

## The Phytochemical Analysis of Aqueous Extract of *Phyllanthus Fraternalis*

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### Abstract

*Phyllanthus fraternus* Webster a tropical weed, belong to the family Phyllanthaceae, medically the plant is employed for numerous uses by the indigenous people, including Nigerians. These include treatment of diabetes, dysentery, fever, flu, tumors, jaundice, vaginitis, and dyspepsia. It has equally been discovered to possess antibacterial and antifungal activities. The preliminary phytochemical study of the aqueous extract of the plant was carried out using standard method of (Harborn 1976 and Trease and Evans 1989). The study reveal the presence of some secondary metabolites; tannins, saponins, glycosides, anthraquinones and phenols. Hence, the plant can be used to discover bioactive natural products that may serve as leads in the development of pharmaceuticals research activities. Though alkaloid, flavonoids, steroids, steroids and terpenoids were found to be absent in the plant.

**Key words:** *Phyllanthus fraternus*; Webster; Metabolites; Medicinal plant

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### INTRODUCTION

The use of medicinal plant and herbs as the first medicines is a universal phenomenon. Every culture on earth, through written or oral tradition, has relied on the vast variety of natural chemistry found in healing plants for their therapeutic properties (Wainright, 2001). Medicinal plants

frequently used as raw materials for extraction of active ingredients which is used in the synthesis of different drugs. Like in case of laxatives, blood thinners, antibiotics and antimalaria medications, contain ingredients from plants. The World Health Organization (WHO) reported that 80% of the emerging world's population relies on traditional medicine for therapy. During the past decades, the developed world has also witnessed an ascending trend in the utilization of complementary or alternative medicine (CAM) particularly herbal remedies (Chintamunnee and Mahomoodally, 2012).

*Phyllanthus fraternus* Webster commonly called gulf leaf flower, Chancapiedra. Mace da goyo (Hausa), Gbogbonowun lese (Yoruba) is a small, erect, annual herb (Dicotyledonous) that grows 30-40 cm in height (Wunderlin and Hansen, 2002). It is indigenous to the rainforests of the Amazon and other tropical areas throughout the world, including the Bahamas, southern India, China and Nigeria. The plant is employed for numerous uses which include treatment of diabetes, dysentery, fever, flu, tumors, jaundice, vaginitis, and dyspepsia (Leslie, 2003).

### MATERIAL AND METHODS

#### Collection of Plant

The plant *phyllanthus fraternus* Webster was collected from River Benue (hayngada) Jimeta Road Girei Local Government Area Adamawa State. The plant material was spread thinly on a flat, clean tray (to prevent spoilage by moisture condensation) and allow to dry at room temperature for seven days (Sofowora, 1982) The dried plant was crushed into fine powder with electric blender (Binatone model-400) mercerization was done to enhance the penetration of the extracting solvent (water) into the cell, thus facilitating the release of active ingredients (Sofowora, 1982).

## Sample Preparation for Phytochemical Screening

Sixty two grams (62g) of the powdered was macerated into 200ml of water for 48hours. It was filtered and evaporated with a rotary evaporator to concentrate the filtrate. The semi-solid extract was transferred into a sterile container and stored in the refrigerator for analysis.

## Phytochemical Screening

Chemical test were carried out using aqueous extract to identify various constituents using standard method of (Harbor, 1976; Trease and Evans, 1989)

### Test for Tannins

About 0.5g of dried powdered sample was boiled in 20ml of water in the test tube and filtered. A few drop of 0.1% ferric chloride was added and observe for brownish green or blue black coloration

### Test for Alkaloids

About 0.5g of sample was stirred with 5ml of 1% hydrochloric acid on the steam bath. The solution will be filtered and 1ml of the filtrate was treated with 2drop of picric acid. Turbidity of the extract filtrate on addition of picric acid indicates the presence of alkaloid.

### Test for Saponins

2g of powdered sample was boiled in 20ml of distilled water in a water bath and filtered. 10ml of the filtrate was mixed with 5ml of distilled water and shaken vigorously for stable persistence froth. The frothing will be mixed with 3 drop of olive oil shaken vigorously, then observed for the formation of emulsion indicating the presence of saponins.

### Test for Flavonoids

To a portion of the filtrate 5ml of dilute ammonia solution was added followed by the addition of concentrate sulphuric acid. A yellow coloration indicates the presence flavonoid.

**Test for cardiac glycosides.** About 5ml of the extract was treated with 2ml of glacial acetic acid containing one drop of ferric chloride solution. This was underlayed with 1ml of concentrated with sulphuric acid. A brown ring of the interference indicates the presence of cardiac glycosides.

**Test for anthraquinones.** About 3g of the powdered sample was mixed with 10ml of benzene in a conical flask. The mixture will then be filtered. To the filtrate, 5ml of 10% ammonia solution was added and shaken. The presence of a pink-red or violet colour in the ammonia phase indicates the presence of anthraquinones.

**Test for steroids.** About 2ml of acetic anhydride was added to 0.5ml of the aqueous extract of the sample with 2ml sulphuric acid. Colour change from violet to blue or green indicates the presence of steroids.

**Test for terpenoids.** About 5ml of the extract was mixed in 2ml of chloroform, and 3ml of sulphuric acid

was carefully added to form a layer. A reddish-brown coloration of the interface was formed to show the presence of terpenoids.

**Test for phenols.** About 2ml of the extract was added to 2ml of ferric chloride solution. Deep bluish green solution was formed which indicates the presence of phenol.

## Results and Discussion

The phytochemical results of the plant *Phyllanthus fraternus* reveal the presence of medicinally active constituents like tannins, saponins, glycosides, anthraquinones and phenols While alkaloid, flavonoids, steroids, terpenoids and terpenoids were found to be absent in the plant.

**Table 1**  
**Phytochemical Constitute of the Aqueous Extract**  
***Phyllanthus Fraternus***

Chemical Constituents	Result
Tannins	Present
Alkaloid	Absent
Saponins	Present
Flavonoid	Absent
Glycoside	Present
Anthraquinones	Present
Steriods	Absent
Terpenoids	Absent
Phenols	Present

## CONCLUSION

The Photochemical Analysis of the plant was carried out using standard method described by (Harborn , 1976, and Trease and Evan 1989). Which confirm the presence of tannins, saponins, glycosides, anthraquinones and phenols. The present study provides evidence that aqueous extract of *phyllanthus fraternus* contain medicinally important bioactive compounds and this justifies the use of use of plant species as traditional medicine for treatment of various diseases.

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