

Introduction

Malaria is an important tropical communicable disease, which accounts for about 800,000 deaths annually, and exerts a huge burden of about \$12 billion on the African economies. Resistance to most malarial drugs, is on the rise. A more-irksome dimension, is the recent development of resistance to artemisinin- the currently most potent anti-malarial drug, which has propelled the search for more antimalarial drugs with greater potency. [1]

Plants which have at least one part been used in ethno medicine are referred to as medicinal plant. Historically, Mankind have long benefitted from the efficacy of medicinal plants, even before the advent of orthodox medicine. In the indigenous communities, it is still a common practice to use decoctions of medicinal plants for the treatment of diseases, which often has offered useful leads to the discovery of new drugs. For instance, the medicinal uses of the cinchona bark from which quinine was derived were first discovered by the Quechua peoples of Bolivia and Peru, who used the plant in the treatment of fever, before its antimalarial properties were, validated. [2]. Similarly, *Artemisia annua*, from which artemisinin, a renowned antimalarial drug which has recently been shown to possess anticancer activity, has been in use in the traditional Chinese medicines (TCM) for a very long time. [3].

Acalypha Wilkesiana

Botanical information

A. wilkesiana is an evergreen shrub, also known as Joseph's coat, and belonging to the Euphorbiaceae family. It grows 3 m high and spreads 2 m across. The stem is erect with many branches. The branches have fine hairs. It has a closely arranged crown. The leaves are coppery green with red splashes of colour.

The plant is found in Africa, Asia, Australia: Notably Bahamas, Bermuda, Fiji, Hawaii, Indochina, Indonesia, Kenya, Malaysia, Nigeria, Norfolk Island, Pacific, Pakistan, Papua New Guinea, PNG, Polynesia, Tanzania, Thailand, Tonga, Uganda, USA, Vanuatu, Vietnam



Figure 1. Picture of the Plant, culled from Wikipedia

Research Validated Bioactivities

- ❖ Antibacterial, antifungal, anti-malarial, cytotoxic and immunomodulatory activities
- ❖ Ethno pharmacological Uses
- ❖ The plant is used locally for the treatment of malaria, gastrointestinal disorders and skin infections, inflammations and breast tumours.

Aims of the Study

- ❖ To investigate the anti-malarial activities of this plant
- ❖ To determine the active constituents of the plant

Research Methodologies

The leaves of *A. wilkesiana* was sourced from a bio-reserve in Nigeria.

The plant extraction was carried out as shown in the scheme below. The antimalarial activity was analysed using the SYBR-green I fluorescence assay method to view the percentage growth of *P. falciparum* (Dd2 strain) at three concentrations of extracts. [6] GC-MS was used for the identification of compounds after trimethylsilylation. [7].

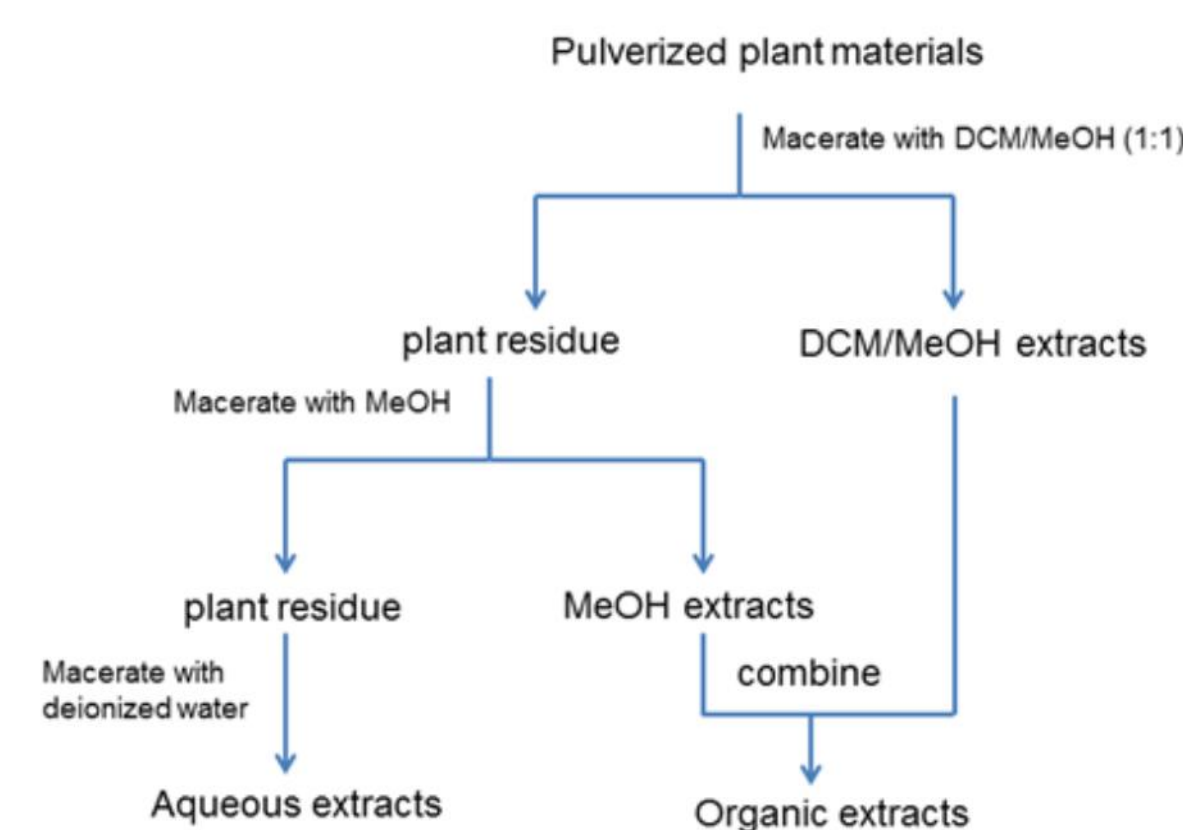


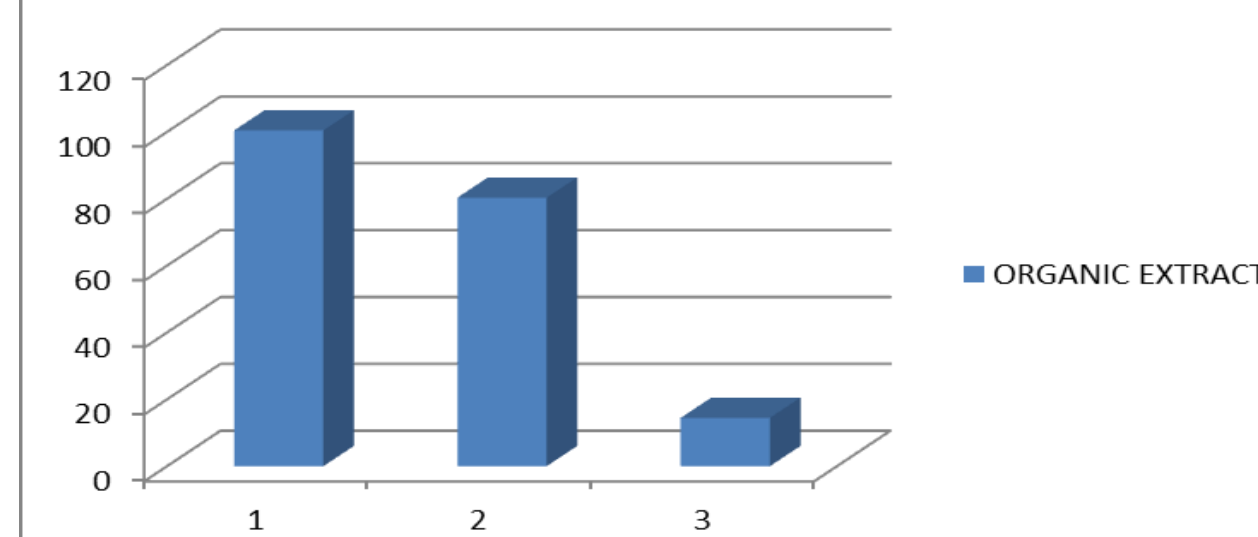
Figure 2. Scheme of Plant Extraction Procedures

Results

Table 1. Showing Results of Malarial Screening of the Extracts

EXTRACT	% GROWTH INHIBITION AT LOW CONC (11.1µG/ML) ± SD	% GROWTH INHIBITION AT MEDIUM CONC (33.3µG/ML) ±SD	% GROWTH INHIBITION AT HIGH CONC (100µG/ML) ±SD
ORGANIC EXTRACT	100.43±0.43	80.32±7.29	14.44±1.08
AQUEOUS EXTRACT	78.39±3.86	14.33±1.99	2.43±4.39

ORGANIC EXTRACT



AQUEOUS EXTRACT

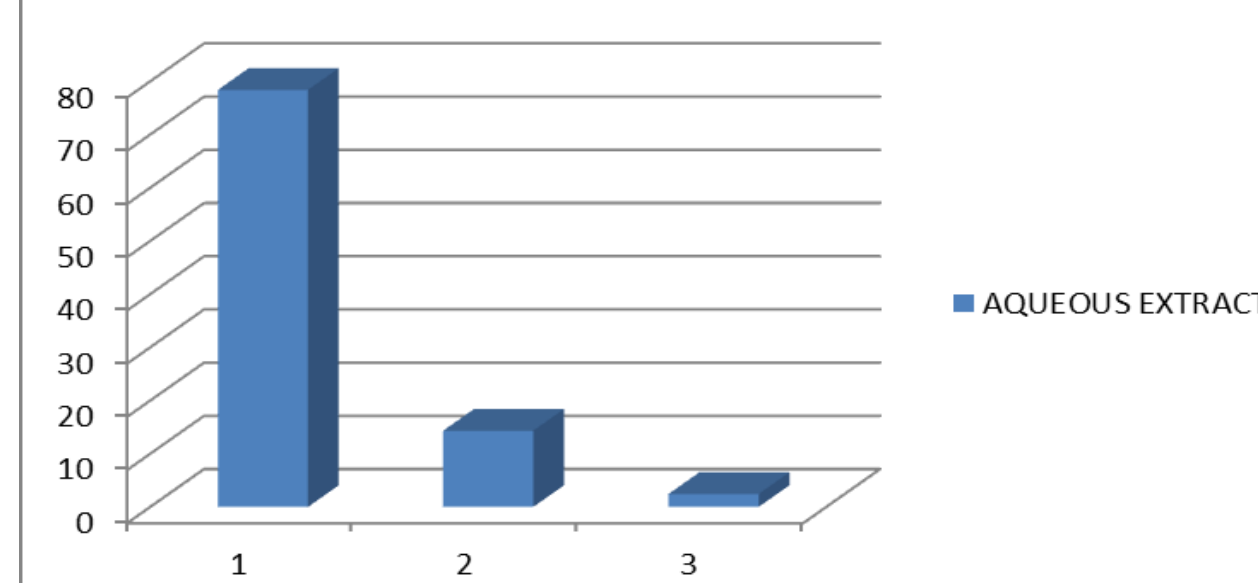
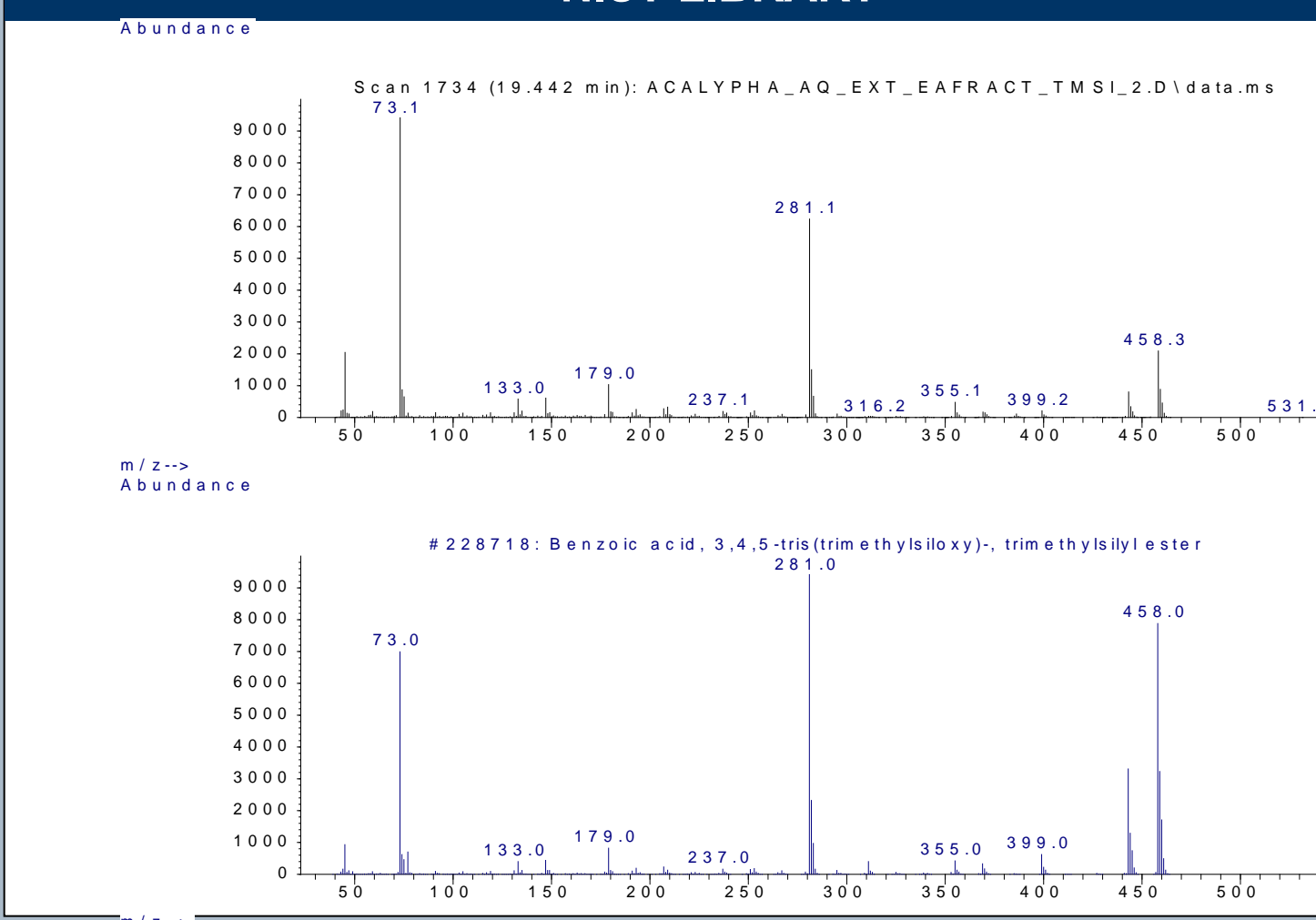


Figure 3. Showing the graphs of the anti-malarial screening results

Table 2. Showing Some GC MS Identified Compounds/Result of Malarial Screening of Gallic Acid

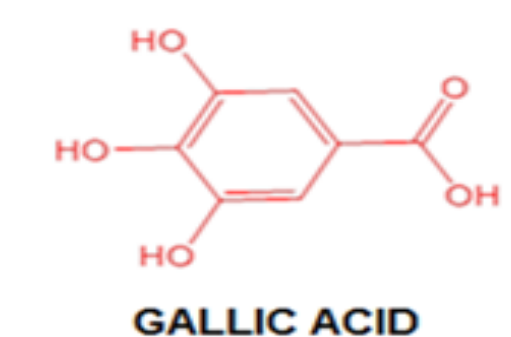
GC MS IDENTIFIED COMPOUNDS	RETENTION TIME (MIN)	IC50±SD µM
GALLIC ACID	19.58	26.8±1.3
SHIKIMIC ACID	17.76	ND
PYROGALLOL	14.56	ND
PROTocatechuic Acid	17.86	ND
MALIC ACID	13.81	ND

GC MS OF GALLIC ACID IN EXTRACT AND SPECTRA FROM NIST LIBRARY



Research Poster Design Services

- ❖ The Plant possesses *in vitro* anti-malarial activities
- ❖ The aqueous extract of the plant is the most bioactive extract
- ❖ The Ethno pharmacological uses of this plant has been validated by this research
- ❖ One of the identified bioactive constituent in the plant is Gallic acid



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