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Chemical Investigation on the Stem Bark of *Phyllanthus discoides* (Euphorbiaceae)

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ABSTRACT

The ethyl acetate extract of *Phyllanthus discoides* affords β-sitosterol, euphol and kaempferol. There structures were characterized by m.p., m.m.ps., TLC, degradation and by preparing their acetyl derivatives. Quantitative evaluation of the crude drug (powdered stem bark) was also carried out.

Keywords: *Phyllanthus discoides*, β-sitosterol, euphol, kaempferol.

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INTRODUCTION

The plant *Phyllanthus discoides* Baill (Euphorbiaceae) is a tree, 18 – 30 meters high and 120cm grith. It is widely distributed in tropical Africa. In Nigeria it is commonly known by the Hausa's as Geron tsuntasaye; majiriyakurmi, by Yoruba's as ashasha and by Igbo's as isinkpi [1].

The bark of this plant was reported to be used as purgative and other gastro-intestinal disorders. Previous phytochemical investigation on the plant has shown the presence of alkaloids [2].

MATERIALS AND METHODS

Dried and powdered stem bark (200 g) of *P.discoides* was extracted with acetone. The extract was concentrated under reduced pressure and the brownish gummy mass was extracted successively with pet – ether (60^o – 80^o) and ethyl acetate. The total ethyl acetate extract was concentrated and purified (fractionated) through silica gel column followed by preparative TLC to yield compounds A, B and C.

RESULTS AND DISCUSSION

Compound A (20 mg) crystallized from MeOH-$CHCl_3$ (7:3) as colourless crystals, m.p. 134^o – $135^{o,}$ gave positive Lieberman Burchard (L.B) test for phytosterols and a mauve colour on heating with H_2SO_4. It was identified as β -sitosterol by direct comparison with an authentic sample (m.p., m.m.p., Co. – IR and Co. – TLC) and preparation of acetate derivative, m.p.125^o - 126^o [3].

Compound B (15 mg) was crystallized from EtOAc – pet Ether (7:3) as colourless crystals, m.p. 113^o – $114^{o.}$ It gave a positive L.B. test. It was confirmed by preparation of its acetate m.p. 109^o of euphol acetate [4].

Compound C (10 mg) was crystallized from MeOH-$CHCl_3$ (6:4) as light yellow crystals m.p. 275^o. The Shinoda and Wilson boric acid tests were positive confirming the presence of flavonol. It was identified as Kaempferol by its melting point 276^o – 278^o and mixed melting point with an authentic sample of Kaempferol and gave an acetate m.p. 180^o – 182^o [5].

Further confirmation of the identity of the flavonoid was furnished by co-chromatography. The spots were revealed in u.v. light, and ammonia vapours, by spraying with solutions of ferric chloride and diazotized p-nitroaniline. The flavonoid on microdegradation [6]. Followed by the chromatographic examination of the fragments revealed two spots by spraying with sodium carbonate and diazotized p-nitroaniline indistinguishable from those of authentic samples of pholoroglucinol and P-hydroxy benzoic acid [7].

The moisture contents, ash value, acid insoluble ash value and alcohol extractive value of the crude drug were also determined Table 1 [8].

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Table 1: Quantitative Evaluation of the crude drug (Powdered Stem Bark)

Evaluation Parameter	Value (% w/w) Mean
Moisture content	14.0
Ash value	9.5
Acid insoluble ash value	5.0
Alcohol extractive value	15.0

REFERENCES

[1] Dalziel JM and Hutchinson J. The useful plants of tropical Africa, published by the Crown agent for Oversea Government and administration, London U.K. 1937.
[2] Parello J C. Bull Soc Chim 1963; 1117 – 29.
[3] Ilyas M and Ilyas N. J Pharm Sci 1985; 79 – 80.
[4] Chakrabarty K and Chawla M. Ind J Chem. 1983; 1156 – 1166.
[5] Geismann T A. The chemistry of Flavonoid compounds 1st ed. Pergoman press, London, U.K. 1962.
[6] Bate – Smith E C and Swain T. J Chem Soc. 1953; 2187.
[7] Chopin J and Pacheco H. Bull Soc Chim boil. 1958; 1593.
[8] British Pharmacopoeia, volume II. 2005; A157: Appendix XIM.