

DOCUMENTATION OF PLANTS TRADITIONALLY USED IN ABIA STATE, NIGERIA FOR MANAGEMENT OF GOAT REPRODUCTION

Ogbuewu, I.P., T.C. Iwuji, Etuk, E.B., Okoli, I.C. and Iloeje, M.U.

Department of Animal Science and Technology, Federal University of Technology,
P.M.B. 1526, Owerri, Nigeria.

*Corresponding author: dr.ogbuewu@gmail.com

Abstract

The current study was designed to identify and document medicinal plant species traditionally used in Abia state for the management of goat reproduction. Medicinal plants used in goat reproduction by poor resource goat farmers were selected using structured questionnaires and guided field walks. Specimens of medicinal plants were collected, tagged, photographed and identified by a taxonomist at Department of Forestry and Wildlife, Federal University of Technology, Owerri. Medicinal uses of the identified plants were assigned into nine major categories to include that stop bleeding during pregnancy, facilitate delivery of retained placenta, enhance poor conception, facilitate delayed parturition, contraceptive, abortifacient, enhance low libido, improve low milk yield and poor sperm quality; and a number of these plants were listed in more than one category. A total of 32 medicinal plant species distributed between 32 genera and 25 families were documented. Most cited plant species in the study area were *Alchornea cordifolia* Schum & Thonn, *Aframomum melegueta* K. Schum, *Allium cepa* Linn, *Musa parasidiaca* Linn and *Elaeis guinensis* Linn. The use of *Acioa barteri* (Hoof. f. ex. Oliv) to enhance sperm production was documented from this region for the first time. Additional findings and implications of this current survey including english name, families, photo album and documented literature use of the identified plants are discussed in this study. In conclusion, bioactivity guided isolation and purification is recommended to identify lead compounds responsible for claimed medicinal use of these medicinal plant species.

Keywords: Medicinal plants, reproduction, goats, Nigeria.

Introduction

In most developing countries like Nigeria, goat production remains crucial and represents a major asset among resource-poor smallholder farmers by providing milk, meat and manure. The International Livestock Centre for Africa's village surveys in southeast Nigeria indicate that up to 75% of rural families keeps goats, making goats potential contributors in improving the animal protein intake of Nigerians. Traditionally, these animals are allowed free grazing or are tethered and feeds in the form of plant leaves and kitchen wastes brought to them. Plants utilized for feed and medications in goats constitute an abundant biomass in farm lands, bush fallows, and forests in the state and are commonly utilized in the wild by the rural farmers. This abundant natural resource is however, threatened by entrenched human activities that drive environmental changes (Njoku, 2009). Specifically, growing pressures on vegetal cover because of rapid urbanization, population growth and inefficient use and destruction of forest resources in southeastern Nigeria create the need to study the issues surrounding the sustenance of plant biomass used by rural communities to enhance reproduction in goats. Information is urgently needed on the diversity of medicinal plants used by farmers to

enhance performance of goats in Abia state. Of critical importance to this area of research is the generation of reliable baseline information on rural animal production practices, especially natural resources utilization in reproductive health management of such animals (Ogbuewu *et al.*, 2015). Based on the above information, the present study was an attempt to identify and document the diversity of medicinal plant utilized for goat reproduction by poor resource small holder farmers in Abia state Nigeria.

Materials and Methods

Abia State is located in southeastern Nigeria and lies between 5°25' - 5°42'N latitude and 7°30' - 7°50'E longitude. The State has 17 Local Government Areas (LGAs) distributed in an area of 5, 234.7 sq. km and borders with Imo, Anambra, Enugu, Ebonyi, Rivers and Akwa Ibom states. Three LGAs (Ikwoano, Umunneochi and Umunagbo) known for keeping goats in State were selected. The study area is inhabited predominantly by Igbo speaking people whose major occupation is subsistence farming. Over 80% of rural household keep poultry, goats, sheep and native cattle.

A guided questionnaire interview was administered randomly to 150 small holder goat farmers selected from three local Government

Areas of Abia State, Nigeria. The interview elicited information on plant species used in the traditional management of reproduction in goats. The specimens were collected, tagged, photographed and identified by a taxonomist at Department of Forestry and Wildlife, Federal University of Technology, Owerri. Data obtained were entered in a spread sheet and expressed as table and figure. Before interviewing the research team, the objectives of the study, method and planned use of the information were explained, and permission to conduct the interview was sought. Verbal consent was obtained in all cases before the interview was carried out. The identified plants were also checked if they were published elsewhere using Google search engine.

Result and Discussion

A total of 32 medicinal plant species distributed between 32 genera and 25 families were documented with details on their English name, families, medicinal uses, documented literature use and their photo album are presented in Table 1 and Figure 1. Euphorbiaceae family had the highest number of specie representation. Similar findings have been reported in a preliminary survey carried out by Ogbuewu *et al.* (2015) on diversity of plants of animal reproductive importance in selected areas of southeastern Nigeria. The plant species with the highest number of reported reproductive uses were *Alchornea cordifolia* Schum & Thonn, *Aframomum melegueta* K. Schum, *Allium cepa* Linn, *Musa parasidiaca* Linn and *Elaeis guinensis* Linn. Among the identified plants, 12 plant species were used as aphrodisiac (enhance libido), 9 plant species each were used to facilitate delivery of retained placenta and stimulate sperm production, 8 plant species each were utilized to facilitate parturition and stimulate lactation. Six 6 plant species each were also used to stop bleeding during pregnancy and enhancing conception rate while 5 species each had contraceptive and abortifacient abilities. *Acioa barteri* (Hoof. f. ex. Oliv) was described for the first time for enhancing sperm production. The findings of the traditional medicinal use of some of the surveyed plants were compared with some published studies (Oguike *et al.*, 2008; Ogbuewu *et al.*, 2015) in Nigeria. From this report, it was apparent that the reproductive use of the surveyed plants cut across other cultures not only in Nigeria but other parts of the world with similar cultural and socio-economic background (Saganuwam and Gulumbe, 2006; Diame, 2010).

Conclusion

There is a general consensus that traditional knowledge on the use of medicinal plants must be conserved because of its vital role for human and animal well-being. The claimed therapeutic value of the reported species call for modern scientific studies to establish their safety and efficacy and to preserve and document this flora which may otherwise be lost due to erosion of age-old traditional methods of biodiversity conservation and medicinal knowledge. The documented medicinal plant species used by the communities in Abia state are a potential source of a new class of fertility enhancement drugs. The current study recommends bioactivity guided isolation and purification of lead compounds responsible for claimed medicinal use of the identified plant species.

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Figure 1. Photograph of identified medicinal plant species

			
<i>Abelmoschus esculentus</i>		<i>Aframomum melegueta</i>	<i>Alchornea cordifolia</i>
			
<i>Allium cepa</i>	<i>Arachis hypogaea</i>	<i>Azadirachta indica</i>	<i>Brachystegia eurycoma</i>
			
<i>Ceiba pentandra</i>	<i>Carica papaya</i>	<i>Chromolaena odoratum</i>	<i>Cocos nucifera</i>
			
<i>Cola hispida</i>	^{D1} <i>Cola nitida</i>	<i>Olex subscorpioidea</i>	<i>Gongronema latifolium</i>
			
<i>Cucurbita pepo</i>	<i>Cyprus esculentus</i>	<i>Daucus carota</i>	<i>Elaeis guineensis</i>
			
<i>Euphorbia hirta</i>	<i>Garcinia kola</i>	<i>Macaranga barteri</i>	<i>Microdesmis puberula</i>
			
<i>Monihot esculenta</i>	<i>Musa parosidia sica</i>	<i>Ocimum viride</i>	<i>Piper guineense</i>

Table 1. Showed of details of plant species used to increase reproductive efficiency in small ruminants in Abia State, Nigeria

Scientific name	English name	Family	Medicinal use(s)	Reported literature
<i>Acacia barberet</i> (L.) Moench	Okro	Malvaceae	SB/FP/PD	Treat of spermatorrhoea
<i>Aframomum melegueta</i> f. ex Ojof	Alligator pepper	Chrysobalanaceae	SP	Boost sperm count & milk yield stop menstrual pain
<i>Alchornea cordifolia</i> Schum & Thonn	Christmas bush	Zingiberaceae	FP/PD/SL/SP	Treats gonorrhoea and acts as contraceptive
<i>Allium cepa</i> Linn	Onions	Euphorbiaceae	CT/FP/EC/SP	Enhances libido
<i>Arachis hypogaea</i> Linn	Groundnut	Amygdaliaceae	FP/PD/SP/EL	Improve low milk yield chewing raw seed enhances libido
<i>Azadirachta indica</i> A. Juss	Neem	Fabaceae	SM	Aphrodisiac and spermaticidal ability
<i>Brachystegia eurycomarum</i>	Kapok	Meliaceae	CT/AB	Treat infertility
<i>Ceiba pentandra</i> (Linn.) Gaertn	Paw-paw	Fabaceae	SP/EL	Management of threatened miscarriage used to treat erectile dysfunction ¹⁰
<i>Carica papaya</i> Linn	Siam weed	Bombacaceae	FP	Induce parturition improve low milk yield & libido
<i>Chromolaena odorata</i> (L.)	Coconut tree	Citricaceae	CT/AB	Stop menstrual pain
<i>Cocos nucifera</i> Linn		Asteraceae	SB/FP	Induce parturition; and improve low milk yield when mixed with oalligator pepper?
<i>Cola hispida</i> Brennan and Keay	Kola nut	Araceae	SP/EL	Stop threatened abortion
<i>Cola nitida</i> (Vent.) Schott. & Endl.		Sterculiaceae	EL	Boost sperm count and weak erection
<i>Olea Subscorpioides</i> Oliv.	Bush buck	Sterculiaceae	PD/EL	To reduce fat build up during pregnancy
<i>Congronema latifolia</i> Benth-W	Pumpkin	Oleaceae	SP	Womb stabilization postpartum
<i>Cucurbita pepo</i> L., semen		Asclepiadaceae	EC/SB	Treatment of gonorrhoea is also used to reduce the symptoms of an enlarged prostate.
<i>Cyperus esculentus</i> Linn	Tiger nut	Cucurbitaceae	SL/EL	Boost sperm production in small laboratory animal model
<i>Daucus carota</i> L., Subsp. savius	Carrot	Cyperaceae	SP/EL	Treat male infertility Root used as aphrodisiac
<i>Eleais guineensis</i> Linn	Palm tree	Araceae	EC/SL/PD/FP/SB	Stop threatened miscarriage
<i>Euphorbia hirtis</i> Linn	Snake weed	Euphorbiaceae	SL/EL	The powdered plant stimulates mamogenesis and induced secretion.
<i>Garcinia kola</i> Heckel	Bitter kola	Guttiferae	SP/EL	Improve sperm count Bark used as aphrodisiac
<i>Macaranga barnebyi</i> Null Arg	African nut tree	Euphorbiaceae	PD/EL	Remedy for irregular menstruation
<i>Microdesmis puberula</i>	Cassava	Pandaceae	EC/FP	The leaf & stem sap, combined with other plants to treat sterility, miscarriage
<i>Manihot esculenta</i> Crantz	Plantain	Euphorbiaceae	EC/SB	Treatment of low sperm count and weak erection spotting
<i>Musa paradisiaca</i> Linn	Scent leaf	Musaceae	SB/FP/PD/SL	Leaves act as an abortifacient and fruit acts as an aphrodisiac
<i>Ocimum viride</i> Willd.	Black pepper	Labiatae	EC/AB	Leaf act as an abortifacient and stop abdominal pain during pregnancy
<i>Piper guineense</i> Schum. & Thonn.	Wire weed	Piperaceae	CT/AB/SL	Stop menstrual pain Treats sterility and impotence
<i>Sida acuta</i> Burm. f.	African tulip tree	Malvaceae	FD/PD/EL	It is used as an aphrodisiac, abortifacient and to treat gonorrhoea
<i>Spathodia campanularis</i> Beauv.	Hog plum	Bignoniaceae	SL	Leaf and bark used to treat breast cancer & stop spotting, menstrual disorder
<i>Spondias mombin</i> Linn.		Anacardiaceae	CT/AB/FP/PD	Ease pain during childbirth and release of milk ¹¹ . Expel placenta ¹² and causes abortion ¹⁰ .
<i>Terminalia ivorensis</i> Chev.	Black afara	Combeteaceae	PD	Leaf used to treat menstrual disorder

enhance libido; Roy et al. (2014); borokiniet al. (2013); Okoliet al. (2007); Ubom (2010); Ndacheet al. (2015); Alawa et al. (2002); Agrawal (2005); Ogbuener et al. (2009); Mustapha (2013); Durugbo (2013); Khan and Khan (2005); Nwojgu et al. (2009); Oguice et al. (2008); Aiyelaja and Bello (2006); Woys (1997); Chimeet al. (2013); Sugiyama and Komon (1992); Salamet al. (2010); Diame (2010); Ariwodo et al. (2000); Desh (1991); Pal and Jain (1998); Kayode (2006); Edeogaet al. (2005); Saganuwam and Gulumbe (2006); Kramer et al. (2006); Okwu (2005) 27; Okwu and Ekeke (2003) 28; (<http://tropical.theferm.info/>)