

# PHD PUBLIC DEFENSE: FRANK RWEGOSHORA

## (10<sup>th</sup> MAY 2023 AT 12:30 PM)



Frank is a registered PhD student in Phytochemistry in the Department of Chemistry and Physics, College of Natural and Applied Sciences at Sokoine University of Agriculture (SUA). He holds a Master Degree in Natural Products Technology and Value Chain Addition (NPTVA) and a BSc. Education (Chemistry and Biology). He has previously worked as a Chemistry Instructor at different secondary schools in Tanzania.

**Thesis Title: Characterization of New Ellagic acid Rhamnoside and other Phytochemicals from *Synadenium glaucescens* Pax**

**Supervisors:** Prof. Faith P. Mabiki, Dr. Francis Machumi, Dr. Musa Chacha, Prof. Bjarne Styrihave, Prof. Claus Cornett

**Date and Time: 10<sup>th</sup> May 2023    Time: 12:30 PM**

**Venue:** Conference room (SLGB-2), Block G at the College of Natural and Applied Sciences (CoNAS) –Mazimbu

**Mode:** Face to Face and Online

**Join Zoom Meeting**

<https://zoom.us/j/98091735971?pwd=R0cxa0dmL2RZM21aSnFkNG4yWEcwQT09>

**Meeting ID:** 980 9173 5971

**Passcode:** 893568

## Panel Members:

| S/N | Name of Panelist Member  | Status of Appointment      | Remarks                        |
|-----|--------------------------|----------------------------|--------------------------------|
| 1.  | Prof. Yasinta Muzanila   | Chairperson                | Professor,<br>Biosciences, SUA |
| 2.  | Dr. Offoro Kimambo       | Appointee of the Principal | Lecturer, DGES,<br>SUA         |
| 3.  | Prof. Stelyus Mkoma      | Internal Examiner          | Not Supervisor                 |
| 4.  | Dr. Beda Mwang'onde      | Internal Examiner          | Not Supervisor                 |
| 5.  | Dr. Alinanuswe Mwakalesi | Head of Department (DCP)   | Recorder                       |

## Summary of Major Findings

This study has led to isolation and full identification of chemical structure of one new ellagic acid rhamnoside from *Synadenium glaucescens* Pax along with other 14 known compounds. These compounds were collectively isolated from root barks and stem barks' extracts of this plant. They include; 3',4'-di-O-methylellagic acid-4- $\alpha$ -L-rhamnopyranoside, 3,4,3'-tri-O-methylellagic acid, hemicosanylferulate, octacosylferulate, 1-nonacosene, hexacosane, hexacosanoic acid, Lupeol, euphol, epifriedelanol,  $\beta$ -sitosterol and a long chain amine. Euphol, epifriedelanol and  $\beta$ -sitosterol were isolated from both root and stem barks. Their cytotoxicity evaluation by BSLT indicated to be safe ( $LC_{50} > 100 \mu\text{g/mL}$ ) at a maximum tested concentration ( $2400\mu\text{g/mL}$ ). Antibacterial assay indicated strong activity of octacosylferulate against *S. aureus* (MIC= 0.125 mg/mL) and weak activity. An assessment of the effect of geographical location and the age indicated significant contribution on the profiles of secondary metabolites in *S. glaucescens* Pax. The location was found to impart the highest effect on the marginal mean of compounds ( $81.52 \pm 0.125$ ). The derivatives of ellagic acid were detected in all root samples from all study sites throughout all ages. However, a triterpenoid euphol was detected at the highest concentration in Tanga followed by Njombe and finally Morogoro sample. Generally, most of these compounds are reported for the first time from *S. glaucescens*. The newly isolated ellagic acid rhamnoside is recommended to serve as the marker compound for any product formulations from the root barks of this medicinal plant.