CURRICULUM VITAE

PERSONAL DATA

NAME:	**OSINUBI**, Abraham Adewale Adepoju
DESIGNATION:	Professor
BIRTHDAY:	12th May
NATIONALITY:	Nigerian
ADDRESS:	Department of Anatomy, College of Medicine of the University of Lagos, Lagos, Nigeria
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INSTITUTIONS ATTENDED

Government College, Ketu, Lagos, Nigeria (September 1975 - June 1980)

University of Ibadan, Ibadan, Nigeria (October 1981- September 1987)

Lagos City Computer College, Ikeja, Lagos, Nigeria (October 1997 - May 1998)

University of Lagos, Lagos, Nigeria (1999 till date)

QUALIFICATIONS ATTAINED

Division One Distinction; West African Examination Council (June, 1980)

M.B.,B.S.; University of Ibadan, Ibadan, Nigeria (1987)

Diploma in Computer Science; Lagos City Computer College, Ikeja, Lagos, Nigeria (1998)

M.Sc. (in Anatomy); University of Lagos, Lagos, Nigeria (2000)

Ph.D. (in Anatomy); University of Lagos, Lagos, Nigeria (2006)

EXPERIENCE

(a) UNIVERSITY TEACHING EXPERIENCE

INSTITUTION	DESIGNATION	AREAS OF SPECIALIZATION	SUBJECTS TAUGHT	DATE
Anat. Dept. Coll. of Med., University of Ibadan	Part-time Demonstrator	Anatomy	Gross Anatomy Microscopic Anatomy	Dec., 1985 to Feb., 1986
Anat. Dept. Coll. of Med., University of Lagos	Part-time Demonstrator	Reproductive & Cell Biology, Chronobiology	Gross Anatomy, Embryology	Dec., 1999 to Feb., 2001
Anat. Dept. Coll. of Med., University of Lagos	Lecturer II	Reproductive Anatomy, Cell Biology	Gross Anatomy, Embryology, Microscopic Anatomy, Stereology (P.G.)	Mar., 2001 to Feb., 2009
Anat. Dept. Coll. of Med., University of Lagos	Senior Lecturer	Reproductive Endocrinology, Cell Biology Morphometry	Gross Anatomy, Embryology, Microscopic Anatomy, Stereology (P.G.)	Feb., 2009 to Sept., 2010
Anat. Dept. Lagos State University Coll. of Medicine	Associate Professor & Ag. Head of Dept.	Reproductive Endocrinology, Morphometry, Cell Biology	Gross Anatomy, Developmental Anatomy, Neuroanatomy, Microscopic Anatomy, Stereology (P.G.)	May, 2008 to Apr., 2009
Anat. Dept. Coll. of Med., University of Lagos	Ag. Head of Dept.	Reproductive Endocrinology, Cell Biology Morphometry	Gross Anatomy, Embryology, Histology, Stereology (P.G.)	Aug., 2010 till July, 2012
Anat. Dept. Coll. of Med., University of Lagos	Associate Professor	Reproductive Endocrinology, Cell Biology Morphometry	Gross Anatomy, Embryology, Histology, Stereology (P.G.)	Oct., 2010 till June, 2015
Anat. Dept. Coll. of Med., University of Lagos	Professor	Reproductive Endocrinology, Stereology	Gross Anatomy, Embryology, Histology, Stereology (P.G.)	July, 2015 till Date

(b) PROFESSIONAL EXPERIENCE

EMPLOYER	DESIGNATION	NATURE OF DUTY	DATE
Lagos State Health Management Board	House officer	Consultation and Calls in Departments of Surgery, Medicine, Paediatrics, Obstetrics & Gynaecology	Dec., 1987 to Nov., 1988
National Sports Commission	Medical officer	Consultation and Calls in the Sports Clinic & on the pitch	Dec., 1988 to Nov., 1989
Osfol Clinics & Hospitals	Senior Medical Officer	Consultation, Administration & Teaching	Jan., 1990 to Nov., 1998

PROFESSIONAL MEMBERSHIP

1. Anatomical Society of Nigeria
2. Anatomical Society of West Africa
3. American Association of Anatomists
4. Nigerian Medical Association
5. Endocrine and Metabolism Society of Nigeria
6. Diabetes Association of Nigeria
7. European Association for the Study of Diabetes
8. American Diabetes Association
9. Nigerian Association for the Study of Diabetes
10. American Association of Clinical Endocrinologists
11. The Endocrine Society
12. International Society for Stereology

POSITIONS

1. Sub-Dean, Faculty of Basic Medical Sciences, College of Medicine of the University of Lagos (2012 till 2014).
2. Ag. Head of Department of Anatomy, College of Medicine of the University of Lagos (2010 to 2012).
3. Associate Professor of Anatomy, Lagos State University (2008).
4. Ag. Head of Department of Anatomy, Lagos State University (2008 to 2009).
5. Member, Senate of the University of Lagos (2010 till date).
6. Member, Business Committee of Senate of the University of Lagos (2010 to 2013).
7. Member, University Medical Centre Management Board of the University of Lagos (2011 to 2014).
8. Member, Academic Programmes Committee, School of Postgraduate Studies, University of Lagos (2007 till date).
9. Member, Examination Results Committee, School of Postgraduate Studies, University of Lagos (2009 to 2012).
10. Coordinator, Department of Anatomy, College of Medicine of the University of Lagos (2007).
11. Member, Senate, Lagos State University, Ojo, Lagos (2008/2009).
12. Member, Board of School of Postgraduate Studies, University of Lagos (2007 till date).
13. Member, Board of Postgraduate Studies, Lagos State University, Ojo, Lagos (2008/2009).
14. Coordinator of postgraduate education in the Department of Anatomy, College of Medicine of the University of Lagos (2007/2008).
15. Member of the Students' Affairs Committee of College of Medicine of the University of Lagos (2007/2008).
16. Chairman, Hostel Management Committee for Blocks 1 and 2, College of Medicine of the University of Lagos (2007/2008).
17. Member, Postgraduate Students' Disciplinary Committee, University of Lagos (2007/2008).
18. Member, Students' Affairs Committee, College of Medicine of the University of Lagos (2007/2008).
19. Member, Committee on Hostel Environment, College of Medicine of the University of Lagos (2007/2008).
20. Member, Felix Oladejo Dosekun Memorial Lecture-Organizing Committee, College of Medicine of the University of Lagos (2009/2010).
21. Member, Academic Board, College of Medicine of the University of Lagos (2007 to 2014).
22. Member, Postgraduate Education Committee, College of Medicine of the University of Lagos (2007 to 2014).
23. Faculty Examinations Officer, Faculty of Basic Medical Sciences, College of Medicine of the University of Lagos (2009/2010).
24. Member, Central Timetable Committee of the University of Lagos (2009/2010).

25. Member, Timetable Committee, College of Medicine of the University of Lagos (2009/2010).
26. Member, Curriculum Review Committee, Faculty of Basic Medical Sciences, College of Medicine of the University of Lagos (2007/2008).
27. Member, Prizes/Scholarship Committee, College of Medicine of the University of Lagos (2010 to 2014).
28. Member, Medical Education Committee, College of Medicine of the University of Lagos (2010 till date).
29. Member, 100L Curriculum Review Committee, Faculty of Basic Medical Sciences, College of Medicine of the University of Lagos (2010 till date).
30. Member, E-Learning Committee, College of Medicine of the University of Lagos (2011 till date).
31. Member, Curriculum Review Committee, College of Medicine, University of Lagos (2011 till date).
32. Secretary-General, Nigerian Society of Endocrinology and Metabolism (now Endocrine and Metabolism Society of Nigeria) (2009 to 2014).
33. Vice-President, Endocrine and Metabolism Society of Nigeria (2014 till Date).
34. Treasurer, American Association of Clinical Endocrinologists - Nigeria Chapter (2009 till date).
35. Editor-in-Chief, University of Lagos Journal of Basic Medical Sciences (the official organ of the Faculty of Basic Medical Sciences, College of Medicine of the University of Lagos (2012 till 2016).
36. Member, University of Lagos Committee for the Promotion of University Biomedical Science Development (2013 till date).
37. Member of the ICT Committees of the faculty of Basic Medical Sciences, College of Medicine and University of Lagos (2012 till date).
38. Chairman, Committee on Staff Training and Development of the Non-Teaching Staff in the College of Medicine of the University of Lagos (2015 till date).

ORIGINAL ARTICLES IN LEARNED JOURNALS

National Journals

1. Noronha CC, **Osinubi AA**, Ashiru OA, Okanlawon AO. The reversal effects of human chorionic gonadotrophin on chloroquine inhibition of ovulation: Evidence for a critical period. *J Med Med Sci.* 2001;3(1):8-10.

This study investigated the reversal of the anti-ovulatory property of chloroquine (CQ) by human chorionic gonadotrophin (hCG), in order to provide evidence for the presence of a critical period, and attempted to characterize the mechanism of the anti-ovulatory action of CQ. Our results showed that CQ injection between 0900 and 1000 h on proestrus, completely blocked ovulation while administration of hCG induced ovulation in all animals previously blocked with CQ. This study demonstrated the presence of a critical period for the anti-ovulatory effect of CQ and that hCG is capable of reversing this action of CQ. In addition, our results suggest that the anovulatory effect of CQ is primarily central.

2. **Osinubi AA**, Duru FI, Noronha CC, Okanlawon AO. Effect of light and darkness on packed cell volume in the rat. *Nig J Health Biomed Sci.* 2002;1(2):82-85.

The aim of the study was to identify and characterize the circadian oscillation of packed cell volume (PCV) within a 24-hour time frame in Sprague-Dawley rats. We observed peak values (51.43 ± 3.51 in female rats & 51.57 ± 2.91% in male rats) at 0600 h and nadir (35.00 ± 2.92 in female rats and 33.71 ± 2.85% in male rats) at 1200 h. This study conclusively demonstrated that PCV exhibits rhythmic variations in Sprague-Dawley rats.

3. **Osinubi AA**, Udeh RA, Akpantah AO, Noronha CC, Okanlawon AO. The circadian rhythm of blood glucose in adult male Sprague-Dawley rats in Lagos. *J Clin Sci*. 2003;3(2):1-4.

Prior to our study, the biological rhythm of blood glucose in our environment has never been reported in rat. The aim of this study was to identify and characterize the rhythm of blood glucose levels in rats kept under standard photoperiodic conditions. This study demonstrated that blood glucose level in male Sprague-Dawley rats subjected to scheduled feeding in Lagos exhibits circadian rhythm with peak (80.78 ± 5.08 mg/dL) at 1900 h and nadir (54.78 ± 3.55 mg/dL) at 1100 h.

4. **Osinubi AA,** Ibegbu BO, Ajayi GO. The relationship between follicle-stimulating hormone and sperm count and motility in fertile and infertile Nigerian males. *Afr J Endocrinol Metab*. 2003;4(1):22-25.

Prior to this study, there was no published work describing the pattern of follicle-stimulating hormone (FSH) in relation to seminal parameters in this environment. Hence, we sought to investigate the relationship between FSH levels, sperm count and motility in Nigerian males. The results showed that 30.77% subjects with normal levels of FSH (1-12 mIU/ml) had sperm motility greater than 50% while 34.62% subjects with similar FSH levels had sperm count $>20x10^6$ /ml. No subject with either subnormal or above normal levels of FSH had sperm motility greater than 50%. We concluded that in our environment, plasma FSH within the range of 1-12 mIU/ml may be the critical reference value for the maintenance of normal sperm motility and count.

5. **Osinubi AA,** Adeyemi A, Banmeke A, Ajayi GO. The relationship between testosterone concentration and sperm count and motility in fertile and infertile Nigerian males. *Afr J Endocrinol Metab*. 2003;4(1):43-45.

The aim of this study was to determine the relationship between testosterone (TT), sperm count and motility in Nigerian males, identify its diagnostic or therapeutic significance and attempt to characterize the pattern of such relationship. We found out that no subject with subnormal level of TT (<3 ng/ml) had either sperm motility greater than 50% or sperm count greater than $20x10^6$ /ml. We therefore concluded that TT within the range of 3-10 ng/ml may be the critical range in the Nigerian male necessary for the maintenance of normal sperm motility and count.

6. **Osinubi AA**, Akinlua JT, Agbaje MA, Noronha CC, Okanlawon AO. Effects of short-term administration of quinine on the seminiferous tubules of Sprague-Dawley rats. *Nig J Health Biomed Sci*. 2004;3(1):1-7.

The aim of this study was to investigate the effect of short-term administration of quinine (QU) (30 mg/kg body weight daily for 7 days) on the seminiferous tubules of rats. The results showed that there was a general destruction coupled with degeneration of cells of the seminiferous epithelium secondary to acute administration of QU. We concluded that QU has a deleterious effect on the testis and may possibly disrupt spermatogenesis.

7. **Osinubi AA**, Ajayi GO, Omilabu S, Wellington JO. The pattern of triiodothyronine, thyroxine and thyroid-stimulating hormone in Nigerian males. *Afr J Endocrinol Metab*. 2004;5(1):15-19.

Data relating to thyroid functions peculiar to our environment are scanty and in most cases are lacking. The aim of this study was to identify and characterize the pattern of thyroid-stimulating hormone (TSH), triiodothyronine (T3) and thyroxine (T4) in Nigerian males. Results showed that 70.5% of subjects had TSH values within 0.4-7.0 μIU/ml; 45.6%

subjects had T4 values above 13.0 µIU/ml; and 18.9% had values below 5.0 µIU/ml. In addition, 33.3% subjects had T3 values within the "normal range" (0.6-2.1 ng/ml) provided by the manufacturer; 41.1% had values above, while 25.6% had values below this range. This study demonstrated that there may be a need to review some of the reference values presently being used to assess thyroid function tests in our environment and a need for the provision of local values.

8. **Osinubi AA**, Ajayi GO, Omilabu S, Wellington JO. Correlation of prostate-specific antigen with luteinizing hormone, follicle-stimulating hormone, prolactin, testosterone, inhibin B, sperm count and motility in Nigerian males. *Afr J Endocrinol Metab*. 2004;5(1):20-24.

Apart from the well documented widespread clinical use of prostate-specific antigen (PSA) as a tumour marker, the body of available literature contains only sparse reports on the relationship that exists between this marker and seminal parameters, luteinizing hormone (LH), follicle-stimulating hormone (FSH), prolactin (PR), testosterone (TT) and inhibin B (IHB) concentrations especially in men without prostate hyperplasia or cancer. We investigated the relationship between PSA and LH, FSH, PR, TT, IHB, sperm count and motility in Nigerian males. Our results clearly demonstrated that serum levels of PSA correlate positively with serum levels of IH B ($r = +0.60$; $p < 0.01$) and negatively with sperm count ($r = -0.5$; $p < 0.01$) in Nigerian males. To the best of our knowledge, this was the first establishment of such a relationship. Present study further highlights the heterogeneity of PSA, and that interpretation of results should be made with some caution. PSA is probably more than a tumour marker.

9. **Osinubi AA**, Noronha CC, Okanlawon AO. Reversal of quinine-induced testicular toxicity by testosterone in rat. *Nig Qt J Hosp.* 2004;14(2):121-125.

The primary aim of this study was to evaluate, using stereological technique if testosterone (TT) is capable of reversing the toxic effects of quinine (QU) on the testis of Sprague-Dawley rat. Our results showed that there was significant testicular destruction and decrease ($p < 0.05$) in mean sperm count and motility in the QU-treated rats compared with the controls and rats administered QU and TT sequentially, while there were no significant differences in both the seminal parameters and testicular morphology and morphometry between the control and QU plus TT-treated rats. We concluded that TT is capable of reversing QU-induced testicular and seminal toxicity.

10. Edeni KO, **Osinubi AA**, Noronha CC, Kusemiju O, Okanlawon AO. Effects of alpha lipoic acid and electrical nerve stimulation on traumatized sciatic nerve of rabbits: a morphometric assessment. *Nig J Med Rehab.* 2004;9(1&2):16-20.

Researchers are presently testing new techniques to enhance nerve regeneration. Our aim was to investigate the combined beneficial effects of alpha lipoic acid (ALA) and electrical nerve stimulation (ENS) on healing of injured nerve tissue. Results of our study showed that there was a decrease in mean nerve diameter, number of Schwann cells and myelin thickness in all traumatized nerves compared with the untraumatized ones. There were significant differences ($p < 0.05$) in the mean number of Schwann cells per unit area and the myelin thickness of the traumatized nerves between the control, ALA, and the combined ALA and ENS groups with the combined therapy group yielding greatest evidence of remyelination. Based on our results, we concluded that the combined therapy of ALA and ENS may be beneficial to remyelination in traumatized nerves.

11. **Osinubi AA**, Noronha CC, Okanlawon AO. Effects of quinine and ascorbic acid on testicular malondialdehyde and sperm quality in the rat. *J Clin Sci*. 2004;4:1-6.

The aim of this study was to determine changes in the testicular levels of malondialdehyde (MDA) secondary to quinine (QU) and ascorbic acid (AA) in rats, with a view to attempt to partly explain the mechanism of QU-induced testicular toxicity. Our study showed that there was a significant ($p < 0.05$) elevation of MDA levels in the testicular homogenates of rats

treated with QU only compared with those of the control group and those treated with a combination of QU and AA. The semen of rats treated with only QU demonstrated a significantly lower sperm concentration and motility compared to the controls and those treated with QU plus AA. Microscopic examination of cross-sections of seminiferous tubules also showed that AA partly protects against QU-induced testicular toxicity. The results of our study demonstrated that QU-induced testicular toxicity is at least partly via a disruption of the oxidant status of the testis.

12. **Osinubi AA**, Noronha CC, Okanlawon AO. Attenuation of quinine-induced testicular toxicity by ascorbic acid in rat: A stereological approach. *Afr J Med Med Sci*. 2005;34:213-219.

This work was undertaken just after we demonstrated that quinine (QU) is toxic to testicular gonocytes and interstitial endocrinocytes. It sought to determine whether co-administration of ascorbic acid (AA) with QU will modify the deleterious effects of QU on the testis of Sprague-Dawley rats. Our findings were sent for publication before paper 11. There was gross testicular destruction in the QU-only-treated rats compared with the control and QU plus AA groups while there was no significant difference in the testicular morphology and morphometry between the control and QU plus AA groups. The results of this study suggested that co-administration of AA with QU could play an important role in the modulation of QU-induced testicular damage.

13. **Osinubi AA**, Ogunleye OO, Azu OO. Comparative effects of leaf extract of *Ocimum gratissimum*, glibenclamide and chlorpropamide on blood glucose in normoglycaemic, hyperglycaemic and alloxan-induced diabetic rats. *Afr J Endocrinol Metab*. 2005;6(1):1-6.

Despite significant achievements in treatment modalities and preventive measures, the prevalence of diabetes has risen exponentially in the last decade. There is therefore a continued need for new and more effective therapies. This study was designed to compare the hypoglycaemic, anti-hyperglycaemic and anti-diabetic effects of aqueous leaf extract of fresh green leaves of *Ocimum gratissimum* with those of glibenclamide and chlorpropamide in male rats. Male Sprague-Dawley rats weighing 180-200 g were used for the experiment. Diabetes mellitus was induced in the group of diabetic test rats by intraperitoneal injections of alloxan (150 mg/kg). Acute hyperglycaemic state was induced by administration of subcutaneous injections of 50% dextrose in water (4 g/kg). Single doses of aqueous extract of leaves of *Ocimum gratissimum* (500 mg/kg) were administered to normal, hyperglycaemic and diabetic rats. These single doses of extract were compared with those of glibenclamide (10 mg/kg), chlorpropamide (250 mg/kg) and distilled water (2 ml/kg). Blood glucose levels of the all the rats were estimated before treatment, 0,1,2,4,6 and 8 hours after administration of test compounds. Aqueous leaf extract of *Ocimum gratissimum* produced significant reductions ($p < 0.05$-0.001) in the blood glucose concentrations of hyperglycaemic and alloxan-induced diabetic rats comparable to glibenclamide and chlorpropamide. Results of this study suggest that aqueous leaf extract of *Ocimum gratissimum* has strong anti-diabetic effects which may be developed into a new plant medicine for the treatment of diabetes mellitus.

14. Jewo PI, Olabiyi AO, Olagunju JA, **Osinubi AAA,** Noronha CC, Okanlawon AO. Comparative study of the hypoglycemic effects of extract of heated and non heated forms of *Vernonia amygdalina* leaf. *J Clin Sci*. 2006;6(2):42-45.

The hypoglycemic effect of the aqueous extract of heated (HE) and non-heated (NE) leaf extract of the *Vemonia amygdalina* (Bitter leaf/Ewuro) was studied, using alloxan-treated albino rats. Rats in groups with alloxan-induced diabetes (experimental groups) were given the above extracts for 14 days and their mean blood glucose (MBG) compared with alloxan-treated rats that had no extracts. The results showed a statistically significant reduction of MBG in the extract-treated diabetic rats, with the non-heated group (NE) showing greater

potency. By the 14th day of treatment, there was a 66% ($p < 0.001$) reduction in MBG in the NE group, and 50% ($p < 0.05$) reduction in the heated extract (HE) group. This result suggests that the hypoglycaemic agents in the plant are to some extent relatively heat-stable and raises the prospect that people ingesting large quantities of the heated plant may derive some advantages in the control of hyperglycaemia and diabetes.

15. **Osinubi AA**, Udeh RA, Noronha CC, Okanlawon AO. Blood glucose levels in adult Sprague-Dawley rats following bilateral optic enucleation. *Nig Med J*. 2006;47(3):57-60.

This study was to determine the 24-h blood glucose (BG) levels in the adult male rats, and to quantify the effect of bilateral optic enucleation (BOE) on blood glucose level. Our results showed the persistence of circadian rhythm in the bilateral optically enucleated rats, though with a phase-shift. The optically enucleated rats also had significantly ($p < 0.05$) lower BG levels at all time points than the sighted ones. We concluded that BOE affects both the levels and rhythm of BG in adult male Sprague-Dawley rats. BG level observes a rhythm in bilateral optically enucleated Sprague-Dawley rats with peak at 0300 h (vs. 1900 h in sighted rats) and nadir at 1100 h (vs. 1100 h in sighted rats).

16. **Osinubi AA**, Ajala MO, Noronha CC, Okanlawon AO. Quinine lowers serum and testicular testosterone in adult Sprague-Dawley rats. *Afr J Med Med Sc*. 2006;35:425-430.

The work reported in paper 46 was undertaken prior to that reported here (16). Paper 46 was also sent for publication before paper 16. While the chief aim of paper 46 was to see if quinine (QU) alters testicular testosterone (TT), this study (paper 16) focused on alterations in serum TT secondary to QU treatment as well as attempted to see if the changes in testicular TT will parallel that of serum since it is more practical to assess serum TT than testicular TT. Our investigation revealed that both the serum and testicular levels of TT in rats administered QU only were significantly ($p < 0.001$) lower than those of the control and QU plus TT-treated rats. In addition, changes in serum TT paralleled that of the testis in response to QU administration.

17. **Osinubi AA**, Enye LA, Adesiyun AE, Ajayi GO. Comparative effects of three herbs and standard hypoglycaemic agents on blood glucose in normoglycaemic, hyperglycaemic and alloxan-induced diabetic male rats. *Afr J Endocrinol Metab*. 2008;7(1):6-11.

We aimed to assess the relative efficacy of three promising herbs as potentially emerging alternative/adjunct treatment for diabetes. One hundred and ninety-two male Sprague-Dawley rats were used. A third of the animals were randomly rendered diabetic with alloxan (150 mg/kg), another third injected 50% dextrose (5 g/kg); and the last third constituted the controls. The rats were variously administered aqueous leaf extract of *Momordica foetida* (MF) (500 mg/kg), *Vernonia amygdalina* (VA) (500 mg/kg) and *Tapinanthus butungii* (TB) (500 mg/kg), glibenclamide (5 mg/kg) chlorpropamide (250 mg/kg), and human insulin lente (0.1 I.U./kg). Extract of MF caused maximal anti-diabetic effect in six hours, VA ten hours, while TB continued to cause reduction after ten hours. The three extracts caused greater blood glucose reductions than glibenclamide in the diabetic rats, while exhibiting comparable effects with chlorpropamide and insulin. TB is more effective in lowering blood glucose than MF and VA in alloxan-induced diabetic rats. Leaf extract of MF should be useful in rapidly lowering blood glucose, while that of TB in situations that require more subtle reductions and in conditions in which prolonged hypoglycaemic actions are desirable.

18. Horsefall AU, Olabiyi O, **Osinubi AA**, Noronha CC, Okanlawon AO. Anti-diabetic effect of fruit juice of *Morinda citrifolia* (Tahitian Noni Juice®) on experimentally-induced diabetes Rats. *Nig J Health Biomed Sci*. 2008;7(2):34-37.

This study investigated the therapeutic use of Tahitian Noni Juice® in controlling hyperglycaemia as claimed in folk medicine. Twenty adult male Sprague-Dawley rats were

used for the experiment. They were randomly allocated into 4 groups of five, rats each. Group A served as control and received standard rat chow and water, throughout the duration of the study. Group B received pretreatment with noni juice for 4 weeks, prior to introduction of diabetes. This group continued treatment with noni juice for further 4 weeks after induction of diabetes. Group C received noni juice treatment, after induction of diabetes, for 4 weeks. Group D was given distilled water for 4 weeks before induction of diabetes and distilled water for 4 weeks after induction of diabetes. Levels of glycaemia of animals in all 4 groups were monitored and compared. Rats which had noni juice prophylaxis, (group B), prior to induction of diabetes had the best glycaemic control and best treatment outcome. However, stoppage of treatment with noni juice resulted in a return of hyperglycaemia. Our findings suggest that noni juice has blood glucose lowering activity following experimentally-induced diabetes in Sprague-Dawley rats.

19. Shittu LAJ, Shittu RK, **Osinubi AA**, Ashiru OA. Stereological evidences of epithelial hypoplasia of seminiferous tubules induced by mesterolone in adult Sprague-Dawley rats. *Afr J Endocrinol Metab*. 2008;7(1):16-20.

There is a dearth of knowledge on the structural and quantitative changes of the testis secondary to this group of compounds. The present study was carried out to evaluate the effects of mesterolone (Proviron), an anabolic-androgenic steroid, on some of the histomorphometric and stereological parameters of the seminiferous tubules in Sprague-Dawley rat. Two groups of 10 adult male rats were used. The treated group was given 0.06 mg/kg body weight/day of mesterolone by gavage for six weeks while the control group received equal volume of 0.9% normal saline per day. Five µm of uniformly random serial sections of the processed testicular tissues were analyzed using unbiased stereological and histomorphometric studies. The results showed that the percentage mean volume density of both the tubular lumen and epithelial height increased by 35% ($p < 0.05$) and decreased by 50% ($p < 0.05$), respectively compared to the control. Mesterolone also caused a significant decline in sperm concentration. We concluded that mesterolone produces epithelial hypoplasia in the testis post continuous management.

20. Ukwenya VO, **Osinubi AA**, Gbotolorun SC, Kusemiju TO, Noronha CC, Okanlawon AO. Ameliorative effects of *Treculia africana* aqueous seed extract on hyperglycaemia and testicular histopathological alterations induced in alloxan-treated rats. *Nig Endocr Pract.* 2008;2(2):101-109.

Treculia africana (TA) has been used as an anti-inflammatory agent by the Yoruba people of West Africa. The plant is also known to be a component of an ancient anti-diabetic remedy used in the Western and Middle belt areas of Nigeria. Diabetes mellitus has been associated with testicular dysfunction. This study was conducted to investigate the anti-glycaemic property of the extract from seeds of TA and also to evaluate the potential of this extract in reversing the toxicity inflicted by diabetes on the testes. The anti-glycaemic potential of the extract was compared with glibenclamide. The animals were randomly divided into 4 groups of 5 rats each. Groups A-C rats were rendered diabetic with alloxan. After 4 weeks of been diabetic, A-C rats were treated with TA (200 mg/kg/d), glibenclamide (10 mg/kg/d) and distilled water (positive control), respectively. The non-diabetic group D animals served as the negative controls. TA caused significant ($p < 0.001$) blood glucose reduction (36.27%) compared to the negative control. The diabetic group treated with distilled water had testicular weight of 0.67 ± 0.06 g and zero sperm count; the group treated with TA recorded 1.31 ± 0.03 g and 33.58 ± 8.85x10^6 /ml while the group treated with glibenclamide recorded 1.69 ± 0.08 and 63.06 ± 10.79, respectively. The testes of the TA-treated rats showed seminiferous tubules lined by Sertoli cells, with relatively normal germinal epithelium. TA would be a good adjunct in the treatment of diabetes mellitus. In addition, TA may be capable of reversing the deleterious effects of diabetes on body weight, the testes and semen parameters.

21. Osinubi AA, Ajayi GO, Adegbola O. Effect of normal and pre-eclamptic pregnancies on plasma cholinesterase in Nigerian women. *Afr J Endocrinol Metab*. 2009;8(1):1-4.

Pre-eclampsia can be devastating and life-threatening for both mother and baby, particularly in developing countries. Early diagnosis and management are very important to the reduction of mortality and morbidity. A sensitive diagnostic and prognostic marker will therefore be of great value. There is paucity of data on the effect of pre-eclamptic pregnancy on plasma cholinesterase activity especially in Nigerians. Our aim was to determine the changes in plasma cholinesterase concentration in normal and pre-eclamptic pregnancies in Nigerians. Plasma cholinesterase concentration was determined using a colorimetric method in 30 healthy non-pregnant, 30 healthy pregnant, 30 and 27 pregnant women with mild and severe pre-eclampsia, respectively, between 28 and 41 weeks of gestation. Cholinesterase activity was re-assessed 6 weeks postpartum. The mean plasma cholinesterase levels in healthy non-pregnant women, women with normal pregnancy, pregnant women with mild pre-eclampsia and those with severe pre-eclampsia were 3594 ± 1042, 2135 ± 422, 1781 ± 330 and 1630 ± 326 (m/L), respectively. Six weeks postpartum, the mean cholinesterase levels in the normal pregnant, mild eclamptic and severe eclamptic groups were 3212 ± 346, 3157 ± 750 and 2864 ± 700 (/L), respectively. Our study suggests that normal pregnancy, mild and severe pre-eclampsia cause a significant ($p < 0.01$) reduction in plasma cholinesterase activity compared to non-pregnant state, with the greatest decrease in severe pre-eclamptic pregnancy. This decline does not return to normal non-pregnant state in subjects with severe pre-eclampsia within six weeks postpartum. The place of plasma cholinesterase concentration as a diagnostic and prognostic marker in pre-eclamptic and eclamptic pregnancies should be further explored.

22. Saalu LC, **Osinubi AA**. Environmental endocrine disruptors of testicular function. *Afr J Endocrinol Metab*. 2009;8(1):15-25.

In the last 50 years the incidence of infertility, testicular and prostate cancers and associated maladies has increased significantly. Infertility now affects 15-20% of couples as opposed to 7-8% fifty years ago. Average sperm counts among adult men have decreased by 50% since 1938, with a decline of 2% every year from 1973. This decline in male reproductive health has been linked to an increased presence in the environment of chemical contaminants in the form of pesticides and plastics. Rapid and unplanned industrialization caused large amounts of these synthetic compounds and their by-products to be released in the environment (air, soil, water and food). Many chemicals found in our environment and households have oestrogenic properties ("xenoestrogens") and are toxic because they affect the endocrine system ("endocrine disruptors"). In terms of male fertility, it now seems that these ubiquitous chemicals are a significant threat at various stages, from testicular development to sperm production to the functionality of healthy sperm. This class of chemicals appears to be threatening male fertility on several fronts. Clinicians and other health practitioners confronted with the challenges of managing male infertility should attempt to identify the aetiology of a possible exposure to endocrine disruptors, and initiate a plan to control and prevent exposure to others. This review highlights the properties of endocrine disruptors; the different types of testicular endocrine disruptors, mechanisms of endocrine disruption, and documents the role of community, government and non-governmental agencies in the assessment, monitoring and control of local endocrine disruptors.

23. Osinubi AA, Bassey RB, Ogunsola AO, Ajayi GO. Seroprevalence of antinuclear antibodies among Lagos residents. *Afr J Endocrinol Metab*. 2009;8(2):32-34.

The aim of study was to determine the seroprevalence of ANA among Lagos residents. The study enrolled 735 patients of the Prenatal Diagnosis and Therapy Centre, College of Medicine of the University of Lagos. Five hundred and twenty (520) (70.7%) females and 215 (29.3%) males participated in this experiment. ANAs were determined by the standard

ELISA (enzyme-linked immunosorbent assay) method. Five hundred and twenty-five (525) (71.4%) patients tested positive for the ANAs while 210 (28.6%) tested negative. One hundred and fifty-five (155) (72.1%) out of 215 males and 370 (71.2%) out of 520 females were tested positive for ANA. ANA is highly prevalent among Lagos residents, and its assay is strongly recommended as part of the investigation in conditions of subfertility and infertility.

24. Ogunsola AO, Ajayi GO, **Osinubi AA**, Bassey RB. Anticardiolipin antibodies and infertility: The Nigerian experience. *Afr J Endocrinol Metab*. 2009;8(2):35-37.

The aim of the study was to evaluate the prevalence of anticardiolipin antibodies (ACAs) in 600 patients of the Prenatal Diagnosis and Therapy Centre, College of Medicine of the University of Lagos. The patients included 413 (68.8%) females and 187 (31.2%) and males. ACAs were analyzed in sera using a commercial ELISA (enzyme-linked immunosorbent assay) test with cardiolipin alone as antigen. Anticardiolipin antibody concentrations were determined using a standard curve based on a series with known concentrations of antibodies and expressed in GPL units. Five hundred and sixty eight **(**568) patients (94.7%) tested positive for ACAs while only thirty two (32) (5.3%) tested negative. One hundred and seventy nine (179) patients (95.7%) out of 187 males and 389 (94.2%) out of 413 females tested positive for ACAs. The study shows a high prevalence of ACAs in both sexes which may negatively affect conception and pregnancy outcome.

25. Kusemiju TO, **Osinubi AA**, Noronha CC, Okanlawon AO. Effect of aqueous extract of the bark of *Carica papaya* on testicular histology in Sprague-Dawley rats. *Nig Q J Hosp.* 2010;20(3):133-137.

The overall aim of this research was to determine the histological responses of the testes of Sprague-Dawley rats to aqueous extract of bark of *Carica papaya* using a single daily dose of 100 mg/kg and also to investigate if these responses are reversible or not. Sixty mature (6-8 weeks old) male Sprague-Dawley rats, divided into 2 equal groups, were used for this experiment. Group 1 rats were fed with 100 mg/kg/day of the extract for 4 and 8 weeks, while group 2 rats served as the control subjects. The results showed that 500 mg/kg (LD_{50}) of the extract of bark of *Carica papaya* produced signs of toxicity with mortality of 50% of the rats. The extract at a dose of 100 mg/kg caused histological changes ranging from seminiferous tubular distortion to outright destruction/degeneration of the seminiferous tubules. In addition, the testicular interstitia of extract-treated rats showed disorganization and hypocellularity. The extract also caused a significant ($p < 0.05$) reduction in both sperm count and motility. There was no significant reversal of these antispermatogenic effects following a recovery period of 8 weeks. Aqueous extract of the bark of *Carica papaya* has deleterious effects on both the seminiferous tubules and testicular interstitium and deserves to be further investigated as a potential male contraceptive agent.

26. Bassey RB, Yama OE, Samuel TA, **Osinubi AAA**, Noronha CC, Okanlawon AO. Ameliorative effects of Tahitian Noni dietary supplement on reproductive hormonal profile and sperm quality of caffeine-induced testicular toxicities in adult Sprague-Dawley rats. *Nig Endocr Pract.* 2010;4(1):7-12.

Caffeine is one of the world's most consumed beverages, and has been implicated as contributing to a wide variety of illnesses including infertility. Our aim is to investigate the effect of Tahitian Noni dietary supplement on the hormonal profile and seminal parameters of Sprague-Dawley rats following testicular toxicities induced by caffeine. Thirty adult male Sprague-Dawley rats, weighing between 105-200 g were used. Group 1 was the control. Group 2 received 200 mg/kg of caffeine for 8 weeks. Group 3 received 200 mg/kg of caffeine for 4 weeks and 5 ml/kg of Noni for another 4 weeks; Group 4 received both 200 mg/kg of caffeine and 5 ml/kg of Noni for 8 weeks, Group 5 received 5 ml/kg of Noni for 8 weeks, Group 6 received 5 ml/kg of Noni for 4 weeks and 200 mg/kg of caffeine for another 4 weeks. Tahitian Noni caused a statistically significant improvement in the sperm count,

percentage of sperm motility and testicular weight/volume compared to those treated with caffeine only. There were statistically significant differences in testosterone, follicle-stimulating hormone and luteinizing hormone and cholesterol levels in the group treated with caffeine compared to the control group. We concluded that administration of Tahitian Noni dietary supplement causes an improvement in the hormonal profile and seminal parameters, thereby modulating the testicular toxicities caused by a high dose of caffeine.

27. Yama OE, **Osinubi AA**, Noronha CC, Okanlawon AO. Effect of methanolic seed extract of *Momordica charantia* on body weight and serum cholesterol level of male Sprague-Dawley rats. *Nig Q J Hosp Med*. 2010;20(4):209-213.

A steady weight increase disproportionate to height is by far the most prevalent type of body weight imbalance (overweight and obesity) in apparently healthy individuals of growing age. Many subsisting weight-reduction regimes or formulations are ineffective. Therefore, an effective and affordable weight-reduction product will add to the options available for the management of weight-related conditions. This study aimed to investigate the effects of graded oral doses of methanolic seed extract of *Momordica charantia* (MC) on the body weights and cholesterol levels of male rats. Results showed that MC extract caused, in a dose-dependent fashion, statistically significant ($p < 0.05$; $p < 0.01$) reduction in the body weight compared to control. The mean serum cholesterol levels in response to graded doses of MC showed a statistically significant decrease ($p < 0.05$) from the baseline control value of 4.4 ± 1.0 mMol/L to 3.4 ± 0.7, 2.5 ± 0.4 and 2.0 ± 1.3 mMol/L, respectively. MC may, therefore, be useful in controlling body weight increase in individuals of growing age as well as be a potential agent in the management of overweight, obesity and hypercholesterolemia.

28. Gbotolorun SC, **Osinubi AAA**, Oremosu AA, Noronha CC. The antifertility effect of amodiaquine hydrochloride. *Nig Q J Hosp Med*. 2011;21(4):271-275.

A number of antimalarial compounds and herbs have been reported to possess antifertility actions. This study was carried out to investigate the effect of amodiaquine hydrochloride (AQ.HCL) on fertility in the adult cyclic Sprague-Dawley rats. Rats used were divided into 6 experimental groups. Groups 1A, 1B and 1C- received *per oral* (p.o.) 6 mg/kg bw of AQ.HCL, 12 mg/kg bw of AQ.HCL and distilled water for 28 days, respectively to determine the effect of AQ.HCL on the oestrous cycle. Groups 2A, 2B and 2C- received a single dose p.o. of 6 mg/kg bw of AQ.HCL, 12 mg/kg bw of AQ.HCL and distilled water at 9 a.m. on proestrus respectively to determine the effect of AQ.HCL on ovulation and serum concentrations of follicle-stimulating hormone (FSH), luteinizing hormone (LH) and prolactin (PRL). Results: AQ.HCL disrupted the oestrous cycle by producing a significant ($p < 0.05$) increase in the dioestrus phase and a reduction in the other phases when compared with the control. A significant reduction ($p < 0.05$) in the number of ova shed on oestrus was observed. However, there was no significant difference in the serum concentrations of FSH, LH and PRL when compared with the control. Conclusion: Oral administration of AQ.HCL disrupts the oestrous cycle and ovulation. These events may negatively affect fertility in females of reproductive age.

29. Osinubi AAA. The use of animals in Endocrine Research: A Synopsis. *Nig Endocr Pract*. 2012;6(2):32-45.

One major challenge in the field of endocrinology is diabetes mellitus. Diabetes mellitus is a major public health concern. Its prevalence has continued to rise exponentially and it remains a crippling global problem. The search for agents and modalities with novel properties to deal with this pandemic is a continuum. Appropriate experimental models are therefore essential tools for understanding the pathogenesis, complications and genetic or environmental influences that increase the risks of diabetes and testing of various potential treatment modalities. The animal models of diabetes can be obtained spontaneously, induced by chemicals or diet, surgical manipulations and by genetic engineering. In this review, an overview of the most commonly used animal models of diabetes mellitus is provided. The

quinine-animal model for the study of male reproductive endocrinology and some potential for models the investigations of thyroid diseases are also presented.

30. Osinubi AA. Animal experimentation: Contemporary ethical considerations. *J Anat Sci*. 2013;4:3-13.

Throughout history, researchers have been solving medical and other challenging problems, developing new techniques and treatments, and curing diseases – largely by conducting animal experimentation. Animal testing gives researchers the opportunity to control *in vivo* the genetic and environmental factors that may influence the development of disease and establishment of its complications, and thus gain new information about its handling and treatment in humans. Most experiments are carried out on rodents, though other species with human-like biological characteristics are also used. In this review, an overview of ethical considerations in the use of animals in research, which have become highly topical and contentious, especially in recent times, is presented. The usefulness and contributions of animals in biomedical research are equally highlighted with some historical perspectives.

31. Saalu LC, **Osinubi AA**. Andropause (male menopause): Valid concepts, fables and controversies. *J Basic Med Sci*. 2013;1:33-37.

Though the concept of andropause is gaining acceptance, there is a huge controversy about whether it actually exists as a clinical syndrome. In this review the valid concepts (facts), the fables (myths), and the controversies related to andropause aree examined and discussed. It is concluded that although progress has been made in our knowledge concerning androgen deficiency of the aging male, it is still incomplete, sometimes even confusing, and that indeed, the debate on andropause would benefit immensely from more science and less conjecture. The unending challenge for reproductive biologists, andrologists and chemical pathologists is therefore to develop a rational, evidence-based approach to the definition, pathophysiology and management of androgen deficiency in the aging male.

32. Ataman JE, **Osinubi AAA.** Acute toxicity and effects of ethanolic leaf extract of *Newbouldia laevis* (P. Beauv.) on quinine-induced testicular damage in Wistar rats. *Nig J Biomed Engr.* 2013; 11(1):20-26.

Thirty-five Wistar rats weighing 200 - 250 g were categorized into five treatment groups- the control, saline, quinine, pre-quinine and the post-quinine groups, each comprising of 7 rats per group. All the animals in the groups including the control received feed mash (Growers) and water *ad libitum*. The saline group received physiological saline intraperitoneally. The pre- quinine extract group received 100 mg/kg of the leaf extract of NL daily for 12 weeks before being treated with 20 mg/kg body weight of quinine intramuscularly for eight weeks.. The quinine only group received daily 20 mg/kg body weight of quinine intramuscularly for eight weeks. The post-quinine extract group had 8 weeks daily treatment of 20 mg/kg quinine intramuscularly, prior to 100 mg/kg of extract treatment for another 12 weeks, before sacrifice. The extract group received only the l00 mg/kg of ethanolic leaf extract for 12 weeks without any other treatment before sacrifice. The testicular lumen of quinine group showed disruption of normal seminiferous epithelium, luminal depletion of spermatozoa and spermatogenic arrest. The epididymis had lumens of sparse spermatozoa distribution, compared to control. The testicular sections of pre-quinine extract group showed remarkable preservation of the original testicular and epididymal cytoarchitecture, compared to the post-quinine group which had altered seminiferous epithelium and some indeterminate cells appearing in the testicular lumen. The findings of this investigation suggests some protective roles of ethanolic leaf extract of NL on quinine-induced testicular damage.

33. Olabanji OJ, Akang E, Yama OE, Kusemiju TO, Oremosu AA, **Osinubi AA**. *Mucuna pruriens* protects the testes from quinine-induced testicular toxicity in Sprague-Dawley rats. *Nig Qt J Hosp Med.* 2013; 23(3):221-226.

Quinine (QU) has been identified as a testicular toxicant that leads to infertility. However some plant extracts have demonstrated protective effects on the testes. This study was

conducted to determine the effect of *Mucuna pruriens* (MP) seed extract on the testes and its protective role on QU-induced testicular damage. Twenty male rats weighing between 120-150 g were used for the study. They were divided into four groups of five rats each. Group I (control) administered distilled water for 8 weeks. Group II received 10 mg/kg of QU only for 8 weeks. Group III rats were treated with QU and MP seed extract at 10 and 75 mg/kg concurrently for 8 weeks. Group IV received 75 mg/kg of MP seed extract only for 8 weeks. At the end of the experimental durations animals were sacrificed by cervical dislocation. Testes harvested, processed for testicular: glutathione (GSH), catalase activity (CAT), superoxide dismutase (SOD) activity, testicular malondialdehyde (MDA) and microscopic studies. Blood samples collected for testosterone assay. There were significant increases in serum testosterone and testicular antioxidants (GSH, CAT and SOD) levels and a decrease in MDA levels in rats treated with MP only and parallel doses of QU and MP for 8 weeks when compared to control and animals treated with QU alone. The histology showed corresponding improvement compared to control and QU treated rats. MP increases testosterone levels and testicular antioxidant enzymes as well as protecting the testis against QU induced testicular damage.

34. Osinubi AA. The 21st century anatomist and histopathologist: Moving from "smaller, focal, widespread, bigger, larger and greater" to numbers. *Journal of Anatomical Sciences*. 2014; 5(2): 2-14.

Traditionally, histologists and histopathologists have relied heavily on verbal and qualitative descriptions of tissue structure. Histological sections are used to define the normal appearances of cells, tissues and organs. These slides, therefore, also define pathological appearances which may be a consequence of a disease affecting an organ. The traditional approach to morphological analyses was mainly descriptive and therefore largely influenced by the researcher or observer and insensitive to minute changes. In certain pathological cases, quantitative analysis may be required to detect subtle morphological changes, such as small changes in cell number. Relatively new design-based methods provide the tools for obtaining accurate, precise quantitative structural data from tissue sections. These tools are sensitive enough to detect small changes by combining statistical sampling principles with geometric analysis of the tissue microstructure. The estimates yielded by these methods are statistically valid, truly three-dimensional, and referential of the entire organ. Though, the new unbiased methods (including computer software) have been in use for some years, these tools and their uses are still poorly understood by many researchers. These new tools are commonly referred to as unbiased stereological methods. Stereology being the quantitative study of three-dimensional structures from their two-dimensional images or profiles is ideally suited to the quantitative analysis of tissues and organs. A lot of quantitative estimations encountered in biological science (especially by histologists and histopathologists) often involve estimation of cell population and volume. This paper traces a little of the past of stereology, gives an overview of unbiased stereology and discusses some of the stereological approaches for obtaining unbiased estimation of cell population and volume in biological tissues in very simple and easy-to-apply formats by researchers (based on personal experience acquired in Nigeria teaching Stereology at the postgraduate level for over ten years at the College of Medicine of the University of Lagos and expertise acquired from training at the Morphometry and Stereology Laboratory, Charles R. Drew University of Medicine and Science, Los Angeles, California, USA). When used correctly, these tools offer a statistically relevant and practical approach to achieve number and volume estimation without bias from cell size, shape, or orientation.

35. Ataman JE, **Osinubi AAA.** Effects of Streptozotocin-induced Diabetes Mellitus on the Testes of Wistar Rats. *NISEB Journal.* 2014; 14(2): 67-75.

Twenty-one Wistar rats weighing 200 - 250 mg were divided into three groups- the control, saline and the diabetic groups, each comprising of seven rats per group. They were used to

assess the effects of streptozotocin-induced diabetes on testes of Wistar rats. All the animals including the control group received feed mash and water ad libitum, the saline group received equal volumes of physiological saline intraperitoneally while the diabetic group was treated with intraperitoneal 55 mg/kg of streptozotocin. The effects of these treatments on total sperm count, sperm motility, percentage live:dead sperm and on testicular and epididymal morphology of the Wistar rats were assessed. There was significant difference in the total sperm count ($P<0.005$) between the diabetic group (24.5±3.7 x 106) and control (55.8±4.7 x 106) and in the motile sperm count ($P<0.001$) between the diabetic group (15.2±2.3 x 106) and control (50.2±4.3 x106). There was no significant difference ($P>0.05$) between the total (53.0±4.2 x106) and motile (46.3±3.7 x106) sperm count in the saline group compared to control. The diabetic group had greater numbers of dead and morphologically abnormal spermatozoa as further evidenced from the histology of the specimens. The findings of this investigation confirm the adverse effects of hyperglycaemia on testicular and epididymal functions in diabetic state.

36. Ataman JE, **Osinubi AAA.** Effects of ethanolic leaf extract of *Newbouldia laevis* (P. beauv) on cisplatin-induced changes on testicular and blood parameters of Wistar rats. *Nig J Life Sc*. 4(1):2014:26-36.

Thirty-five Wistar rats weighing 200 - 250 mg were categorized into five treatment groups- the control, saline, cisplatin, pre-cisplatin and the post-cisplatin groups, each comprising of seven rats per group, to assess the effects of ethanolic leaf extract of *Newbouldia laevis* on cisplatin- induced testicular damage in Wistar rats. The control group received feed mash and water *ad libitum*, the saline group received equal volumes of physiological saline intraperitoneally with normal feeds and water. The pre-cisplatin group was treated with 100mg/kg body weight of ethanolic leaf extract of *Newbouldia laevis* for twelve weeks before being treated with 8 mg/kg of cisplatin intraperitoneally for five days. Sacrifice was done after another twelve weeks. Cisplatin group received 8 mg/kg body weight of cisplastin for five days without any extract treatment, but had normal feeds and water for twelve weeks before sacrifice. The post-cisplatin group had 8mg/kg body weight of cisplatin for five days before being treated with 100 mg/kg of ethanolic leaf extract of *Newbouldia laevis* for twelve weeks before sacrifice. The extract group received only the 100mg/kg of ethanolic leaf extract of *Newbouldia laevis* for twelve weeks without any other treatment before sacrifice. The effects of these treatments on body weight, testicular and epididymal weight, testicular volume, total and motile sperm count, sperm motility, percentage live:dead sperm, hormonal and haematological parameters as well effects on testicular and epididymal cytoarchitecture of the Wistar rats were assessed. There were significant *($p<0.05$)* changes in body weight, testicular and epididymal weight, testicular volume, sperm, hormonal and haematological parameters in the treatments, compared to control. The pre-cisplatin treatment group showed significant *($p<0.05$)* improvement in the induced changes caused by cisplatin, compared to the post-cisplatin group. The findings of this investigation confirm the protective effects of ethanolic leaf extract of *Newbouldia laevis* on cisplatin-induced gonadotoxicity in male Wistar rats.

37. Ataman JE, **Osinubi AAA**, Baxter-Grillo D. Cytoarchitectural effects of ethanolic leaf extract of *Newbouldia laevis* (P. Beauv.) on cisplatin-induced testicular damage in Wistar rats. *Ann. Biomed. Sc.* 2015;14(1):37-50.

Thirty-five Wistar rats weighing 200 - 250 g were divided into five groups- the control, saline, cisplatin, pre-cisplatin and the post-cisplatin groups. Each comprised of seven rats per group and were fed with growers feed mash. They were used to investigate the effects of ethanolic leaf extract of *Newbouldia laevis* (*N. laevis*) on cisplatin-induced testicular damage in Wistar rats. The control group received growers feed mash and water ad libitum and the saline group received physiological saline intraperitoneally. The pre-cisplatin group was treated with 100mg/kg body weight of ethanolic leaf extract of *N. laevis* for twelve weeks

before being treated with 8mg/kg of cisplatin intraperitoneally for five days. Sacrifice was done after another twelve weeks. Cisplatin group received 8 mg/kg body weight of cisplastin for five days. They were without any extract treatment for twelve weeks before sacrifice. The post-cisplatin group had 8mg/kg body weight of cisplatin for five days before being treated with 100 mg/kg of ethanolic leaf extract of *N. laevis* for twelve weeks before sacrifice. The extract group received only the 100mg/kg of ethanolic leaf extract of *Newbouldia laevis* for twelve weeks without any other treatment before sacrifice. The phytochemical, proximate and micronutrient analysis of the extract as well as the effects of treatments on the testicular and epididymal cytoarchitecture of the Wistar rats were assessed. The results of phytochemical analysis of the leaf extract of *N. laevis* revealed the presence of saponins, steroids, flavonoids, tannins and cardiac glycosides as contents. Results of the proximate and micronutrient analysis taken from three different readings showed the presence of carbohydrate, protein, fat, vitamin C, Zn, Mg, Ca, Na, K, Se and Cl. The testicular lumen of cisplatin treatment group showed features of hypocellularity, degenerative changes and necrosis, absence of normal tails of matured spermatozoa abutting the lumen, their replacement with indeterminate cells, few Leydig cells in the interstitium and spermatogenic arrest. The sections of the epididymis revealed lumen devoid of usual matured spermatozoa but with areas of necrosis, cellular degeneration, hypocellularity and numerous indeterminate cells. The testicular sections of pre-cisplatin group showed remarkable preservation of the original testicular and epididymal cytoarchitecture, compared to the post-cisplatin group. The findings of this investigation suggests some protective effects of ethanolic leaf extract of *N. laevis* on cisplatin-induced testicular damage in Wistar rats.

38. Ataman JE, Baxter-Grillo D, **Osinubi AAA.** Assessment of the effects of parenteral Quinine on Testicular Histology and Sperm parameters in Wistar rats. *Journal of Biomedical Sciences*. 2014;13(2):72-81.

Twenty-four week duration experiment was conducted with twenty-one male Wistar rats (200 - 250 g) to investigate the effects of quinine on the testis. The rats were divided into three groups- the control, saline and the quinine; each comprised of seven rats. The control group and others were fed on feed mash (Growers) and water ad libitum. The saline group had physiological saline intramuscularly. The quinine group had intramuscular 20 mg/kg body weight of quinine daily (5 days/week), for eight weeks. The effects of quinine treatment caused reduced total and motile sperm count, significantly different ($p<0.05$) from control, but sperm motility was unaffected. The sections on quinine treatment showed seminiferous tubules with vacuolated lumens, disrupted seminiferous epithelium, arrested spermatogenesis, and moderate spermatozoa in epididymis. Quinine in this study caused morphorgical changes in the testis and significant reduction ($p<0.05$) in epididymal total and motile sperm count, but no detectable effects on sperm motility.

Foreign Journals

39. Osinubi AA, Noronha CC, Okanlawon AO. Cytoarchitectural and morphometric changes in the testis induced by quinine administration in rabbits. *West Afr J Anat*. (Ghana) 2005;8:73-80.

We have earlier demonstrated that quinine (QU) is a testicular toxicant in Sprague-Dawley rat. The aim of this study was to investigate histologically and stereologically the effects on the rabbit testes of short and long-term administration of QU. This research was also undertaken to find out whether the QU-induced testicular toxicity observed in rats will be evident in the rabbits as well. Our results showed that in rabbits treated with QU only, there was degeneration of cells of the seminiferous epithelium and a general destruction of the interstitium. Testicular destruction was more marked in animals treated for 8 weeks than in those treated for 7 days. We concluded that QU has deleterious effects on the rabbit testis.

40. Osinubi AA, Noronha CC, Akosile SK, Okanlawon AO. Histomorphometric and seminal analyses: Testosterone prevents quinine-induced testicular toxicity in Sprague-Dawley rats. *West Afr. J. Anat.* (Ghana) 2005;8:109-116.

This work was sent for publication prior to paper 9. Our aim was to investigate whether concomitant administration of testosterone (TT) with quinine (QU) is able to prevent the toxic effects of the latter on the testis. Histological slides of the testes were prepared and morphometric assessment carried out. Our results showed that there was testicular destruction and significant decrease ($p < 0.05$) in the mean sperm count and motility in the QU-treated rats compared with the control and QU plus TT groups while there were no significant differences in seminal parameters, testicular morphology and morphometry of the control and QU plus TT-treated rats. We concluded that concomitant administration of TT with QU prevents QU-induced testicular damage and QU-induced reduction in sperm concentration and motility.

41. Osinubi AA, Noronha CC, Okanlawon AO. Morphometric and stereological assessment of the effects of long-term administration of quinine on the morphology of rat testis. *West Afr J Med*. (Ghana) 2005;24(3):200-205.

The aim of this study was to determine using stereological parameters the long-term morphological response of the testis to chronic administration of quinine (QU). This study demonstrated a continuous decrease in mean testicular volume (TV), diameter, cross-sectional area and volume density of seminiferous epithelium (VSE) of the seminiferous tubules (STs) in rats administered QU for 8 weeks. The TV and VSE continued to decrease after cessation of treatment for another 12 weeks. In contrast, QU administration produced a concomitant increase in the number of profiles of STs per unit area, length and numerical density of STs during the 8 weeks of treatment and the immediate 4 weeks post-treatment period. We concluded that chronic administration of QU has a deleterious effect on the STs of rats, which may not be reversible within 12 weeks of cessation. This work is the most cited article among all publications that have reported the effects of QU on the testis.

42. Azu OO, **Osinubi AA**, Noronha CC, Okanlawon AO. Hypoglycaemic activities of extract of *Garcinia kola* seeds in normal, hyperglycaemic and alloxan-induced diabetic rats. *West Afr J Anat.* (Ghana) 2005;8:141-149.

In view of the increasing interest in the use of plant sources for treatment of diabetes and the conflicts arising from literatures over the antidiabetic action of *Garcinia kola* (GK) seeds, the effects of acute and chronic administration of methanolic extract of the seeds of GK on blood glucose in normoglycaemic, hyperglycaemic and alloxan-induced diabetic rats were investigated. GK produced significant blood glucose-lowering effects in normoglycaemic ($p < 0.05$), hyperglycaemic ($p < 0.05$) and in alloxan-induced diabetic ($p < 0.001$) rats when compared to the controls. GK had a pronounced blood glucose-lowering effect in alloxan-induced diabetic rats comparable to those of standard anti-diabetic drugs (glibenclamide [5 mg/kg]; chlorpropamide [250 mg/kg], human insulin lente [1 I.U. /kg] and is therefore a potential agent for the treatment of diabetes mellitus.

43. Akpan HB, Noronha CC, **Osinubi AA**, Orakwue CO, Kusemiju TO, Okanlawon AO. Effects of indomethacin on the seminiferous tubules of male Sprague-Dawley rats: A stereological study. *West Afr J Anat.* (Ghana) 2005;8:151-159.

The objective of this study was to investigate the cytotoxic effects of indomethacin on the seminiferous tubules of Sprague-Dawley rats. Histological observations showed that in animals treated with indomethacin, the drug caused a general destruction of the testicular interstitium, a degeneration of cells of the seminiferous epithelium and reduction in the size of seminiferous tubules. We concluded that indomethacin has deleterious cytological effects on the testes of Sprague-Dawley rats and may possibly disrupt spermatogenesis.

44. Adejuwon SA, **Osinubi AA**, Noronha CC, Okanlawon AO. Acute effects of *Vernonia amygdalina* on blood glucose levels in normoglycaemic and alloxan-

induced diabetic male Sprague-Dawley rats. *West Afr J Anat*. (Ghana) 2005;8:161-168.

The leaves of *Vernonia amygdalina* (VA) are used locally to treat many ailments. To determine whether or not there is a scientific basis for its use as an anti-diabetic agent, the effect of the aqueous extract of the leaves of VA on blood glucose level was assessed in normoglycaemic and alloxan-induced diabetic rats. Our results showed that the aqueous extract of the leaves of VA caused a significant reduction in blood glucose levels of rats administered alloxan plus VA and extract only when compared to those treated with alloxan and distilled water only. These findings demonstrated scientifically that VA leaves possess both hypoglycaemic and anti-diabetic effects.

45. **Osinubi AA**, Ajayi GO, Adesiyun AE. Evaluation of the anti-diabetic effect of aqueous leaf extract of *Tapinanthus butungii* in male Sprague-Dawley rats. *Medical Journal of Islamic World Academy of Sciences*. (Turkey) 2006;16(1):41-47.

Our aim was to evaluate the hypoglycaemic, anti-hyperglycaemic and anti-diabetic effects of aqueous extract of fresh green leaves of *Tapinanthus butungii* (TB) in the rat. TB produced significant dose-dependent reductions ($p < 0.05$-0.001) in blood glucose concentrations of normoglycaemic, hyperglycaemic and alloxan-induced diabetic rats comparable to glibenclamide, chlorpropamide and human insulin lente. Our results suggested that the leaves of TB have strong and remarkable anti-diabetic property. This is probably the first scientific establishment of the anti-diabetic effect of TB.

46. **Osinubi AA**, Daramola AO, Noronha CC, Okanlawon AO, Ashiru OA. The effect of quinine and ascorbic acid on rat testes. *West Afr J Med.* (Ghana) 2007;26(3):217-221.

This work was undertaken and sent for publication prior to the work reported in paper 16. The main thrust of this work was to determine the changes in the testicular levels of testosterone (TT) secondary to quinine (QU) and ascorbic acid (AA) administration in rats. Prior to this particular study, our proposition that QU-induced testicular toxicity might be through a disruption of TT synthesis/secretion remained mere speculation. We therefore sought to assay testicular TT in rats administered QU, AA and distilled water. Results obtained from this study showed that QU significantly ($p < 0.01$) decreased testicular TT concentrations, in addition to inducing formation free radicals (from elevation of malondialdehyde levels) in the testes of rats compared with those of the control group and those treated with a combination of QU and AA.

47. **Osinubi AA.** Effects of *Vernonia amygdalina* and chlorpropamide on blood glucose. *Medical Journal of Islamic World Academy of Sciences*. (Turkey) 2007;16(3):115-119.

The aim of this study was to subject a promising antidiabetic herb *Vernonia amygdalina* (VA), to further investigation with a view to unlocking its potential in the treatment of diabetes mellitus as potentially emerging alternative or adjunct therapeutic. Sixty adult male Sprague-Dawley rats weighing 180-220 g were used for the experiment. Half of the animals were randomly rendered diabetic by administering alloxan (150 mg/kg). Equal numbers (20) of the rats were variously administered aqueous leaf extract of VA (500 mg/kg), chlorpropamide (250 mg/kg) and distilled water (2 ml/kg). Aqueous leaf extract of VA produced significant ($p < 0.05$-0.001), reductions in the blood glucose concentrations of normal and diabetic rats 1 to 12 hours after acute treatment compared with distilled water-treated control animals. Its blood-glucose-lowering potential in both normoglycemic and alloxan-induced diabetic male Sprague-Dawley rats compared favourably to that of chlorpropamide. This work is the most cited article among all publications that have reported the anti-diabetic property of VA.

48. Gbotolorun SC, **Osinubi AA**, Noronha CC, Okanlawon AO. Antifertility potential of Neem flower extract on adult female Sprague-Dawley rats. *Afr Health Sc*. (Makerere;/University Medical School, Kampala, Uganda) 2008;8(3):168-173.

The search for a relatively cheap, widely available, widely accepted and effective contraceptive of plant origin; that is equally non-invasive in administration, non-hormonal in action, non-toxic and that is relatively long-acting, generated our interest in this study (in order to meet the increasing need for population control). The aim of this study was to determine the effects of alcoholic extract of Neem flowers on the estrous cycle, ovulation, fertility and foetal morphology of cyclic adult Sprague-Dawley rats. There were 3 main experimental groups. Group 1 rats received 1 g/kg of alcoholic extract of Neem flower for 3 weeks and the effect on estrous cycle studied. Group 2 rats were administered 1 g/kg of the extract at 9 a.m. and at 6 p.m. on proestrus and the effect on the number of ova shed on the morning of estrus observed. Rats in Group 3 were treated with 1 g/kg of the extract on days 1 to 5 *postcoitum*, and observation was made for anti-implantation / abortifacient effects and possible teratogenic effects on the foetuses. The oestrous cycle of 80% of the rats was altered with a marked prolongation of the diestrus phase. Neem flower caused a statistically significant ($p < 0.05$) reduction in the number of ova shed in the morning of estrus in rats fed with the extract at 9 a.m. on proestrus. Neither anti-implantation / abortifacient nor teratogenic effect was observed in the rats treated with Neem flower. It was concluded that administration of alcoholic extract of Neem flower disrupted the estrous cycle in Sprague-Dawley rats and caused a partial block in ovulation and thus has the potential of being developed into a female contraceptive.

49. Saalu LC, Ajayi GO, Adeneye AA, Imosemi IO, **Osinubi AA**. Ethanolic seed extract of grapefruit (*Citrus paradisi* Macfad) as an effective attenuator of doxorubicin-induced oxidative stress in the rat heart. *Int J Cancer Res.* (USA) 2009;5(2):44-52.

In the present study, we examined the ameliorating effect of the 100% ethanol extract of *Citrus paradisi* (grapefruit) seed (GSE) on survival of doxorubicin (DOX)-treated rats and on DOX- induced cardiomyopathy. Whereas only 20% of the rats treated with DOX (20 mg kg^{-1} body weight intraperitoneally) survived at the end of 14 days, almost all the DOX-treated rats survived when GSE (20 mg kg^{-1} body weight) was administered by gastric gavage. In the second experiment, GSE (20 mg kg^{-1} body weight) was administered daily by gavage for 14 consecutive days before a cumulative single dose of DOX (20 mg kg^{-1} body weight, intraperitoneally) was given. DOX induced marked biochemical alterations characteristic of cardiac toxicity. There was enhanced lipid peroxidation measured as elevated malondialdehyde. The anthracycline antibiotic drug reduced the cardiac enzymatic activities of superoxide dismutase, glutathione S-transferase and catalase. Prior administration of GSE ahead of DOX challenge ameliorated the negative effects of the latter on all these biochemical markers. We concluded that GSE has a protective role in the abatement of DOX-induced cardiac toxicity that resides, at least in part, on its anti-radical effects.

50. Shittu Lukeman AJ, Shittu Remilekun K, Ogundipe Olufemi, Tayo Adetokunbo O, **Osinubi Abraham AA**. Hypoglycaemia and improved testicular parameters in *Sesamum radiatum*-treated normoglycaemic adult male Sprague-Dawley rats. *Afr J Biotech*. (Kenya) 2009;8(12):2878-2886.

This work aimed to evaluate the effects of aqueous extract of *Sesamum radiatum* leaves on adult male Sprague-Dawley rats' testis using unbiased stereological, biochemical and hormonal studies. Thirty adult male rats were divided into three groups of 10 rats each. The treated groups, 1 and 2 received 28.0 and 14 mg/kg bwt of aqueous extract of sesame leaves via oral gavage, respectively, while the control group received equal volume of 0.9% (w/v) normal saline per day for 6 weeks. Serum follicle-stimulating hormone (FSH), testosterone and blood glucose levels were assayed. In addition, 5 µm of uniformly random transverse

sections of processed testicular tissues were equally analyzed using an unbiased stereological study. Serum testosterone and follicle-stimulating hormone were significantly higher and lower, respectively, in the high dose sesame-treated group when compared to control. Sesame leaves intake improved glucose profile and testicular parameters in a dose-related manner via possible improved insulin activity.

51. Shittu LAJ, Shittu RK, **Osinubi AAA**, Tayo A. Mesterolone (Proviron) induces low sperm quality with reduction in sex hormone profile in adult male Sprague-Dawley rat testis. *Sci Res Essay.* (Kenya) 2009;4(4):320-327.

Anabolic-androgenic steroid (AAS) compounds are one of the most widely abused drugs by athletes and muscle builders with the goal of improving performance/muscle mass. However, increasing concern has been expressed because these compounds not only offer unappreciable benefits to infertile and subfertile males, but also might have deleterious effects on both human and animal physiology including sperm quality. In addition, there is the conflicting outcome of AAS usage in the clinical settings with its attendant reduced spermatogenesis and hypopituitarism in patient management. Hence, we aimed to evaluate the effects of mesterolone on serum follicle-stimulating hormone and testosterone, histomorphometry of seminiferous tubules and seminal analyses in adult male Sprague-Dawley rat. The results showed significant ($p < 0.05$) body weight gain in all the animals. However, both the raw testicular weight and relative testicular weight per 100 g bwt was significantly ($p < 0.05$) higher in control than treated. The mean sperm count significantly decreased by 28% ($p < 0.05$) and the motility reduced significantly by 56% ($p < 0.05$) in the treated compared to control. In addition, both follicle-stimulating hormone and testosterone of the treated were significantly lowered by 73% ($p < 0.05$) and 63% ($p < 0.05$) respectively compared to the control. The use of mesterolone should be with caution, and short intermittent therapy is advisable for better semen quality and improved overall fertility.

52. Saalu LC, Enye LA, **Osinubi AA.** An assessment of the histomorphometric evidences of doxorubicin-induced testicular cytotoxicity in Wistar rats. *Int J Med Med Sci*. (Nairobi, Kenya) 2009;1(9):370-374.

Clinical usefulness of doxorubicin (DOX) is limited by its proven toxicity to certain organs particularly the heart and the kidney. In the present study, we evaluated the effect of a single dose of DOX on the seminiferous tubules of rats. Forty male adult (11 to 13 weeks old) wistar rats weighing 185-210 g were used for this research work. The rats were randomly divided into four groups of ten rats each. Group 1 rats were given a single dose of normal saline (2.5 ml/kg) body weight ip and then were sacrificed a day after. Group 2 animals had 10 mg DOX per kg body weight ip as a single dose. These rats were sacrificed the day after DOX administration. Group 3 animals had 10 mg DOX per kg body weight ip as a single dose but were sacrificed on the 56^{th} day. Group 4 rats had similar treatment as those in group 3, except that they were sacrificed at the end of the 16^{th} week after DOX administration. The results showed that there was degeneration of cells of the seminiferous epithelium following DOX administration. There was also a demonstrable progressive worsening of the testicular derangement with passage of time following DOX challenge. We conclude that DOX has a deleterious effect on the testis.

53. Mbaka G, Adeyemi O, **Osinubi A**, Noronha C, Okanlawon A. The effect of aqueous root extract of *Sphenocentrum jollyanum* on blood glucose level of rabbits. *J Med Plants Res*. 2009;3(11):370-374.

The anti-hyperglycaemic effect of the aqueous root extract of *Sphenocentrum jollyanum* (SJ) Pierre (Menispermaceae) was evaluated in normal and alloxan-induced diabetic rabbits. The levels of glucose were determined at different doses and times following treatment with the extract. The oral single dose administration of the extract in OGTT study led to significant ($p < 0.05$) decrease in peak values and the area under curve by 10.5% compared to the untreated. Although the glucose level showed gradual decline it nonetheless failed to return to

baseline glycaemia (65.7 ± 4.1 mg/dL) with a value of 118.4 ± 3.9 mg/dL after 4 h. In alloxan diabetic rabbits SJ exhibited dose-dependent significant ($p < 0.05$) reduction in blood glucose level from day 3 of daily treatment with the extract. The maximum decrease from 337.4 ± 8.9 to 269.6 ± 3.8 mg/dL was observed in the group that received 200 mg/kg^{-1}. This suggests that the plant may be a potential source for the development of a new oral anti-diabetic agent.

54. Azu OO, Duru FI, **Osinubi AA**, Noronha CC, Elesha SO, Okanlawon OA. Preliminary study on the androgenic effects of *Kigelia africana* fruit extract in male Sprague-Dawley rats. *MEFSJ (Middle East Fertility Society Journal)* 2009;14(3):1-7.

Our aim was to evaluate the androgenic properties of *Kigelia africana* fruit extract (KAFE) in male Sprague-Dawley rats. Intervention was administered orally as 100 and 500 mg/kg doses of KAFE over a 28 and 56 day period. Serum and testicular tissues were analyzed for light microscopy and assayed for hormones and enzymes. Administration of KAFE at 100 and 500 mg/kg resulted in the significant increase in body weight ($p < 0.01$ and 0.001), sperm count ($p < 0.001$), testosterone levels ($p < 0.001$), follicle-stimulating hormone ($p < 0.001$) and luteinizing hormone ($p < 0.001$). Qualitative histopathological results did not show any deleterious alterations caused by KAFE but an enhancement of spermatogenesis with increased thickness of the seminiferous epithelium of the rats. The 100 mg/kg dose produced better result in most of the parameters monitored than the higher dose of 500 mg/kg used. We concluded that KAFE has some androgenic effects in rats; however the precise mechanism of this action needs further elucidation. It is possible that the flavonoids/saponin content may be responsible for increased androgen biosynthesis. These results suggest that KAFE might serve as a future agent for development as an androgenic drug in human.

55. Saalu LC, **Osinubi AA,** Olagunju JA. Early and delayed effects of doxorubicin on testicular oxidative stress and spermatogenesis in rats. *Int J Cancer Res*. (USA) 2010;6(1):1-9.

In the present study, we assessed the early and delayed effects of a single dose of doxorubicin (DOX) on the testicular oxidative status and spermatogenesis in rats. Forty male rats were used for this research. The testicular oxidative status of DOX-treated rats was severely compromised as evidenced by the significant decrease in the activities of superoxide dismutase (SOD), catalase (CAT) and glutathione peroxidase (GPx), in addition to the significant reduction in the reduced glutathione (GSH) level as well as the significantly elevation of malondialdehyde (MDA). The results indicate that DOX produces progressive increase in testicular oxidative stress as well as persistent damage to the spermatogenic epithelium.

56. Saalu LC, **Osinubi AA**, Jewo PI, Oyewopo AO, Ajayi GO. An evaluation of influence of *Citrus paradisi* seed extract on doxorubicin-induced testicular oxidative stress and impaired spermatogenesis. *Asian J Sci Res*. 2010;3(1):51-61.

The therapeutic value of doxorubicin (DOX) as anticancer antibiotic is limited by its organotoxicity. It has been shown that free radicals are involved in doxorubicin-induced toxicity. In this study the ameliorating role of ethanolic seed extract of *Citrus paradisi* (CP) on DOX-induced testicular oxidative stress and impaired sperm parameters was investigated. Our results showed that DOX-induced reduction in sperm motility and epididymal sperm concentrations as well as increase in total abnormal sperm rates were all normalized in the group pretreated with CP. Pretreatment with CP ameliorated the testicular content of glutathione and superoxide dismutase, catalase and glutathione peroxidase activities. Similarly, CP treatment attenuated the DOX-induced increase in testicular lipid peroxidation reflected by malondialdehyde levels. These data indicate that CP protects the rat testis against DOX-induced oxidative stress and deranged sperm characteristics.

57. Saalu LC, **Osinubi AA**, Oguntola JA, Adeneye IO, Benebo AO. The delayed testicular morphologic effects of doxorubicin and the rejuvenating role of grapefruit seed extract. *Int J Pharmacol*. 2010;6:192-199.

Doxorubicin (DOX), one of the anthracycline antibiotic drugs isolated from the soil fungus *Streptomyces peucetius* caesius, which has been widely used to treat cancer effectively. It has also been known to induce reproductive abnormalities in males. The implication of natural phenolic compounds in the prevention of many pathologic diseases has been reported. In this experiment, the ability of grapefruit seed extracts (GSE), to protect rat testis against DOX-induced histomorphometric impairment was investigated. The testicular toxicity induced by DOX was assessed by histologic and stereologic evaluation. The results demonstrated that post-treatment with GSE is capable of reversing the reduction of body and testicular weights as well as the testicular histomorphometric evidences of high dose and delayed DOX toxicity in the animals.

58. Salawu AA, **Osinubi AA**, Dosumu OO, Kusemiju TO, Noronha CC, Okanlawon AO. Effect of the juice of lime (*Citrus aurantifolia*) on estrous cycle and ovulation of Sprague-Dawley rats. *Endocr Pract*. (USA) 2010;16:561-565.

The aim of this study was to determine the effect of lime juice on the oestrous cycle and ovulation of cyclic female rats. The experiment was divided into 2 groups (I, II). In Experiment I, 15 rats were randomly divided into 3 groups (Ia, Ib, Ic) of 5 rats each. The oestrous cycles of the rats were studied for the first 16 days to establish cyclicity, after which lime juice was administered for the next 24 days. Rats in Ia received 1 ml of undiluted lime juice; rats in Ib received 1 ml of 50 % diluted lime juice while group Ic received distilled water only. In experiment II, 10 female rats were divided into 2 groups (IIa and IIb). IIa rats received 1 ml of undiluted lime juice on morning of proestrus and IIb received distilled water only on the day of proestrus. The rats were sacrificed the next day, using chloroform anesthesia. The upper parts of the oviducts were excised and examined for the number of ova shed. There was an irregular pattern in all phases of estrous cycle of rats fed lime juice. There was a significant ($p < 0.05$) reduction in the number of ova shed in rats administered lime juice compared to the control. Ovulation was partially blocked as shown by the reduced number of ova observed in the oviducts from the treated rats (5.10 ± 2.37) compared with the control (12.70 ± 1.14).It was concluded that lime juice causes irregularity of the oestrous cycle, partially blocks ovulation, and may possibly compromise fertility.

59. Okoko II, **Osinubi AA**, Olabiyi OO, Kusemiju TO, Noronha CC, Okanlawon AO. Anti-ovulatory and anti-implantation potential of the methanolic extract of seeds of *Abrus precatorius* in the rat. *Endocr Pract*. (USA) 2010;16:554-560.

The aim of the present study was to investigate the effect of the methanolic extract of seeds of *Abrus precatorius* on oestrous cycle, ovulation, and implantation in Sprague-Dawley rat. Cyclic female rats were randomly divided into four groups (A - D). Rats in A had daily vaginal smears for a total of 64 consecutive days while being fed the extract for the first 32 days. Rats in B were fed with a single dose of extract on the day of proestrus and sacrificed the following morning for counting of ova. Group C rats received *Abrus precatorius* from day 1-10 *post coitum* and sacrificed on day 12 to check for anti-implantation effect, while the dams in D received extract from $6^{th} - 19^{th}$ day of gestation. *Abrus precatorius* caused a reversible disruption in the oestrous cycle of the regularly cyclic rats and completely blocked ovulation in all the treated rats. Despite successful mating with males of proven fertility, uterine dissection on day 12 postcoital revealed neither post-implantation nor resorption sites in all the animals treated with *Abrus precatorius*. *Abrus precatorius* caused a decrease in mean body weight, mean crown rump length, and mean tail length of foetuses of the treated rats. Methanolic extract of *Abrus precatorius* seeds caused reversible alterations in the oestrous cycle pattern and completely blocked ovulation in Sprague-Dawley rats. In addition,

the seeds possess anti-implantation activity and may affect gross foetal morphometry in the rat.

60. Azu OO, Duru FIO, **Osinubi AA**, Noronha CC, Elesha SO, Okanlawon AO. Preliminary study on the antioxidant effect of *Kigelia africana* fruit extract (Bignoniacieae) in male Sprague-Dawley rats. *Afr J Biotech*. (Kenya) 2010;9(9):1374-1381.

Testicular germ cells as well as epididymal maturing spermatozoa are endowed with enzymatic and non-enzymatic scavenger systems to protect lipid peroxidation damage. A number of pathologies and systemic challenges can lead to antioxidant/pro-oxidant disequilibrium. We investigated the antioxidant effect of *Kigelia africana* fruit extract (KAFE) on normal rats. KAFE showed a non-dose dependent elevation in testicular catalase ($p < 0.05$), significant decline in malondialdehyde ($p < 0.001$) and an up-regulation of glutathione ($p < 0.001$) levels. Seminal parameters were also enhanced by KAFE with the lower dose producing better effects. Male infertility is frequently accompanied by increased testicular or seminal fluid oxidative stress. This result provides further scientific basis for the use of KAFE in the treatment of male infertility.

61. Azu OO, Duru FIO, **Osinubi AA**, Noronha CC, Elesha SO, Okanlawon AO. Protective agent, *Kigelia africana* against cisplatin-induced kidney oxidant injury in Sprague-Dawley rats. *Asian J Pharmaceut Clin Res*. 2010;3(2):84-88.

The protective effect of methanol extract of *Kigelia africana* fruit extract (KAFE) against cisplatin-induced renal toxicity in male rats was studied. Cisplatin-treated rats suffered significant loss in body weight ($p < 0.05$), elevation in blood urea nitrogen ($p < 0.001$) and serum creatinine ($p < 0.001$) levels as well as tubular necrosis. However, KAFE alone and as a prophylaxis significantly ($p < 0.05$) improved these parameters. Our results suggest that KAFE protects against cisplatin-induced renal toxicity hence might serve as a novel combination agent with cisplatin to limit renal injury.

62. Saalu LC, **Osinubi Abraham AA**, Aina WO. Quantitative evaluation of third year medical students' perception and satisfaction from problem-based learning in anatomy: A pilot study of the introduction of problem based learning into the traditional didactic medical curriculum in Nigeria. *Edu Res Rev.* (Kenya) 2010;5(4):193-200.

Problem-based learning (PBL) is a method of teaching that uses hypothetical clinical cases, individual investigation and group process. In recent years, in medical education, PBL has increasingly been adopted as the preferred pedagogy in many countries around the world. Controversy, however, still exists regarding the potential benefits and overall outcome of PBL over traditional didactic learning (TDL). The present study compared the learning effectiveness of PBL with TDL using both experimental method (students' performance in examination) and observational method (students` responses to questionnaires). The self-administered questionnaires measured learning outcomes and acquisition of interpersonal skills on a 5-point Likert type rating scale of 1 (strongly agree) - 5 (strongly disagree). The study population comprised third year medical students of Lagos State University College of Medicine, Ikeja, Lagos, Nigeria. Half of the new innovative Human Anatomy curriculum was thought using PBL and the other half using TDL. The PBL method resulted in better examination scores than TDL for the same students. A majority of students felt that, the PBL sessions were better at fulfilling learning objectives, gave better factual knowledge of Anatomy, promoted better student participation in the learning process, provided more learning fun, ensured more students' team work and interpersonal skills' acquisition and enabled more students' reflective/critical thinking and reasoning of anatomy, compared to TDL methods. Most of the students opined that more such sessions should be organized in the future. We conclude that, based on the examination scores and the responses of the students, PBL methods are more successful than TDL.

63. Oyewopo AO, Saalu LC, **Osinubi AA**, lmosemi IO, Omotoso GO, Adefolaju GA. The attenuating effect of zinc on propoxur-induced oxidative stress, impaired spermatogenesis and deranged steroidogenesis in Wistar rat. *J Med Med Sci*. (China) 2010;1(5):178-184.

Propoxur (PPX), a carbamate pesticide is known to cause reproductive toxicity partly through induction of cellular oxidative stress. In the present study, the ability of zinc (Zn) to ameliorate testicular oxidative stress was investigated in adult rats exposed to PPX (10 mg/kg bw/d) orally for 30 days. The results from this study showed that there was a significant reduction ($p < 0.05$) in the growth rate and relative weights of testes of PPX-exposed rats compared to the control. PPX-exposed rats also displayed significant ($p < 0.005$) decreases in plasma testosterone levels, epididymal sperm count and motility of spermatozoa when compared to the control values. Furthermore, there was a statistically significant increase in malondialdehyde (MDA) and a significant ($p < 0.005$) decrease in the activities of glutathione peroxidase (GPx) in the testes of PPX-exposed animals. Zn supplementation in the *PPX*-exposed rats restored the activities of testicular GPx and the testicular content of MDA to the levels of the control group. Co-treatment with Zn also normalized the deranged sperm parameters and hormonal profiles. We conclude that Zn administration minimizes testicular oxidative damage and reverses the impairment of spermatogenesis and steroidogenesis induced by *PPX* in the rat.

64. Azu OO, Duru FIO, **Osinubi AA**, Oremosu OA, Noronha CC, Elesha SO, Okanlawon OA. Histomorphometric effects of *Kigelia africana* (Bignoniaceae) fruit extract on the testis following short-term treatment with cisplatin in male Sprague-Dawley rats. *MEFSJ. (Middle East Fertility Society Journal)* 2010;15(3):200-208.

Aim was to investigate the short-term effects of *Kigelia africana* fruit extract (KAFE) on cisplatin-induced testicular histomorphometric changes in Sprague-Dawley (SD) rats. Fifty-seven male SD rats were acclimatized and grouped into 10 of five rats per group. Each rat was administered either KAFE in 100 and 500 mg/kg doses orally or cisplatin 10 mg/kg i.p. or normal saline to controls. Experiment was terminated after 28 days by i.p. injection of ketamin 50 mg/kg. Testicular tissue was processed for histological and morphometric analyses while catalase enzyme activity, lipid peroxidation and glutathione levels were assayed accordingly. Sperm count/motility was also assessed. Our results showed that cisplatin treatment caused over 37.5% mortality of SD rats. Qualitative histological assessment showed no deleterious changes following treatment with KAFE alone or as a pre-treatment with cisplatin. KAFE post-treatment resulted in focal vacuolar changes in the seminiferous tubules (ST) of the SD rats. Cisplatin-treatment negatively affected the histoarchitecture of the seminiferous tubules with massive loss of spermatogenic cells. There was also a significant reduction in testicular weight/volume, ST diameter and cross-sectional areas ($p < 0.001$) but KAFE positively improved these parameters. KAFE alone and as prophylaxis significantly increased body weight, serum testosterone and follicle-stimulating hormone ($p < 0.001$); it showed a significant elevation in catalase activity, decline in malondialdehyde and up-regulated glutathione levels ($p < 0.001$). We concluded that the cytoprotection against cisplatin-induced testicular damage by KAFE is likely via an antioxidant modulatory pathway. It is also possible that KAFE possesses an androgen-stimulating property.

65. Enye LA, Saalu LC, **Osinubi AA**. The prevalence of agenesis of palmris longus muscle amongst students in two Lagos-based medical schools. *Int J Morphol.* (Chile) 2010;28(3):849-854.

Palmaris longus (PL) muscle, although of little functional use to the human upper limb, assumes great importance when used as a donor tendon for transfer or transplant. The surgeon's awareness of the incidence in a population is therefore desirable. In the present

study, 500 Medical students (242 males and 258 females) of ages 16 to 40 years from both College of Medicine of the University of Lagos, Idi-Araba and Lagos State University College of Medicine, Ikeja were examined for the presence or absence of the PL tendon, using the conventional (Schaffer's) test. The prevalence and pattern of PL agenesis was further analyzed statistically for differences in the prevalence or pattern of PL agenesis with regard to body side or sex. The prevalence of PL agenesis was found to be 12.6% (8% Unilateral and 4.6% Bilateral). Out of those with unilateral agenesis, 20 (4%) had left-sided agenesis and 20 (4%) had rightsided agenesis. Female subjects had a prevalence of agenesis of PL tendon (Unilateral and Bilateral combined) of 36 out of 258, (13.95%) while in male subjects this prevalence was 23 out of 242 (9.5%). The prevalence of PL muscle agenesis in this study was found to be much higher than the previously reported average for blacks (2-3%).

66. Bassey RB, Yama OE, **Osinubi AA**, Noronha CC, Okanlawon AO. Micro-anatomical effect of Tahitian Noni dietary supplement on the heart of caffeine-treated Sprague- Dawley rats. *Internet J Health*. (Saudi Arabia) 2010:11(2).DOI:10.5580/95d.

This study was designed to assess the effects of Tahitian Noni on the heart of caffeine-treated rats. Thirty adult rats were used. They were divided into 6 groups of 5 rats each. Group 1 was the control. Group 2 received 200 mg/kg of caffeine for 8 weeks, group 3 received 200 mg/kg of caffeine for 4 weeks and 5 ml/kg of Noni for another 4 weeks, group 4 received both 200 mg/kg of caffeine and 5 ml/kg of Noni for 8 weeks, group 5 received 5 ml/kg of Noni for 8 weeks, group 6 received 5 ml/kg of Noni for 4 weeks and 200 mg/kg of caffeine for another 4 weeks. There was no significant difference in cholesterol levels and body weights of treated groups when compared to control. The histological sections of the heart showed necrosis in groups 2, 3 and 4. Groups 5 and 6 tended towards normal. Tahitian noni dietary supplement modulates the effect of a high dose of caffeine on the heart.

67. Imosemi IO, **Osinubi AA,** Saalu LC, Olagunju JA. Phenytoin-induced toxicity in the postnatal cerebellar development in rat: effect of *Calotropis procera* on selective biochemical and haematological variables. *Int J Biol Chem Sci*. (South Africa) 2010;4(6):2387-2396.

Phenytoin, an antiepileptic drug is used in managing seizures. Phenytoin-associated oxidative stress causes cellular damage by the generation of free radicals. Vitamin C, a standard antioxidant and *Calotropis procera* are believed to scavenge oxygen free radicals. The effect of *C. procera* extract on haematological and biochemical variables in an *in vivo* model was studied. Pregnant rats were administered phenytoin (50 mg/kg body weight). Extracts of *C. procera* (300 mg/kg body weight) and vitamin C (200 mg/kg body weight) were administered one hour prior to phenytoin treatment separately. Blood was collected from animals on day 50 *postpartum* for packed cell volume (PCV), haemoglobin (Hb) content and evaluation of levels of alanine aminotransferase (ALT) and aspartate aminotransferase (AST) evaluation. Lipid peroxidase (LPO) and reduced glutathione (GSH) levels in the cerebellum were assessed as markers of oxidative stress on day 50 postpartum. Phenytoin-induced toxicity was associated with increased cerebellar LPO and decreased GSH levels. Increase in ALT and AST levels in the serum was observed. However, PCV and Hb levels were not affected. LPO, GSH, ALT and AST levels registered a tendency to shift towards normalcy on administration of *C. procera* and vitamin C to phenytoin. In conclusion, supplementation with *C. procera* leaf extract reduced the rate at which phenytoin induces toxicity in developing rat cerebellum postnatally.

68. Dosumu OO, Duru FIO, **Osinubi AA,** Oremosu AA, Noronha CC. Influence of virgin coconut oil (VCNO) on oxidation stress, serum testosterone and gonadotropic hormones (FSH and LH) on chronic ethanol ingestion. *Agric Biol J N Am*. (Connecticut, USA) 2010;1(6):1126-1132.

The present study explored the effect of virgin coconut oil on oxidative stress, testosterone and gonadotropic hormones in alcohol-induced testicular injury. Twenty-five male rats were randomly assigned to one of five groups (n = 5). The oil was processed from the mature endosperm of coconut and administered at 6.7 ml/kg body weight, while alcohol was given orally at 7 ml/kg body weight. After sacrifice, testicular malondialdehyde and serum hormone levels were determined. Virgin coconut oil effectively lowered alcohol-induced oxidative stress by reducing testicular malondialdehyde levels and ameliorated the deleterious effect of alcohol on serum testosterone level, but showed no effect on serum FSH and LH levels.

69. Imosemi IO, **Osinubi AA.** The role of *Calotropis procera* in phenytoin-induced toxicity in the postnatal developing cerebellum of Wistar rats – Histological and Gross Morphometric Studies. Eur J Anat. 2010; 14(2):91-98.

The role of methanolic leaf extracts of *Calotropis procera* in phenytoin-induced toxicity in the postnatal development cerebellum of Wistar rat was studied. Forty sexually mature female rats, weighing about 160 g were randomly divided into 5 groups of 8 animals per group. They were mated and pregnancy confirmed by the presence of a vaginal plug. The animals were fed with a standard diet of rat pellets and water provided *ad libitum*. The control animals received water, while the test groups received 50 mg/kg of phenytoin, 300 mg/kg, methanolic extracts of C*alotropis procera* and 200 mg/kg vitamin C orally, both separately and in combination during and after pregnancy. At the end of the experiment, the offspring for days 1, 7, 14, 21, 28 and 50 *post-partum*, five per group, were weighed and killed. The brains and cerebella were dissected out and weighed and the cerebella processed for histological studies. In the phenytoin-treated animals the results showed a non-significant reduction in the body weight of the animals, $p>0.05$, and a significant reduction in the brain and cerebellar weights, $p<0.05$, was observed. The administration of extracts of *Calotropis procera* and vitamin C reversed these changes when compared with the phenytoin-treated group, but not significantly when compared with the control. Histologically, the outer molecular, Purkinje and inner granular layers of the cerebellar cortex were intact, and in all the groups the external granular layer was not seen on day 21 *post-partum*. In conclusion, supplementation with methanolic extracts of *Calotropis procera* reduced the rate at which phenytoin induced toxicity in the postnatal developing cerebellum of Wistar rats.

70. Azu OO, **Osinubi AAA.** Survey of problem-based learning and traditional methods of teaching anatomy to 200 level pharmacy students of the University of Lagos, Nigeria. *Afr J Pharm Pharmacol.* (Kenya) 2011;5(2):219-224.

The introduction of problem-based learning (PBL) may be a very uncomfortable problem for the students originally exposed to the didactic methods of teaching and learning. Our medical and pharmacy curricula are yet to adopt this new method of learning and as such this study looks forward to exposing some aspects of the traditional style as well as introducing to the students the new method using PBL. It is envisaged that in the five-year Pharmacy program, the students would be exposed to and monitored and their academic performance vis-à-vis their professional competencies adjudged using this two styles of teaching anatomy. A total of one hundred and fifty 200 level Pharmacy students were randomly divided into fifteen groups of ten per group during their 2 semester course in Anatomy in the academic year 2007/2008 session. The students were exposed to both the PBL and traditional methods of teaching anatomy alternately. At the end of the period, 150-structured questionnaires were administered to the students and analyzed statistically. Results from this study showed that the PBL method of teaching Anatomy to Pharmacy students has strong positive impact in the general perception and knowledge build of the students in their 200 level studies.

71. Imosemi IO, **Osinubi AA.** Phenytoin-induced toxicity in the postnatal developing cerebellum of Wistar rats, Effect of *Calostropis procera* on histomorphometric parameters. (*Toxicidad Inducida por Fenito na en el Desarrollo Postnatal del Cerebelo de Ratas Wistar, Efecto de Calostropis*

procera sobre los Par metros Histomorfom tricos). *Int J Morphol*. (Chile) 2011;29(2):331-338.

The role of methanolic leaf extracts of *Calotropis procera* in phenytoin-induced toxicity on histomorphometric variables in the postnatal developing cerebellum of Wistar rat was studied. Pregnant rats were treated orally with 50 mg/kg phenytoin in pre and post natal life and 300 mg/kg methanolic leaf extract of *Calotropis procera* 1 hour prior to phenytoin administration. Vitamin C (200 mg/kg) was also administered orally 1 hour prior to phenytoin treatment. At the end of the experiment, the offspring of days 1, 7, 14, 21, 28 and 50 *postpartum*, were sacrificed. The results showed in the developing cerebellum of phenytoin treated animals, a delayed cell maturation in the external granular layer, reduction of the molecular layer, astrocytic gliosis and loss of Purkinje cells on day 50 *postpartum*. Administration of extracts of *Calotropis procera* and vitamin C though reversed these changes when compared with the phenytoin treated group, but not significantly when compared with the control. In conclusion, supplementation with methanolic extracts of *Calotropis procera* reduced the rate at which phenytoin induces toxicity in the postnatal developing cerebellum of Wistar rat.

72. Saalu LC, **Osinubi AA,** Akinbami AA, Yama OE, Oyewopo AO, Enaibe BU. *Moringa oleifera* Lamarck (drumstick) leaf extract modulates the evidences of hydroxyurea-induced testicular derangement. *Int J Appl Res Nat Prod*. (IJARNP-HS Publications (USA)) 2011;4(2):32-45.

Hydroxyurea (HDU) is an antineoplastic agent that is commonly used in the treatment of Sickle cell disease (SCD). However, the therapeutic value of HDU is limited by its organotoxicity including testicular toxicity. It has been shown that free radicals are involved in HDU-induced toxicity. The application of natural phenolic compounds in the prevention of many pathologic diseases has been reported. Herein, the ability of polyphenolic-rich *Moringa oleifera* leaf extract (MOLE) to protect rat testis against HDU-induced histomorphometric, spermatogenic and oxidative status impairments were investigated. Our results demonstrated that co-treatment with MOLE protected the testis against the morphologic, spermatogenic and oxidative status changes induced by HDU. The present study explores the ability of MOLE to prevent testicular damage during HDU therapy with a view of providing base line information on its possible use as an adjunct in future treatment regimes.

73. Bassey RB, Yama OE, **Osinubi AA**, Noronha CC, Okanlawon A. Effects of Tahitian Noni dietary supplement on caffeine-induced testicular histo-pathological alterations in adult Sprague-Dawley rats. *MEFSJ* (*Middle East Fertility Society Journal)*. 2011;16(1):61-66.

The aim of this experiment was to investigate the possible ameliorating effect of Tahitian Noni dietary supplement on caffeine-induced testicular histopathological alterations in Sprague-Dawley rats. This is an experimental animal study. Thirty adult male Sprague-Dawley (SD) rats, weighing between 105 and 200 g were acclimatized and grouped into six of five rats per group. Group 1 was the control, Group 2 received 200 mg/kg of caffeine for 8 weeks, Group 3 received 200 mg/kg of caffeine for 4 weeks and 5 ml/kg of Noni for another 4 weeks, Group 4 received both 200 mg/kg of caffeine and 5 ml/kg of Noni for 8 weeks, Group 5 received 5 ml/kg of Noni for 8 weeks, Group 6 received 5 ml/kg of Noni for 4 weeks and 200 mg/kg of caffeine for another 4 weeks. Tahitian Noni caused a statistically significant increase in the mean body weight of the SD rats, opposed to the groups treated with caffeine. There was also a statistically significant increase in the testicular weight, sperm count and motility in the SD rats treated with Noni compared to those treated with caffeine. Caffeine negatively affected the histo-architecture of the seminiferous tubules with massive loss of spermatogenic cells while the groups exposed to Noni tended towards normal when compared with the control. Administration of Tahitian Noni dietary supplement ameliorates the testicular toxicities caused by a high dose of caffeine.

74. Gbotolorun SC, **Osinubi AAA,** Oremosu AA, Noronha CC. The effect of amodiaquine on oestrus cycle, ovarian histology and oxidative stress markers in regular cyclic Sprague-Dawley rats. *Agric Biol J N Am.* (Connecticut, USA) 2011;2(4):630-637.

This study investigated the effect of amodiaquine hydrochloride (AQ.HCl) administered by gavage on the oestrous cycle, ovarian morphology and on the antioxidant status of superoxide dismutase (SOD) and catalase (CAT) in the ovary of 15 regular cyclic Sprague-Dawley rats. The experiment was divided into 3 groups: group I- received 6 mg/kg bw AQ.HCl for 28 day; group II- received 12 mg/kg bw of AQ.HCl for 28 days; and group III- received distilled water and served as control. The animals were autopsied on the 28th day. Results showed that the mean length of the oestrous cycle was prolonged in all the AQ.HCl-treated rats when compared to the control. The increase in mean cycle length was statistically significant ($p < 0.05$) in the group that received 12 mg/kg bw of AQ.HCl. Histological sections of the ovaries of the rats treated with AQ.HCl revealed that the most remarkable change was widespread follicular atresia. The study revealed a reduction in the antioxidant status of SOD and CAT in the ovary. The result of this study showed that AQ.HCl is deleterious to the ovary.

75. Azu OO, Duru FIO, **Osinubi AAA,** Oremosu AA, Noronha CC, Okanlawon AO, Elesha SO. Long term treatment with *Kigelia africana* fruit extract ameliorates the testicular toxicity following cisplatin administration in male Sprague-Dawley rats. *J Med Plants Res*. 2011;5(3):388-397.

In the present study, we investigated the long term effects of treatment with *Kigelia africana* fruit extract (KAFE) and cisplatin in male Sprague-Dawley rats. Fifty rats were used for the study, divided into 10 groups ($n = 5$ in each group): control group, KAFE alone groups (100 and 500 mg/kg), cisplatin group, KAFE and cisplatin co-treatment group, KAFE prophylactic groups, and KAFE post-treatment groups. Testicular histopathology, MDA, GSH, catalase activities were determined alongside epididymal sperm count and motility. Hormonal assay for testosterone, FSH and LH was determined as well as morphometric parameters. Cisplatin-treated rats suffered 44% attrition rate with significantly reduced weight compared to controls and KAFE-treated rats. Similarly, sperm motility was below 50% in cisplatin-treated rats while KAFE treatment resulted in over 70% motility. The cross-sectional area of seminiferous tubules in cisplatin-treated rats was $27.77 \pm 0.9 \times 10^3$ μm^2 as against $35.28 \pm 1.6 \times 10^3$ μm^2 in controls. While in cisplatin-treated group the tissue levels of GSH and catalase activities were found to be significantly lower than in control and KAFE-treated rats, MDA levels were significantly higher. Administration of KAFE as an adjunct to cisplatin and as post-treatment was not as effective in ameliorating the derangements in histoarchitectural and biochemical parameters caused by cisplatin as the case when it is administered as a prophylactic or alone. Long term treatment with KAFE in rats has not shown any serious histoarchitectural alterations in the testis of the animals.

76. Yama OE, **Osinubi AA,** Duru FIO, Noronha CC, Okanlawon AO. Contraceptive effect of methanolic extract of *Momordica charantia* seed in male Sprague-Dawley rats. *Asian J Pharm Clin Res*. 2011;4(2):22-26.

The aim of this study was to investigate the oral contraceptive effects of methanolic seed extract of *Momordica charantia* (MC) in male Sprague-Dawley (S-D) rats. The parameters evaluated include mating test/fertility assessment, testicular morphometry, sperm count and motility. None of the male rats fed the MC seed extract (from the 8th week) was able to fertilize the females exposed to them despite successful mating. The testicular weight and volume were markedly reduced ($p < 0.05$) in the extract-treated groups compared to control. The rats in the withdrawal groups showed substantial recovery. The data from the present study suggest that MC seed extract produced a male contraceptive effect in S-D rats.

77. Osho OA, Akinbo S, **Osinubi A**, Olawale O. Effect of weight bearing and non-weight bearing aerobics combined with resistance exercises on the

cardiopulmonary functions of Nigerians with type 2 diabetes mellitus. *J Diabetes Metab*. 2011;10(1):411-417. doi:10.4172/2155-6156.S10-001.

People with type 2 diabetes (T2DM) often develop cardiopulmonary complications which necessitate prescription of therapeutic exercises. Progress monitoring post exercise prescription in the management cardiopulmonary complications is paramount. This study was designed to evaluate the effect of weight bearing aerobics combined with resistance exercises (WBARE) and non-weight bearing aerobic combined with resistance exercises (NWBARE) on selected cardiopulmonary parameters of Nigerians with T2DM. It also assessed the changes in these parameters at specified duration in the intervention period. Pre- and post-outcome measures which included cardiopulmonary parameters; resting arterial systolic and diastolic blood pressure (RASBP and RADBP), resting rate pressure product (RRPP), oxygen uptake (VO_2max), forced vital capacity (FVC) and forced expiratory volume in one second (FEV_1) were assessed at baseline and at the end of 4^{th}, 8^{th} and 12^{th} week. Glycosylated haemoglobin level (HbA1c) was assessed at baseline and at the end of 12^{th} week. RASBP, RADBP, RRPP and HbA1c were significantly decreased in WBARE and NWBARE groups ($p \leq 0.05$). VO_2max and FEV_1 were also significantly increased in both groups ($p < 0.05$). WBARE recorded significant improvement in FEV_1 and FVC values than NWBARE group when compared with control ($p < 0.05$). Significant improvement in RRPP, VO_2max and FEV_1 occurred as early as four weeks post intervention between the groups. WBARE and NWBARE improved cardiopulmonary functions in Nigerian adults with T2DM. WBARE may be more effective in the management of pulmonary functions.

78. Amah CI, Yama OE, Duru FI, **Osinubi AA**, Noronha CC, Okanlawon AO. Effect of *Momordica charantia* on Estrous Cycle of Sprague-Dawley Rats. *Pac J Med Sci*. (PJMS) (University of Papua New Guinea) 2011;3(1):37-48.

Bitter melon (*Momordica charantia*) is a plant known for its uses in various ailments. However, little is known for its effect on the female reproductive system. The aim of this project was to evaluate the effect of oral administration of methanolic seed extract of *Momordica charantia* on the oestrous cycle and the histology of the ovary and uterus in Sprague-Dawley (S-D) rats. Twenty adult cyclic female S-D rats were used. The dose of the extract administered was 25 mg/100g body weight. Groups A and B were both treated with a daily dose of the extract for 28 days (7 cycles) and vaginal smear monitored within this period. Animals in Groups C and D (control) were fed distilled water and vaginal smear monitored. The effect of withdrawal of the extract was studied in Group B which was treated with distilled water for another 28 days. Irregular changes in the phases of the oestrous cycle in all the treated rats were observed: the diestrus phase was increased while the proestrus and oestrus phases were decreased significantly. These effects were reversible on withdrawal of the extract. Histological sections did not show any difference between the ovarian and uterine tissues of the treated and control.

79. Jewo PI, Duru FI, **Osinubi AA**, Fadeyibi IO, Faduyile FA, Benebo AS. Histological Changes and Testicular Dysfunction in Severely Burned Rats. *MJMS*. (*Macedonian Journal of Medical Sciences*) (Republic of Macedonia) 2011;4(3):227-233.

The immediate and early sequelae of burns such as vascular collapse and wound sepsis have been extensively studied. Some studies now show that burns cause significant changes in most body systems. However, only few studies have addressed the reproductive consequences of burns in the male. In this study, third degree burns were induced in Wistar rats equivalent to 40% of total body surface area. They were sacrificed at 8 and 16 weeks. Epididymal sperm parameters, serum follicle-stimulating hormone (FSH), luteinizing hormone (LH) and testosterone (TT) were measured. A semi-quantitative evaluation of histopathological changes in the testis was also carried out. Burns caused significant reduction in all sperm parameters ($p < 0.05$). FSH, LH and TT were also significantly

reduced at 8 weeks. By 16 weeks however, only TT was still reduced. The key histologic change was germ cell atrophy. In cases of chronic wounds, sloughing left only basal cells such as spermatogonia and Sertoli cells in many of the tubules. It was concluded that burns impair spermatogenesis and distorts testicular histology in rats.

80. Yama OE, Duru FI, Oremosu AA, **Osinubi AA**, Noronha CC, Okanlawon AO. Sperm quotient in Sprague-Dawley rats fed graded doses of seed extract of *Momordica charantia*. *MEFSJ* (*Middle East Fertility Society Journal*) 2011;16:154-158.

The objective of this investigation was to evaluate the effects of methanolic seed extract of *Momordica charantia* (MC) on the sperm production (sperm number and motility), testicular volume and testicular testosterone in Sprague-Dawley (S-D) rats. Twenty adult male S-D rats, weighing 106-200 g were randomly allotted into 4 main groups (A, B, C and D). Groups A, B and C received 15, 25 and 50 mg/100 g bw/oral of MC, respectively, daily for 56 days. Group IV rats (control) were fed equal volume of physiological saline. Testicular volume, sperm count and motility and testicular testosterone estimated. The sperm number and motility were found to be significantly decreased ($p < 0.05$) with increasing dose. Similarly a dose-dependent decrease in the testicular testosterone concentrations and testicular volume ($p < 0.05$) was also recorded. We concluded that MC suppresses the sperm production in rats. Thus, it could be developed into a contraceptive agent for men.

81. Osho OA, Akinbo SRA, **Osinubi AAA**, Olawale OA. Effect of progressive aerobic and resistance exercises on the pulmonary functions of individuals with type 2 diabetes. *Int J Endocrinol Metab.* (Shahid Beheshti University of Medical Sciences, Tehran, Iran) 2012;10(1):411-417.

The lungs are end organs that are adversely affected in adults with type 2 diabetes (T2DM). Assessment and monitoring of the progress of pulmonary functions postexercise prescription is paramount for optimal feedback on a patient's progress. This study was designed to investigate the pulmonary responses of individuals with T2DM to progressive aerobic exercises and resistance exercises (PAREs) and assess changes at specified points in the intervention period. Outcome measures, which included pulmonary parameters (oxygen uptake (VO_2max), forced vital capacity (FVC), forced expiratory volume in one second (FEV_1)) and anthropometric parameters (body mass index (BMI), waist circumference (WC), and waist hip ratio (WHR)), were assessed at baseline and at the end of weeks 4, 8, and 12 of the intervention period. Glycosylated hemoglobin level (HbA1c) was assessed at baseline and at the end of week 12. Mean VO_2max, FEV_1, and FVC increased as early as 4 weeks postintervention. Significant improvements in these variables were noted in subjects ($p < 0.05$). WC and HbA1c were significantly reduced ($p = 0.03$ and 0.001, respectively) following intervention. Significant changes in pulmonary variables occurred from week 8. PARE is beneficial in the management of pulmonary complications in adult Nigerian T2DM patients. PARE for at least 4 weeks may improve the pulmonary function of individuals with T2DM. However, postexercise prescription assessment may be commenced 8 weeks post intervention.

82. Bassey RB, Bakare AA, Peter AI, Oremosu AA, **Osinubi AA**. Factors influencing extract of *Hibiscus sabdariffa* staining of rat testes. *Biotech Histochem.* (Louisville, USA) 2012;87(6):403-407.

Some plant extracts can be used in biology and medicine to reveal or identify cellular components and tissues. We investigated the effects of time and concentration on staining of histological sections of rat testes by an acidified extract of *Hibiscus sabdariffa*. An ethanolic extract of *Hibiscus sabdariffa* was diluted using 1% acetic acid in 70% ethanol to stain histological sections of testes at concentrations of 0.2, 0.1 and 0.05 g/ml for 5, 10, 15, 30, 45 and 60 min. The sections of testes were stained deep red. The staining efficiency of *Hibiscus sabdariffa* was greater at a high concentration and required less time to achieve optimal

staining than at lower concentration. *Hibiscus sabdariffa* is a strong basic dye that can be used for various diagnostic purposes. Staining time and concentration must be considered to achieve optimal results.

83. Bassey RB, Bakare AA, Edagha IA, **Osinubi AA**, Oremosu AA. Staining characteristics of *Lonchocarpus cyanescens* leaf extract on the testis of Sprague-Dawley rats. *Microsc Microanal*. (USA and Canada) 2012;18(4):840-843.

The use of nonallergic, nontoxic, and eco-friendly natural dyes has become a matter of great importance due to increased environmental awareness on the need to avoid hazardous synthetic dyes. This study was to determine the staining properties of the dye extract of *Lonchocarpus cyanescens* on histomorphology of the testis. The dye obtained from the boiled leaves was diluted with 70% ethanol to a concentration of 0.1 g/mL and was used to stain sections of testes. Its potential for use as a counterstain was also studied. The sections of testes were stained in shades of blue. The dye overshadowed the colours of haematoxylin and eosin. Preliminary phytochemical screening of *L. cyanescens* revealed that it contains alkaloids, saponins, flavonoids, and tannins.

84. Bassey RB, Oremosu AA, **Osinubi AAA.** *Curcuma Longa*: Staining Effect on Histomorphology of the Testis. 2012; 5(1): 26-29 *MJMS*. (*Macedonian Journal of Medical Sciences*) (Republic of Macedonia). http://dx.doi.org/10.3889/MJMS.1857-5773.2011.0209.

The use of non-allergic, non-toxic and eco-friendly natural dyes has become a matter of significant importance due to the increased environmental awareness in order to avoid some hazardous synthetic dyes. The ethanolic extract of Curcuma longa was diluted using 1% acetic acid in 70% ethanol to a concentration of 0.2 g/ml. It was used to stain histological sections of the testes for 15 minutes. *Curcuma longa* was also used as a counter stain for Haematoxylin. Phytochemical constituents were investigated. The *Curcuma longa* dye distinctly stained the seminiferous epithelium and interstitium yellow. *Curcuma longa* provided a good counter stain for Haematoxylin, taking up the acidic staining characteristics with Haematoxylin staining the basic staining characteristics. Phytochemical screening revealed the presence of saponins, alkaloids, tannins and flavonoids. *Curcuma longa* has good potential for use as a counter stain for Haematoxylin in the staining of tissues in lieu of Eosin.

85. Gbotolorun SC, Oremosu AA, **Osinubi AAA**, Noronha CC, Coker HAB, Silva BO. Ameliorative effect of Vitamin E on the deleterious effect of Amodiaquine hydrochloride (AQ.HCl) on the reproductive function of the adult cyclic Sprague-Dawley (S-D) rats. *Biol Med*. 2012;4(3):141-146.

This study determined whether exogenous supplementation with Vitamin E could confer ameliorative effect against the deleterious effect of amodiaquine hydrochloride (AQ.HCl) on ovarian function of matured Sprague-Dawley (S-D) rats. Thirty S-D rats divided into two groups were used in this study: Group A – determined the effect of AQ.HCl + Vitamin E administered for 28 days on the oestrous cycle and antioxidant activities of superoxide dismutase (SOD) and catalase (CAT). Group B – determined the effect of a single dose of AQ.HCl + Vitamin E administered at 5 p.m. on proestrus on ovulation and serum concentrations of follicle stimulating hormone (FSH), luteinizing hormone (LH), and prolactin (PRL). The exogenous supplementation with Vitamin E increased ($p < 0.05$) the length of the oestrous cycle and the diestrus phase, decreased the activities of CAT and SOD slightly, and did not hinder ovulation in adult S-D rats. Vitamin E proffered ameliorative effect against the deleterious effect of AQ.HCl through its antioxidant activity.

86. Kusemiju TO, Yama OE, **Osinubi AA**, Okanlawon AO. Morphometric assessment of the effect of *Carica papaya* bark extracts on testes of Sprague-Dawley rats. *Pacific Journal of Medical sciences* (Official Publication of the Divisions of Basic Medical Sciences and Health Sciences, School of Medicine and Health Sciences, University of Papua New Guinea), 2012;9(2): 3-16.

Carica Papaya (CP) plant (paw paw) is largely used for its curative benefit and now being exploited as an anti-fertility agent. The testicular histomorphometric correlation vice versa

function is yet to be fully understood. This study aimed at quantifying the effects of aqueous extract of the bark of CP on the testes of adult Sprague–Dawley (S-D) rats. Ninety adult 6-8 weeks old male S-D rats were divided into nine groups [$1DW_{(4wk)}$, $1CP_{50(4wk)}$, $1CP_{100(4wk)}$, $2DW_{(8wk)}$, $2CP_{50(8wk)}$, $2CP_{100(8wk)}$, $3DW_{(16wk)}$, $3CP_{50(16wk)}$ and $3CP_{100(16wk)}$] of 10 rats per group. Rats in groups $1DW_{(4wk)}$, $2DW_{(8wk)}$, and 3DW(16wk) served as control and were treated with distilled water (DW) for 4, 8 and 16 weeks respectively. Rats in groups $1CP_{50(4wk)}$, $2CP_{50(8wk)}$ and $2CP_{50(16wk)}$ were fed 50 mg/ml/day CP, while those in groups $1CP_{100(4wk)}$, $2CP_{100(8wk)}$ and $2CP_{100(16wk)}$ were fed 100 mg/ml/day CP. Rats in groups $2CP_{50(16wk)}$ and $2CP_{100(16wk)}$ compared to those in $3DW_{(16wk)}$ were observed for possible reversibility after 8 weeks of withdrawal of the CP extract. Rats were sacrificed after the appropriate duration and testicular histological sections prepared for histometric analysis. Stereological parameters estimated were; tubular diameter, cross sectional area of seminiferous tubules, volume density, number of profiles per unit area, absolute volume of seminiferous tubules and testicular interstitium, numerical density, length density and star volume of the seminiferous tubules. The result showed dose and duration-dependent decrease in mean testicular volume, tubular diameter, cross sectional area and star volume of tubules. A converse increase in the length density, numerical density, number of profiles per unit area and volume density of tubules was also observed. Alteration in the histomorphometric data indicates that the CP bark extract can cause impairment in spermatogenesis.

87. Bassey RB, **Osinubi AA**, Oremosu AA. Staining effect *Hibiscus sabdariffa* extract on sperm cell morphology of Sprague-Dawley rats. *J Histotechnol*. (Journal of the National Society for Histotechnology) 2012;35(3):110-113.

There is increasing awareness among people towards natural products. Due to their non-toxic properties, low pollution, and lower side effects, natural dyes are used in many day-to-day products. Although the African continent possesses plentiful plant resources, only a small amount has been exploited so far. This study evaluated the use of *Hibiscus sabdariffa* as a stain to evaluate sperm morphology. Following liquefaction, 10 ml of semen was spread onto glass slides and allowed to air-dry at room temperature. The smear was fixed for 15 minutes in methanol. The sperm morphology was analyzed by staining 10 slides of the smears with eosin (control) and the ethanolic extract of *Hibiscus sabdariffa* dye was used to stain the sperm cells. The smears were air-dried and viewed at magnification of x400. Phytochemical and chromatographic analyses were carried out. The sperm cells were stained in shades of reddish brown. Preliminary phytochemical screening of *Hibiscus sabdariffa* revealed that it contains alkaloids, saponins, flavonoids, and tannins. *Hibiscus sabdariffa* has potential for use as a stain for study of sperm morphology.

88. Falana BA, Ogundele OM, Duru FI, **Osinubi AA**, Falode DT. Role of Se+Zn in regeneration (Ki-67) following Pb toxicity (p53 and cad) in the germinal epithelium of adult Wistar rats. *Pak J Biol Sci*. 2013;16:67-73.

This study addresses the effect of lead (Pb) toxicity on the germinal epithelium and the proliferative effect of Zinc (Zn) and Selenium (Se) administered in trace concentration. Sixty adult male Wistar rats were divided into four groups of 15 animals each. Group 1 received normal saline, group 2: 100 mg $kg^{-1}$of lead acetate, group 3: 100 mg kg^{-1} of lead acetate then 2.25 mg kg^{-1} each of Zn and Se and group 4: 2.25 mg kg-1of Se+Zn. Se+Zn treatment improves proliferation of germinal epithelium and counters Pb toxicity, probably by substitution, activation of enzymes (radical scavengers and vitamins), growth factors and endothelial factors.

89. Falana BA, Ogundele OM, Duru FI, **Osinubi AA**, Falode DT. Immunohistochemical Characterization of Lymphocytic CD3/CD20 and Macrophage CD68 in the Germinal Epithelium of Pb and Se+Zn Treated Adult Sprague-Dawley Rats. *J Cytol Histol*. 2013, 4:171. doi:10.4172/2157-7099.1000171.

Lead toxicity in the testes has been described to be capable of inducing cell death by apoptosis and necrosis. Such toxicity can be attenuated by selenium and zinc synergy treatment in trace amount. This study evaluates the role and distribution of macrophages/histocytes (CD68), B-Lymphocytes (CD20) and T-Lymphocytes (CD3) in the testes of lead, selenium and zinc treated rats. 60 F1 generation adult male Sprague-Dawley rats were divided into four groups of 15 animals each. Group 1 received normal saline, group 2: 100 mg/Kg of lead acetate, group 3: 100 mg/kg of lead acetate then 2.25 mg/ Kg each of Zinc (Chelated zinc) and Selenium (Sodium Selenium) and group 4: 2.25 mg/kg of zinc and selenium (Se+Zn). The duration of treatment was 56 days following which the animals were sacrificed on the 57th day and the testes harvested and fixed in Bouin's fluid. CD3, CD20 and CD68 are distributed within the epithelium and the interstitium of the Pb treated testis, the expression level is influenced by the extent of the damage posed by Pb toxicity and not by the proliferative tendencies of Se+Zn treatment did protect the germinal epithelium and the macrophage/lymphocyte cell lines.

90. Badejo P, Samuel TA, Yama O, Kusemiju TO, **Osinubi AA**. Effects of Tyrosine on Metoclopramide Treated Hyperprolactinemic Adult Wistar Rats. *Asian J Biochem Pharmaceut Res.* 2013; 1(3):148-157.

The potential pro-fertility effects following oral administration of tyrosine was investigated in adult male albino Wistar rats. Thirty-sixadult male Wistar rats were uniformly divided into six groups of six rats each. Group A served as control while Groups B, C, D, E and F were respectively given 10mg/kg body weight of metoclopramide for 3 weeks. At the end of the 3 weeks, the metoclopramide was discontinued and group C was given 0.11mg/kg bromocriptine while groups D, E and F were given 33mg/kg, 66mg/kg and 100mg/kg body weight tyrosine respectively. At the end of treatments, animals were sacrificed, serum prolactin and testosterone were assayed. Results showed that treatment of rats with the respective doses of tyrosine improved the fertility of these groups as compared with bromocriptine. This result suggests that ingestion of tyrosine may be beneficial in the treatment of infertility.

91. Falana BA, Ogundele OM, Duru FI, **Osinubi AA**, Falode DT. Molecular Characterization of Alkaline Phosphatase and PLAP in the Germinal Epithelium of Pb and Se+Zn Treated Adult Sprague-Dawley Rats. *Cell Dev Bio*. 2013; 2(3):1-4. http://dx.doi.org/10.4172/2168-9296.1000122

The role of alkaline phosphatase in cell metabolism and regulation is essential and cuts across cell proliferation, division, cell death, membrane transport and DNA cleavage. This study addresses the role and importance of alkaline phosphates (ALP) and Placenta Alkaline phosphatase (PLAP) in the cells of germinal epithelium of male Rat testes following induced lead (Pb) toxicity and rejuvenation by Selenium (Se) and Zinc (Zn) treatment. Adult Sprague-Dawley Rats (males) were divided into 4 groups of 15 animals each and were treated as thus; Group 1: Normal saline and serves as the control, Group 2: 100 mg/Kg BW of Pb only, Group 3: 100 mg/Kg BW of Pb and 2.25 mg/Kg each of Se and Zn and group 4 received 2.25 mg.Kg each of Se and Zn only. The duration of treatment was 56 days following which the animals were sacrificed by the 57th day and testes fixed in Bouin's fluid. Pb induced toxicity could be apoptotic involving ROS activation of NO-dependent apoptotic pathway or necrotic involving a wide range damage by ROS induced lipid peroxidation. Selenium and zinc treatment ameliorated the damage induced by lead toxicity in the germinal epithelium. ALP is involved in intrinsic regulation of DNA cleavage in apoptosis by functioning similar to endonucleases and also regulates membrane transport in perioxidated biomembranes. PLAP expression is minimal as tumorgenesis was not recorded, although Pb treatment showed signs of epithelium of endothelial cancer signalling, which was ameliorated by Se+Zn treatment.

92. Osinubi AAA. Ailoje-Ibru K. A Paradigm Shift in Medical, Dental, Nursing, Physiotherapy and Pharmacy Education: From Traditional Method of Teaching to

Case-Based Method of Learning- A Review. *Annual Research & Review in Biology*. 2014;4(13):2053-2072.

The most commonly used pedagogy in Nigeria and most other countries is the didactic method of teaching. This method is useful for covering underlying concepts, principles and systems. The traditional method of teaching places the burden of promoting learning fully on the teacher, unless it is integrated with other techniques such as problem-based learning and case-based learning (CBL). However, the advantages of CBL over the traditional method of teaching have not been adequately evaluated and this also reflects on the dearth of available literature in this area. The purpose of this paper is to critically evaluate, analyze and synthesize the available literature evidence base about CBL in order to highlight its merits/benefits, barriers and possible shortcomings so as to guide Medical Colleges and Faculties of Pharmacy in Nigeria in taking a decision on whether or not to begin to explore the possibility of introducing CBL in their medical, dental, physiotherapy, nursing and pharmacy curricula. The study was literature-based. The review was focused on CBL for both preclinical and clinical health professional programmes including Medicine, Dentistry, Physiotherapy, Nu effectiveness. The search covered the period from January 1990 to December 2013 and the following databases: MEDLINE, EMBASE, Cochrane Library, International Education Research Database, Web of Knowledge (WoK) and ERIC (Educational Resources Information Center) database. The traditional modes of teaching of science and medical subjects focus mainly on the transmission of content by disciplinary experts. By nature, these teaching processes by themselves are not effective at equipping the students in the areas of communication, critical thinking, creativity, self-directed and collaborative learning. CBL adequately addresses most of these deficiencies in pedagogy. In their effort to find solutions and reach decisions through discussion, learners sort out factual data, apply analytic tools, articulate issues, reflect on their relevant experiences, and draw inferences they can relate to new situations that are often not given within the scope of a lecture but that could be very vital in professional practice. In the process, they acquire substantive knowledge, become innovative and develop analytic, collaborative and communication skills. Colleges and faculties of Medicine and Pharmacy should consider the inclusion of CBL in their curricula for the teaching of medicine, dentistry, physiotherapy, nursing, pharmacy and other allied programmes.

93. Dosumu OO, **Osinubi AAA**, Duru FIO. Alcohol induced testicular damage: Can abstinence equal recovery? *MEFSJ* (*Middle East Fertility Society Journal*). 2014;19:221-228. DOI: 10.1016/j.mefs.2014.01.003.

Drinking continues to be a major problem in many parts of the world. Significant effects on testicular morphology and function in animals as well as man have been well described. To further explore the impact of chronic ethanol exposure on the testes, we designed this study specifically to define whether or not there was complete recovery after abstinence by examining reproductive hormones, testicular histomorphometry, testicular antioxidants as well as semen parameters after ethanol exposure. Sexually mature male Sprague–Dawley rats were randomly divided into control, abstinent and non-abstinent groups. Alcohol was administered orally at 7 ml/kg body weight per day thrice in a week for 2, 4 and 8 weeks. Control animals received an equivalent amount of distilled water. Histological analysis of the seminiferous tubules of the animals in the non-abstinent group showed severe reduction of cells of the spermatogenic series, hypocellularity, tubular atrophy and significant reductions in the tubular diameter and cross-sectional areas ($p < 0.001$). Testicular weight, sperm count and motility, were also significantly reduced ($p < 0.001$) while testicular malondialdehyde (tMDA) levels increased significantly ($p < 0.001$). Hormonal assay showed significant reductions in the levels of testosterone (TT) ($p < 0.05$) while luteinizing hormone (LH) and follicle stimulating hormone (FSH) remained unchanged. In the recovery or abstinent groups (group III), despite weeks of abstinence from alcohol, the groups still demonstrated high levels of tMDA, low sperm count and motility and significantly reduced ($p < 0.001$) testicular diameter and cross sectional area values. However, increased TT levels and non-severe reduction in the seminiferous epithelium observed in these groups showed signs of epithelial

regeneration and probable recovery tendencies. In conclusion, the present study shows that total alcohol abstinence following chronic ethanol administration failed to reverse completely alcohol-induced testicular damage.

94. Bassey R, Hu Y, Tomaszewski J, Nickerson P, Holmes J, Colón L, **Osinubi A,** Oremosu A. Histomorphologic characterization of human tissues stained with selected plant-based dyes. *The FASEB Journal*, 2014; 28: no. 1 Supp. 1050.10.

The use of eco-friendly natural dyes has become a matter of significance due to increased environmental awareness. However, the scientific studies and systematic reports with natural dyes are insufficient. In this study, we have explored the histomorphological properties of several plant-based dyes**.** Paraffin-embedded human tissue sections were stained with a variety of plant-based dyes sourced from Nigeria to determine factors that produce the optimal staining efficiency in the dyes. The stained tissues were studied under bright-field and also using a multi-spectral imaging system to histomorphologically analyze the staining characteristics on the different tissues. The staining characteristics and factors influencing staining efficiency of the different dyes on human tissues were determined. *L. cyanescens* stained the nuclei and cytoplasm with strong nuclear labeling in all the tissues. *H. sabdariffa* selectively and strongly labeled the nuclei in the tissues stained. The deep pink from *H. sabdariffa* and the blue from *L. cyanescens* gave good contrast, making a good combination for staining of tissues. Our study has shown *L. cyanescens* and *H. sabdariffa* as effective, cheap and readily available histological stains derived from our rich biota.

95. Akang EN, Oremosu AA, **Osinubi AA**, Dosumu OO, Kusemiju TO, Adelakun SA, Umaru ML. Histomorphometric studies of the effects of *Telfairia occidentalis* on alcohol-induced gonado-toxicity in male rats. *Toxicology Reports*. S2214-7500(15)30018-4. DOI: ttp://dx.doi.org/doi:10.1016/j.toxrep.2015.06.009.

Available evidence suggests that 50% of couples with infertility are male related. Over 40% of these males consume alcohol which has been reported to be a reproductive toxicant causing depletions in the epithelium of seminiferous tubules hence reducing sperm counts and sperm morphology. Objective of study was to determine the effects of aqueous leaf extract of *Telfairia occidentalis* on alcohol-induced cytoarchitectural changes in the testis. Aqueous leaf extract of *Telfairia occidentalis* was administered by gastric gavage at a dose of 250mg/kg and 500 mg/kg body weight daily, while 2 g/kg body weight of ethanol at 30% v/v was administered daily to mature male Sprague-Dawley rats. The experiment was in 2 phases. Phase 1 had groups A1-F1 and lasted for 4 weeks while phase 2 had groups A2-F2 and lasted 8 weeks. Parameters tested include: testicular histology, relative volume density, sperm parameters, malondialdehyde (MDA), superoxide dismutase (SOD) and reduced glutathione. In both phases, there were depletions in the seminiferous epithelium, decreased sperm quality and increased MDA and SOD in animals that received alcohol only compared to control. Likewise, a significant increase of seminiferous epithelium of animals that received respective doses of 250 mg/kg and 500 mg/kg of *T. occidentalis* only compared to control. Animals that received *T. occidentalis* and alcohol simultaneously had a significant increase in seminiferous epithelium and sperm quality with decreased MDA level. *T. occidentalis* attenuated the deleterious effects of alcohol to the cytoarchitecture of the testis, protected the seminiferous epithelium, reduced oxidative stress and promoted spermatogenesis.

BOOKS

1. **Osinubi AAA**. Saalu LC, Imosemi IO. Interactive Anatomy Text Series - Histology. Lagos: Miral Printing Press, 2009, 1-264.
2. Chinenye S, Ofoegbu EN, Uloko A, Ogbera A, Kuku SO, Johnson TO, Oli JM, Onyemelukwe GC, Puepet F, Mijinyawa B, Young E, Fasanmade O, Solanke A, Ocheke A, Ekpebe C, Bakari AG, Abdullahi A, Mubi B, Anumah F, Idris H,

Briggs O, Sada K, Isiavwe AR, Ohwovoriole AE, Unachukwu CN, **Osinubi AAA**. National Clinical Practice Guidelines for Diabetes Management in Nigeria. Diabetes Association of Nigeria (DAN). Lagos: Capital Centre Nig. Ltd., 2012, 1-127.

3. **Osinubi AAA,** Saalu LC. Interactive Anatomy Text Series - Basic and Human Anatomy. Lagos: Adeleye Printing Services, 2012, 1-557.

PAPERS READ AT CONFERENCES/WORKSHOPS

1. Cytoarchitectural and morphometric changes in the testis induced by short and long-term administration of quinine in rabbits.
   Osinubi AA, Noronha CC, Okanlawon AO.
   Conference: 10th International Conference of Anatomical Society of West Africa in Accra, Ghana (May, 2003).
2. The circadian rhythm of blood glucose in normal Sprague-Dawley rats in Lagos.
   Udeh RA, **Osinubi AA**, Akpanta A, Noronha, CC, OkanlawonAO.
   Conference: 10th International Conference of Anatomical Society of West Africa in Accra, Ghana (May, 2003).
3. Short and long-term effects of quinine on rat testis: A morphometric assessment.
   Osinubi AA, Noronha CC, Okanlawon AO.
   Conference: 2003 Scientific Conference & Annual General Meeting of the Nigerian Society of Endocrinology and Metabolism in Lagos, Nigeria (September, 2003).
4. The correlation between prostate-specific antigen and seminal fluid analysis in Nigerian males.
   Osinubi AA, Wellington JO, Ajayi GO.
   Conference: 2003 Scientific Conference & Annual General Meeting of the Nigerian Society of Endocrinology and Metabolism in Lagos, Nigeria (September, 2003).
5. The pattern of triiodothyronine, thyroxine and thyroid-stimulating hormone in Nigerian males.
   Osinubi AA, Wellington JO, Ajayi GO.
   Conference: 2003 Scientific Conference & Annual General Meeting of the Nigerian Society of Endocrinology and Metabolism in Lagos, Nigeria (September, 2003).
6. The relationship between prostate-specific antigen and hormonal profile in Nigerian males.
   Osinubi AA, Wellington JO, Ajayi GO.
   Conference: 2003 Scientific Conference & Annual General Meeting of the Nigerian Society of Endocrinology and Metabolism in Lagos, Nigeria (September, 2003).
7. The effect of bilateral optic enucleation on the level and rhythm of blood glucose in Sprague-Dawley rat.
   Osinubi AA, Udeh RA, Noronha CC, Okanlawon AO.
   Conference: 2003 Scientific Conference & Annual General Meeting of the Nigerian Society of Endocrinology and Metabolism in Lagos, Nigeria (September, 2003).
8. Acute effects of *Vernonia amygdalina* on blood glucose levels in normoglycaemic and alloxan-induced diabetic male Sprague-Dawley Rats.
   Adejunwon SA, **Osinubi AA**, Noronha CC, Okanlanwon AO.
   Conference: 2003 Scientific Conference & Annual General Meeting of the Nigerian Society of Endocrinology and Metabolism in Lagos, Nigeria (September, 2003).
9. Attenuation of quinine-induced testicular toxicity by ascorbic acid in rat: A stereological approach.
   Osinubi AA, Noronha CC, Okanlawon AO.
   Conference: 2004 International Conference of Endocrinology, Lisbon, Portugal

(September, 2004).

10. Evaluation of the hypoglycaemic, anti-hyperglycaemic and anti-diabetic effects of aqueous leaf extract of *Tapinanthus butungii*.
Osinubi AA, Ajayi GO, Adesiyun AE.
Conference: The 2005 University of Lagos Annual Research Conference and Fair (October, 2005).

11. The effects of quinine and ascorbic acid on rat testicles.
Osinubi AA, Daramola AO, Noronha CC, Okanlawon AO, Ashiru OA.
Conference: The 2005 University of Lagos Annual Research Conference and Fair (October, 2005).

12. Comparative effects of three tropical herbs, glibenclamide, chlorpropamide and human insulin lente on blood glucose in normoglycaemic, hyperglycaemic and alloxan-induced diabetic rats.
Osinubi AA, Adesiyun AE, Ajayi GO, Ogunleye OO, Akinlua JT, Agbaje MA.
Conference: 19th World Diabetes Congress, Cape Town, South Africa. (December, 2006).

13. (a) Introduction to stereology and andrological techniques.
Osinubi AA.
(b) Quinine - A male contraceptive?
Osinubi AA, Noronha CC, Daramola AO, Ajala MO, Okanlawon OA, Ashiru OA.
Conference: 1st Conjoint International Conference on Fertility, Anatomy and Morphological Sciences, Lagos, Nigeria (September, 2007).

14. Quinine - A male contraceptive?
Osinubi AA, Noronha CC, Daramola AO, Ajala MO, Okanlawon OA, Ashiru OA.
Conference: 2007 Scientific Conference and Annual General Meeting of the Nigerian Society of Endocrinology and Metabolism (September, 2007).

15. Thyroid function tests in pregnant women in Lagos, Nigeria.
Osinubi AA, Ajayi GO, Oshundiya OO, Balogun RO.
Conference: 2007 Scientific Conference and Annual General Meeting of the Nigerian Society of Endocrinology and Metabolism (September, 2007).

16. The search for male contraceptive: The quinine study.
Osinubi AA, Noronha CC, Daramola AO, Ajala MO, Okanlawon OA, Ashiru OA.
Conference: The 1st Scientific Conference and General Meeting of the American Association of Clinical Endocrinologists - Nigerian Chapter (November, 2007).

17. Stereology application – Our experience with testicular toxicology and morphometry.
Osinubi AA, Noronha CC, Daramola AO, Ajala MO, Okanlawon OA, Ashiru OA
Conference: 7th Annual Scientific Conference of the Anatomical Society of South South and South Eastern Nigeria (November, 2007).

18. Secular trends in male reproductive functions: A fact, fiction or an artefact?
Akingbade A, **Osinubi AA.**
Conference: 2008 Scientific Conference and Annual General Meeting of the Nigerian Society of Endocrinology and Metabolism (Abuja, Nigeria) (September, 2008).

19. Anatomical variations or anatomical abnormalities- Where is the dividing line? And where and when is the local canon?
Osinubi AA, Enye LA, Olakulehin OE, Tedunjaiye OA, Saalu CL, Imosemi IO, Anuforo, AC, Agbara JO, *et al*.
Conference: 6th Annual Scientific Conference of the Anatomical Society of Nigeria (October, 2008).

20. Role of herbal nutritional supplements in the management of diabetes mellitus – A systematic review.
Yama O, **Osinubi AA.**

Conference: The 2nd Scientific Conference and General Meeting of the American Association of Clinical Endocrinologists (AACE) - The Nigerian Chapter (October, 2008).

21. Role of vitamins and minerals (dietary supplements) in the management of diabetes mellitus – A systematic review.
Yama O, **Osinubi AA**
Conference: The 2nd Scientific Conference and General Meeting of the American Association of Clinical Endocrinologists (AACE) - The Nigerian Chapter (October, 2008).

22. Evaluation of the hypoglycemic, anti-hyperglycemic and anti-diabetic effects of aqueous leaf extract of *Tapinanthus butungii* in male Sprague-Dawley rats.
Osinubi AA, Ajayi OG, Adesiyun AE.
Conference: 13th International Congress of Endocrinology, Rio de Janeiro, Brazil (November, 2008).

23. Cytoarchitectural and morphometric alterations of testes of Sprague-Dawley rats secondary to quinine.
Osinubi AA, Daramola AO, Ajala MO, Noronha CC, Okanlawon AO.
Conference: 18th Annual Meeting & Clinical Congress of American Association of Clinical Endocrinologists in Houston, Texas, USA (May, 2009).

24. Correlation of prostate-specific antigen with luteinizing hormone, follicle-stimulating hormone, prolactin, testosterone, inhibin B, sperm count and motility in Nigerian males.
Osinubi AA, Ajayi GO, Omilabu SA, Wellington JO.
Conference: 7th Annual Scientific Conference of the Anatomical Society of Nigeria, Olabisi Onabanjo University, Ogun State, Nigeria (February, 2010).

25. Correlation of prostate-specific antigen with luteinizing hormone, follicle-stimulating hormone, prolactin, testosterone, inhibin B, sperm count and motility in Nigerian males.
Osinubi AA, Ajayi GO, Omilabu SA, Wellington JO.
Conference: 19th Annual Meeting & Clinical Congress of American Association of Clinical Endocrinologists in Boston, Massachusetts, USA (April, 2010).

26. Reversal of propoxur-induced testicular alteration by *Cissus populnea* in Wister rats.
Oyewopo O, Saalu LC, **Osinubi AAA**, Ashiru OA.
Conference: Joint Meeting of Anatomical Societies, Bursa, Turkey (May, 2011).

27. Effects of quinine on spermatogonia, spermacyte, Sertoli cell and Leydig cell counts
Osinubi AA.
Course: The 2012 Bangalore Microscopy Course, Bangalore, India (September, 2012).

28. Non-Communicable Killer Diseases: Prevention and Management.
Osinubi AAA.
Workshop for Federal Permanent Secretaries in Nigeria, Lagos, Nigeria (19th January, 2013).

29. The Relevance of Anatomy in Ultrasonography.
Osinubi AAA.
World Federation of Ultrasound in Medicine and Biology, College of Medicine of the University of Lagos, Lagos, Nigeria (11th February, 2013).

30. The use of Animals in Endocrine Research.
Osinubi AA.
Conference: 3rd SIDCAIN (Strategies for Improving Diabetes Care in Nigeria) Conference, Obafemi Awolowo College of Health Sciences, Ogun State, Nigeria. (28th February, 2013).

31. The Triad of Silent Killers: Simple Antidotes and Preventive Measures.
Osinubi AAA.
Workshop for Provost and Deans of the University of Lagos, Lagos, Nigeria (9th April, 2013).

32. Ethical Concerns in Animal Research.
Osinubi AAA.
Workshop on Scientific Paper Writing (Organized by the Faculty of Basic Medical Sciences, College of Medicine of the University of Lagos) (12th June, 2013).

33. The Journal Publication Process.
Osinubi AAA.
College of Medicine of the University of Lagos Manuscript Writing Workshop (9th July, 2013).

34. (a) Teaching by Case-Based Method: An overview of the course; (b) Common Non-facilitating Teaching Behaviours; (c) Teaching by Case-Based Method: A reflection and way forward.
Osinubi AA.
First step-down training of trainers programme on teaching by case method for academic faculty of the College of Medicine of the University of Lagos (17th - 19th July, 2013).

35. Use of animals in endocrine research.
Osinubi AAA.
Pre-conference Update Course of the Endocrine and Metabolism Society of Nigeria (September 11th 2013).

36. Diabetology: Insights from Pathophysiological Anatomy.
Osinubi AAA.
35th Scientific Conference and Annual General Meeting of the Endocrine and Metabolism Society of Nigeria, Lagos, Nigeria (September 12th 2013).

37. Case-Based Learning Method: An Overview.
Osinubi AAA.
MEPIN second step-down workshop on teaching by case-based method organized by College of Medicine of the University of Lagos (3rd February, 2014).
Unilag Conference Centre, University of Lagos

38. Non-facilitating Teaching Behaviours.
Osinubi AAA.
MEPIN second step-down workshop on teaching by case-based method organized by College of Medicine of the University of Lagos (4th February, 2014)

39. The 21st century anatomist: Moving from "smaller, focal, widespread, bigger, larger and greater" to numbers.
Osinubi AAA.
13th Annual Scientific Conference of the Society of Experimental and Clinical Anatomists of Nigeria in University of Nigeria, Enugu Campus (25th April, 2014).

40. Transforming the teaching of Anatomy, Biochemistry and Physiology from "à la cram, à la pour" to Lifelong Transformation through Tales.
Osinubi AAA, Aruleba AE, Poluyi EO.
13th Annual Scientific Conference of the Society of Experimental and Clinical Anatomists of Nigeria in University of Nigeria, Enugu Campus (25th April, 2014).

41. Teaching by Case-Based Method: An overview of the course.
Osinubi AAA.
Medical Education Training organized by Medical Education Unit of the College of Medicine of the University of Lagos (18th September, 2014).

42. The Silent Killers: Simple Antidotes and Preventive Measures.

Osinubi AAA.
The 9th UNILAG Annual Research Conference and Fair (9th October, 2014).

43. Stereological and Comparative Analyses of the renal glomeruli of the African giant rat (*Cricetomys gambianus*, Waterhouse) and Sprague-Dawley rat.
Osinubi AAA.
Spring Stereology Workshop on "Applications of Unbiased Stereology" at Bay Club Hotel and Marina, San Diego, California, USA (20th and 21st March, 2015).

44. Stereology: Applemetry.
Osinubi AAA.
Department of Anatomy, College of Medicine, University of Lagos (23rd April, 2015).

45. Fundamentals of Animal Research.
Osinubi AAA.
Pre-Conference Workshop of the 2015 Faculty of Basic Medical Sciences, College of Medicine of the University of Lagos (24th June, 2015).

46. Improving Reproductive Health Using African Medicinal Plants.
Osinubi AAA.
HerbFEST 2015 Conference (*Utilization and Sustainable Exploitation of African Medicinal plants and Natural Products*) (6th - 8th October, 2015).

47. Numerical and Volumetric Estimation of Structures Using Unbiased Stereology.
Osinubi AAA.
12th Annual General Meeting and Conference of the Anatomical Society of Nigeria at the University of Benin (28th – 31st October, 2015).

48. Studies on cardiac cytoarchitectonic, Oxidative stress and biochemical indices in pregnant STZ-Induced diabetic rats treated with Gliclazide and Insulin
Olojede SO, Lawal SK, Medubi LJ, **Osinubi AA.**
Annual General Meeting and Scientific Conference of the Society of Experimental Anatomists of Nigeria in Delta State University, Abraka, Delta State, Nigeria holding (22nd to 24th March, 2016).

49. Animal Models of Diabetes: Investigating the Antidiabetic Potentials of Plants (April 5, 2016)
Moving from the Pancreas to the GIT and Kidney in the Battle on Diabetes: The Anatomical Basis (April 6, 2016)
The Rat Quinine Model as a Template for the Investigation of Testicular Toxicology (April 7, 2016)
Numerical and Volumetric Estimation of Structures Using Unbiased Stereology (April 8, 2016)
Case-Based Learning in the Teaching of Medical Sciences (April 14, 2016)
Osinubi AA.
Nelson R. Mandela School of Medicine, Kwa- Zulu-Natal University, South Africa.

50. Impact of Vitamin K Deficiency on the Spermatogenic Process of Male Sprague-Dawley Rats.
Sanyaolu AO, Oremosu AA, **Osinubi AA**, Bakare AA.
5th Scientific Conference of the Faculty of Basic Medical Sciences, College of Medicine of the University of Lagos (2nd June, 2016)

CONFERENCES / WORKSHOPS /TRAININGS ATTENDED

1. 10th International Conference of Anatomical Society of West Africa
Date: 11th-14th May 2003
University of Ghana Medical School, Korle-bu, Accra, Ghana

2. Information & Communication Technology Training for Network Administration
Date: 2nd-14th June, 2003
College of Medicine, University of Lagos, Lagos, Nigeria

3. 3rd Workshop on Effective use of Biomedical Communications Media and Equipment
Date: 11th and 12th June, 2003
College of Medicine, University of Lagos, Lagos, Nigeria

4. Workshop on Statistical Methods on Medical Research
Date: 16th and 17th September, 2003
College of Medicine, University of Lagos, Lagos, Nigeria

5. 2003 Scientific Conference and Annual General Meeting of The Nigerian Society of Endocrinology and Metabolism
Date: 24th - 27th September, 2003
University of Lagos, Lagos, Nigeria

6. Workshop on Health Planning
Date: 15th and 16th March, 2004
College of Medicine, University of Lagos, Lagos, Nigeria

7. 12th International Congress of Endocrinology
Date: 31st August-4th September, 2004
Lisbon, Portugal

8. 2004 Scientific Conference and Annual General Meeting of The Nigerian Society of Endocrinology and Metabolism
Date: 22nd- 24th September, 2004
University of Lagos, Lagos, Nigeria

9. The 2005 University of Lagos Annual Research Conference and Fair
Date: 26th October, 2005
University of Lagos, Lagos, Nigeria

10. 2006 Annual General Meeting & Scientific Conference of The Nigerian Society of Endocrinology and Metabolism
Date: 20th-23rd September, 2006
Jos, Nigeria

51. 1st Conjoint International Conference on Fertility, Anatomy and Morphological Sciences
Date: 19th-21st September, 2007
Lagos, Nigeria

52. 2007 Scientific Conference and Annual General Meeting of the Nigerian Society of Endocrinology and Metabolism (Lagos, Nigeria)
Date: 26th -28th September, 2007.
Lagos, Nigeria

53. The 1st Scientific Conference and General Meeting of the American Association of Clinical Endocrinologists (AACE) - The Nigerian Chapter
Date: 2nd November, 2007
Lagos, Nigeria

54. 7th Annual Scientific Conference of the Anatomical Society of South South and South Eastern Nigeria
Date: 29th November-1st December, 2007
Calabar, Cross River State, Nigeria

55. 2008 Scientific Conference and Annual General Meeting of the Nigerian Society of Endocrinology and Metabolism (Abuja, Nigeria)
Date: 24th-26th September, 2008.
Lagos, Nigeria

56. 6th Annual Scientific Conference of the Anatomical Society of Nigeria (Zazzau 2008)
Date: 14th-17th October, 2008
Ahmadu Bello University, Zaria, Nigeria

57. The 2nd Scientific Conference and General Meeting of the American Association of Clinical Endocrinologists (AACE) - The Nigerian Chapter
Date: 30th and 31st October, 2008
Lagos, Nigeria

58. 13th International Congress of Endocrinology
Date: 8th -12th November, 2008
Rio de Janeiro, Brazil

59. Full Day Ethics Workshop on Ethical Issues in Clinical Research
Theme: Enhancing Integrity in Clinical Research
Date: 8th November, 2008
Windsor Barra Hotel, Rio de Janeiro, Brazil

60. 18th Annual Meeting & Clinical Congress of American Association of Clinical Endocrinologists
Date: 13th-17th May, 2009
Houston, Texas, USA

61. 7th Annual Scientific Conference of the Anatomical Society of Nigeria
Date: 24th -26th February, 2010
Olabisi Onabanjo University, Ogun State, Nigeria

62. 19th Annual Meeting & Clinical Congress of American Association of Clinical Endocrinologists in Boston, Massachusetts, USA
Date: 21st-25th April, 2010
The John B. Hynes Veterans Memorial Convention Center and the Sheraton Boston Hotel, Boston, Massachusetts, USA

63. 32nd Scientific Conference and Annual General Meeting of the Nigerian Society of Endocrinology and Metabolism (Lagos, Nigeria)
Date: 16nd -17th September, 2010
Lagos, Nigeria

64. 8th Annual Scientific Conference of the Anatomical Society of Nigeria
Date: 13th -16th October, 2010
Bayero University Kano, Kano, Nigeria

65. 1st Scientific Conference of the Faculty of Basic Medical Sciences, College of Medicine of the University of Lagos
Date: 18th and 19th May, 2011

66. 33rd Scientific Conference and Annual General Meeting of the Nigerian Society of Endocrinology and Metabolism
Date: 21st -23rd September, 2011
Kongo Conference Hotel, Zaria, Nigeria

67. 2012 Triennial General Meeting and Scientific Conference of the Diabetes Association of Nigeria (National Diabetes Congress)
Date: 7th June, 2012
Hotel Presidential, Port-Harcourt, Nigeria

68. Mentor Training Workshop: Medical Education Partnership in Nigeria (MEPIN) and Northwestern University
Date: 26th - 29th August, 2012
Equity Hotel, Ijebu-Ode, Nigeria

69. 34th Scientific Conference and Annual General Meeting of the Nigerian Society of Endocrinology and Metabolism
Date: 12th - 14th September, 2012

Supreme Management Consultants, Ibadan, Nigeria

70. The 2012 Bangalore Microscopy Course
Date: 23rd - 30th September, 2012
National Centre for Biological Sciences, Bangalore, India

71. UNILAG Golden Jubilee Research Conference and Fair
Date: 6th - 8th November, 2012
Multipurpose Halls, University of Lagos, Lagos, Nigeria

72. The CMUL Mentoring Program: Making the most of being mentored workshop
Date: 20th November, 2012
Alumni Centre, College of Medicine of the University of Lagos, Lagos, Nigeria

73. Non-Communicable Killer Diseases: Prevention and Management.
Workshop for Federal Permanent Secretaries in Nigeria.
Date: 19th January, 2013
Four Point By Sheraton, Victoria Island, Lagos, Nigeria

74. The Relevance of Anatomy in Ultrasonography.
World Federation of Ultrasound in Medicine and Biology.
Date: 11th February, 2013
Alumni Centre, College of Medicine of the University of Lagos, Lagos, Nigeria

75. The 3rd SIDCAIN (Strategies for Improving Diabetes Care In Nigeria) Conference
Date: 27th February - 1st March, 2013
Obafemi Awolowo College of Health Sciences and Remo Majestic Hotel, Ogun State, Nigeria

76. The Triad of Silent Killers: Simple Antidotes and Preventive Measures
Workshop for Provost and Deans of the University of Lagos.
Date: 9th April, 2013
Protea Hotel, Ikeja, Lagos, Nigeria

77. Stereology Training at the Morphometry and Stereology Laboratory.
Date: 15th - 30th April, 2013
Charles Drew University, Los Angeles, California, USA

78. 22nd Annual Meeting & Clinical Congress of American Association of Clinical Endocrinologists
Date: 1st - 5th May, 2013
Sheraton Phoenix Downtown and the Phoenix Convention Center, Phoenix, Arizona, USA

79. Training Program on Teaching by Case Method: Training of Trainers (TOT) [MEPIN/ Medical Education Partnership in Nigeria]
Date: 23rd and 25th May, 2013
Grand Inn & Suites, Ijebu-Ode, Ogun State

80. 2nd Scientific Conference of the Faculty of Basic Medical Sciences, College of Medicine of the University of Lagos
Date: 12th and 13th June, 2013
Old Great Hall, University of Lagos

81. College of Medicine of the University of Lagos Manuscript Writing Workshop
Date: 8th - 10th July, 2013
New Great Hall, College of Medicine of the University of Lagos

82. First Step-down training of trainers programme on teaching by case method for academic faculty of the College of Medicine of the University of Lagos
Date: July 17th - 19th 2013
Grand Inn Hotel & Suites, Ijebu-Ode, Ogun State, Nigeria

83. Pre-conference Update Course of the Endocrine and Metabolism Society of Nigeria
Date: September 11th2013

Medilag Alumni Centre, Idi-Araba, Lagos, Nigeria

84. 35th Scientific Conference and Annual General Meeting of the Endocrine and Metabolism Society of Nigeria
Date: September 11th - 13th 2013
Lagos Oriental Hotel, Lekki, Lagos, Nigeria

85. Workshop on Evaluation of Case-Based Teaching Method
Date: September 25th - 27th 2013
K-One Hotel, Ikeja, Lagos State, Nigeria

86. Workshop of Action Committee on the promotion of University Biomedical Science development (PUBSD).
Date: October 22nd and 23rd 2013
National Universities Commission, Abuja, Nigeria

87. Smart Campus Conference 2013
November 14th and 15th 2013
Eko Hotel and Suites, Victoria Island, Lagos, Nigeria

88. Annual General Meeting and 5th Scientific Conference of the American Association of Clinical Endocrinologists - Nigeria Chapter
Date: November 20th 2013
Westown Hotels, Ikeja, Lagos, Nigeria

89. MEPIN second step-down workshop on teaching by case-based method organized by College of Medicine of the University of Lagos
Date: 3rd and 4th February, 2014
Unilag Conference Centre, University of Lagos

90. The 13th Annual Scientific Conference and Annual General Meeting of the Society of Experimental and Clinical Anatomists of Nigeria
Date: 24th – 26th April, 2014
University of Nigeria, Enugu Campus, Nigeria

91. Medical Education Training organized by Medical Education Unit of the College of Medicine of the University of Lagos
18th – 22nd September, 2014
Alumni Centre, College of Medicine of the University of Lagos

92. The 9th UNILAG Annual Research Conference and Fair
Date: 8th – 10th October, 2014
Multipurpose Halls, University of Lagos

93. Two-Day Workshop of Action Committee on the Promotion of University Biomedical Science Development (PUBSD)
Date: 14th and 15th October 2014
Idris Abdulkadir Auditorium, National Universities Commission, Abuja

94. MEPIN e-Learning Strategic Planning Workshop
Date: 29th – 31st October 2014
Supreme Management Centre, Ibadan, Oyo State

95. Bioethics Workshop
Date: 5th November, 2014
College of Medicine, University of Lagos

96. 2-day Spring Stereology Workshop on "Applications of Unbiased Stereology"
Date: 20th and 21st March, 2015
Bay Club Hotel and Marina, San Diego, California, USA

97. 4-day hands-on Stereology Training/Workshop.
Date: 23rd – 26th March, 2015
Morphometry and Stereology Laboratory, Charles R. Drew University of Medicine and Science, Los Angeles, California, USA

98. 14th Annual Scientific Conference of the Society of Experimental and Clinical Anatomists of Nigeria
Date: 22nd - 24th April, 2015
Hall 36, Lagos University Teaching Hospital, Lagos

99. Pre-Conference Workshop of the 2015 Faculty of Basic Medical Sciences, College of Medicine of the University of Lagos
Date: 24th June, 2015

100. 4th Annual Scientific Conference of the Faculty of Basic Medical Sciences, College of Medicine of the University of Lagos
Date: 25th June, 2015

101. HerbFEST 2015 Conference (*Utilization and Sustainable Exploitation of African Medicinal plants and Natural Products*)
Date: 6th - 8th October, 2015
Raw Materials Research & Development Council, Abuja, Nigeria.

102. 12th Annual General Meeting and Conference of the Anatomical Society of Nigeria at the University of Benin.
Date: 28th – 31st October, 2015

103. Annual General Meeting and Scientific Conference of the Society of Experimental Anatomists of Nigeria in Delta State University, Abraka, Delta State, Nigeria
Date: 22nd to 24th March, 2016

104. International Visiting Scholar at the Nelson R. Mandela School Of Medicine, Kwa-Zulu-Natal University, South Africa. Invited by the research group- Morphology and Andrology Group (MAG) under the aegis of the South African National Research Foundation (NRF) COMPETITIVE PROGRAMME FOR RATED RESEARCHERS (CPRR) grant (vide Grant NRF 99053)
Also on research visit to

- School of Anatomical Sciences, University of the Witwatersrand
- KwaZulu-Natal Sharks Board

Date: April 1-15, 2016

105. Workshop on Scientific Paper Writing (Organized by the Faculty of Basic Medical Sciences, College of Medicine of the University of Lagos)
Date: 1st June, 2016

106. 5th Scientific Conference and Annual General Meeting of the Faculty of Basic Medical Sciences, College of Medicine of the University of Lagos
Date: 2nd June, 2016

107. Medical and Nursing Education Partnership Initiative Symposium
Laico Regency hotel, Nairobi, Kenya,
Date: 1st – 4th August, 2016

LIST OF Ph.D. (ANATOMY) STUDENTS SUCCESSFULLY SUPERVISED/CO-SUPERVISED

S/NO.	NAME	UNIVERSITY	DATE OF DEFENSE
1.	Professor Saalu, Chia Linus	Lagos State University	2009
2.	Dr. Yama, Oshiozokhai Eboetse	University of Lagos	2009
3.	Dr. Gbotolorun, Stella Chinwe	University of Lagos	2010

4.	Dr. Dosumu, Olufunke Olubusola	University of Lagos	2010
5.	Dr. Imosemi, Innocent	Lagos State University	2012
6.	Dr. Jewo, Imoni Peter	University of Lagos	2012
7.	Dr. Osho, Oluwaseyi Abigail	University of Lagos	2012
8.	Dr. Oyewopo, Adeoye Oyetunji	Lagos State University	2014
9.	Dr. Bassey, Rosemary Basiono	University of Lagos	2014
10.	Dr. Ataman, Jacob	University of Benin	2014
11.	Dr. Akang, Edidiong Nnamso	University of Lagos	2015
12.	Dr. Okoko, Ini Ibehe	University of Lagos	2016

NAMES OF Ph.D. STUDENTS PRESENTLY BEING SUPERVISED/CO-SUPERVISED

S/NO.	NAME	UNIVERSITY
1.	Falana, Benedict Abiola	University of Lagos
2.	Sanyaolu, Arinola Omolara	University of Lagos
3.	Ogunlade, Babatunde	University of Lagos
4.	Makanjuola, Victor	University of Lagos
5.	Akinribido, Abosede	University of Lagos

RESEARCH INTERESTS

1. Reproductive and Endocrine Anatomy
2. Testicular and Renal Toxicology and Stereology
3. Curriculum Development and Teaching Innovations

CURRENT RESEARCH

1. Investigation of the safety of commonly used oral hypoglycaemic agents in pregnancy.
2. Investigation of the anti-diabetic and fertility potential of some herbs.
3. Studies on the use of Case-based learning in the Medical and Dental curricula.

SPECIAL SKILLS

1. Stereology.
2. Experimental Biology
3. Mentorship, hence has successfully produced 12 (twelve) Ph.D. candidates.
4. Teaching Innovations.
5. E-Learning
6. Problem-Based Learning.
7. Case-Based Learning.

AWARDS AND FELLOWSHIP

1. Travel Grant awarded by The International Society of Endocrinology (ISE) to present the paper, "Attenuation of Quinine-induced Testicular Toxicity by Ascorbic acid in rat: A Stereological Approach" at the 12th International Congress of Endocrinology (ICE) in Lisbon, Portugal (31st August – 4th September, 2004).
2. Travel grant awarded by American Association of Clinical Endocrinologists (AACE) to present the paper, "Cytoarchitectural and Morphometric Alterations of Testes of Sprague-Dawley Rats Secondary to Quinine" at the AACE 18th Annual Meeting & Clinical Congress, Houston, Texas (13th – 17th May, 2009).

3. Awarded Fellow of the American College of Endocrinology (FACE) by the American College of Endocrinology (ACE) in December, 2009. Convocation was held on Saturday 24th April, 2010 at the Sheraton Boston Hotel, Boston, Massachusetts, USA.
4. Voted by the students as the lecturer with greatest positive influence on the students in the College of Medicine of the University of Lagos (2010).
5. The Anatomical Society of Nigeria conferred on him the highest honour of the Society- FASN (Fellow of the Anatomical Society of Nigeria) on 23rd September, 2016 at the 13th AGM and Scientific Conference at the Ekiti State University.

GRANT AWARD

- Funding Agency: University of Lagos
- Amount: N3,000,000.00
- Title of Project: Determination of safety of some commonly used oral hypoglycaemic agents in pregnant diabetic rats (6th November, 2014)

SIGNIFICANT CONTRIBUTIONS OF SOME OF THE PUBLICATIONS TO KNOWLEDGE

1. In year 2002, we described for the very first time the PCV (packed cell volume) pattern of Sprague-Dawley rat in this environment. This work has far-reaching implications in that it demonstrated that PCV levels may need to be interpreted with reference to the time of sample collections.

2. In 2003, we showed clearly the relationship between testosterone, follicle-stimulating hormone and seminal parameters in Nigerian males. We also provided our local critical reference values of testosterone and follicle stimulating hormone necessary for the maintenance of normal sperm motility and concentration.

3. To the best of our knowledge, we are the first to scientifically show that *Vernonia amygdalina* and *Tapinanthus butungii* are potential anti-diabetic agents.

4. My team described the circadian rhythm of blood glucose in adult male Sprague-Dawley rats in Lagos in 2003.

5. From review of literatures available, we were also the first to clearly demonstrate that serum levels of prostate specific antigen correlate positively with serum levels of inhibin B and negatively with sperm count in Nigerian males.

6. Our work on the effects of quinine (QU) on the testis of rats and rabbits has the potential of developing a non-invasive, non-steroidal and an acceptable male contraceptive. This work is currently the most extensive study conducted by a single laboratory on the effects of QU on the cytoarchitecture and morphometry of the testes. In addition, this study has provided quantitative evidence that QU-induced testicular toxicity is largely preventable by testosterone, ascorbic acid and alpha tocopherol.

7. Our study has shown that quinine-induced testicular toxicity is an excellent animal model for the study of fertility, infertility and the process of spermatogenesis. This model has been cited by several other investigators.

COMMUNITY SERVICE

1. I reach out to the whole world through my website, **www.profosinubi.com**, encouraging students, youth, the rejected, the sick, especially with my periodic quotes, and other motivational articles.
2. I have also been using my website to preach peace to the whole world.
3. Active participation in public enlightenment campaign on HIV/AIDS, diabetes, *etc*.
4. Enlightenment campaign on the adoption of proper lifestyle for optimal health.
5. Free voluntary services in NGOs medical clinic.
6. Participation in free community clinic for the aged.
7. Free motivational talks to students and the youth.
8. Offering of free medical services to victims of natural and other disasters.
9. Schools' programs on career talks.
10. Community development program.

REFEREES

1. Prof. O. T. Ogundipe
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University of Lagos, Lagos, Nigeria.
Phone: 08023201618
E-mail**: toyin60@yahoo.com**, **oogundipe@unilag.edu.ng**.

2. Prof. A. O. Okanlawon,
Former Deputy Provost,
College of Medicine of the University of Lagos,
Lagos, Nigeria.
Phone: 234-8023059033.
E-mail: **okanlawon@hotmail.com**, **okanlawona@yahoo.com**.

3. Prof. S. A. Omilabu,
Past Dean, Faculty of Basic Medical Sciences,
College of Medicine of the University of Lagos,
Lagos, Nigeria.
Phone: 234-8066331053, 234-8023119431.
E-mail: **omilabusa@yahoo.com**.

4. Prof. (Mrs.) O. O. Adeyemi
Immediate past Dean, Faculty of Basic Medical Sciences,
College of Medicine of the University of Lagos,
Lagos, Nigeria.
Phone: 234-8034459618.
E-mail: **ooadey@yahoo.com**, **ooadeyemi@cmul.edu.ng.**