NEW LIGNAN DERIVATIVE FROM *PACHYPODANTHIUM BARTERI* (BENTH). (ANNONACEAE)

Pascal D. Douanla [a]*, Thierry K. Wafo [a], Sammer Yousuf [b], Turibio Kuiate Tabopda [a], Saira Bano [b], Alembert T. Tchinda [c], Iqbal Choudhary [b] and Marguerite Hortence K. Tchuendem [a].

[a] *Department of Organic Chemistry, Faculty of Science, The University of Yaounde-1, P.O. Box 812, Yaounde, Cameroon*

[b] *H E. J. Research Institute of Chemistry, International Center for Chemical and Biological Sciences (ICCBS), University of Karachi, Karachi 75270, Pakistan*

[c] *Laboratory of Phytochemistry, Institute of Medical Research and Medicinal Plant Studies, (IMPM), P.O. Box 6163, Yaounde, Cameroon*

INTRODUCTION

The genus *Pachypodanthium* belongs to the family of Annonaceae, which consists of 120 genera subdivided in 1100 species [1]. *Pachypodanthium barteri* is native to the tropical forest zone of West and Central Africa. Plants belonging to *Pachypodanthium* genus are popular remedy for chest pain, bronchitis, gastrointestinal troubles, edemas and cancer [2-3]. For these reasons, several papers regarding phytochemistry and biological activities have been reported on some species of *Pachypodanthium* and revealed the presence of lignans, flavonoids, alkaloids, glycosides phenolics and triterpenes [4-5-6-7]. To the best of our knowledge, there is no prior report on the chemical constituents of *P. barteri*. Within the scope of our ongoing program aimed at the systematic chemical studies of African plants with a medicinally interesting profile, we reported our findings on dichoromethane and methanol (1:1 v/v) extract of the fruits of *P. barteri*. One new compound along with five known compounds was obtained. This paper describes the isolation and structural elucidation of this compound as well as the evaluation of *in vitro* leishmanicidal, anticancer and cytotoxicity activities of the isolated compounds.

METHODOLOGY

❑ Extraction and isolation

Scheme 1: Extraction, fractionation and isolation of compounds from the fruits of *P. barteri*

RESULTS AND DISCUSSION

Air-dried and powdered fruits of *P. barteri* was successively extracted by maceration at room temperature with a mixture of dichoromethane and methanol (1:1 v/v) to give crude extracts. Repeated column chromatography of the crude extract over silica gel yielded one new compound, designated pachypobarter (**1**), along with five known compounds identified as Pachypostaudin A (**2**) and B (**3**), Pellucidin A (**4**), Pachypodol (**5**) [6-7] and β-Amyrin glucoside (**6**) [8].

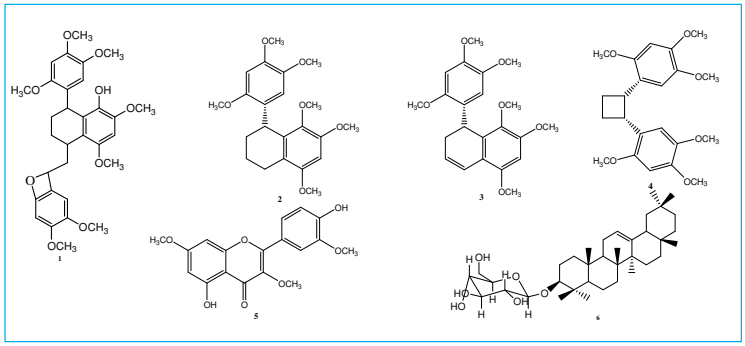

Figure 1: Structures of compounds isolated from the fruits of *P. barteri*

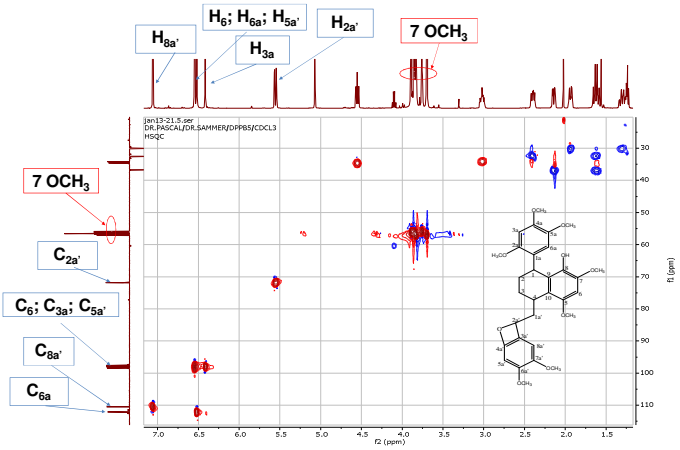

Figure 2: HSQC spectrum (^{1}H: 500 MHz, DEPT 135: 125 MHz, $CDCl_3$) of compound 1

The extract, the fractions and the compounds isolated from the fruits of *P. barteri* were tested for biological activity. Concerning the leishmanicidal activity, except pachypodol that show moderate acivity with an % inhibition of 45.61±1.60, the rest of compounds were found to be inactive against L. major (DESTO) promastigotes. For the anticancer activity, all the tested compounds were found to be inactive against PC3 (prostate cancer) cell line. Cytotoxicity were found to be less than 50% for all the tested substances

Table 1: Leishmanicidal , anticancer and cytotoxicity *in vitro* activity of extract, fractions and compounds from the fruits of *P. barteri*

Substances	Leishmanicidal activity	Anticancer activity	Cytotoxicity	n
	% Inhibition	% Inhibition	% Inhibition	
Extract	12.54±0.24	27.54±0.31	13.04±2.35	1
F1	nt	nt	12.08±2.39	1
F2	nt	nt	11.03±1.33	1
F3	nt	nt	14.60±2.35	1
F4	nt	nt	13.07±2.35	1
Pachypobarter	9.13±1.08	29.54±0.21	11.08±0.21	2
Pachypostaudin A	20.03±1.98	nt	12.01±0.76	2
Pachypostaudin B	19.88±2.35	10.44±2.36	9.05±0.45	2
Pellucidin A	18.80±1.04	6.49±1.76	11.32±0.67	2
Pachypodol	45.61±1.60	3.76±0.18	10.01±0.18	2
β-Amyrin glucoside	Nt	nt	10.45±0.76	2
Standard	67.13±0.49	86.39±	89.09±08	2

values are expressed as means ±standard deviation; n: number of independant experiments; nt: not tested

❑ Leishmanicidal , anticancer and cytotoxicity activity of extract and compounds

In vitro leishmanicidal assay were carried out according to the protocol developed by Choudhary et al. (2005) and Habtemariam (2003). Leishmania major (DESTO) promastigotes were grown in bulk early in modified NNN biphasic medium using normal physiological saline [9-10]. Amphotericin B (MP Biomedical Inc.) was used as standard. In vitro cytotoxicity activity of pure compounds was evaluated on MCF-7 cell lines using the standard MTT (3-[4,5-dimethylthiazole-2-yl]-2, 5-diphenyl-tetrazolium bromide) colorimetric assay according to Scudiero et al. (1988) [11].

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