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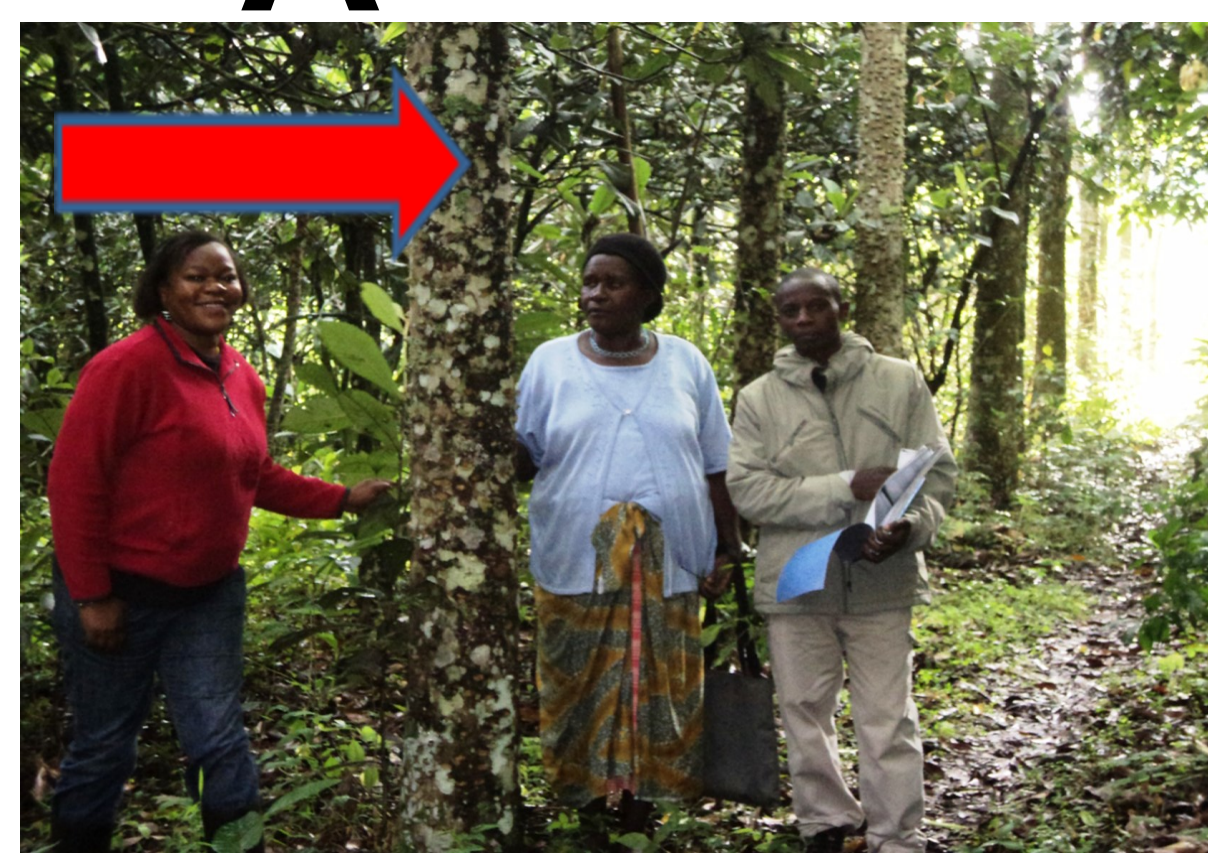
INTRODUCTION

- Malaria is the leading cause of morbidity and mortality (over 27%) in Uganda and is the leading cause of sickness (52%) and death among children under age five in Uganda (MOH, 2016).
- Resistance of malaria parasites to known antimalarial drugs provided the necessity to find new drugs from natural products to treat malaria.
- The study was done to determine antiplasmodial activity, toxicity and chemical structures of compounds from the extracts of *Zanthoxylum chalybeum* stem bark (A) .

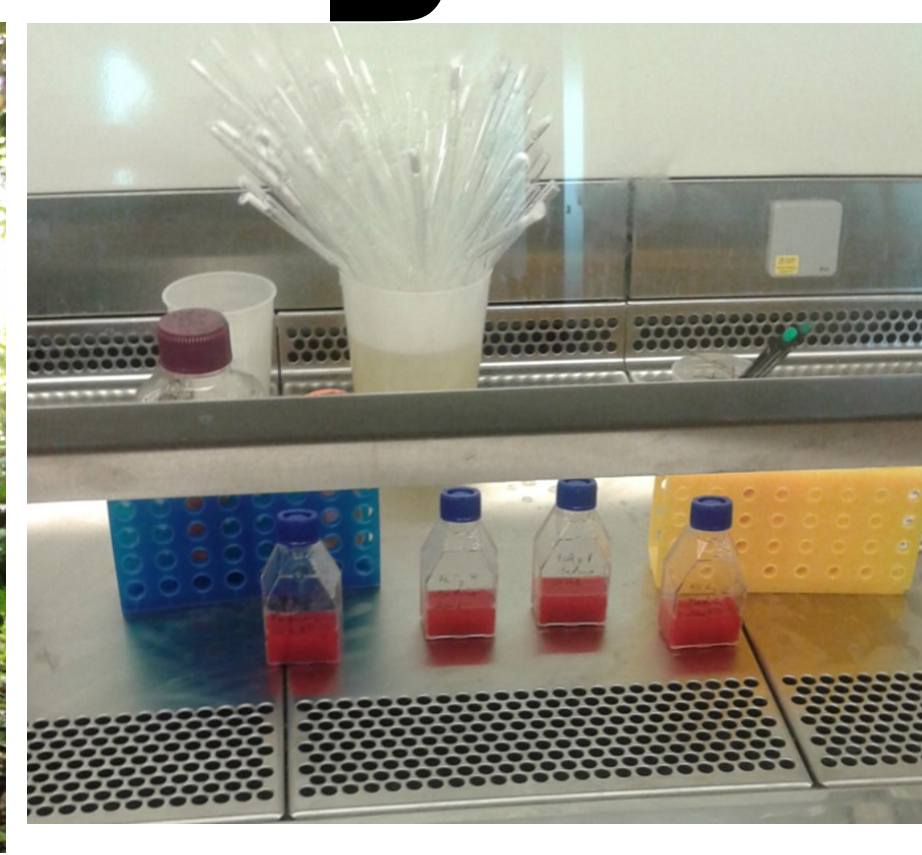
MATERIALS AND METHODS

- Micro Mark III test was used for in vitro antiplasmodial analysis of the extracts (B & C).
- Acute toxicity was done on Wister mice (Table 1).
- Chromatographic techniques were used to isolate and purify constituents from extracts.
- Structures of pure compounds were determined using spectroscopic techniques .

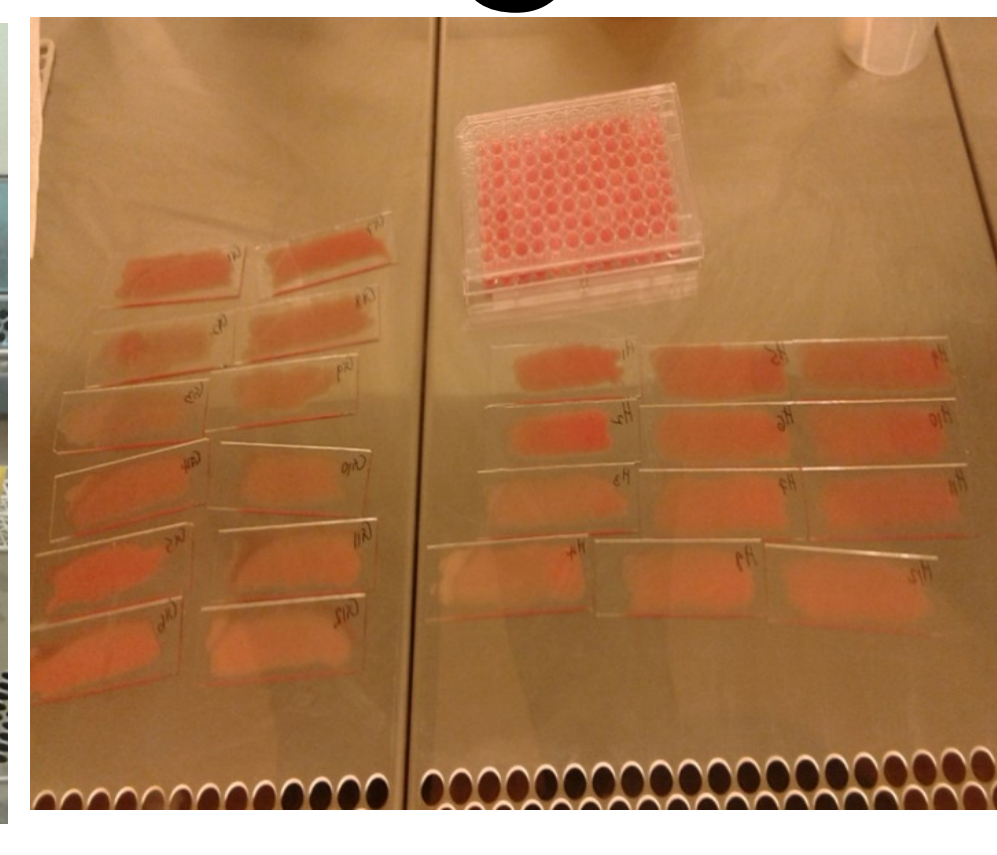
A



B



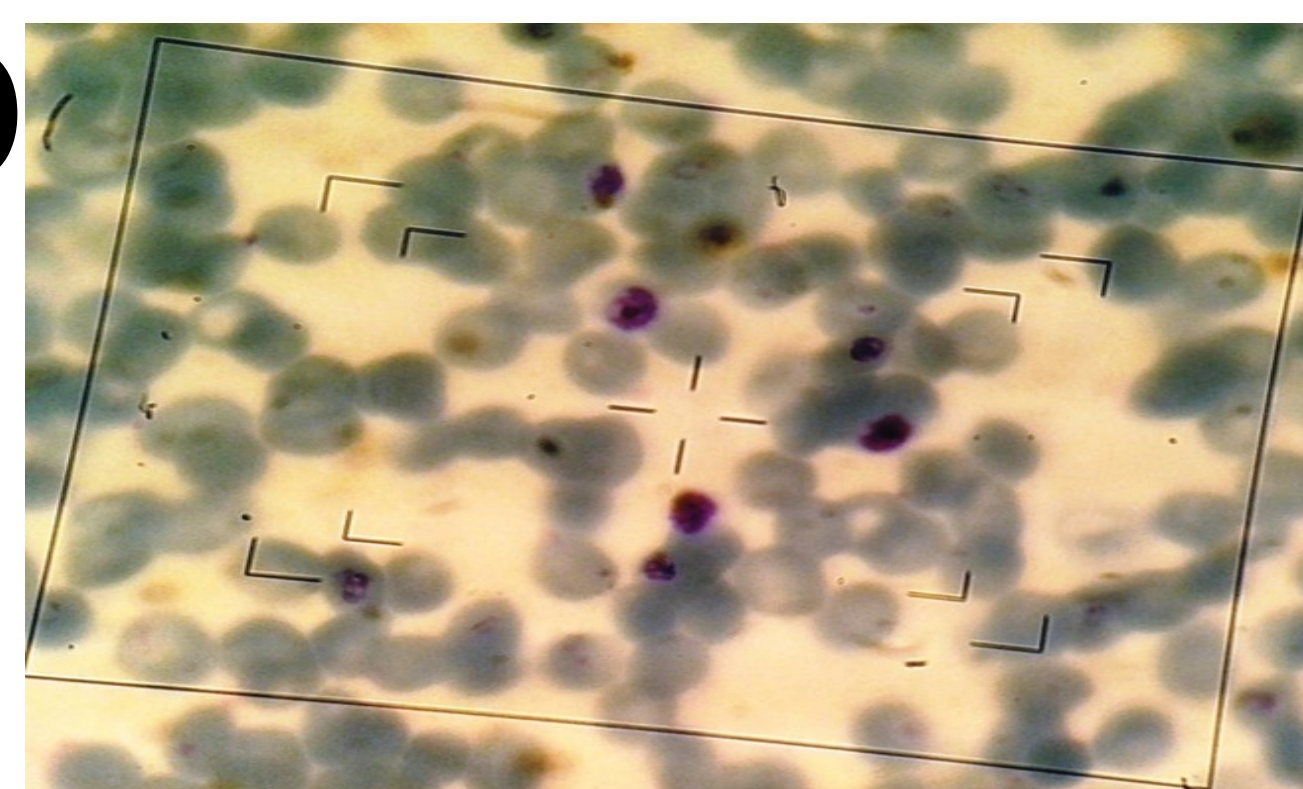
C



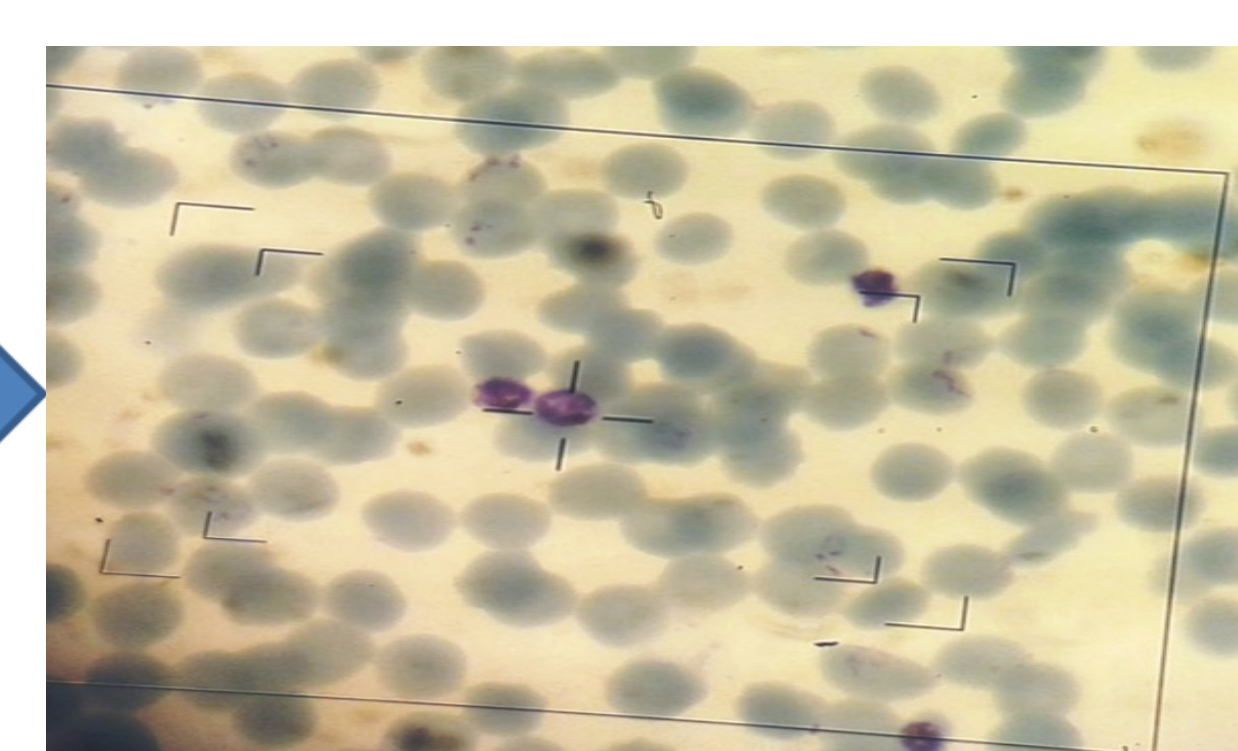
RESULTS AND DISCUSSION

.50% inhibitory concentration (IC₅₀) values for the *Z. chalybeum* water extract. For control (D) and with activity (E).

D



E



- The ethyl acetate extract was more active followed by the water extract and then the methanol extract.
- All the tested crude extracts of *Z. chalybeum* were potent (IC₅₀ < 50 µg/mL).
- The activity of *Z. chalybeum* on *P. falciparum* malaria parasites is due to the secondary metabolites present in the plant and not the solvent used in extraction.

Table 1: Acute toxicity

Extract	LD ₅₀ (mg/Kg)
Water extract of <i>Z. chalybeum</i>	20,216

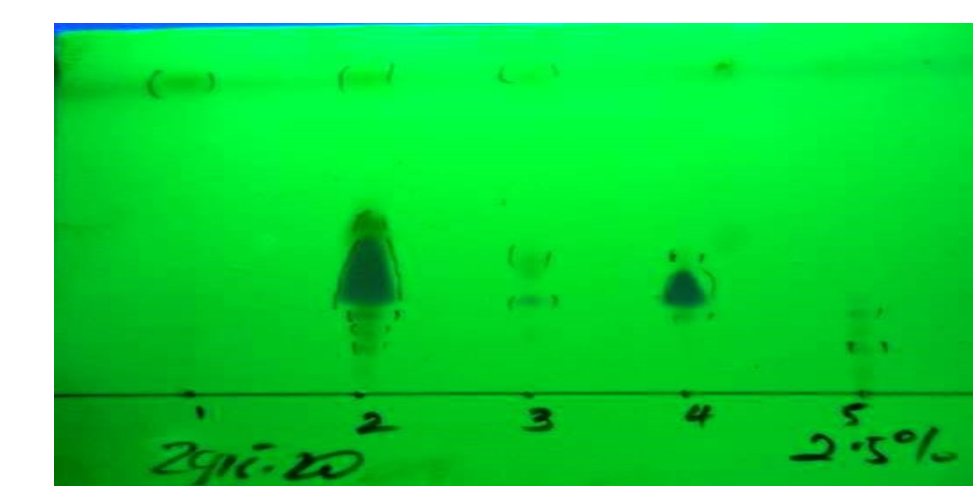
The water extract was safe for consumption since the LD₅₀ was above 5,000 mg/kg body weight (OECD, 2008).

Phytochemical analysis

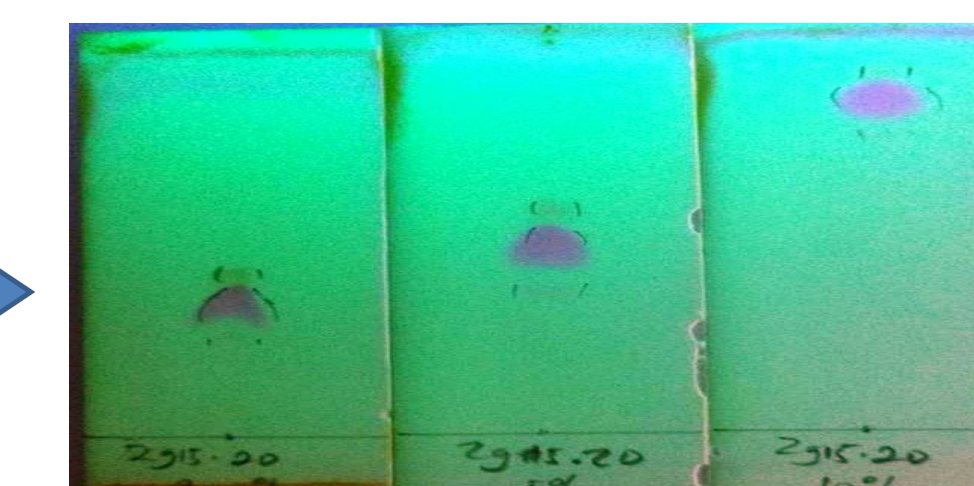
- The extracts of *Z. chalybeum* showed the presence of alkaloids, saponins, flavonoids & cardiac glycosides that may be responsible for the antiplasmodial activity .

Thin layer chromatography of the fraction and Compound A isolated from *Zanthoxylum chalybeum*.

Z. Chalybeum fractions



Different solvent systems for isolation of A

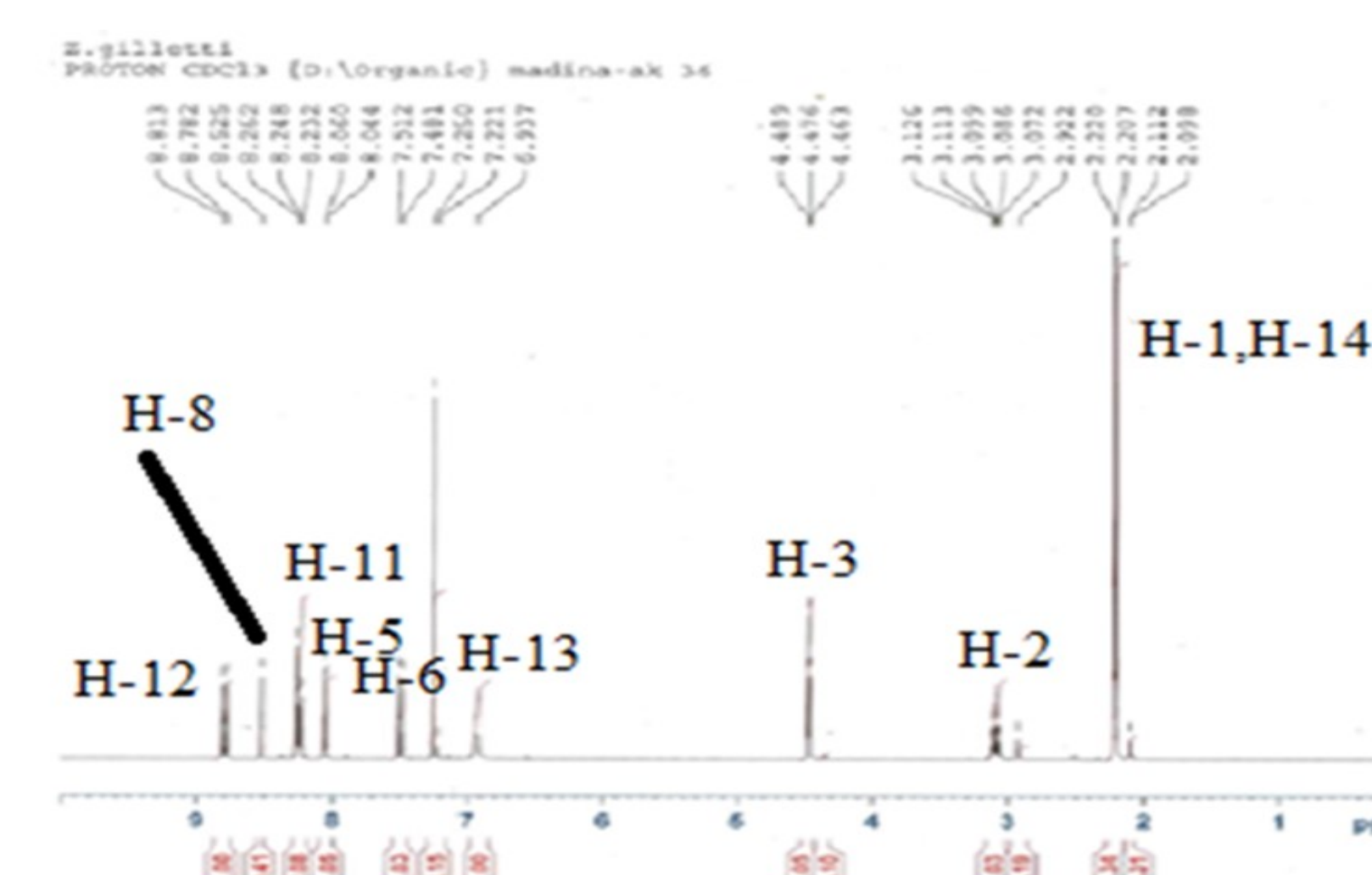
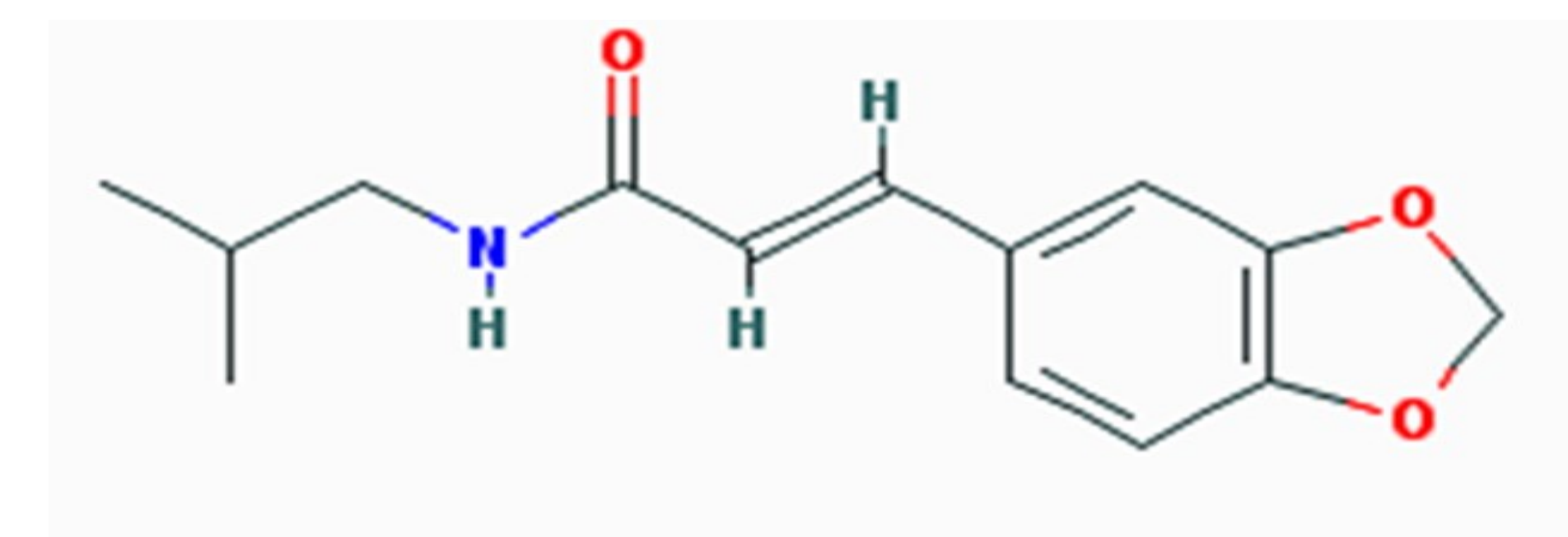


•Proton NMR of Com-

N-isobutyl-3-(3,4- methylene dioxyphenyl)-2E-propenamide

•Molar mass = 248 g/mol

•Molecular Formula: C₁₄H₁₇NO₃



Common name: Fagaramide;
highly active (2.85 µg/mL) and moderately active (16.6 µg/mL) on the FCR3 and NF54 strains respectively..

Conclusions

- The findings indicate that *Z. chalybeum* is efficacious and non-toxic herbal remedy for oral administration at low concentration which justifies its use in malaria treatment by the Herbalists of Rukararwe-Uganda.
- The isolated compound, Fagaramide is a potential antiplasmodial agent for the discovery of new natural antimalarial compounds.

The herbal product will contribute to the nation's ambitious goal of good health for all which is vital for poverty reduction and sustainable development (**SDG 3**).

