

Improving access to anti-HIV/AIDS drugs



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Background

AIDS is a highly devastating infectious disease of global proportions. It disproportionately affects more people in Sub-Saharan Africa (SSA) than elsewhere. In Uganda alone, 1.2 million people are affected, of whom 250,000 die every year (UNAIDS, 2010). The standard antiretroviral therapy (ART) comprises antiretroviral (ARV) drugs that suppress the HIV virus and stop the progression of the disease. These ARVs have turned a hitherto fatal disease into a manageable chronic lifelong condition. The ARVs, although, highly effective have serious side effects which cannot be ignored and are too costly and would not be available for the majority of users in Uganda were it not because governments and donor organizations subsidize their cost. Nonetheless, the majority of people who require these drugs in SSA lack access.

It is important therefore that new inexpensive and effective alternative anti HIV-AIDS drugs are developed. Plants have always been an important source of drugs. A case in point is the anti HIV-AIDS drug Prostratin that was developed from the plant species *Homalanthus nutans* following leads from its cultural use among the Samoans (Cox, 1993). Another species, *Ancistrocladus korupensis,* was observed to be effective but abandoned due to its very high toxicity.

A key concern associated with using herbal medicines is that many plant species are threatened by over-exploitation and habitat loss. Maintaining access to these medicines requires the conservation of these plant species through sustainable harvesting, propagation and domestication, and securing their habitats.

This project is being is being undertaken in the districts of Mpigi, Kaliro, Mukono and Pallisa with the aim of developing inexpensive HIV/AIDS drugs and ensuring access to these drugs. The specific objectives of the projects are:

- 1. to determine plants used by healers to manage HIV/AIDS and associated illnesses
- 2. to validate therapeutic claims of anti HIV/AIDS efficacy by healers
- 3. to formulate anti HIV-drugs
- 4. to conserve medicinal plants through collaborative domestication with healers and other stakeholders, and
- 5. to identify opportunities for commercialization.

Methods

This project started in August 2011 with ethnobotanical surveys to determine the species that healers use to treat HIV/AIDS in Mpigi and Kaliro Districts through interviews (Fig 1). To validate therapeutic claims of anti HIV/AIDS efficacy by healers samples of *Huslondia opposita, Bidens pilosa, Piptadeniastrum africanum, Eryrthrina abyssinica* and *Albizia coriaria* have been collected for preliminary screening for sensitivity against bacteria and fungi. The results from this screening are yet to be received.



To conserve medicinal plants propagation experiments have been started in a nursery garden at Masoli village in Wakiso District (Fig 2). The experiments comprise propagating of medicinal plants from seed and cuttings for the species *Spathodea campanulata* (Kifabakazi), *Toddalia asiatica* (Kawule), *Entada abyssinica* (Mwolola), *Psidium guajava* (Mapeera), *Canarium schweinfurthii* (Mpafu), *Zanthoxylum* sp. (Omunyenye), *Cordia africana* (Mukebu), *Milicia excelsa*, and *Eucalyptus globulus* (Kalitunsi). Associated with this is the strengthening medicinal botanical gardens in collaboration with schools: Nabalanga Primary School in Mukono District, Kaucho Boys Primary School in Pallisa District, and Budini Secondary School in Kaliro District



Fig 1. Interview with a healer

Fig 2. Nursery garden at Masoli

Preliminary results

Healers have mentioned 302 plant species that they commonly use to treat HIV/AIDS. The most commonly used of these are: *Erythrina abyssinica* (Jilikiti), *Spathodea campanulata* (Kifabakazi), *Hoslundia opposita* (Kamunye), *Bidens pilosa* (Sere), *Piptadeniastrum africanum* (Mpewere), *Prunus africana* (Ntaseesa/Ngwabuzito), *Albizia coriaria* (Mugavu). Therapies are prepared from mixtures of 20 or more species. During preparation the bark and roots are preferentially selected over other plant organs. The plant organs are either dried under the shade or not, before boiling for 3 – 5 hours. Healers also treat 28 opportunistic infections associated with HIV/AIDS, and these include anemia, diarrhea, skin ailments like herpes zoster, and tuberculosis. We have observed that patients taking the concoctions (these patients are outside our experiment) have shown improvements in appetite and energy.

All the species that have been sown, have germinated (we are determining the germination rates). Cuttings of *Ficus natalensis* have an almost 100% success rate.



Fig 3. Seedlings and sprouting cuttings



Next major activities

The next major activities are to conduct a **controlled prospective observational study** with people voluntarily using the herbal medicine from participating healers to prove efficacy and safety of the traditional drugs. The second one will be to determine the sensitivity of HIV to plant extracts. Lastly **seedlings of medicinal plants** are going to be distributed to interested healers and collaborating schools.

References

Cox, P.A. 1993. Saving the ethnopharmacological heritage of Samoa. Journal of Ethnopharmacology 38:181-188 UNAIDS, 2010. GLOBAL REPORT: UNAIDS REPORT ON THE GLOBAL AIDS EPIDEMIC 2010. the Joint United Nations Programme on HIV/AIDS (UNAIDS), Geneva, Switzerland.

Ethical issues: The project was approved and permission given (NS 373) to conduct it Uganda by the Uganda National Council for Science and Technology (UNCST). Prior Informed Consent (PIC) was sought for from groups and participants where we gathered the ethnobotanical data.

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