PHYTOCHEMICAL AND ELEMENTAL ANALYSES OF *Pyrenchantha staudtii Engle (Icacinaceae)* AS BLOOD CLOTTING AGENT

Umudi, E. Q.
Department of Chemistry
College of Education, Agbor, Delta State, Nigeria
e-mail: ese.umudi@yahoo.com

ABSTRACT

Analysis of n-Hexane extracts of the leaves of *pyrenachantha staudii Engl. (Icacinaceae)* showed the presence of alkaloids, glycosides, tannins, and proteins. Atomic Absorption Spectroscopic Analysis of the leaves extract revealed the presence of magnesium. 270.01mg/100g; potassium 25.73mg/100g; calcium 10.20mg/100g; copper 5.30mg/100g and Iron 2.10-mg/100g while maganses 0.90mg/100g and zinc 0.02mg/100g were found in trace quantitites. The spectrochemcal analysis showed strong peaks at 300nm and 410nmfor the ultraviolet/ visible spectroscopy corresponding to absorbance of 0.192 and 0.288, while the infrared spectrum showed strong peaks at 1700cm^{-1}, 2910cm^{-1}, 1350cm $^{-1}$ 1450cm^{-1} and 1230 $^{-1}$ respectively. Blood clothing time was monitored with the sample extract and without the sample. It showed good improvement in clothing time with respect to blood containing the samples extract.

Keywords: Pyrenachantha Staidtii Engl, blood clothing, elements, analysis

INTRODUCTION

The uses of medicinal plants for treatment of infections is an age-long practice in traditional medicine, Dalziel (1937). Among the plants used by traditional medical practitioners in Nigeria includes Pyreacatha Staudtii Engl *(icacicacea)* called "ipera" by the Yoruba Speaking tribe of Western Nigeria. Gundiza (1993). The family to which P. Staudtii belongs-Icacinaceae consist of about 24 genera with over 150 species of plants. Busari, A. D (1970). It is a high climbing glaborous shrub that inhabits the tropical rainforest. It is a woody climber with pure green or pink leaves in low corymbrose inflorescence, fruiting follicle about 0.6m long, slender and fruits during the dry season. P. Staudtii Engl finds enthropharmacological usage in the treatment of various intestinal disorders, an anti-ulcer treatment and a blood clothing agents. Aguwa and Mittal (1981). The results of phytochemical screening of the results of various morphological parts of P. Staudtii Engl. Revealed the presence of alkaloids, saponin, tannis, fatty acids and numerous trace substance, Bohm and Kocipai-Abyazan (1999). This study investigates the anti hamorrharage activities of the n-hexane extract, identification of essential metals and active organic compounds found in the leaves of P. Staudtii to identify the active organic compounds and essential metals responsible for its anti hamorrharage activity.

MATERIAL AND METHODS

Extraction: Leaves were collected in Okwagbe, Ughelli South Local Government Area of Delta State. They were air dried and ground into powder. 20g of the sample were weighed into beaker containing 150cm$^{3\ of}$ deionized water. It was warmed for 30mins and filtered obtaining a brown extract.

N-HEXANE EXTRACT

20g of the ground leaves was extracted with hot n-hexane using soxhlet extractor for 12hrs. The extract was concentrated into a brown material weighing 5g.

ALKALOID, PROTEINS, TANNINS, FLAVONOIDS AND GLYCOSIDES DETERMINATION

From the n-hexane extract, alkaloids proteins, tannin and glycosides was determined using Finar (1970) and Bohm and Kocipai-Abyazan (1994). Multiple nutrients wet-acid digestion method as described by Ademoroti (1996) was used for the digestion. While mineral determination was done using Atomic absorption spectrometers (Model-spetral 10).

DETERMINATION OF CLOTHING TIME

10ml of blood was carefully taken from a healthy female adult standing erect by 9.00am using a sterilised syringe. The blood samples was immediately put in a glass tube and rocked in a water bath at temperature ranging from 25^0C to 40^0C. The time for the blood to stop flowing was note. It was repeated with 5 drops of the sample extract in the blood sample to investigate the effect of the sample on clothing time.

INFRARED AND ULTRAVIOLET/VISIBLE SPECTROSCOPIC ANALYSIS

The spectrum of the n-hexane was run on Furia transformed infrared spectrophotometer and UV-visible spectrophotometer V2.05.

RESULTS AND DISCUSSION

Table 1: Photochemical Analysis of the n-Hexane Extract from Leaves of *P. Staudtii*

Natural products	Results
Alkaloids	± ±
Proteins	± ±
Tannins	± ±
Glycocides	± ±

± ± present

Table 2: Blood Clothing Time Measurement

Temperature ^{0}C	Clothing blood sample without extract (minutes)	blood sample with extract (minutes)
20	6.0	3.5
25	7.5	4.5
30	8.0	5.0
35	10.0	6.0
40	11.0	7.0

Fig. 1: IR Spectrum of Pyrenchantha *staudtii* (*Icacinaceae)*

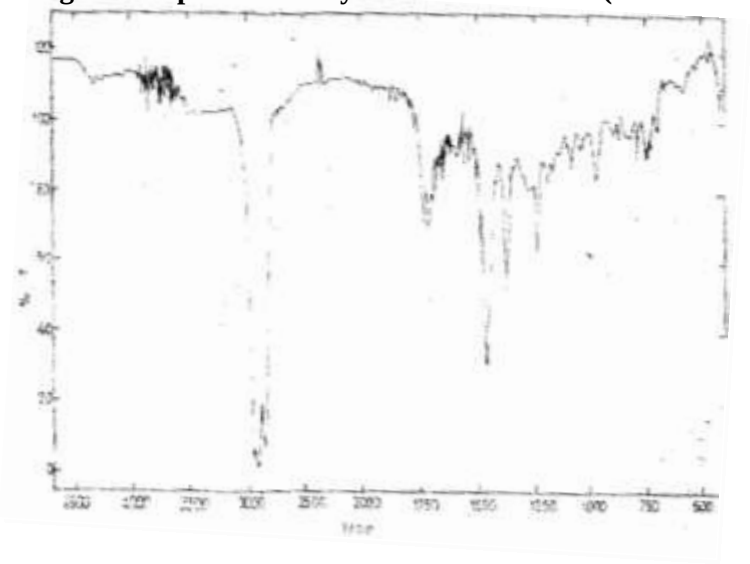

Table 3: Concentration of elements in the aqueous leaf extract of *P. Standtii Engl.*

Elements	Concentration (mg/100g)
Calcium	10.20
Iron	2.10
Copper	5.30
Manganese	0.90
Potassium	25.73
Magnesium	270.01
Zinc	0.02

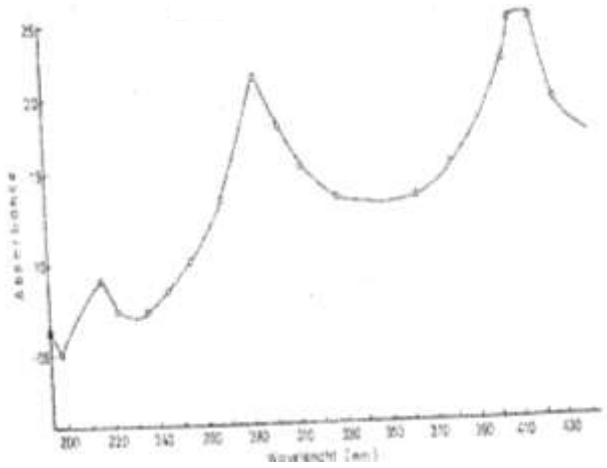

Fig. 2: UV/Visible Spectrum of *Pyrenchantha staudtii* (*Icacinaceae)*

RESULTS AND DISCUSSION

Table 1 shows the result test for alkaloids, proteins, glycoside and tannin. The presence of Alkaloids was known when a creamy white precipitate was formed when acidified the sample reacted with Meyer's reagent, reddish brown precipitate with Wagnerts reagent

and orange brown precipitate with Dragendoffs sample solution turned deep red with millions reagent. Glycosides were shown to be present, when testing the sample solution with chloroform and tetraoxo-sulphate (vi) acid, two layer. Tannins were confirmed present when the test with ferric chloride solution. This was done ethanol and distilled water. Rosa and Josem (1999). Table 2 shows the determination of clothing time with and without sample. There was significant reduction time at all the temperatures investigated with blood samples containing the sample extract compared to blood sample without extract. Table 3 shows the analysis of the essential elements with Magnesium having the highest concentration of 270.0mg/100g; potassium 25.73mg/100g; calcium 10.20mg/100g; copper 5.30mg/100g; Iron 2.10mg./100g; Maganese 0.9mg/100g and Zinc 0.02mg/100g. The conversion of prothrombin to thrombin is always accomplished in the presence of calcium ions. Calcium is a major player in blood clothing Giangrande (2003). The high concentration of magnesium in the formation of chlorophyll i.e. the fixing capability of the plant. Kaliyan (1976).

Fig. 1 and 2, shows the infrared/UV visible spectral of the n-hexane extracts of the leaves of P. Staudtii Engl. From the IR infrared spectral the peaks identifies represent a mixture of several organic compounds. Fig 2 shows the UV/Visible spectral, two notable peaks at wavelengths of 300nm and 410nm were identified showing absorbance of 0.191 and 0.228. This corresponds to aromatic compounds with benzene ring attached directly to a group containing multiple bonds such as those of conjugated acyclic dienes leading to long wavelength Bentley (1960). In relation to anti-haemorrhage properties *P. Staudtii Engl.* from the UV/visible spectrum in Fig 2 the peaks represented the quinines disubstituted benzene and conjugated alkenes suggested that the presence of the quinines are the basic structures of 1,4, naphtaquinones which are the basic components of vitamins K. Other like 2 – mothyle-1,4-napthaquinore and p-benaoquinone are other more active in blood clothing.

CONCLUSION

The presence of alkaloids, proteins glycosides and tannis confer medicinal properties on the plant. It is effectives in blood clothing because of the presence of the napthaquinones. It is a medicinal plant in the forest areas it can provide alternatives to the expensive thrombin used in many hospitals. The high minerals (elements) contents of Magnesium, potassium and calcium can serve as an important mineral supplement in the body with positive health implication. The phytochemicals are good antioxidants thereby minimizing a lot of common health problems structural evaluation is important to enhance drug formation.

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