

SOME EFFICACIOUS NIGERIAN ANTICANCER HERBAL REMEDIES

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Public lecture given at the University of Medical Sciences, Ondo: 31st August,
2017.

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INTRODUCTION

- **TRADITIONAL MEDICINE: Plants, Animals, Soils, Incantations/Words, Spiritualism**
- **Plant advantage: easy access, manipulation, variety, sustainable, transferable**
- **Garden of Eden, Prophet Ezekiel**
- **Herbal medicine/herbalism: History**
- **Drugs from Nature**
- **Ethnomedicine and modern drug discovery**
- **Modern science and plant drug discovery**
- **Herbal remedies in Nigeria**
- **Global cancer problem**
- **Anticancer herbal remedies in Nigeria: two efficacious formulations**

HISTORY OF HERBALISM

- 5000BCE: Sumerians of Mesopotamia – herbal recipes on clay
- 2800BCE: China, Emperor Pen T'Sao: 385 herbal remedies
- 1500BCE: Egyptian Ebers Papyrus – 850 herbal remedies, *Aloe vera*, *Ocimum basilicum*, *Acasia*, *onions*, *garlic*, etc.
- *Sub- Saharan Africa ? ?*
 - Europe:
 - Hippocrates(400 – 377BCE): Greek and Roman medicines, the willow tree, removed superstition from disease. Known as the father of Western medicine – Hippocrates oath
 - Galena(about 200AD): Classification systems for diseases and herbal medicine
 - Benedictine Monks(around 1000AD): Monastery infirmaries

DRUGS FROM NATURE: TRADITIONAL MEDICINE/ETHNOMEDICINE

- **ASPIRIN:** Willow tree, *Salix alba L*
- **RESERPINE** from *Rauwolfia serpentine*

- **PENICILLIN** fungal metabolite of *Penicillium notatum*
- **QUININE** from *Cinchona ledgeriana* Moens. ex
- **VINBLASTINE, VINCRIStINE** from Malagasy *Catharanthus roseus* (L.) G. Don. For cancer
- **ESERINE/PHYSOSTIGMINE**, Nigerian Calabar bean, *Physotigmua venenosum* Balf. Glaucoma
- **ARTEMISININ** from *Artemisia annua* (Chinese Quinhaosu)
- **BIOGENICS**
- **20% prescription drugs directly or indirectly from Nature; higher percentage for cancer drugs**

HERBAL MEDICINES IN NIGERIA

- **Rural dwellers: each person knows common herbs for common diseases**
- **Producers: TMPs, Members of NANTMP, Paxherbal Clinics & Res Labs., Benedictine Monastery, Ewu-Esan, Edo State, Neimeth, etc. which are local and a number of foreign companies selling products in Nigeria**
- **Regulating authority: NAFDAC**
- **Alabukun, etc.; Tianshi, Edmark, Forever, GNLD brand are imported**
- **In terms of turnover, foreign brands dominate the market in Nigeria**

NAFDAC REGULATIONS

- **PRODUCT OWNERSHIP AND MANUFACTURING COMPANY, facilities personnel**

- **NANTMP membership**
- **PUBLIC ANALYST CERTIFICATES**
- **WHO CONDITIONS MET**
- **SOPs**
- **PACKAGING AND LABELS**
- **NAFDAC STANDARDS**

DEVELOPMENT OF MODERN DRUGS NOT POSSIBLE CURRENTLY IN NIGERIA

- **GMP facilities and laboratories for such enterprise are virtually not available in Africa except perhaps in South Africa**

- **The cost could be up to one billion US dollars or more, RISK**
- **Intellectual Property Rights (patents)**
- **Governments With due respect, the policy makers have shown more interest in contracting foreign drug acquisition than in drug development**
- **Some senior scientists prefer to run disease clubs**
- **TURN TO NATURE**

WHY CHEMISTRY OF NATURAL PRODUCTS(PLANTS) IN NIGERIA?...

C. W. L. BEVAN, 1958. West African J. Biol. Appl. Chem. 2, 36 – 41

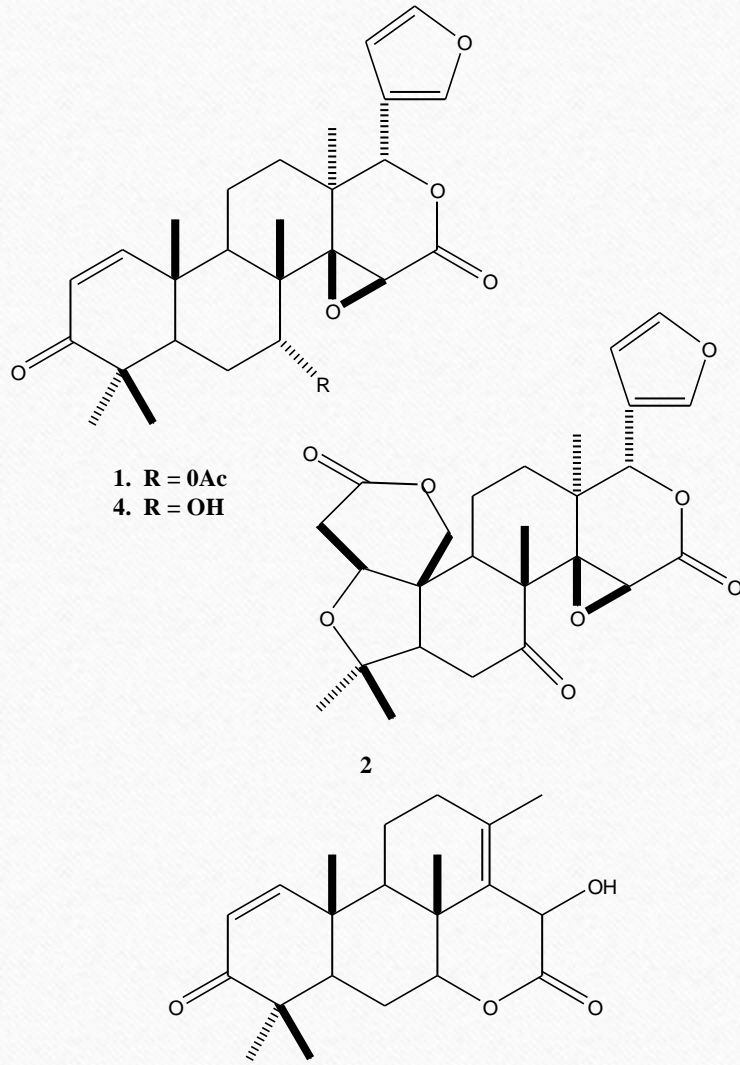
- THE PROVISION OF DATA CONTRIBUTING TO THE TAXONOMIC CLASSIFICATION OF SPECIES
- THE DISCOVERY OF NEW COMPOUNDS OR OF ADDITIONAL SOURCES OF KNOWN COMPOUNDS FOR POSSIBLE UTILIZATION IN THE FINE CHEMICAL INDUSTRY, FOR EXAMPLE IN THE MANUFACTURE OF DRUGS
- THE GENERAL STIMULATION OF RESEARCH IN ORGANIC CHEMISTRY BY THE DISCOVERY OF COMPOUNDS OF NOVEL TYPE AND THE TRAINING OF FUTURE ORGANIC CHEMISTS.
- THE PROVISION OF A BACKGROUND OF KNOWLEDGE WHICH WOULD SIMPLIFY THE SOLUTION OF PROBLEMS ARISING IN THE USE OF WOOD AS A RAW MATERIAL.
- *ENTANDROPHRAMA ANGOLENSE* (WELW) C. DC. AND *HYPOESTES ROSEA* P. BEAUV

Entandrophragma angolense (EWOHIMI, EDO STATE)



ENTANDROPHRAMA ANGOLENSE
(WELW) C. DC.: CHEMISTRY

GEDUNIN(Gedunohor), LIMONIN,
MEROGEDUNOL, BITTER
PRINCIPLES, CHEMOTAXONOMY



BIOLOGICAL AND MEDICINAL ACTIVITIES OF GEDUNIN

- BITTER PRINCIPLE.....
- INSECT GROWTH DISRUPTER, ANTIFEEDANT
- MOSQUITOECIDE
- ANTI-ALLERGEN
- ANTIMALARIAL, SAR, P450, DILLAPIOL
- DOGONYARO MALARIA FORMULATION IN MARKET – GEDUNIN
- ANTI-COLON, ANTI-OVARIAN CANCERS

Photo of

Hypoestes rosea P. Beauv Family Acanthaceae

from DR. EMMANUEL A. OJO-AMAIZE

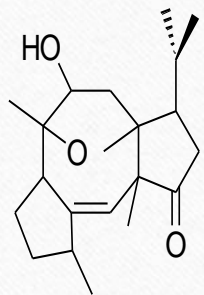


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**BUDGET CUT, CONSEQUENCES, DECISION: LESS WET
CHEMISTRY, X-RAY CRYSTALLOGRAPHY
ACANTHACEAE**

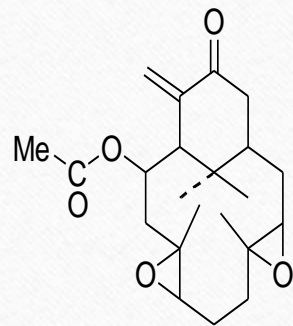
- **COLLECTION, TLC, DECISION**
- **GEORGE A. ADESIDA: THE PRINCE**
- **IDANRE ROAD COCOA PLANTATION – UWAIFO, BEES**
- **ABAIRE, YUSUF, OKOGUN,**

Hypoestes rosea P. Beauv Family Acanthaceae : Chemistry



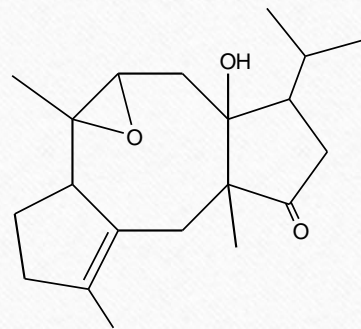
ROSEANOLONE

Okogun et al, 1983

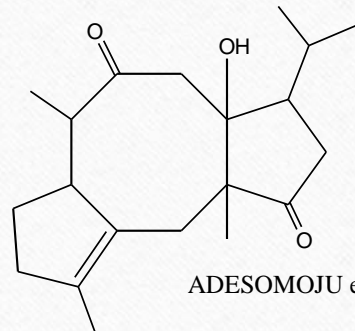


HYPOESTOXIDE

Adesomoju et al, 1984

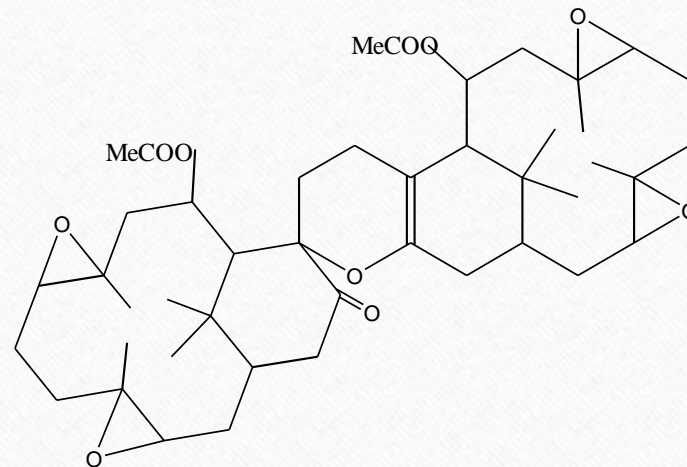


ROSEATOXIDE



ROSEADIONE

ADESOMOJU et al 1983, 1984



HYPOESTOXIDE DIMER

BIOLOGY OF HYPOESTOXIDE

- **ANTIINFLAMMATORY**
- **ANTIMALARIAL, TOXICITY AND HUMAN TRIAL**
- **ANTILEISHMANIA**
- **ANTICANCER:**
 - **ANTIANGIONESIS**
 - **INHIBITS THE GROWTH OF MELANOMA IN MICE**
 - **COLON CANCER IN BALB/C MICE**
 - **PARKINSON DISEASE**

ORTHODOX FORMULATION OF HERBAL REMEDIES

- **MOST HERBAL REMEDIES IN NIGERIA CAME FROM TRADITIONAL MEDICINE: FORMULATIONS ARE MODIFICATIONS OF THE ETHNOMEDICINE, ACTIVE PRINCIPLES NEED NOT BE KNOWN *ab initio***
- **ORTHODOX OR MODERN DRUGS**
- **“*ORTHODOX FORMULATION OF HERBAL MEDICINE*” COINED**

HERBAL DRUG DISCOVERY TEAM

- **TRADITIONAL MEDICINE PRACTITIONERS**
- **BOTANISTS – TAXONOMISTS**

- **PLANT BREEDERS**
- **CHEMISTS/PHYTOCHEMISTS, BIOCHEMISTS**
- **PHARMACOGNOSISTS**
- **PHARMACOLOGISTS AND MICROBIOLOGISTS**
- **TOXICOLOGISTS**
- **VETERINARY EXPERTS – BREEDERS, DOCTORS**
- **HUMAN MEDICINE CLINICIANS**
- **TECHNOLOGISTS, LAWYERS, ENTREPRENEURS**

DEVELOPMENT OF ORTHODOX MEDICINES: HERBAL REMEDIES

- **OKPAKO: DEVELOPMENT OF MODERN MEDICINES AROSE FROM APPLYING SCIENCE TO ETHNOMEDICINES – ASPIRIN, QUININE, ETC.**
- **EUROPEANS DISCOURAGED AFRICAN ETHNOMEDICINES AND HENCE PREVENTED THEIR DEVELOPMENT USING MODERN SCIENCE**
- **TRADITIONAL AFRICAN MEDICINES HAVE A NUMBER OF DESIRABLE QUALITIES**
- **AFRICAN SCIENTISTS SHOULD CHANGE ATTITUDES AND USE SCIENCE TO ENHANCE THE STATUS OF TRADITIONAL AFRICAN MEDICINES**

SOME HERBAL REMEDIES DEVELOPED BY NIGERIAN SCIENTISTS

- **WAMBEBE et al : NIPRISAN**
- **IWU et al: KOLAVIRON**
- **SOFOWORA et al: ANTISICKLING *ORIN ATA FORMULATION***
- ***NONE KNOWN FOR CANCER***

THE CANCER CHALLENGE: WHO

- *“a generic term for a large group of diseases that can affect any part of the body. Other terms used are malignant tumours and neoplasms. One defining feature of cancer is the rapid creation of abnormal cells that grow beyond their usual boundaries, and which can then invade adjoining parts of the body and spread to other organs, the latter process is referred to as metastasizing. Metastases are a major cause of death from cancer”*
- **...ONE OF THE LEADING CAUSES OF MORBIDITY AND MORTALITY
....14million NEW CASES IN 2012.**
- **NEW CASES IS EXPECTED TO RISE BY ABOUT 70% OVER THE NEXT 2 DECADES.**

- **....SECOND LEADING CAUSE OF DEATH GLOBALLY, AND WAS RESPONSIBLE FOR 8.8 MILLION DEATHS IN 2015. GLOBALLY, NEARLY 1 IN 6 DEATHS IS DUE TO CANCER.**
- **AROUND ONE THIRD OF DEATHS FROM CANCER ARE DUE TO THE 5 LEADING BEHAVIORAL AND DIETARY RISKS: TOBACCO USE IS THE MOST IMPORTANT RISK FACTOR FOR CANCER AND IS RESPONSIBLE FOR APPROXIMATELY 22% OF CANCER DEATHS.**
- **CANCER CAUSING INFECTIONS, SUCH AS HEPATITIS AND HUMAN PAPILLOMA VIRUS (HPV), ARE RESPONSIBLE FOR UP TO 25% OF CANCER CASES IN LOW- AND MIDDLE-INCOME COUNTRIES.**
- **LATE-STAGE PRESENTATION AND INACCESSIBLE DIAGNOSIS AND TREATMENT ARE COMMON. THE ECONOMIC IMPACT OF CANCER IS SIGNIFICANT AND IS INCREASING.**

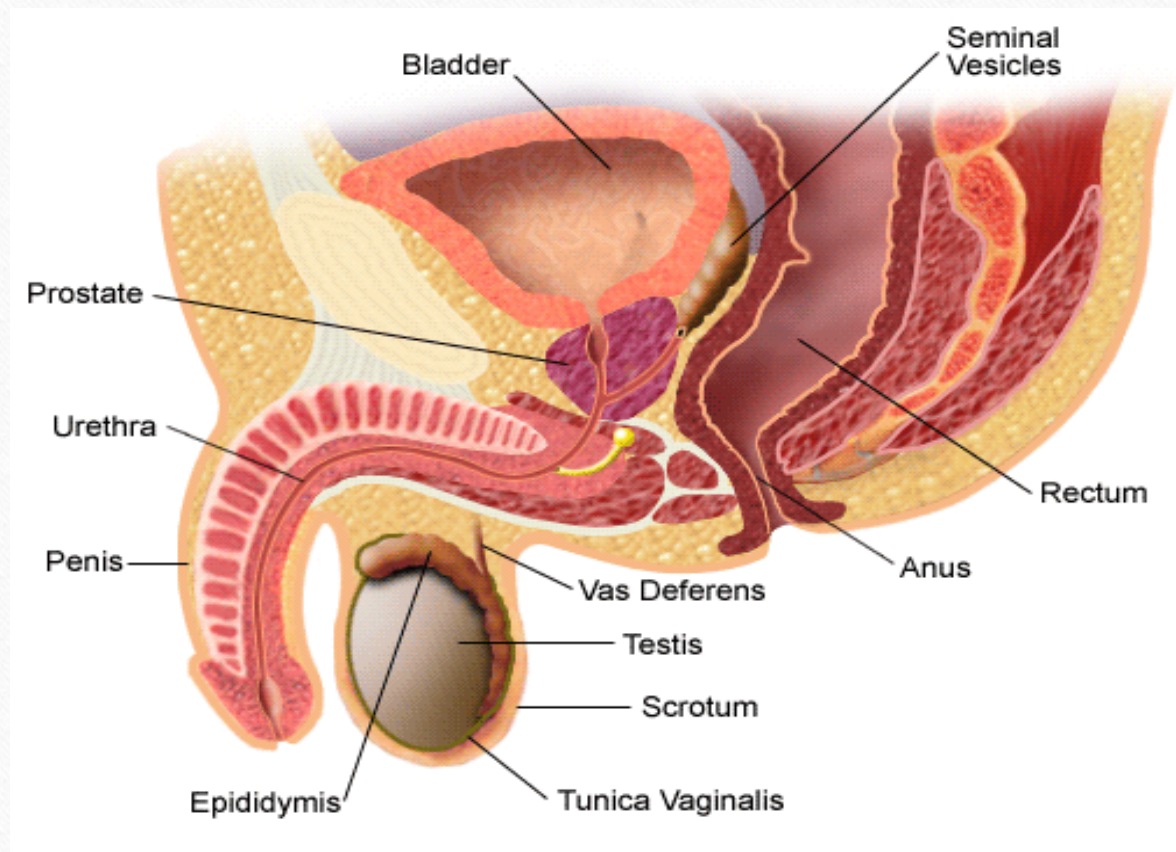
- **THE TOTAL ANNUAL ECONOMIC COST OF CANCER IN 2010 WAS ESTIMATED AT APPROXIMATELY US\$ 1.16 TRILLION.**
- **ONLY 1 IN 5 LOW- AND MIDDLE-INCOME COUNTRIES HAVE THE NECESSARY DATA TO DRIVE CANCER POLICY.”**
- **OTHER CAUSES: CHEMICALS, BACTERIA, VIRUSES, UV AND OTHER RADIATIONS**
- **DEATH RATES BY COUNTRY: NIGERIA RANKED 119TH OUT OF 172 COUNTRIES, 88.45/100,000 = ABOUT 160,000/YR(180m) – AFRICA’S HIGHEST NUMBER**

COMMONEST CANCERS: PROSTATE AND BREAST

➤ PROSTATE:

- ABOUT 80% MEN OVER 50 AT RISK, MORE AMONG BLACKS
- 30, 000 MEN DIE GLOBALLY EVERY MONTH FROM PROSTATE CANCER
- ENLARGED WITH OR WITHOUT CANCER
- FREQUENT URINATION, PAINFUL EJACULATION
- PSA OVER 4
- LEGS PARALYSED, PAINS: DEATH
- MALE HORMONE *TESTOSTERONE* CAUSATIVE FACTOR

From Prof Vincent Njar, University of Maryland, USA



TREATMENT

- CHEMOTHERAPY
- RADIATION/RADIOACTIVE INPLANT
- SURGERY AND MAY RETURN THEREAFTER
- SIDE EFFECTS IN EACH CASE

BREAST CANCER

- **BREAST CANCER LEADING CAUSE OF CANCER DEATHS IN WOMEN**
- **STARTS AS LUMP, BIOPSY TO CONFIRM**
- **IF UNTREATED, BREAST ENLARGES, HARDENS, LYMPH NODES**
- **HAND ENLARGES, SORE, PAINS**
- **MORE PREVALENT AMONG BLACKS**
- **OESTRONE**
- **TREATMENT PARALLELS PROSTATE TREATMENT**

BEVEKT GEDU CHEMICAL COMPANY AND PAXHERBALS: MAMOL AND EDION AS ANTICANCER HERBAL REMEDIES

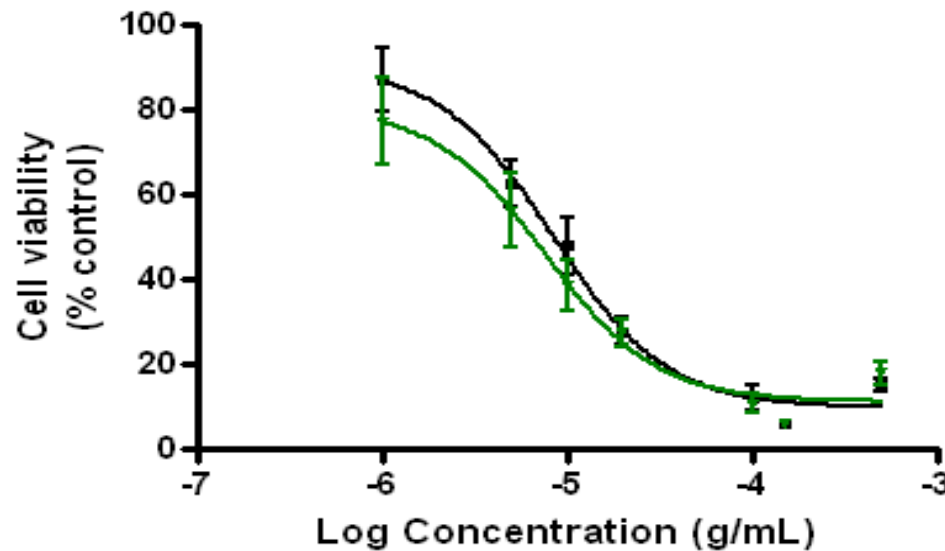
- **CANCER HERBAL REMEDIES UNCOMMON: D. A. OYEBOLA ON ATM(YORUBA) HAS NO INFORMATION ON CANCER**
- **BEVEKT = Bev(an) + Ek(ong) + T(aylor): *CHEMISTRY DEPT, UI. IBADAN***
- **GEDU**
- **ORTHODOX HERBAL FORMULATIONS: MAMOL & EDION**
- ***CONTRACT MANUFACTURE BY PAXHERBAL CLINICS & RES. LABS., BENEDICTINE MONASTERY, EWU-ESAN, EDO STATE***

MAMOL

- ***MAMOL*[®]: AN EDIBLE OIL EXTRACT OF PLANTS**
- **PLANTS HAVE LONG HISTORY OF USE IN ETHNOMEDICINE IN NIGERIA**
- **PHYTOCHEMICAL ANALYSIS**
- **NO MICROBIAL LOAD**
- **MICE SHOWED NO CLINICAL SIGNS OF TOXICITY AT 5grams/Kg**
- **NAFDAC NUMBER: A7-1909L**

EDION CAPSULES HAVE ABIRATERONE ACTIVITY

Effect of Red Capsule Extract on Low Passage LNCaP Cells



- Red Capsule (plate 1)
 $GI_{50} = 8.32 \mu\text{g/mL}$
- ▼ Red Capsule (plate 2)
 $GI_{50} = 6.60 \mu\text{g/mL}$

Average $GI_{50} = 7.46 \mu\text{g/mL} \pm 1.22$

EDION

- **EDION®: DOSAGE FORM IS CAPSULE**
- **PHYTOCHEMICAL ANALYSIS**
- **MICROBIAL ANALYSIS SHOWED NO LOAD OF FUNGI, MUCOUR, *E.coli*, *Staph.* Up to or beyond the allowed limit**
- **TOXICITY: at 5grams/kg, MICE SHOWED NO SIGNS OF TOXICITY**
- **HAD GI₅₀ of 7.46µg/ml ± 1.2 , +ve ref.: ABIRATERONE**
- **HUMAN LNCaP PROSTATE CANCER CELLS WHICH EXPRESS ANDROGEN RECEPTOR AND ARE ANDROGEN SENSITIVE**
- **NAFDAC REGN. NUMBER: A7-1912L**

REPORTED SUCCESSFUL CANCER MANAGEMENT CASES

- **PROSTATE CANCER: PSA REDUCTION, SYMPTONS, SYNERGISTIC ACTION WITH HORMONE TREATMENT(LEUPROLIDE/LUPRON INJ.)**
- **BREAST LUMP/ CANCER**
- **UTERINE CANCER, CYST**
- **GOITRE**
- **BODY SWELLINGS**

REDUCING THE RISK OF CANCER

- **EARLY DIAGNOSIS**
- **REDUCTION OF ALCOHOL INTAKE, SMOKING**
- **EXERCISE**
- **AVOID VIRAL, BACTERIAL, PARASITIC INFECTIONS, CHEMICALS**
- **DIET**

ANTICANCER HERBS AND FOODS: IWU, ATAWODI, GDAMAOSI, et al

- SOME EXAMPLES

- *M. OLEIFERA*,
- *G. KOLA* (BITTER KOLA),
- *V. AMYGDALINA* (BITTER LEAF),
- *O. GRATISSIMUM* (SCENT LEAF),
- *D. BULBIFERA* (YELLOW YAM),
- *LYCOPERSICON ESCULENTUM* Mill TOMATOES,
- *D. EDULIS* (NATIVE PEAR), *ETC.*
- *X. AETHIOPICA*

SOME REFERENCE WORKS ON MEDICINAL PLANTS

- **OKUJAGU, AJAIYEOBA AND ELUJOBA: ABSTRACTS OF RESEARCH PUBLICATIONS ON NIGERIAN MEDICINAL PLANTS**
- **Rev. Fr. Dr. ANSELM ADODO, OSB OF THE BENEDICTINE MONASTERY, EWU-ESAN, EDO STATE: NATURE MEDICINE**
- **IWU: FOODS AS MEDICINE: FUNCTIONAL FOOD PLANTS OF AFRICA and HANDBOOK OF AFRICAN MEDICINAL PLANTS**
- **GBILE: NATIVE NAMES OF PLANTS – YORUBA, HAUSA**

CONCLUSION

- **USE OF HERBS AS FOOD AND MEDICINE AS OLD AS CREATION**
- **NIGERIA DOES NOT CURRENTLY HAVE THE CAPACITY TO DEVELOP MODERN/ORTHODOX DRUGS**
- **NIGERIA SHOULD ADD VALUE TO TRADITIONAL MEDICINE AND SCIENTISTS SHOULD COLLABORATE AND FORMULATE HERBAL MEDICINES FROM RESEARCH DATA: REDUCE DRUG IMPORTATION COSTS, IMPROVE DRUG AVAILABILITY**
- **CONGRATULATIONS TO THE UNIVERSITY: HERBAL MEDICINE RESEARCH INSTITUTE – PROGRESSIVE, GREAT POTENTIAL BENEFITS FOR AFRICA, NIGERIA, ONDO AND THE UNIVERSITY**

ACKNOWLEDGEMENTS

- **ROOTS, PARENTS,**
- **PROFESSORS, INSTITUTIONS.**

- **COLLABORATORS INCLUDING PAST STUDENTS – NATIONAL AND INTERNATIONAL,**
- **IMI, USA.,**
- **BEVEKT GEDU CHEM CO., FAMILY GUINEA PIGS**
- **PAX HERBAL CLINICS & RES LABS.,**
- **, DISTRIBUTORS**

A PHILOSOPHY OF AN NIAID-NIH COLLABORATION BY
ALBERT EINSTEIN AND FROM ED TRAMONT WITH LOVE
FROM THE US

THE *IDEALS* WHICH HAVE *LIGHTED MY WAY*,
AND TIME AFTER TIME HAVE GIVEN ME
NEW COURAGE TO FACE LIFE CHEERFULLY
HAVE BEEN

KINDNESS

BEAUTY AND

TRUTH

I THANK YOU ALL FOR YOUR ATTENTION

AND I THANK THE LORD FOR EVERYTHING

NATURE IS UNFATHOMABLE

