Largest percentage of the respondents were herb sellers (38.8%), others were traditional religious leaders (24.6%), hunters (19.0%), herbalists (12.7%) and chiefs (4.8%).

**Table 1: Demographic Characteristics of the Respondents**

Characteristics	Specification	Total	Percentage (%)
1. Sex	Male	50	39.7
	Female	76	60.3
2. Practice specification	Herb sellers	49	38.8
	Herbalist	16	12.7
	Chiefs	6	4.8
	Hunters	24	19.0
	Traditional religious leaders	31	24.6
3. Age	21-31	30	23.8
	31-40	40	31.7
	41-50	27	21.4
	51-60	12	9.5
	>60	17	13.5
4. Religion	Islam	78	61.9
	Christianity	18	14.3
	Traditional	40	31.7
5. Marital status	Married	64	50.8
	Divorce	12	9.5
	Single	30	23.8
	Widow(er)	22	17.5
6. Educational status	Tertiary institution	0	0
	Secondary school	89	70.6
	Primary school	24	19.0
	No formal education	13	10.3
7. Nationality (Tribe)	Nigerian (Yoruba tribe)	126	100
	Non-Nigerian	0	0

The characteristics (family, common names and plant parts used) of medicinal plants used in the management of menstrual disorder and female infertility are presented in Table 2.

**Table 2: Plants species mentioned as remedy for menstrual disorders and female infertility in Iwo metropolis (Osun State)**

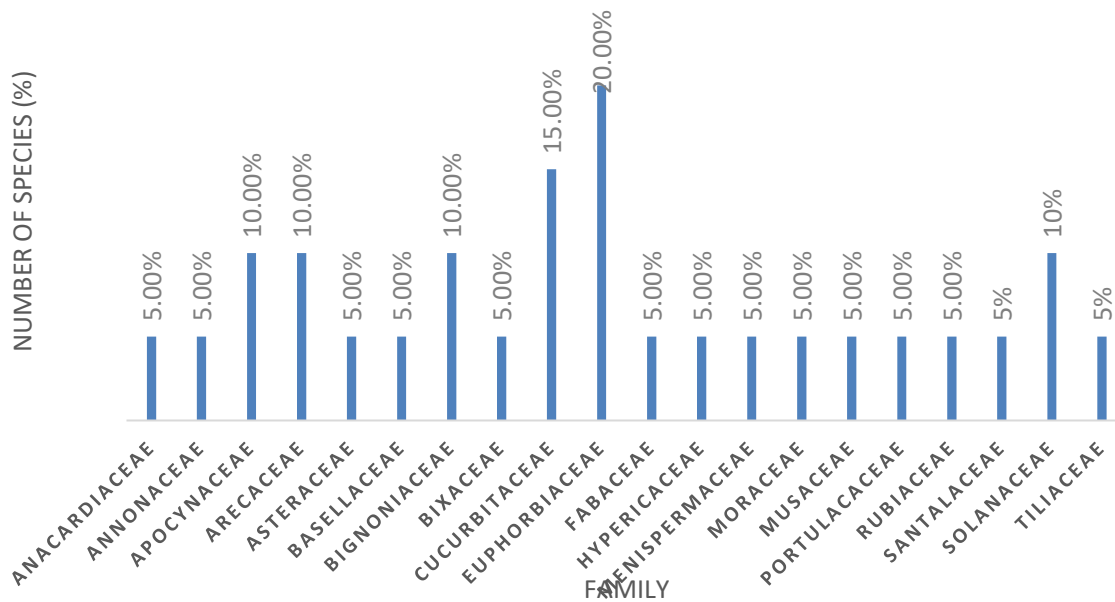
Family/ Species	Local name(s)	Part used	Medicinal uses	Growth form	Times stated (n <sub>is</sub> )	Use mention index (UMi)	Number of uses (by respondent, U <sub>is</sub> )	Use value (UV <sub>is</sub> )
<b>Anacardiaceae</b>								
1. <i>Spondia mombin</i> L.	Iyeye	Leaf and seed	Treatment of Female infertility, vaginal infections, malaria and to induce labour	Tree	30	0.0317	4	0.1333
<b>Annonaceae</b>								
2. <i>Xylopi aethiopica</i> (Dunal) A. Rich	Eeru alamo	Fruit	Treatment of menstrual disorder, stomach, joint pains and infertility	Tree	26	0.0317	4	0.1539
<b>Apocynaceae</b>								
3. <i>Alstonia boonei</i> De Wild.	Ahun	Leaf	Treatment of Female Infertility, malaria, and impotence	Tree	10	0.0238	3	0.3000
4. <i>Picralima nitida</i> Stapf Th. & H. Dur.	Abere	Fruit	Treatment of menstrual disorder	Tree	2	0.0079	1	0.5000
<b>Areaceae</b>								
5. <i>Elaeis quineensis</i> Jacq.	Eyin (abon)	Fruit (Unripe)	Treatment of Female Infertility	Tree	10	0.0079	1	0.1000
6. <i>Cocos nucifera</i> L.	Agbon	Fruit water	Treatment of Infertility.	Tree	1	0.0079	1	1.0000
<b>Asteraceae</b>								
7. <i>Vernonia amygdalina</i> Del.	Ewuro	Leaf	Treatment of menstrual disorder, fibroid, stomach ache, ringworm, typhoid fever, headache and diabetes	Tree/ Shrub	45	0.0556	7	0.1556
<b>Basellaceae</b>								
8. <i>Basella alba</i> L.	Amunu-tutu, gbowo-le-ganna	Complete aerial parts	Treatment of Female infertility, irregular periods, acne and sterility	Climber	23	0.0317	4	0.1739
<b>Bignoniaceae</b>								
9. <i>Kigelia africana</i> (Lam.) Benth	Pandoro	Fruit	Treatment of female Infertility, skin infections and vaginal infections	Tree	17	0.0238	3	0.1765
10. <i>Newbouldia laevis</i> (Beauv.) Seem. ex Bureau	Akoko	Bark, root and leaf	Treatment of menstrual disorder, fibroid, impotence and infertility	Tree/ Shrub	25	0.0317	4	0.1600
<b>Bixaceae</b>								
11. <i>Bixa orellana</i> L.	Osun-buke	Leaves		Shrub	33	0.0238	3	0.0909

				Treatment of Female Infertility, stomach ache and diabetes					
<b>Cucurbitaceae</b>									
12.	<i>Lagenaria breviflora</i> (Benth.) Roberty	Tangiri	Fruit	Treatment of Irregular menstrual flow, skin infections and diarrhoea	Climber	10	0.0238	3	0.3000
13.	<i>Tetracera</i> sp.	Ahara	Leaf	Treatment of unhealthy menstruation	Climber	6	0.0079	1	0.1667
14.	<i>Momordica charantia</i> L.	Ejinrin	Leaf, complete aerial parts	Treatment of Female infertility, malaria, diabetes, painful menstruation and to regulate menses	Climber	21	0.0397	5	0.2381
<b>Euphorbiaceae</b>									
15.	<i>Euphorbia lateriflora</i> Schum. & Thonn.	Enu opiri	Leaf	Treatment of Irregular menstrual flow	Shrub	1	0.0079	1	1.0000
16.	<i>Bridelia micrantha</i> (Hochst.) Baill.	Aasa, araasa	Leaf and root	Treatment of menstrual irregularity and diabetics	Tree	10	0.0159	2	0.2000
17.	<i>Jatropha gossypifolia</i> L.	Lapalapa pupa	Fruit	Treatment of Irregular menstruation, skin infections and excessive bleeding from the vagina	Shrub	13	0.0238	3	0.2308
18.	<i>Mallotus oppositifolius</i> (Geisel.) Müll	Ipa, Ija,	Leaf	Treatment of Female Infertility and headache	Shrub	27	0.0159	2	0.0741
<b>Fabaceae</b>									
19.	<i>Pterocarpus osun</i> Craib	Osun	Seed, leaf	Treatment of Irregular menstrual flow, unhealthy vaginal secretion and skin infections	Tree	41	0.0238	3	0.0732
<b>Hypericaceae</b>									
20.	<i>Harungana madagascariensis</i> Lam. ex Poir	Amuje	Stem bark	Treatment of Irregular menstrual flow and stomach ache	Tree	7	0.0159	2	0.2857
<b>Menispermaceae</b>									
21.	<i>Cissampelos owariensis</i> P. Beauv.	Jenjoko	Leaf	Treatment of Stomach disorder during menstruation, excessive bleeding during menstruation, diabetes and infertility	Climber	20	0.0317	4	0.2000
<b>Moraceae</b>									
22.	<i>Erythrophleum suaveolens</i> Guill and Perr Brenan	Igi obo	Bark and leaf	Treatment of menstrual disorder and skin infections	Tree	3	0.0159	2	0.6667

<b>Musaceae</b>									
23.	<i>Musa paradisiaca</i> L.	Ogede agbagba	Fruit peel	Treatment of Stomach disorder during menstruation	Tree	5	0.0079	1	0.2000
<b>Portulacaceae</b>									
24.	<i>Talinum triangulare</i> (Jacq.) Willd.	Gbure	Leaf	Treatment of Stomach disorder during menstruation and diabetes	Herb	15	0.0159	2	0.1333
<b>Rubiaceae</b>									
25.	<i>Morinda lucida</i> Benth.	Oruwo	Root, bark	Treatment of Irregular menstrual flow, malaria, diabetes, stomach disorder during menstruation	Tree	17	0.0238	3	0.1765
<b>Santalaceae</b>									
26.	<i>Viscum album</i> L.	Afomo-obi	Whole plant	Treatment of Irregular menstrual flow and diabetes	Herb (parasite)	10	0.0159	2	0.2000
<b>Solanaceae</b>									
27.	<i>Capsicum frutescens</i> L.	Ata-eye	Fruit	Treatment of Irregular menstrual flow and ulcer	Herb	9	0.0159	2	0.2222
28.	<i>Physalis angulata</i> L.	Koropo	Leaf, complete aerial parts	Treatment of Female infertility	Herb	3	0.0079	1	0.3333
<b>Tiliaceae</b>									
29.	<i>Glyphaea brevis</i> (Spreng.) Monachino	Atori	Leaf and root	Treatment of menstrual disorder, ulcer, diabetes and as abortifacient	Tree/ Shrub	5	0.0317	4	0.8000

Twenty-nine medicinal plants in 20 families were documented. Based on UMI the twenty-nine plants were in six categories. One plant each was found in the first (UMI 0.056) and second (UMI 0.040) categories, while six plants were found in the third (UMI 0.032) category. The fourth (UMI 0.024), fifth (UMI 0.016) and sixth (UMI 0.008) categories had seven plants each. The plant families mostly used were Euphorbiaceae (20%), Cucurbitaceae (15%), Bignoniaceae (10%), Apocynaceae (10%), Arecaceae (10%) and Solanaceae (10%) as shown in Figure 2. The plants frequently mentioned by respondents for management and/or treatment of menstrual disorder and female infertility were *Pterocarpus osun*, *Basella*

*alba*, *Cissampelos owariensis*, *Morinda lucida*, *Kigelia africana*, *Talinum triangulare* and *Viscum album*. In a study similar to this one, Nduche *et al.* (2015) reported that 62 plant species belonging to 41 families were being used as remedy for fertility conditions in Ebonyi State of Nigeria. Another study that surveyed medicinal plants used in the management and treatment of various female reproductive health challenges in Southwestern part of Nigeria reported 61 plant species belonging to 32 families (Fasola, 2015). The family Euphorbiaceae was well represented in this study, signifying their relevance in the management of menstrual disorder and female infertility.



**Figure 2: Family and number of Species of medicinal plants mentioned for the treatment of menstrual disorder and female infertility**

The study found that most herbal remedies used by the community for treating menstrual disorder and female infertility were administered in combination, while some plants, such as *Tetracera* sp., *Pterocarpus osun*, *Cissampelos owariensis*, *Talinum triangulare* and fruit peel of *Musa paradisiaca* were administered singly although with other non-plant materials like potash or charred with sulphur. The enumeration and duration of administration of herbal preparations differ

according to the symptoms reported by the women affected with these conditions. Such symptoms include oligomenorrhea, amenorrhea, amenorrhea, unhealthy menses and infertility. The herbal preparations were mostly taken orally, either as decoctions and infusions, or as herbal soap. The concept similar to solvent partitioning was reported for the preparation which contains *Erythrophleum suaveolens*, the plant known among the ethnic group for its toxicity (Table 3).

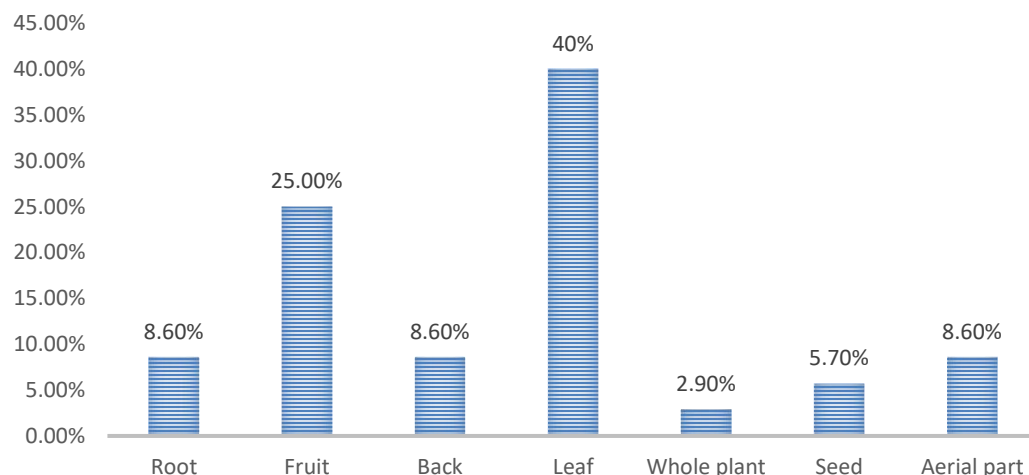


**Table 3: Enumeration of recipes used as remedy for menstrual disorder and female infertility**

Conditions	Method(s) of preparation	Administration
1. Infertility	a). The dried fruit of <i>Picralima nitida</i> will be grounded into powder and macerated with <i>Cocos nucifera</i> water. b). Squeeze <i>Momordica charantia</i> leaves c). <i>Basella alba</i> plant is macerated with water	A cup of infusion is to be taken every night This is to be taken everyday The infusion should be taken twice daily
2. Infrequent menstruation (oligomenorrhea)	a). Fruit of <i>Jatropha gossypifolia</i> , leaf of <i>Euphorbia lateriflora</i> and <i>Lagenaria breviflora</i> fruit were burned together b). Fruit of <i>Jatropha gossypifolia</i> , leaf of <i>Euphorbia lateriflora</i> and <i>Lagenaria breviflora</i> fruit were burned together and mixed with black soap and potash	A spoonful of the powder is then mixed with a cup of water and taken as the day of menstruation approaches. The soap is to be bath with as the day of menstruation approaches.
3. Ceased menstruation (amenorrhea)	a). Dried leaves and root of <i>Bridelia micrantha</i> and <i>Xylopiya aethiopica</i> are mixed in a bottle and then water is added. b). Bark and leaves of <i>Erythrophleum suaveolens</i> are boiled with water and potash. The infusion is then mixed with alcohol. c). Squeeze <i>Physalis angulata</i> leaves with water. d). <i>Bixa orellana</i> leaves, <i>Harungana madagascariensis</i> stem bark and <i>Morinda lucida</i> root, are grounded together	A cup of infusion is to be taken twice a day, morning and night, for duration of 6 months to 1 year A cup of the alcoholic part (of the infusion) is to be taken twice a day, morning and night A glass cup should be taken each day of menstruation This mixture is to be taken with hot pap every morning
4. Unhealthy menses (discoloured or malodourous)	a). Leaves juice of <i>Momordica cabraei</i> and small potash	This mixture is to be taken every day till the menstruation is over
5. Unhealthy vaginal secretion	a). Squeeze leaf juice of <i>Pterocarpus osun</i>	Bathe with water mixed with the juice on the day this vaginal secretion is observed
6. Painful menstruation (dysmenorrhea)	a). Leaves juice of <i>Cissampelos owariensis</i> and small potash b). Leaves juice of <i>Talinum triangulare</i> and small potash c). Fruit peel of <i>Musa paradisiaca</i> and sulphur burned together.	This mixture is to be taken every day till the menstruation is over This mixture is to be taken every day till the menstruation is over The residue is mixed with pap and should be taken regularly

For the plant species mentioned for management of menstrual disorders and female infertility, the leaves (40%) were the morphological part persistently used in most herbal preparations, then fruit (25%). Other

parts of plant used are bark (8.6%), seed (5.7%) and whole plant (2.9%) (Figure 3).



### PLANT PARTS MENTIONED

**Figure 3: Plant parts mentioned for the treatment of menstrual disorder and female infertility**

One of the procedures used to determine the foremost used plant species used for medicinal purpose is the calculation of fidelity level. High fidelity value shows the strength of approval for each plant species used in the study area. This value justifies the selection of a particular species by respondent for the treatment of a

specified disease. Among all the plant mentioned, *Picralima nitida*, *Elaeis quineensis*, *Cocos nucifera*, *Tetracera* sp., *Euphorbia lateriflora*, *Musa paradisiaca* and *Physalis angulata* had fidelity level of 100% (Table 4).

**Table 4: Fidelity level (FL) for each medicinal plant mentioned per use**

Species	Medicinal uses	I <sub>p</sub>	I <sub>u</sub>	FL (%)
1. <i>Spondia mombin</i>	Female infertility	17	30	56.7
	Vaginal infections	5		16.7
	Malaria	5		16.7
	To induce labour	3		10
2. <i>Xylopia aethiopica</i>	Menstrual disorder	7	26	23.3
	Stomach	3		11.5
	Joint pains	13		50.0
	Infertility	3		11.5
3. <i>Alstonia boonei</i>	Female Infertility	2	10	20.0
	Malaria	7		70.0
	Impotence	1		10.0
4. <i>Picralima nitida</i>	Menstrual disorder	2	2	100
5. <i>Elaeis quineensis</i>	Female Infertility	10	10	100
6. <i>Cocos nucifera</i>	Infertility.	1	1	100
7. <i>Vernonia amygdalina</i>	Menstrual disorder	3	45	6.7
	Fibroid	5		11.1
	Stomach ache	10		22.2
	Ringworm	3		6.7
	Typhoid fever	4		8.9
	Headache	2		4.4
	Diabetes	18		40.0
	8. <i>Basella alba</i>	Female infertility	3	23

	Irregular periods	14		60.9	
	Acne	4		17.4	
	Sterility	2		8.7	
9.	<i>Kigelia africana</i>	Female Infertility	7	17	41.2
		Skin infections	7		41.2
		Vaginal infections	3		17.6
10.	<i>Newbouldia laevis</i>	Menstrual disorder	6	25	24.0
		Fibroid	10		40.0
		Impotence	6		24.0
		Infertility	3		12.0
11.	<i>Bixa orellana</i>	Female Infertility	10	33	30.3
		Stomach ache	6		18.2
		Diabetes	17		51.5
12.	<i>Lagenaria breviflora</i>	Irregular menstrual flow	3	10	30
		Skin infections	2		20
		Diarrhoea	5		50
13.	<i>Tetracera</i> sp.	Treatment of unhealthy menstruation	6	6	100
14.	<i>Momordica charantia</i>	Female infertility	1	21	4.8
		Malaria	3		14.3
		Diabetes	8		38.1
		Painful menstruation	7		33.3
		Regulation of menses	2		9.5
15.	<i>Euphorbia lateriflora</i>	Irregular menstrual flow	1	1	100
16.	<i>Bridelia micrantha</i>	Menstrual disorder	4	10	40
		Diabetics	6		60
17.	<i>Jatropha gossypifolia</i>	Irregular menstrual flow	3	13	23.1
		Skin infections	5		38.5
		Excessive bleeding from the vagina	5		38.5
18.	<i>Mallotus oppositifolius</i>	Female Infertility	15	27	55.6
		Headache	12		44.4
19.	<i>Pterocarpus osun</i>	Irregular menstrual flow	19	41	42.2
		Unhealthy vaginal secretion	17		41.5
		Skin infections	5		12.2
20.	<i>Harungana madagascariensis</i>	Irregular menstrual flow	5	7	71.4
		Stomach ache	2		28.6
21.	<i>Cissampelos owariensis</i>	Stomach disorder during menstruation	4	20	20.0
		Excessive bleeding during menstruation	3		15.0
		Diabetes	7		35.0
		Infertility	6		30.0
22.	<i>Erythrophleum suaveolens</i>	Menstrual disorder	1	3	33.3
		Skin infections	2		66.7
23.	<i>Musa paradisiaca</i>	Treatment of Stomach disorder during menstruation	5	5	100
24.	<i>Talinum triangulare</i>	Stomach disorder during menstruation	4	15	26.7
		Diabetes	11		73.3
25.	<i>Morinda lucida</i>	Irregular menstrual flow	1	17	5.9
		Malaria	9		60

	Diabetes	6		35.3
	Stomach disorder during menstruation	1		5.9
26. <i>Viscum album</i>	Irregular menstrual flow	2	10	20
	Diabetes	8		80
27. <i>Capsicum frutescens</i>	Irregular menstrual flow	3	9	33.3
	Ulcer	6		66.7
28. <i>Physalis angulata</i>	Female infertility	3	3	100
29. <i>Glyphaea brevis</i>	Menstrual disorder	1	5	20
	Ulcer	1		20
	Diabetes	2		40
	Abortifacient	1		20

## CONCLUSION

Medicinal plants were commonly used in the study area because of their better affordability, reported efficacy and regular accessibility compared to modern health care facilities. However, aggressive collection of these plants with medicinal importance is a big threat to availability. Therefore, most traditional healers practiced propagation of the medicinal plants of interest in their home gardens. The indigenous knowledge of medicinal plants is valuable resources

for health management. Knowledge of traditional medicine use need to be protected through proper documentation of recipes enumerations. This documentation becomes the foundation for proper investigation of phytochemicals and validation of pharmacological claims of medicinal plants use for management of infertility and other gynaecological problems in this community and for future

## REFERENCES

- Abe, J.O., (1995). Community participation in forestry development in Nigeria – Osun State Experience, Proceedings of the 24th Annual Conference of the Forestry Association of Nigeria (Ed. Oduwaye, E.A), Kaduna, Kaduna State, 30th October 5th November, pp,19 – 27.
- Andrade-Cetto, A., (2009). Ethnobotanical study of the medicinal plants from Tlanchinol, Hidalgo, Mexico. *J. Ethnopharmacol.* 122: 163-171.
- Bearinger, L.H., Sieving, R.E., Ferguson, J., Sharma, V., (2007). Global perspectives on the sexual and reproductive health of adolescents: patterns, prevention, and potential. *Lancet* 369: 1220–1231.
- Castle, S., (2003). Factors influencing young Malians’ reluctance to use hormonal contraceptives. *Stud Fam Plann.* 34: 186–199.
- Engmann, L, Maconochie, N, Sladkevicius, P., (2005). The outcome of in-vitro fertilisation treatment in women with polycystic ovaries. *Reprd Biomed Online* 6: 181–184.
- Fasola, T.R., (2015). An Ethnobotanical Survey of Plants Used in the Management and Treatment of Female Reproductive Health Problems in Ibadan, Southwestern Nigeria. *J Biol Agric Healthcare* 5: 7-11
- Friedman, J., Yaniv, Z., Dafni, A., Palewitch, D., (1986). A preliminary classification of the healing potential of medicinal plants, based on the rational analysis of ethnopharmacological field survey among Bedouins in Negev Desert, Isreal. *J. Ethnopharmacol.* 16: 275-287.
- Levin, E., (2001). The meaning of menstrual management in a high-fertility society: Guinea, West Africa. In: Van de Walle, E., Renne, E.P. (Eds.), *Regulating Menstruation: Beliefs, Practices, Interpretations*. The University of Chicago Press, Chicago, pp. 157–171.
- Malińska, D., Kiersztan, A., (2004). Flavonoids – characteristics and significance for therapy. *Post-mortem Biochemistry* 50: 182-196
- Nduche, M.U., Omosun, G. And Okwulehie, I.C., (2015). Ethnobotanical Survey of Plants Used as Remedy for Fertility Conditions in Ebonyi State of Nigeria. *Acad J Biosci.* 3: 214-221
- Ozcan, S and Sahin, N., (2009). Reproductive health in women with diabetes. *Diabetes voice* 54: 8-11
- Phillips, O., Gentry, A.H., (1993). The useful plants of Tambopata, Peru.1. Statistical hypotheses tests with a new quantitative technique. *Econ Bot.* 47: 15–32.
- Rice-Evans, C.A., Packer, L., (2003). *Flavonoids in Health Diseases*, 2<sup>nd</sup> Edition. Dekker, New York.
- Rogombe, R. F., (1985). Equal Patner’s in Africa’s Development. *Afri Rep* 30: 17 - 20.

- Siedlecky, S., (2001). Pharmacological properties of emmenagogues: a biomedical view. In: Van de Walle, E., Renne, E.P. (Eds.), *Regulating Menstruation: Beliefs, Practices, Interpretations*. The University of Chicago Press, Chicago, pp. 93–112.
- Soladoye, M.O., Chukwuma, E.C., Sulaiman, O., Feyisola, R.T., (2014). Ethnobotanical Survey of Plants Used in the Traditional Treatment of Female Infertility in Southwestern Nigeria. *Ethnobot Res Appl* 12: 081-090
- Sonibare, M.A, Ayoola, I.O., (2015). Medicinal plants used in the treatment of neurodegenerative disorders in some parts of Southwest Nigeria. *Afri J Pharm Pharmacol* 9: 956-965
- Tjon, A.T., (2007). *Menstrual Hygiene: A neglected condition for the achievement of several Millennium Development Goals*, Europe External Policy Advisors, *Zoetermeer*. <https://www.ircwash.org/resources/menstrual-hygiene-neglected-condition-achievement-several-millennium-development-goals>. Accessed 22 April, 2018
- United Nations, (2012). *The Millenium Development Goals Report 2012*. New York. Uppsala Monitoring Centre. 2013. WHO Programme Members. (<http://www.who-umc.org/DynPage.aspx?id¼100653&mn1¼7347&mn2¼7252&mn3¼7322&mn4¼7442>). Accessed 25 November, 2013.
- Wada, I, Matson, P.L, Macnamee, M.C, Brinsden, P.R, Lieberman, B.A., (1994). High ovarian response in Yoruba African women during ovulation induction for assisted conception. *Hum Reprod* 9: 1077-1080
- World Health Organization, (2010). Mother or nothing: the agony of infertility. *Bull World Health Organ* 88: 881-882.
- Williamson, L.M., Parkes, A., Wight, D., Petticrew, M., Hart, G.J., (2009). Limits to modern contraceptive use among young women in developing countries: a systematic review of qualitative research. *Reprod Health* 6: 1–12.
- Wise, L.A, Mikkelsen, E.M, Rothman, K.J, Riis, A.H, Sorensen, H.T, Huybrechts, K.F, Hatch, E.E., (2011). A prospective cohort study of menstrual characteristics and time of pregnancy. *Am J Epidemiol* 174: 701-709
- Zegers-Hochschild, F., Adamson, G.D., de Mouzon, J., Ishihara, O., Mansour, R., Nygren, K., Sullivan, E., Vanderpoel, S. (2009). International Committee for Monitoring Assisted Reproductive Technology (ICMART) and the World Health Organization (WHO) revised glossary of ART terminology. *Fertil Steril* 92: 1520–1524.
- Zhao, L., 2011. Treating Infertility with the Integration of Traditional Chinese Medicine and Assisted Conception Therapy. *Chin Med Times* 6: 1-7

\*Address for correspondence: Mubo A. Sonibare  
Department of Pharmacognosy,  
Faculty of Pharmacy,  
University of Ibadan,  
Ibadan, Nigeria.  
Telephone: +234 813 490 1273  
E-mails: [sonibaredeola@yahoo.com](mailto:sonibaredeola@yahoo.com)

Conflict of Interest: None declared  
Received: Jun 2, 2019  
Accepted: December 12, 2019