



Pic 4: Antidiabetic Medicinal formulations prepared by Northrift Herbalists



Pic 5: Testing Efficacy of Antidiabetic traditional Medicines against Diabetic Rats in the Laboratory

## PHYTOCHEMICAL ANALYSES

Phytochemical analysis of the medicinal plants is required to help in the determination of metabolites present in the various polyherbal concoctions used by traditional herbalists. Various specialist techniques such as thin layer chromatography (TLC), column chromatography (CC), Gas Chromatography (GC), High Performance Liquid Chromatography (HPLC), Mass Spectrometry (MS), Nuclear Magnetic Resonance Spectroscopy (NMR) and X-ray crystallography are routinely used in this endeavor. Pic



Pic 6 shows some state-of-the-art equipment for Drug Discovery and Analysis

## KEY RESOURCES

Although our country is endowed with plenty of natural medicinal plants that may be used as sources of drugs to treat various non-communicable diseases such as type 2 diabetes, more investment and resources for drug discovery and analysis is required.

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# TRADITIONAL MEDICINES TO CURE DIABETES MELLITUS IN THE NORTH RIFT

## DIABETES TYPE 2 IS AFFECTING OUR PEOPLE

Presently, there are more than 415 million people affected by diabetes mellitus worldwide, (International Diabetes Federation). This figure is projected to rise to over 642 million or more by 2040.

Around 90% of diabetic patients in the worldwide are diagnosed with type 2 diabetes mellitus (T2DM).

The cost of health care related to diabetes and its secondary complications continues to expand and is a massive economic burden for afflicted diabetic patients and particularly developing countries (Diabetes Atlas, 7th edition, International Diabetes Federation, 2015).

## IMPACT OF FINDINGS

**1. Conservation**  
Local communities should be sensitized on conservation and cultivation of medicinal plants.

**2. Identification**  
Correct identification and authentication of plant materials from which African traditional medicine for the treatment of diabetes are derived.

**3. Verification**  
of claims of efficacy of herbal remedies is essential.



In this work, scientists from the University of Eldoret worked collaboratively with African Traditional Medicinal Practitioners (ATMPs) to validate medicinal plant components of polyherbal formulations used to cure diabetes type 2 in the North Rift of Kenya. Local communities should be sensitized on the importance of conserving medicinal plants.

## Herbal Alternatives for the Management of Diabetes Type 2

In developing countries, 70-95% of the population relies on herbal medicines for primary care mainly due to cost imperatives or unavailability of conventional drugs.

According to an estimate of the World Health Organization (WHO), about 80% of the world population still uses herbs and other traditional medicines for fulfilling their primary health care needs.

Safety considerations including toxicological analysis, pre-clinical and clinical trials are essential prior to adoption of any herbal medicine.

## COLLABORATING, TRAINING AND ENGAGING NORTH RIFT HERBALISTS



Pic 1: The Principal Investigator engaging with Herbalists



Pic 2: Herbalists During a Training & Engagement Session

The University of Eldoret (UoE) runs a collaborative, training and public engagement program with traditional herbalists from the North Rift and surrounding areas (Pic 1 and Pic 2). Through this program, the herbalists share their knowledge of the various medicinal plant components that comprise the various concoctions used for treating T2D. In turn, the University trains the herbalists on a wide range of best practices such as hygiene, record keeping, analysis and standardization of their traditional medicines.



## COLLECTING MEDICINAL PLANT MATERIALS USED BY HERBALISTS



Pic 3: Some Medicinal Plants in Their Natural Habitats

Up until now, most medicinal plants that make up the antidiabetic formulations are known by their local vernacular names. With the help of Scientists from UoE, these plants have been taxonomically identified; paving way for more detailed studies on their wild distribution (Pic 3) and conservation status, antidiabetic efficacy among other key parameters.

One antidiabetic concoction, dubbed F1-ATM, is made from a variety of different herbs namely Kabukel (*Ocimum suave*), komolwo (*Vanguera madagascariensis*), kiptebes (*Albizia gummifera*), korwol (*Olea welwitschii*), chepili (*Mankhania lutea*), tengeretwo (*Combretum molle*), torwet (*Rhoicissus tridentate*), sigowet (*Solanum aculeastrum*) and soget (*Warburgia ugandensis*).

## VERIFICATION OF CLAIMS OF ANTIDIABETIC EFFICACY

In order to tentatively prove that the polyherbal formulations (Pic 4) prepared by our herbalists have efficacy against T2D, UoE scientists carried out biological assays in the laboratory. This was done by treating diabetic rats (Pic 5) with various doses of the polyherbal concoction F1-ATM. In our preliminary studies, when STZ-induced diabetic rats were treated with F1-ATM with dose of 200 mg/ kg, lowering in blood glucose was not observed when compared to standard drug Glimpepiride (1 mg/kg p.o). This preliminary findings mean that the F1-ATM is not as efficacious as the standard antidiabetic drug. It may also mean that the F1-ATM works via a different mode of action.

