Pathways to Conventional Clinical Trial Testing of Traditional and Alternative Medicine Research: Navigating Fears of Intellectual Property Rights/Loss and Effective Community Engagement

Professor Pauline Byakika-Kibwika
Vice Chancellor, Mbarara University of Science and Technology

Definition of Traditional Medicine

The sum of knowledge, skills and practices based on theories, beliefs, and experiences indigenous to different cultures, whether it is explicable or not, used in the maintenance of health and the prevention, diagnosis, improvement, or treatment of physical and mental illness (WHO)

Traditional/Natural/Alternative medicine:

- use of medicinal herbs and plants,
- faith-based approaches- prayer and spirituality,
- mind and body therapies like meditation and massage,
- Concoctions, and finished herbal products.

Introduction

- 80% of people in the developing world depend solely on natural therapeutics 2022)
- 170 countries reporting their use
- Some plants contain phytochemicals with antiviral, anti-inflammatory & immune-modulatory properties
- The COVID-19 outbreak increased use of natural/herbal medicines globally
- Mostly used in absence of conventional evaluation of safety & efficacy
- WHO published guidance on research on herbal medicines


Yoweri K Museveni
@KagutaMuseveni
I call upon doctors/scientists to work closely with innovators of herbal medicine especially by carrying out clinical trials in the presence of formulae founders/ herbalists, in order to rule out mistrust and thereafter identify the important elements which cure a given illness.
15:10 · 15 Mar 22 · Twitter Web App
67 Retweets 1 Quote Tweet 214 Likes

CLINICAL TRIALS OF NATURAL THERAPEUTICS OF UGANDA PROGRAM (CONAT)

- **Funder:** The Government of Uganda
- **Sponsor:** Ministry of Science Technology & Innovation and Presidential Initiative on Epidemics (PRESIDE)
- **Coordinator:** Makerere University Lung Institute Clinical Trials Unit
- **Partnering Institutions**
    1. Makerere University College of Veterinary Animal Resources and Biotechnology (COVAB)
    2. Natural Chemotherapeutics research Institute (NCRI)
    3. Uganda Virus Research Institute (UVRI)
    4. Directorate of Government Analytical Laboratories
    5. Mbarara University of Science and Technology

For evaluation of the safety, pharmacokinetics and efficacy of natural/herbal products through clinical trials.

Pathways to Conventional Clinical Trial Testing of TAM Research-WHO Guidelines

- The first stage is identification of the plant species ie Botanical verification
- For herbal medicines with a well-documented history of traditional use; evaluation of reports, in vitro and in vivo safety data
- In vitro data have to be confirmed by clinical studies
- Well-documented reports of pharmacological activity in animals or humans
- Review of safety and efficacy data for study design, number of patients, specific diagnosis, dosage, duration of administration, criteria for evaluation/endpoints, simultaneous therapy, and valid statistical analysis
- New clinical studies are necessary where traditional use and experience of a herbal medicine in humans have not established its safety and efficacy

Evaluation of Safety

- Safety reported and documented side-effects should be taken into account when deciding about the need for new pharmacological or toxicological studies
- A full range of toxicological tests may not be necessary
- Tests which examine effects that are difficult or even impossible to detect clinically should be encouraged eg immunotoxicity (e.g. tests for allergic reactions), genotoxicity, carcinogenicity and reproductive toxicity
- In absence of historical use, or safety data, additional toxicity studies should be performed and where possible in vitro
- In vivo studies should be conducted humanely, with respect for the animals' welfare and rights

Evaluation of Efficacy

- For the treatment of minor disorders, for nonspecific indications, or for prophylactic uses, less stringent requirements (e.g. observational studies) may be adequate to prove efficacy

- The level of the evidence and the grading of recommendations must correspond to the nature of the illness to be treated or the nature of the physical or mental function to be influenced and regulated

Use of observational studies for efficacy evaluation

- Observational studies involving large numbers of patients may also be a very valuable tool for the evaluation of herbal medicines
- Single-case studies for the evaluation of efficacy of a herbal medicine may be used
- Single-case designs have the advantage of being adaptable to the clinical needs of the patient and the therapeutic approach of the practitioner, but can not be generalized to other patients, hence generate hypotheses
- Ethnographic studies document the social and cultural context in which a traditional practice emanates, may be appropriate in situations where there is no available scientific literature or other documentation
- These and other qualitative studies can provide baseline information from which hypotheses may be generated, and can lead to further research

Efficacy evaluation; Clinical trials

- In the case of a new herbal medicine, a new indication for an existing herbal medicine, or a significantly different dosage form or route of administration, the general principles and requirements for a clinical trial should be very similar to those which apply to conventional drugs
- Design of such studies may be adapted to deal with the particularities of herbal medicines.
- Randomization and use of a placebo may not always be possible, eg if the herbal medicine has a strong or prominent smell or taste, or when patients who have been treated previously with the herbal medicine under investigation cannot be randomized into control groups
- For herbal medicines with a strong flavor, placebo substances with the same flavor may have a similar function hence it may be advisable to use a low dosage of the same herbal medicine as a control or a positive control, such as well-established treatment, can be used.

CONAT Methods

- Invitation of Innovators of herbal medicine to STI- OP
- Assessment of products for readiness for clinical trial evaluation

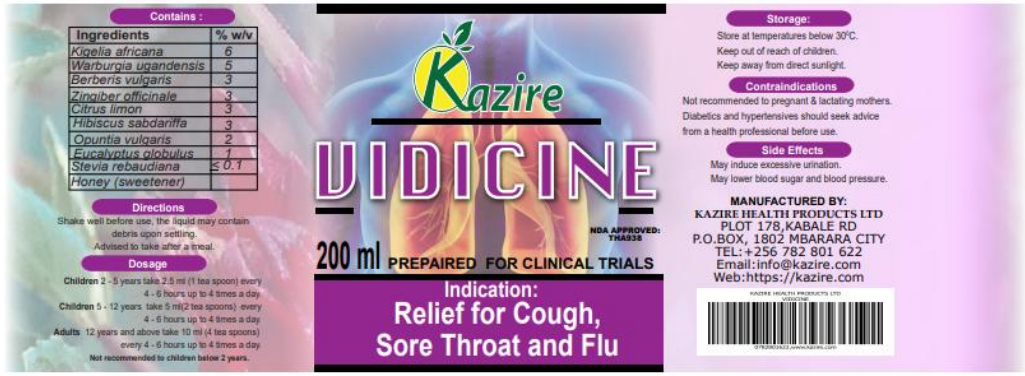
- Eligibility Criteria included:
  - Good Manufacturing Practices (GMP)
  - Standardized, and notified by the National Drug Authority (NDA)
  - Documented community evidence of use and safety

Methods

- Phytochemical analysis at DGAL
  - Identify bioactive compounds as markers
  - Liquid chromatography and mass spectrometry (LC-MS) for characterization and identification of the chemical constituents (bioactive compounds)
- Invitro testing at UVRI
- Animal toxicity studies at COVAB
- In-human clinical trials at Mulago Clinical Trials Unit
  - Safety
  - Efficacy
  - Pharmacokinetics

CONAT Progress

- Conducted two clinical trials of natural products to completion (UBV-01N, TAZCOV and Vidicine)



- We currently preparing to start evaluation of natural products for malaria prevention and diabetes control
    - Protocols under review

EXPERIENCES AND CHALLENGES ENCOUNTERED

Start Up Phase

- Limited research capacity
- Infrastructure, personnel and systems
- Delinked systems
- Mistrust
- Negativity
- Indoctrination
- Myths

Process

- Fear of Intellectual Property Rights/Loss
- Protracted protocol reviews,
  - limited experience
  - limited knowledge
  - mistrust
  - Indoctrination
  - lack of standardization
  - limited documentation

Funders &Stakeholders

- Limited resources
- Differing expectations
- Bureaucracies
- Community mistrust
- Fear of the unknown
- Complexity of use of herbal medicines with conventional therapy

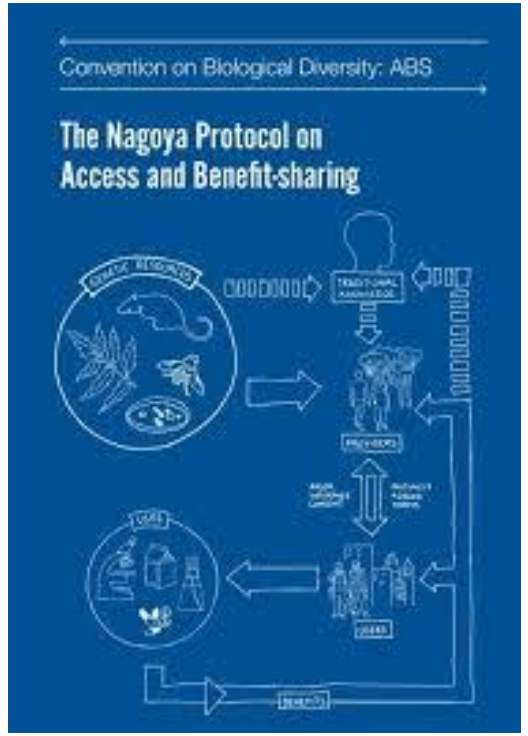
Fears of Intellectual Property in TAM

- Loss of cultural/spiritual relevance and significance
- Biopiracy - unauthorized extraction and patenting of traditional knowledge or biological m
- aterials by researchers or companies
- Loss of community control over knowledge through publications or clinical trials
- Failure of TAM knowledge to fit into western intellectual property frameworks eg collectiveness and oral Vs novelty or individual inventions.
- Lack of recognition or compensation of the TAM knowledge holders- they always do not receive credit and commercial benefits
- TAM misuse or being misrepresented when complex traditional systems to single compounds or ingredients

How to Overcome Fears for IP Rights

- Use of access and benefit-sharing agreements e.g aligning research with the Nagoya Protocol

  - fair and equitable sharing of benefits from the use of genetic resources and associated traditional knowledge



- Purposive prior informed consent - ensure that communities and traditional knowledge holders are fully informed about the research purpose, process, and potential outcomes.

- Establish agreements that outline how knowledge will be used, who will own resulting IP, and how benefits will be shared.

How to Overcome Fears of IP Rights

- **Balanced participatory research rights –involving both communities and modern researchers**
    - **equal research partners**, not just subjects

- **Ethics guidelines for TAM research**

- UNCST & NDA to provide frameworks tailored to TAM, addressing IPR, cultural sensitivity, and benefit-sharing

- **Recognition and attribution -e**nsure that traditional healers and communities are **formally acknowledged** -e.g as co-authors, co-grantees etc in publications, grants, patents and promotional materials.

How to Overcome Fears of IP Rights

Exploring the Non-Patent IP models - open-source models, geographical indications (GIs) or **certifications** that preserve traditional use while allowing commercialization

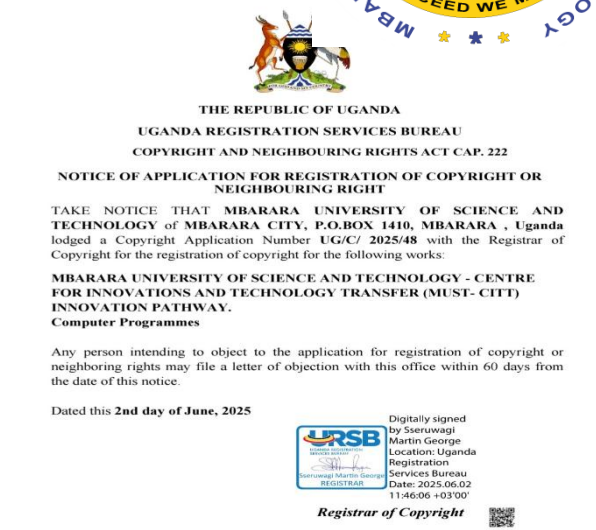
Building capacity – in collaborative clinical trials processes, train communities in understanding IPR and negotiation skills for local communities

How MUST Manages IP Rights in TAM

- In 2017, MUST established the Pharm Biotechnology and Traditional Medicine Centre (PHARMBIOTRAC) as cornerstone for TAM research and training
- In 2018, MUST established the Centre for Innovations and Technology Transfer (CITT).
- In 2021, established the Intellectual Property Policy
- In 2025, CITT was certified by the World Intellectual Property Organization and Uganda Registration Services Bureau (URSB) as a Technology and Innovation Support Centre (TISC) for the region.
- The TISC provides support for IP identification and registration, manages and protects the ownership of IPs.

How CONAT & MUST address fears of IP

- Innovation Pathways Framework copy written by URSB
- Non-Disclosure Agreement (NDA) which protects IPs for innovators including those in TAM.
- Anybody eg Trainers, Mentors, Researchers, Innovators, Guests who interact with the Innovations or Inventions sign the NDA which is witnessed by the Legal Officer



THE REPUBLIC OF UGANDA

UGANDA REGISTRATION SERVICES BUREAU

COPYRIGHT AND NEIGHBOURING RIGHTS ACT CAP. 222

NOTICE OF APPLICATION FOR REGISTRATION OF COPYRIGHT OR NEIGHBOURING RIGHT

TAKE NOTICE THAT **MBARARA UNIVERSITY OF SCIENCE AND TECHNOLOGY** of **MBARARA CITY, P.O.BOX 1410, MBARARA , Uganda** lodged a Copyright Application Number **UG/C/ 2025/48** with the Registrar of Copyright for the registration of copyright for the following works:

MBARARA UNIVERSITY OF SCIENCE AND TECHNOLOGY - CENTRE FOR INNOVATIONS AND TECHNOLOGY TRANSFER (MUST- CITT) INNOVATION PATHWAY.
Computer Programmes

Any person intending to object to the application for registration of copyright or neighboring rights may file a letter of objection with this office within 60 days from the date of this notice.

Dated this **2nd day of June, 2025**

Digitally signed by Sseruwagi Martin George
Location: Uganda Registration Services Bureau
Date: 2025.06.02 11:46:06 +03'00'

Registrar of Copyright

Capacity building

- Researchers, innovators and practitioners
- Sensitization of innovators to improve knowledge on the drug development & evaluation process, & the research regulatory & legal frameworks, CoI & IP rights
- Individual & institutional capacity development & improving systems and standard work processes, including office and research infrastructure support
- Intellectual Property Management and ownership safeguards, integrating TAM with clinical trials, collaborative research, commercialization of TAM
- Short courses

Importance of Community Engagement

- **TAM Research:** Shift from a model of research **on communities** to research **with and for communities**

- **Core Principle:** TAM is inherently community-centric and culturally grounded - must be integrated through:
  1. **Building Trust & Legitimacy:** TAM practices are often based on deep cultural trust and oral tradition. Researchers are outsiders; engagement bridges this gap.

Dr. Jimmy Ronald Angupale is training herbalists at community level using local available tools

Why Community Engagement is Important

- **Ensuring Cultural Safety & Respect:** Protects against exploitation and misappropriation of Indigenous Knowledge (IK) and traditional healing practices
- **Improving Research Quality & Relevance:** Communities define the most pressing research questions, ensuring outcomes are practical and meaningful to them.
- **Enhancing Recruitment & Retention:** Community endorsement is the most powerful tool for participant engagement in studies.

Eng. Anke Weisheit demonstrate sustainable harvesting of tree barks

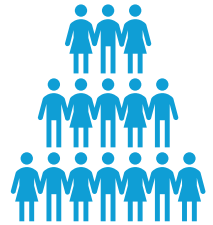
Key Principles for Effective Communiy Engagement in TAM Research

Start Community Engagement Early & Sustain their Involvement

Engage from the very beginning, have participatory study design and continue through dissemination of results.

Co-creation & Shared Leadership

Include community representatives as equal partners on research teams, not just as advisors, participants or research subjects.



Cultural Humility & Respect

Acknowledge that researchers are learners, respect cultural protocols, hierarchies, and knowledge-keeping traditions (emphasize respect for especially elders and knowledge custodians).

Key Principles for Effective Community Engagement

Mutual Benefit & Reciprocity

Clarity on community gains (e.g., capacity building, access to findings, funding).

Transparency & Accessible Communication

Communicate in plain language and share results back with the community in accessible formats.

Practical Strategies & Models for Engagement

- **Establish a Community Advisory Board (CAB)**
  - A formal group of diverse community stakeholders (men, women, elders, and other interest groups) to guide all research phases.
- **Employ Participatory Methods:**
  - Use workshops, focus groups, and community fora to gather input and build consensus.
- **Utilize Community-Based Participatory Research (CBPR):**
  - A collaborative approach that equitably involves all partners in the research process.

Practical Strategies & Models for Engagement

Develop Memoranda of Understanding (MOUs)

Formal agreements that clarify roles, responsibilities, data ownership and benefit sharing from the research outcome.

Invest in Capacity Building: [5]

Train community members in research skills, documentation, presentation, hence creating a legacy of expertise.

Key Takeaways

Successful TAM research is built on authentic partnerships.

Trust is the most valuable currency.

The process is as important as the outcome.

Community wisdom is essential data.

Community consultation an integral part of Traditional Healer – Scientists collaboration

Traditional Healer – is showing her documentation knowledge and patient records

Training session on traditional medicine propagation (vegetative propagation)

Advancing training in modern formulation of herbal medicine

Acknowledgement

Patricia Alupo[1], James Arinaitwe[1], Aida N Kawuma[1], Eva Akurut[1], Maria Sekimpi[1], Winters Muttamba[1], Moses Joloba[2], Eddie Wampande[3], Jacqueline Kyosiimire-Lugemwa[4], Jane Nakibuuka[5,9], John Lusiba[1,6], Darius Owachi[7], Grace Nambatya Kyeyune[10], Noah Kiwanuka[8], Barnabas Bakamutumaho[4], Moses Ocan[2], Medard Twinamasiko[11], Cassim Uba Tolo[11], Anke Weisheit[11] Joseph Okia, James Arinaitwe, Joaniter Aine, Aidah Kawuma, David Seruka, Najja Wali[1], Joseph Byamugisha[1], Karen Ndahura[1], Kepha Kateu, Levi Mugenyi[1], Loyce Wanda[1], Abel Walekwa[12], Mary Nantongo[12], Peter Kungu[12], Brenda Walyaula[12], Bruce J Kirenga[1,9], Monica Musenero[12],

1. Lung Institute, Makerere University College of Health Sciences, Kampala, Uganda
2. School of Biomedical Sciences, Makerere University, Kampala, Uganda
3. College of Veterinary Medicine, Makerere University, Kampala, Uganda
4. Uganda Virus Research Institute, Entebbe, Uganda
5. Mulago National Referral Hospital, Ministry of Health, Kampala, Uganda
6. Uganda Peoples' Defence Forces Health Services, Kampala, Uganda
7. Kiruddu National Referral Hospital, Ministry of Health, Kampala, Uganda
8. School of Public Health, Makerere University College of Health Sciences, Kampala, Makerere University
9. School of Medicine, Makerere University College of Health Sciences, Kampala, Uganda
10. Natural Chemotherapeutics Research Institute, Kampala, Uganda
11. Mbarara University of Science and Technology, Uganda.
12 Ministry of Science Technology & Innovation and Presidential Initiative on Epidemics (PRESIDE)

THANK YOU

Prof. Pauline Byakika-Kibwika

+256772626885

pauline.byakika@must.ac.ug

www.must.com

P.O Box 1410, Mbarara Uganda