

Ethnobotanical survey of plants used in the management of benign prostatic hyperplasia in Ijebu – North Local Government Area, Ogun State, Nigeria

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Abstract. An ethnobotanical survey was carried out in Ijebu – North Local Government Area of Ogun State to document the plant species used in the treatment of benign prostatic hyperplasia within the area. According to modern ethnobotanical practices, structurally designed questionnaires were administered to those with knowledge about these medicinal plants, and their responses were properly documented. A total of thirty-one (31) plant species from twenty-nine (29) genera and twenty-six (26) families were reported as useful in the treatment of the ailment. While *Annonaceae*, *Caesalpiniaceae*, *Euphorbiaceae*, *Moraceae*, and *Poaceae* are all represented by two species, others are represented by only one. The recipes, methods of preparation and administration were also properly documented in this work. *Ananas comosus* and *Garcinia kola* were both useful in the preparation of at least two recipes, which is indicative of their importance in herbal and traditional medicine. This study suggests that further phytochemical and pharmacognostic studies should be conducted to ascertain the potencies of these medicinal plants.

Key words: ethnobotany, herbs, medicine, prostatic hyperplasia

Introduction

The use of medicinal plants in traditional healthcare has continued to grow across the world. Today, many people prefer the use of herbal medicine for health-related issues. In many developing countries, such as Nigeria, the rural dwellers living close to medicinal plants collect and use them without replacement. This attitude is also spreading fast to the cities, where people supplement the treatment they receive from orthodox doctors with treatment from traditional healers.

Traditional medicine in Nigeria is gradually getting in line. In recent times, the herb sellers and tradi-

tional health care practitioners have been patronized by many who prefer the use of natural herbs to orthodox medications. However, the safety of herbal medicines has become a major concern to both national health authorities and the general public, and the majority of adverse effects related to the use of these herbal products have been attributed to poor product quality, or to improper use (WHO 2004).

Benign prostatic hyperplasia (BPH), otherwise referred to as prostrate enlargement, is a condition that affects the prostate gland in men. It has been described by Clement & al (2008) as a common disease of the urinary system among elderly men. BPH disorder has two

phases: one that involves no clinical signs, and the other manifested as disorder of urination resulting from urinary tract obstruction by an enlarged prostate (Isaac 1994). The incidence of occurrence has recently been estimated at 42% in males aged 51–60, 70% in those aged 61–70 and 90% in males between 81–90 years (Nickel 2008). According to the National Institutes of Health (2006), many symptoms of BPH stem from obstruction of the urethra and gradual loss of bladder function, which results in incomplete emptying of the bladder. The size of the prostate does not always determine how severe the obstruction or the symptoms will be. Some men with greatly enlarged glands have little obstruction and few symptoms while others, whose glands are less enlarged, have more blockage and greater problems.

While Western or orthodox medicine has become the practice in many cultures, the earlier works of several authors have shown that it is not the only available treatment option. In Nigeria, ethnobotanical studies have been carried out overtime by researchers and a reasonable number of medicinal plants have been properly documented for the treatment of many ailments. To mention but few, those are the works of Gbile & Adesina (1986), Gills (1992), Okoegwale & Omefezi (2001), Okoli & al. (2007), Odugbemi (2008), Omonike & al. (2010), Soladoye & al. (2010a & b), Soladoye & al. (2012), and Soladoye & al. (2014). Owing to the fact

that modern research has remained relatively silent on the subject of BPH, this paper focuses on the medicinal plants utilized by the indigenous population of Ijebu – North Local Government Area of Ogun State, Nigeria, in its treatment and, hopefully, it will form a baseline for further studies on the subject matter.

Material and methods

The survey was carried out in Ijebu – North Local Government Area of Ogun State, Nigeria, at 6°57'0" N and 4°0'0" E (Fig. 1). Several visits were made to Ijebu-Igbo, Ago-Iwoye, Awa, Ilaporu, and Oru-Ijebu, all within the area of the present study. Information regarding the plants used for traditional management of benign prostatic hyperplasia (BPH), otherwise known

Table 1. Distribution of respondents according to their age group.

Age groups	Categories					Total
	Herb sellers	Herba- lists	Traditional healers	Patients	Others	
26–30	1	–	–	–	–	1
31–35	3	–	–	–	4	7
36–40	5	5	4	6	3	23
41–45	19	4	7	9	6	45
45 and above	17	9	16	15	17	74
Total	45	18	27	30	30	150

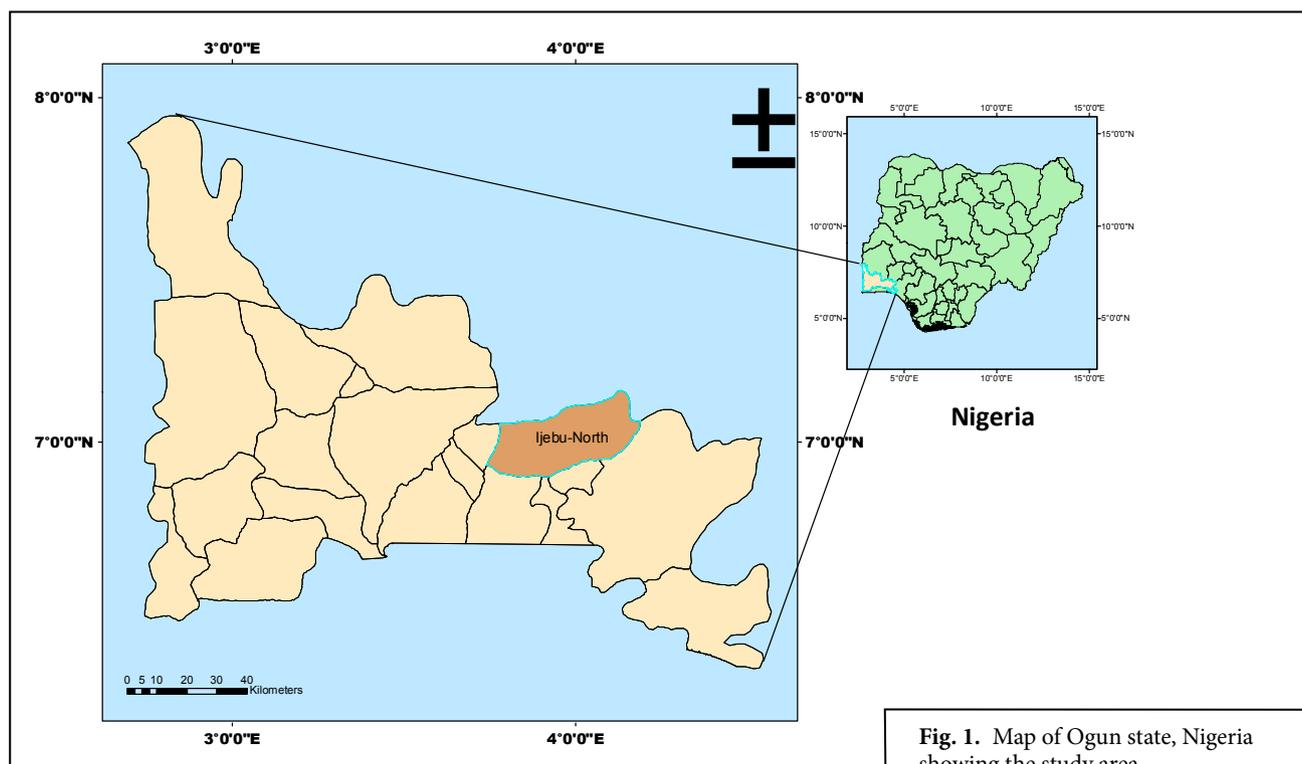


Fig. 1. Map of Ogun state, Nigeria showing the study area.

as prostrate enlargement, was gathered by structurally designed questionnaires. A total of 150 respondents, including herb sellers, traditional healers, herbalists, patients, and other individuals with deep knowledge about BPH were interviewed and their responses were carefully recorded in the questionnaires (Table 1).

The Nigerian Traditional Medical Association (NTMA), Ijebu-North Branch and the Nigerian Union of Medical Herbal Practitioners (NUMHP), Ijebu-Igbo Branch were also consulted and all information was properly documented. Upon completion of questionnaires, the plants were carefully collected and processed according to modern taxonomic practice. They were taken to the Forest Herbarium Ibadan (FHI) for proper identification and later deposited at the Elikaf Herbarium of Olabisi Onabanjo University, although yet to be listed in Holmgren & al. (1990).

Results and discussion

A total of thirty-one (31) plant species from twenty-nine (29) genera and twenty-six (26) families were identified as useful in the traditional management of BPH. These plants are listed in Table 2, with their families, habits, common and local names. The families *Annonaceae*, *Caesalpiniaceae*, *Euphorbiaceae*, *Moraceae* and *Poaceae* were represented all by two species while the remaining twenty-one (21) families were represented by one species each. Similarly, the genera *Jatropha* and *Senna* have been represented both by two species while the remaining genera were represented by only one species each. Most of the information was obtained from adults, especially from those above 45 years of age (Table 1). This supported the idea that these persons were more knowledgeable

Table 2. List of plant species used for the traditional management of BPH.

S no	Botanical name	Family	Habit	Common name	Local name (Yoruba)
1.	<i>Abrus precatorius</i> Linn.	<i>Papilionaceae</i>	Climber	Crab's Eye	Oju ologbo
2.	<i>Adenopus breviflorus</i> Benth.	<i>Cucurbitaceae</i>	Climber	Pseudo Colocynth	Tagiri
3.	<i>Aframomum melegueta</i> K. Schum.	<i>Zingiberaceae</i>	Herb	Alligator Pepper	Atare
4.	<i>Ananas comosus</i> (Linn.) Merr	<i>Bromeliaceae</i>	Herb	Pineapple	Ope oyinbo
5.	<i>Bambusa vulgaris</i> Linn	<i>Poaceae</i>	Giant grass	Bamboo	Oparun
6.	<i>Calotropis procera</i> R. Br.	<i>Asclepiadaceae</i>	Shrub	Giant Milk Weed	Bomubomu
7.	<i>Capsicum frutescens</i> Linn.	<i>Solanaceae</i>	Herb	Chili Pepper	Ata wewe
8.	<i>Carica papaya</i> Linn.	<i>Caricaceae</i>	Shrub	Pawpaw	Ibepe
9.	<i>Chrysophyllum albidum</i> G. Don.	<i>Sapotaceae</i>	Tree	African Star Apple	Agbalumo
10.	<i>Citrus aurantifolia</i> (Christm.) Swingle	<i>Rutaceae</i>	Shrub	Lime	Osan wewe
11.	<i>Cocos nucifera</i> Linn.	<i>Arecaceae</i>	Tree	Coconut	Agbon
12.	<i>Cola acuminata</i> (P. Beauv.) Schott & Endl.	<i>Sterculiaceae</i>	Tree	Kola Nut	Obi abata
13.	<i>Ficus exasperata</i> Vahl.	<i>Moraceae</i>	Tree	Sand Paper Leaf	Epin
14.	<i>Garcinia kola</i> Heckel	<i>Clusiaceae</i>	Tree	Bitter Kola	Orogbo
15.	<i>Grewia pubescens</i> P. Beauv	<i>Tiliaceae</i>	Shrub	Raisin	Afoforo
16.	<i>Heliotropium indicum</i> Linn.	<i>Boraginaceae</i>	Herb	Cock's Comb	Ogberi-akuko
17.	<i>Ipomoea involucreta</i> P. Beauv	<i>Convolvulaceae</i>	Climber	Morning Glory	Alukerese
18.	<i>Jatropha curcas</i> Linn.	<i>Euphorbiaceae</i>	Shrub	Physic Nut	Botuje, lapalapa
19.	<i>Jatropha gossypifolia</i> Linn.	<i>Euphorbiaceae</i>	Shrub	Wild Cassava	Botuje pupa
20.	<i>Musanga cecreopioides</i> R. Br	<i>Moraceae</i>	Tree	Umbrella Tree	Aga
21.	<i>Opuntia dillenii</i> (Ker Gawl.) Haw.	<i>Cactaceae</i>	Shrub	Prickly Pear	Oro agogo
22.	<i>Portulaca oleraceae</i> Linn.	<i>Portulacaceae</i>	Herb	Common Purslane	Esinsan-Omode
23.	<i>Saccharum officinarum</i> Linn.	<i>Poaceae</i>	Shrub	Sugarcane	Ireke
24.	<i>Securidaca longepedunculata</i> Fres.	<i>Polygalaceae</i>	Herb	Violet Tree	Ipeta
25.	<i>Senna alata</i> (Linn.) Roxb.	<i>Caesalpiniaceae</i>	Shrub	Candle Bush	Asurun oyinbo
26.	<i>Senna podocarpa</i> (Guill. & Perr.) Lock	<i>Caesalpiniaceae</i>	Shrub	Senna	Asurun ijebu
27.	<i>Sida acuta</i> Burm.f.	<i>Malvaceae</i>	Herb	Broomweed	Isekotu
28.	<i>Spondias mombin</i> Linn.	<i>Anacardiaceae</i>	Tree	Hog Plum	Iyeye
29.	<i>Uvaria chamae</i> P. Beauv	<i>Annonaceae</i>	Shrub	Finger - Root	Eruju
30.	<i>Vernonia amygdalina</i> Linn.	<i>Asteraceae</i>	Shrub	Bitter Leaf	Ewuro
31.	<i>Xylopia aethiopica</i> (Dunal.) A Rich	<i>Annonaceae</i>	Tree	Ethiopian Pepper	Eeru

about BPH, as a number of them were managing the ailment during the period of this study.

The shrubs dominated among the plant life forms with 12 species. The trees, herbs, climbers, and grasses were represented by eight, seven, three and one species, respectively. The occurrence of these species is indicative of their importance in traditional health care. Furthermore, in each of the life forms or habits, each species represents different families, except for the trees and shrubs. In other words, the number of species in each plant habit was equal to the number of families, except for the trees and shrubs where they differ, as shown in Fig. 2.

Dominant in the recipes are *Ananas comosus* and *Garcinia kola*. Both species are important in the preparation of at least two recipes (Table 3). These species have also been used to treat many other ailments and have been found very effective as reported by Odugbemi (2008).

Table 3. Enumeration of recipes.

a.

Plants	Vernacular name	Part used
<i>Chrysophyllum albidum</i>	Agbalumo	Seeds
<i>Musanga cecropioides</i>	Aga	Juice from the leaves

Preparation: The dried seeds of *C. albidum* are ground into powder and dissolved in the juice obtained from *M. cecropioides*.

Administration: A cup of the preparation is taken once daily.

b.

Plants	Vernacular name	Part used
<i>Garcinia kola</i>	Orogbo	Seeds
<i>Citrus aurantifolia</i>	Osan wewe	Juice from the fruit

Preparation: The seeds of *G. kola* (Bitter Cola) are ground with Trona (Kaun – Yoruba) and the derived powder is then added to the juice of *C. aurantifolia*.

Administration: Two small glasses of the preparation to be taken daily.

c.

Plants	Vernacular name	Part used
<i>Aframomum melegueta</i>	Atare	Fruits
<i>Abrus precatorius</i>	Mesinmesin	Leaves
<i>Calotropis procera</i>	Bomubomu	Seeds
<i>Adenopus breviflorus</i>	Tagiri	Seeds
<i>Cocos nucifera</i>	Agbon	Coconut liquid

Preparation: Grind three (3) fruits of *A. melegueta* with the leaves of *A. precatorius* and Trona into powder. Take the seeds of *A. breviflorus* and *C. procera* burn them together and sieve the ashes. The obtained powder is then mixed together and dissolved in the coconut liquid.

Administration: Two small glasses of the preparation are to be taken frequently to air urination.

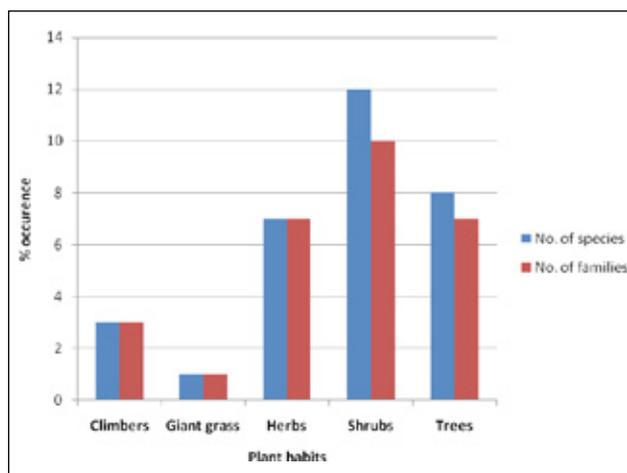


Fig. 2. Distribution of species and families in each plant habit.

d.

Plants	Vernacular name	Part used
<i>Opuntia dillenii</i>	Oro-agogo	Latex
<i>Garcinia kola</i>	Orogbo	Seeds

Preparation: Grind the dried seed of *G. kola* into powder and mix with the latex from *O. dillenii*, then mould it into pills and air-dry them.

Administration: One pill to be taken once in five days.

e.

Plants	Vernacular name	Part used
<i>Bambusa vulgaris</i>	Oparun	Leaves
<i>Ananas comosus</i>	Ope-oyinbo	Fruits
<i>Spondias mombin</i>	Iyeye	Leaves
<i>Portulaca oleraceae</i>	Esinsan-Omode	Leaves

Preparation: The leaves of *B. vulgaris*, *S. mombin*, *P. oleraceae* and unripe fruits of *A. comosus* are put together in a pot, Trona (kaun – Yoruba) is also added and the mixture is then boiled with water for about thirty-five minutes.

Administration: ½ glass to be taken once daily.

f.

Plants	Vernacular name	Part used
<i>Carica papaya</i>	Ibepe	Fruit
<i>Ananas comosus</i>	Ope-oyinbo	Fruit

Preparation: Peel off the epidermis of *C. papaya* and *A. comosus*, soak them together in water and boil for thirty minutes.

Administration: ½ glass is to be taken every morning.

g.

Plants	Vernacular name	Part used
<i>Securidaca longepedunculata</i>	Ipeta	Root
<i>Saccharum officinarum</i>	Ireke	Stem

Preparation: Grind the listed plant parts together with Trona. Squeeze out the juice and filter into a bottle.

Administration: A glass to be taken daily.

h.

Plants	Vernacular name	Part used
<i>Uvaria chamae</i>	Eruju	Root

Preparation: The root of *U. chamae* is boiled with palm wine and water for about thirty-five minutes.

Administration: A spoonful of the decoction to be taken twice daily.

i.

Plants	Vernacular name	Part used
<i>Vernonia amygdalina</i>	Ewuro	Leaf

Preparation: The fresh leaves of the plant are squeezed in water.

Administration: A glassful to be taken four times daily.

j.

Plants	Vernacular name	Part used
<i>Grewia pubescens</i>	Afoforo	Leaves

Preparation: The leaves of *G. pubescens* are thoroughly washed, boiled in clean water and allowed to cool.

Administration: A glassful to be taken three times daily.

Observations during this work also revealed that many of the listed plants are abundantly distributed within the study area and are readily available for use as reported by the respondents. They include: *Abrus precatorius*, *Adenopus breviflorus*, *Bambusa vulgaris*, *Calotropis procera*, *Capsicum frutescens*, *Carica papaya*, *Citrus aurantifolia*, *Cocos nucifera*, *Cola acuminata*, *Ficus exasperata*, *Heliotropium indicum*, *Ipomoea involucreta*, *Jatropha curcas*, *Jatropha gossypifolia*, *Musanga cecropioides*, *Portulaca oleraceae*, *Senna alata*, *Sida acuta*, and *Vernonia amygdalina*. Others, such as *Aframomum melegueta*, *Chrysophyllum albidum*, *Garcinia kola*, *Grewia pubescens*, *Opuntia dillenii*, *Saccharum officinarum*, *Securidaca longepedunculata*, *Senna podocarpa*, *Spondias mombin*, *Uvaria chamae*, and *Xylopiya aethiopica* are considered as rare. However, many of these species have been used to treat other ailments too. *Abrus precatorius*, *Aframomum melegueta*, *Capsicum frutescens*, *Citrus aurantifolia*, *Calotropis procera*, *Grewia pubescens*, *Heliotropium indicum*, *Jatropha curcas*, *Jatropha gossypifolia*, *Saccharum officinarum*, *Securidaca longepedunculata*, *Senna alata*, *Spondias mombin*, *Uvaria chamae*, and *Xylopiya aethiopica* among others, have been reported in our earlier works to be useful in the management of cancer, hemorrhoids and *diabetes mellitus* in South-western Nigeria (Soladoye & al., 2010a & b; Soladoye & al., 2012; Chukwuma & al., 2015). Madersbacher & al (2007) had earlier reported the important role of plant extracts in the management of BPH, but they concluded that further studies following WHO-standards are necessary to ascertain the role of these extracts in contem-

porary management of the lower urinary tract symptoms (LUTS) which result from BPH. Nyamai & al. (2016) have also recently reviewed the important role played by plants in BPH management, with particular mention of *Prunus africana*, *Serenoa repens* and *Saxifraga stolonifera*, and concluded that traditional medicine remains a pillar of healthcare system, especially in areas of poor economies. They also pointed out clearly that alternative medicine alleviates the symptoms of BPH with little or no side effects.

All thirty-one plant species recorded in this work have been confirmed by the traditional medical practitioners as useful in the treatment of enlarged prostate, although only some of them have been found to contain some active ingredients. Examples of such ingredients includes: alkaloids, tannins (in *Anacardiaceae*), vernomygdin (in *Asteraceae*), annonaceine, xylopic acid (in *Annonaceae*), cardiac heteroside, calactin, calotropin (in *Asclepiadaceae*), and azulene, guanine, terpenoids (in *Caesalpiniaceae*), as reported earlier by Adesina & al. (1993). However, mention deserves the fact that some of the plants have poisonous latex/sap (e.g. *Opuntia dillenii*), which must not get in contact with the eyes to avoid blindness. Interestingly, some medicinal plants known to be useful in treating ailments also form part of the human diet. Some of those included in this work are: *Aframomum melegueta* (Alligator Pepper), *Ananas comosus* (Pineapple), *Capsicum frutescens* (Chili Pepper), and *Cocos nucifera* (Coconut). The limited number of species (31) recorded in this work could be attributed to non-availability of other useful plant species that may be found useful for the treatment of BPH, as reported by the respondents, because of being a threat to biodiversity conservation. It is therefore suggested that the Federal, State and Local Governments should encourage the protection and conservation of these plants, not only as a measure of combating biodiversity loss, but also as a means of ensuring availability of species, since human life is directly dependent on their existence.

Conclusion

In recent times, ethnobotanical surveys have been encouraged by the continuous search for plant bioactive compounds for the manufacture of orthodox drugs. This study has revealed the importance of 31 angiosperm species in the management of benign prostatic

hyperplasia in Ijebu – North Area of Ogun State, Nigeria. While it is important to conduct ethnobotanical researches into useful plants, it is very commendable to carry out further phytochemical and pharmacognostic studies on these species, so as to ascertain their potencies beyond reasonable doubt.

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