African Traditional Medicines and Indigenous Knowledge Systems

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Core message:

Building a digital library of African Traditional Knowledge through existing databases and networks, and translating data into innovation
Presentation outline

- Brief background of Biodiversity and African Traditional Medicine
- Existing Databases on African Medicinal Plants
- Existing Networks on Traditional knowledge and related subjects in Africa
- Critical analysis
- Which way forward?
Madagascar periwinkle: Source of anticancer drugs Vinblastine and Vincristine
Vast amount of African biodiversity waiting to be translated into new therapies

African Biodiversity

Bioprospecting

- Chemical diversity
- Biological screening
- Drug discovery

Indigenous knowledge; Traditional Medicine

Phytomedicines
African System of Traditional Medicine

Holistic basis

Local communities

Environment (Social, Ecological)

Diseases

Culture, Beliefs

Disease treatments
Disease treatments

Spiritual
(Diviners)

Physical
(Herbalists)

Pretoria, 2005
Databases on African medicinal plants

I- Francophone database

PHARMEL (PHARMACOPÉE ET MEDECINE TRADITIONNELLE) Database on African Traditional Medicine and Pharmacopoeia

- 19,691 recipes from 24 African countries;
- 4000 medicinal plants recorded;
- 51 references.

http://www.ulb.ac.be/sciences/bota/pharmel.htm

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E-mail: jlejoly@ulb.ac.be
Databases on African medicinal plants

II- Bilingual databases

PRELUDE Database on traditional veterinary and human medicine plants in sub-Saharan Africa.

This database contains information on thousands of plants used for treating animals and humans in rural areas in different regions of Africa. Each listing includes, among other things, the plant’s botanical name, the African countries where the plant is used for veterinary purposes, and the animal diseases it is used for.

http://pc4.sisc.ucl.ac.be/prelude.html

- Jean Lehmann, Laboratoire de botanique médicale de l’Université de Louvain, Institut Carnoy, 4 place Croix du Sud, 1348 Louvain-la-Neuve, Belgium.
  E-mail: lehmann@fynu.ucl.ac.be
Databases on African medicinal plants

II- Bilingual databases (cont’d)

PROTA (Plant Resources Of Tropical Africa) DATABANK.

The PROTA databank is the basic output of the program to survey, compile, edit, publish and disseminate existing knowledge on some 7000 useful plants of Tropical Africa with estimated 200,000 references, an estimated 30,000 photographs and drawings and 6,000 geographic distribution maps.

http://www.prota.org/PROTAstartframes.htm

Wageningen University (WU), Haarweg 333, PO Box 341, 6700 AH Wageningen, the Netherlands.
E-mail: PROTA@pros.dpw.wag-ur.nl
Databases on African medicinal plants

III- English databases

TRAMED (Traditional Medicine Database).

The Traditional Medicines Database incorporates: material gathered from the contemporary scientific literature on medicinal plants and their pharmacology and toxicology; material from collections, such as books, published articles, theses and databases already available, concentrating on African plants.

http://www.healthnet.org.za/tramed/gen/tramedsearch

- South African Traditional Medicines Research Unit, Department of Pharmacology, Faculty of Health Sciences, University of Cape Town, 7925 Observatory, South Africa.

E-mail: satmerg@uctgsh1.uct.ac.za
Databases on African medicinal plants

III- English databases (cont’d)

**NTRAP** (The Database of Natural & Traditional Pesticidal Materials Pest Control in Sub-Saharan East Africa).

This database covers both natural products used, and with potential uses, for crop protection in sub-Saharan East Africa. The majority of these products are botanicals.

http://www.ippc.orst.edu/ipmafrica/db/index.html

- Dr. Richard E. Ford, Executive Director, CICP, N417 Turner Hall, University of Illinois, 1102 S. Goodwin Avenue, Urbana, IL 61801, U
Databases on African medicinal plants

IV- National Databases from institution initiatives

**CESRIKI** *(CEnter for S cientific R esearch, I ndigenous K nowledge and I nnovation)*

Based at the University of Botswana, CESRIKI has an ongoing project to document Botswana’s IK systems and is working with nearly **100 IK owners** and has constructed a ‘smart-system’ database.

**IMRA** *(Institut M algache de R echerches A ppliquées)*

IMRA has a database containing a computerized ethno-botanical data of over **4000 Madagascan plants**.
The African Ethnobotany Network/
Le Réseau Africain d’Ethnobotanique

The African Ethnobotany Network was founded at the 15th AETFAT Congress held in 1997 in Harare.

More than 4,600 bibliographic references.

The area under study comprises 27 countries
Networks on Traditional knowledge and related subjects in Africa

AAMPS (African Association of Medicinal Plants Standard)

Most up-to-date and extensive publication on the uses, quality, safety and efficacy of 52 of most important African medicinal plants.

www.aamps.org
Networks on Traditional knowledge and related subjects in Africa

Networks on Natural Products with significant presence in Africa

NAPRECA (NAtural Products Reseach Network for Eastern and Central Africa)

http://www.napreca.ne

WANPRES (West African Network of Natural Products REsearch Scientists)

www.wannpres.org

The aims and objectives of NAPRECA and WANPRES are:

★ To initiate, develop and promote research in the area of Natural Products in Africa;
★ To encourage collaboration in all areas of natural product research in Africa;
★ To exchange information among scientists working on different aspects of natural product research.
Networks on Traditional knowledge and related subjects in Africa

ANDI (African Network for Drug and Diagnostic Innovation)

Mission Statement:
"To promote and sustain African-led Health Product Innovation to address African public health needs through efficient use of local knowledge, assembly of research networks, and building of capacity to support economic development"
ANDI R&D and Knowledge Management Databases

Contribute
- TDR
- Share document, knowledge and information

Find
- People, expertise, resources information

Biology
- Register, Associate, Search, & Report

Chemistry
- Register, Search, Report Share

Connect
- People, groups, exchange information and ideas

Web Portal - Login
- Authentication

ANDI Knowledge database
- Hosting in Morocco

ANDI R&D database
- Project – Pipeline – Portfolio management

Courtesy: D. Besson
Critical analysis

➤ Vast amount of plant biodiversity;
   (Sub-Saharan Africa and the Indian Ocean Islands contain approximately 60,000 plant species – roughly a quarter of the world’s total)

➤ Vast amount of documented ethnomedical knowledge through databases;

➤ Existence of infrastructures and expertise for:
   ■ basic research (botany, chemistry, pharmacology);
   ■ clinical trials;
   ■ drug manufacturing.
To date, Africa has only contributed 83 of the world’s 1100 leading commercial medicinal plants.

Externally-driven projects on databases.

Lack of culture of business, mainly in Sub-Saharan Africa.
Which way forward?

Building a digital library of African Traditional Knowledge

- Tool for defensive protection:
  - misappropriation of disclosed African traditional knowledge;
  - Bridge between Traditional Knowledge as prior art and patent examiners.

- Users obligations to avoid bio-piracy.

- Tool for active research
CESRIKI, IMRA and TWAS jointly submitted a project to JRS Biodiversity Foundation for Database on African medicinal plants.
Which way forward? (cont’d)

Redefine the problem outside boundaries to generate new approach: ‘out of box’ thinking

Indigenous data → Knowledge

Innovation

Concrete action

Modern science & medicine (Data-intensive)
Acknowledgments

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