

# **PHYTOMEDICINES: A REGIONAL APPROACH TO DEVELOPMENT OF CHEMOTHERAPEUTIC DRUGS AND EMPOWERMENT OF LOCAL COMMUNITIES IN EAST AND CENTRAL AFRICA**

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# GUIDING PRINCIPLES

- **1. God does NOT make junk** ( My curiosity and belief since I was 7 years old when I was introduced to who God is)
- **2. Neither does Nature make junk**
- **i)** Berridge's elaboration and elucidation of the Phosphatidyl inositol 4,5 biphosphate pathway (originally described as a futile cycle): which lead to development of some antihypertensives eg. Prazosin ( an  $\alpha$ -1 adrenoceptor antagonist
- **3. Nature does NOT allow any organism to dominate**
- **i)** Flemming's discovery of Penicillin G ( the original antibiotic), from which semi-synthetic derivatives of the  $\beta$ -lactam antibiotics were made. This also lead to the global search for antibiotics from non-pathogenic soil microorganism eg. Streptomycin, Tetracyclines and from marine sources
- **5.It is our God-given** duty that as we subdue the earth, we must take care of it so that it can continue to provide for us its renewable resources

# MEDICINAL BIODIVERSITY

- **Can we use medicinal biodiversity** as an engine of health improvement, conservation, economic empowerment of local communities, wealth creation and sustainable livelihood
- **If so how can issues of availability, sustainability of use, safety, efficacy, product development, acceptability, marketing and environment conservation be addressed?**
- **We MUST believe that it is our God-given duty** that as we subdue the earth, we must take care of it so that it can continue to provide for us its renewable resources

# THE EAST AND CENTRAL AFRICA REGION

- **1. Current membership of the East African Community (EAC)**
  - Burundi
  - Kenya
  - Rwanda
  - Tanzania
  - Uganda
- **2. Has applied to join the EAC**
  - Southern Sudan
- **3. Possible future entrants**
  - DRC etc

# Background of the Project

- 1.Challenges and constraints in current chemotherapeutic intervention strategies . Problems with HAART eg. high cost in the absence of global support from development partners, development of resistance, dosage compliance, monitoring and evaluation for potential toxicity, carcinogenicity and mutagenicity etc.**
- 2.Are there possibilities of using “Natural products and/or derivatives from medicinal plants and microorganisms) as potential sources for antiviral drugs and immune modulators? ”**
- 3. How to use medicinal biodiversity as an engine of economic development and sustainable livelihoods**

# Key issues in developing Plant-derived medicines for HIV/AIDS

- **Q. Are there medicinal plants or microorganisms in the East African region that could have curative, or prophylactic effects in inhibiting the HIV-1 virus, secondary opportunistic infections or in modulating immune functions?**
- **A. Studies elsewhere show there are, some now in developmental stages eg**
- ***Ancistrocladus korupensis*, contains Michellamie B (Inhibitor of HIV Reverse transcriptase**
- ***Castanospermum australe*, contains castanospermine which is an inhibitor of terminal protein glycosylation but non selective for host cells (therefore toxic)**
- ***Astragalus membranaceus* used in Chinese herbal therapy and contains a chemical which slows progressive telomere shortening, therefore use in immune modulation**
- **How about reports on *Tylossema fassoglense*?**

# **Value Chain : Progressive value in activity, health and wealth creation**

**Traditional Herbs ( leaves, bark, roots)**

**Crude extract ( water or organic solvents)**

**Separation on columns and other solvents**

**Pure compounds**

# KEY INDICATORS OF VALUE ADDED

Health Products  
Services

Technologies

Policies

COMMERCIALISATION

1. Health Improvement, with affordable products and increased life expectancy
2. Attitude change on conservation of biodiversity
3. Enhancement of ecosystem health to mitigate climate change effects
4. Sustainable livelihood, wealth creation and economic growth



# MEDICINAL BIODIVERSITY

- **Can we use medicinal biodiversity as an engine of economic growth of local communities, health improvement, sustainable livelihood, wealth creation and maintenance of ecosystems health”.**
- **If so how can issues of availability, sustainability, safety, efficacy, product development, acceptability, marketing and environment conservation be addressed?**





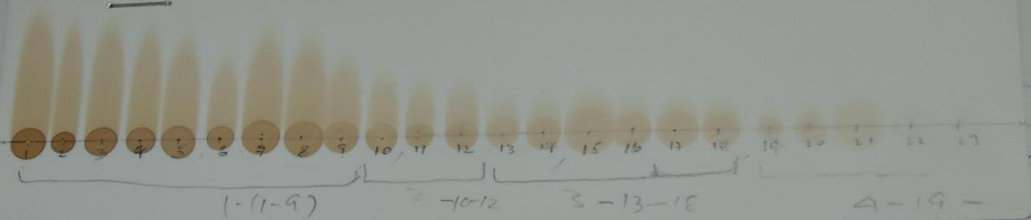






3.0.17

eluted using EtOH:EtAc:2:1



1-9, 10-12, 13-18, 19-21 grouped together.

→ After collecting the fractions from no. 1-21. Spotting was done for the fractions on a TLC plate. Then it was left to dry for sometime followed by development; this was done by placing a small amount of ethyl acetate in the tank which is beneath the TLC origin. It was left to develop for 1hr then put to air dry for sometime (5min) - The spots were then visualized using iodine powder. Pooling were done awaiting bioassay determination.

or

| NAME OF |
|---------|
| WEIGHT  |

- 1<sup>st</sup> ✓ EXT
- 2<sup>nd</sup> ✓ EXT
- 3<sup>rd</sup> ✓ EXT
- 4<sup>th</sup> ✓
- 5<sup>th</sup> ✓
- 6<sup>th</sup> ✓
- 7<sup>th</sup> ✓
- 8<sup>th</sup> ✓
- 9<sup>th</sup> ✓

# SPECIFIC THERAPIES

- Antifungal
- Antibacterial
- Antiviral
- Immune modulation
- Anticancer ( Cytotoxicity)