SUPPLEMENTARY MATERIAL

A New Piperidine Alkaloid from the Leaves of *Microcos paniculata* L.

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Abstract

A new piperidine alkaloid, microcosamine C (**1**), and one known compound, microcosamine A (**2**) were isolated from the leaves of *Microcos paniculata*. Structure elucidation was carried out using HR-ESI-MS, 1D and 2D NMR spectroscopic methods and by comparison to data reported in the literature. The absolute configuration at the C-3 hydroxy group of **1** was established by a Mosher esterification procedure. Both of the isolates (**1–2**) were evaluated for cytotoxicity against four selected tumor cell lines and showed only weak activity against RAW 264.7 cell line.

Keywords: piperidine alkaloids; *Microcos paniculata*; cytotoxicity

List of Supplementary Material

Figure S1. ^1H - ^1H COSY, ^1H - ^{13}C HMBC and NOESY correlations for compound **1**.

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Figure S3. ^1H NMR spectrum (600 MHz, CD_3OD) of compound **1**.

Figure S4. ^{13}C NMR spectrum (150 MHz, CD_3OD) of compound **1**.

Figure S5. DEPT spectrum (150 MHz, CD_3OD) of compound **1**.

Figure S6. ^1H - ^1H COSY spectrum (600 MHz, CD_3OD) of compound **1**.

Figure S7. ^1H - ^{13}C HMQC spectrum (600 MHz, CD_3OD) of compound **1**.

Figure S8. ^1H - ^{13}C HMBC spectrum (600 MHz, CD_3OD) of compound **1**.

Figure S9. ^1H NMR spectrum (600 MHz, CDCl_3) of compound **1**.

Figure S10. ^1H - ^1H COSY spectrum (600 MHz, CDCl_3) of compound **1**.

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Figure S12. Overlaid proton spectra of the (*R*)- and (*S*)-MTPA esters of **1**
(pyridine- d_5 , 600 MHz).

Figure S13. ^1H - ^1H COSY spectrum of (*R*)-MTPA ester of **1** (pyridine- d_5 , 600 MHz).

Figure S14. (*R*)- and (*S*)-MTPA derivatives of **1** with chemical shift values used in the
determination of the absolute configuration of the 3-hydroxy position by
a Mosher ester procedure.

Table S1. ^1H and ^{13}C NMR data for compounds **1** and **2**.

Table S2. Cytotoxicity data for compounds **1** and **2**.

Figure S1. ^1H - ^1H COSY, ^1H - ^{13}C HMBC and NOESY correlations observed for compound **1**.

zg-4-2 #1427 RT: 3.32 AV: 1 NL: 5.44E8
T: FTMS + p ESI Full ms [100.00-800.00]

Figure S2. HR-ESI-MS of compound **1**.

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Figure S10. ^1H - ^1H COSY spectrum (600 MHz, CDCl_3) of compound **1**.

Figure S11. NOESY spectrum (600 MHz, CDCl₃) of compound **1**.

Figure S12. Overlaid proton spectra of the (*R*)- and (*S*)-MTPA esters of **1** (pyridine-*d*₅, 600 MHz).

Figure S13. ^1H - ^1H COSY spectrum of (*R*)-MTPA ester of **1** (pyridine- d_5 , 600 MHz).

- (A) ^1H NMR data of *S*-MTPA ester of **1**
 (B) ^1H NMR data of *R*-MTPA ester of **1**
 (C) $\Delta\delta_{\text{H}}$ ($\delta_{\text{S}} - \delta_{\text{R}}$) values of derivatized products
 (D) *S*-configuration of C-3 in **1**

Figure S14. (*R*)- and (*S*)-MTPA derivatives of **1** with chemical shift values used in the determination of the absolute configuration of the 3-hydroxy position by a Mosher ester procedure.

Table S1 ^1H (600 MHz) and ^{13}C NMR (150 MHz) data (J value in Hz, δ in ppm) of compound **1** in CD_3OD and **2** in CDCl_3 .

position	1		2	
	δ_{H}	δ_{C}		δ_{C}
2	1.99 (m)	67.4	2.60 (m)	58.3
3	3.19 (m)	72.3	3.23 (m)	73.4
4 α	2.01 (m)	33.9	2.05 (m)	34.0
4 β	1.40 (m)		1.47 (m)	
5 α	1.51 (m)	31.7	1.62 (m)	32.5
5 β	1.68 (m)		1.75 (m)	
6	2.69 (m)	69.1	3.26 (m)	58.6
1'	5.51 (dd, 15.1, 8.9)	135.2	5.52 (dd, 15.6, 7.2)	136.0
2'	6.26 (m)	134.5	6.21 (m)	129.7-131.2 ^a
3'	6.15-6.23 ^a	131.7-134.9 ^a	6.06-6.22 ^a	129.7-131.2 ^a
4'	6.15-6.23 ^a	131.7-134.9 ^a	6.06-6.22 ^a	129.7-131.2 ^a
5'	6.15-6.23 ^a	131.7-134.9 ^a	6.04 (m)	129.7-131.2 ^a
6'	6.15-6.23 ^a	131.7-134.9 ^a	5.70 (dt, 15.1, 7.2)	135.9
7'	6.09 (m)	131.0	2.10 (q, 7.0)	32.9
8'	5.76 (dt, 15.1, 6.7)	138.2	1.38 (m)	31.4
9'	2.12 (q, 7.0)	26.9	1.36 (m)	22.2
10'	1.01 (t, 7.4)	14.0	0.86 (t, 7.2)	13.9
2-CH ₃	1.28 (d, 6.2)	15.9	1.24 (d, 7.0)	18.5
N-CH ₃	2.30 (s)	40.3		

^a Multiplicity patterns unclear due to signal overlapping.

Table S16. Cytotoxicity data against HeLa, HepG2, A-549 and RAW 264.7 Cell Lines of Compounds **1–2**.

compound	IC ₅₀ (μM)			
	HeLa	HepG2	A-549	RAW 264.7
1	Inactive ^a	Inactive	Inactive	31.5
2	Inactive	Inactive	Inactive	39.8
Adriamycin	0.7	0.6	0.3	0.8

^a Inactive: indicates <50% inhibition of cell proliferation at 100 μM.