



Antifertility activity of *Bambusa vulgaris* aqueous methanolic leaf extract in male wistar rats.

Alade, Gideon Oyewole



DEPARTMENT OF PHARMACOGNOSY
& HERBAL MEDICINE, NIGER DELTA
UNIVERSITY, WILBERFORCE ISLAND,
NIGERIA

October 28th, 2015

Antifertility activity of *Bambusa vulgaris* var. *vulgaris* aqueous methanolic leaf extract in male wistar rats.

Gideon O. Alade^{1*}, Tolulope O. Alade², Olanrewaju R. Omobuwajo¹, Jones O. Moody³

¹Department of Pharmacognosy & Herbal Medicine, Faculty of Pharmacy, Niger Delta University, Wilberforce Island, Nigeria

² Department of Medical Laboratory Sciences, Faculty of Basic Medical Sciences Niger Delta University, Wilberforce Island, Nigeria

³ Department of Pharmacognosy, Faculty of Pharmacy, University of Ibadan, Ibadan, Nigeria

Introduction

- - Antifertility (Fertility regulation) has to do with prevention of pregnancy
- - By natural means
- - By artificial means

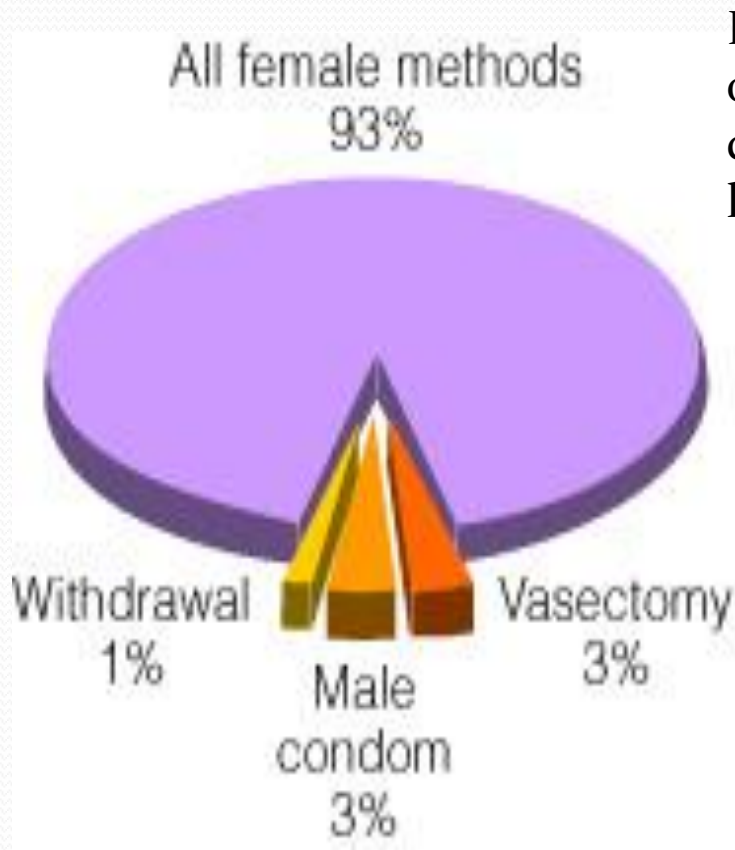


Advantages of fertility regulation

- reduces maternal mortality rate
- helps prevent unwanted pregnancy
- helps control human population growth.



Use of existing male contraceptives



Participation
of male
counterpart is
low

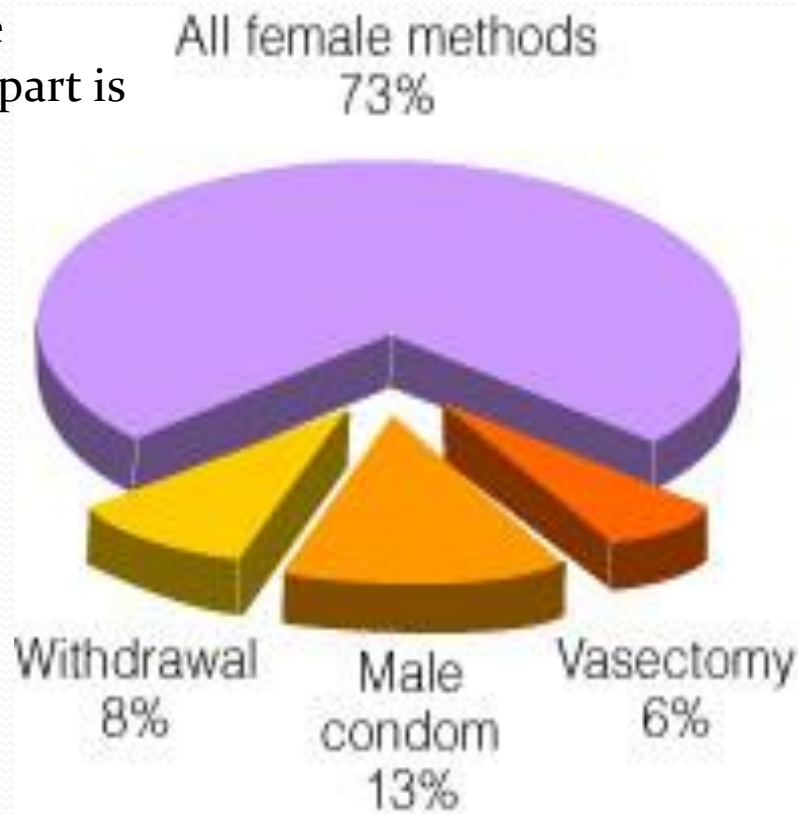


Fig. 1: Existing contraceptive use in Developing countries

Fig. 2. Existing contraceptive use in Developed countries

Reasons for low participation of Men

- - lack of Family Planning (FP) information for men
- - limitedness of FP service for men
- - socio-economic and cultural background which considers FP as women's affairs
- - limited kinds of contraception for men



Background to study

- Ethnobotanical study of antifertility medicinal plants used by the people of Kathijavadi village in India revealed that the extract of *B. vulgaris* leaves is taken orally to reduce sperm count (Sathiyaraj *et al.*, 2012).

Bambusa vulgaris L. (Poaceae)

Common name: Bamboo

Habit: Tree

Habitat: Tropical
and Sub-tropical areas

Local name: Oparun (Yoruba
Iko (Bini), Atosin (Igbo)

Ethnomedicinal uses:
emmenagogue, abortifacient,
Gonorrhoea

- Chemical constituents: (none) Flavonoids present in
- A related sp. (*Bambusa pervariabilis*)



Fig. 3: *Bambusa vulgaris* growing in University of Ibadan
Campus, Nigeria

21/10/2015

Pharmacology

- Abortifacient potentials of the leaf extract has been scientifically validated; revealing that 250 and 500 mg/kg dose produced abortion at the rate of 60 and 100 % respectively (Yakubu and Bukoye, 2009)
- Antidiabetic activity of the leaf (Senthilkumar et al.,2011).
- Toxicity and microscopy of leaf in male rats (Alade *et al.*, 2015)

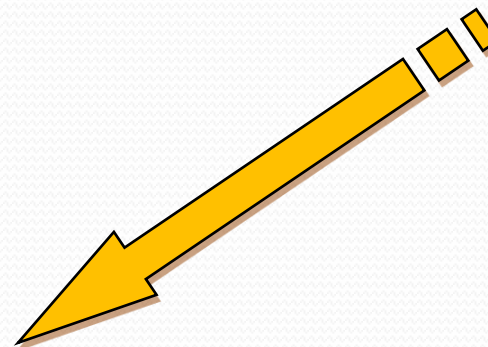
Plant Collection and extraction



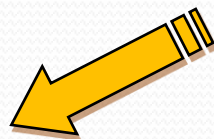
**Herbarium specimen/
Authentication**



Drying (40 °C)



Extraction (50 % aqueous ethanol)



Concentration (40 °C)



Bioactivity screening

In vivo assay in male rats



Distilled water : negative control
 Test extracts at different doses, orally daily
 for 15 days (Ekaluo *et al.*, 2011)
 Sacrificed, testis, epididymis removed, serum
 taken (Ofusori, 2007)



Serum centrifuged for
 hormonal assay
 31/10/2015

Testis weighed, epididymis put in
 normal saline and marcerated with
 a scissors

Sperm count and
 motility using
 microscopy

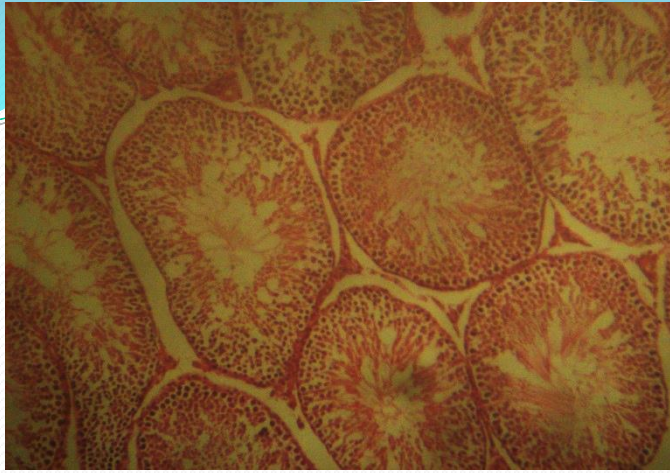
11

(Chakrabarti, 2000)

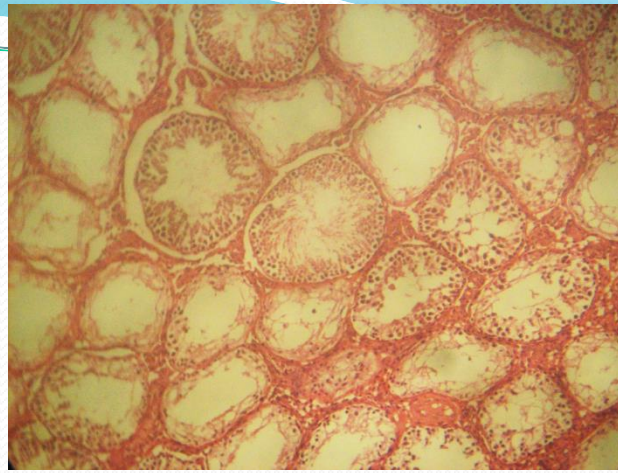
Effect of <i>Bambusa vulgaris</i> var. <i>vulgaris</i> aqueous methanolic leaf extract on Spermatozoa parameters in male Wistar rats					
Parameters	Doses (mg/kg)	14 DAYS	14 DAYS	28 DAYS	28 DAYS
Dose (mg/kg)	0	250	500	250	500
Sperm count (X10 ⁶ /mL)	22340 ± 1276	12900 ± 1394 ^{*a}	8900 ± 486 ^{*a,b}	15000 ± 790 ^{*a}	9400 ± 70 ^{*a,b}
% Motility	65 ± 8.2	(42 %) ^x	(60 %) ^x	(31 %) ^x	(60 %) ^x
% Active spermatozoa	25 ± 4.1	58 ± 8.5	51 ± 4.5 ^{*a}	57 ± 2.7	47 ± 2.3 ^{*a}
% Sluggish spermatozoa	25 ± 4.1	20 ± 4.1 ^{*a}	13 ± 2.9 ^{*ab}	20 ± 3.5 ^{*a}	10 ± 2.5 ^{*ab}
% Dead spermatozoa (spermicidal action)	40 ± 3.5	38 ± 5.8	38 ± 2.2	40 ± 3.5	37 ± 2.7
Liveability	35 ± 6.5	42 ± 7.7	49 ± 2.6 ^{*a}	43 ± 5.7	47 ± 5.7 ^{*a}
% Normal spermatozoa	1.9 ± 0.02	1.4 ± 0.02 ^{*a}	1.00 ± 0.01 ^{*a,b}	1.3 ± 0.02 ^{*a}	1.00 ± 0.13 ^{*a,b}
% Abnormal spermatozoa	70 ± 7.9	67 ± 4.1	70 ± 7.9	67 ± 4.1	70 ± 7.9
Weight of testes (g)	30 ± 7.1	33 ± 4.5	30 ± 7.1	33 ± 4.5	30 ± 7.1
Testes / Body weight ratio	2.3 ± 0.1	2.4 ± 0.2	2.7 ± 0.8	2.7 ± 0.5	2.5 ± 0.1
Number of rats used	6 ± SD				
*a Test carrying superscripts different from the control for each parameter are significantly different (p<0.05)					
*b Test carrying superscripts different from the 250 mg/kg for each parameter are significantly different (p<0.05)					
^x percentage reduction in sperm count relative to control (0 mg/kg)					

Activity of *Bambusa vulgaris* var. *vulgaris* aqueous methanolic leaf extract on Spermatozoa parameters 14 days after withdrawal of extract in male Wistar rats

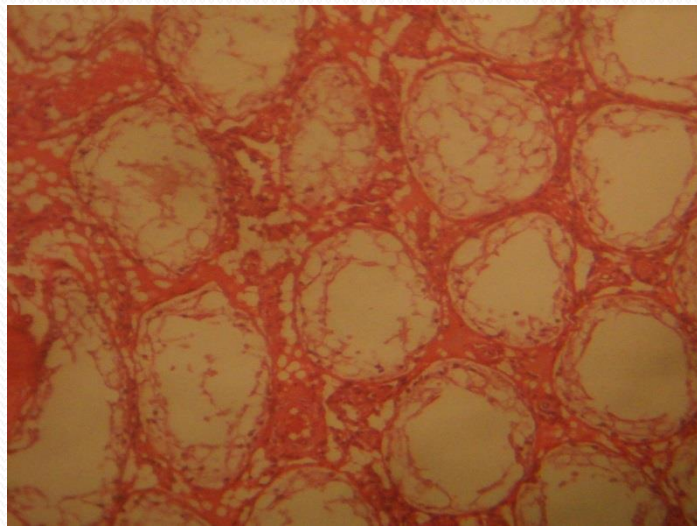
Parameters	0 mg/kg	250 mg/kg	500 mg/kg
Sperm count (X10 ⁶ /mL)	22340 ± 1276	22900 ± 1000	22130 ± 1310
% Motility	65 ± 8.2	64 ± 9.7	64 ± 8.2
% Active spermatozoa	25 ± 4.1	23 ± 9.1	24 ± 4.1
% Sluggish spermatozoa	40 ± 3.5	41 ± 7.0	37 ± 3.5
% Dead spermatozoa (spermicidal action)	35 ± 6.5	35 ± 6.5	35 ± 6.5
Liveability	1.9 ± 0.02	1.9 ± 0.07	1.9 ± 0.02
% Normal spermatozoa	70 ± 7.9	70 ± 8.1	68 ± 7.9
% Abnormal spermatozoa	30 ± 7.1	31 ± 13.1	27 ± 7.1
Weight of testes (g)	2.3 ± 0.1	2.3 ± 0.1	2.3 ± 0.1
Testes / Body weight ratio	1.00 ± 0.1	1.00 ± 0.1	1.00 ± 0.1



0 mg/kg



250 mg/kg



500 mg/kg

Photomicrographs of Rat testes after 14 days of *Bambusa vulgaris* administration x100

Effect of *Bambusa vulgaris* var. *vulgaris* aqueous methanolic leaf extract on Some reproductive hormone in male Wistar rats

		14 days treatment		28 days treatment	
Parameters	Doses (mg/kg)				
	0	250	500	250	500
Testosterone / ng/dL	451 ± 3.70	412 ± 3.20	562 ± 1.40* ^{ab}	482 ± 15.34* ^b	566 ± 54.20* ^{ab}
Leutinizing hormone / ng/ml	0.53 ± 0.03	0.45 ± 0.01	2.28 ± 0.16* ^{ab}	1.31 ± 0.05* ^{ab}	2.50 ± 0.11* ^{ab}
Follicle stimulating hormone / ng/ml	1.84 ± 0.01	0.68 ± 0.01* ^{ab}	3.19 ± 0.08* ^{ab}	3.16 ± 0.04 * ^{ab}	3.92 ± 0.79* ^{abc}

Acknowledgement

Tertiary Education Trust Fund
(TETFUND)

FEDERAL GOVERNMENT OF NIGERIA



THANKS FOR LISTENING

NAMASTE