

Enhancement the processing and standardization technics towards the production of certified phytomedicines and food supplements in response to critical health needs in Rwanda

Principal Investigator (PI): **Andre NDAGIJIMANA**, Product and Technology Development Specialist (Life Sciences) at National Industrial Research & Development Agency (NIRDA)
Tel: +250 788 45 8600, e-mails: andrewnirda@gmail.com and andre.ndagijimana@nirda.gov.rw
Co-PIs: Dr Raymond MUGANGA, Rwanda FDA, Tel : +250 788 53 1520, e-mail : mugangaray@gmail.com

Specific Aims:

Concerned by the lack of qualified and effective phytomedicines and food supplements in Rwanda and in response to NCST's call for research proposal encouraging the collaboration between academia and industry, Rwanda researchers from different institutions want to initiate the local production of safe, effective, and affordable phytomedicines and food supplements. The present project is based on a collaborative partnership between three private institutions, Life Care Phyto Labs from India, ZIRUMUZE Cooperative, and Laboratoire l'Expérience Ltd from Rwanda, and researchers from public and Private institutions in Rwanda, National Industrial Research and Development Agency (NIRDA), Rwanda FDA, University of Rwanda (UR) and INES Ruhengeri.

The overall objective of this project is to standardize the production process of selected and reputable phytomedicines produced by IRST and food supplements for them to meet international standards. **The specific objectives are:**

- i. To isolate, purify and certify the Active Pharmaceutical Ingredients (API) from local and available raw materials.
- ii. To develop the production and testing processes of already known and reputable phytomedicines (Batankor, Rusendina and Tembembe) used to be produced by former IRST and food supplements as well as herbal tea
- iii. To develop the product documents for each of the five products to be produced, registered, and certification.

The Approach. This project will select the most appreciated phytomedicines and food supplements responding to local needs and with high quality and safety. The *good agricultural and collection practices (GACP)*, post-harvest processing, good processing practices (GHPP) of selected medicinal plants be investigated. Processing of herbal materials into herbal preparations and API which are considered active ingredients will be standardized. The preparations of different finished products with different dosage forms will be produced under GMP conditions including tea bags, syrups, ointments, creams, and capsules. The appropriate method for testing will be developed and validated. The nutraceutical testing method will be used. Diagnostics methods will be used for herbal supplements (teas, vitamins, powders, and tinctures) for microbial detection and can be done onsite with a fast turn-around. Different technical meetings with relevant stakeholders will be organized to develop and validate product dossiers containing detailed technical information about a particular finished product. This output is a short-term result that will contribute not only to raising awareness among consumers but also to demonstrating the feasibility of the project and the possibility to upscale it at the industrial level.

The expected outputs of this project are:

Output 1. The prototypes of three phytomedicines (Batankor, Rusendina, Tembembe), *Aloe vera-based* food supplement and Lippia tea are produced in compliance with international standards.

Output 2. Dossiers containing detailed technical information of each produced product developed

Output 3: Three certified phytomedicines and two food supplements were produced and disseminated

The expected impacts. This project is in line with the "Made in Rwanda" policy our government is promoting and the valorization of our genetic resources. The total budget of this project (Phase I) is estimated to be eighty-nine million seven hundred eighty-nine thousand and five hundred Rwandan Francs (**89,789,500 Frw**) and will be implemented within 18 months.

Additional information

Investigators/Institutions

Associate Prof. Marie Jeanne MUKAZAYIRE, University of Rwanda, College of Medicine and Health Sciences

Mrs. INGABIRE MUKAZI Goretti, Laboratory Operations Specialist at National Industrial Research and Development Agency (NIRDA), chemistry and expert in Quality control of phyto-drugs

Dr. Egide KAYITARE, Associate Prof at University of Rwanda, College of Medicine and Health Sciences experienced in Pharmaceutics: Drug manufacturing and quality assurance

Dr Vedaste KAGISHA, a researcher and Lecturer at the University of Rwanda, College of Medicine and Health sciences, expert in quality control and quality assurance of medicines

Mr. NYAKARUNDI, Managing Director of ZIRUMUZE Cooperative, research and Expert in Traditional medicine, Naturopath and maker of Action Research in Natural Medicine

Dr. Justin Kabera, Chemistry Division at Rwanda Forensic Laboratory, expert in Chemical composition of plant extracts, including essential oils

Ms Sandrine UWINGABIRE, Pharmacist at Laboratoire l'Experience, experienced in pharmaceutical industry

Dr. Nsanzurwimo Aimable, Lecturer at INES Ruhengeri, a Botanist with highly experienced in several research programs

