## **Electronic Supplementary Information**

#### for

# Structure-Activity Studies of the Pelorusides: New Congeners and Semi-Synthetic Analogues

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$\begin{array}{c ccccccccccccccccccccccccccccccccccc$	Desition	13	2	<sup>1</sup> H		COON	UN (D)C
$ \begin{array}{cccccccccccccccccccccccccccccccccccc$	Position	$\delta_{ m C}{}^a$	mult.	$\delta_{ m H}$	mult. ( <i>J</i> ,Hz)	COSY	HMBC
$ \begin{array}{cccccccccccccccccccccccccccccccccccc$							
$ \begin{array}{cccccccccccccccccccccccccccccccccccc$	1	$171.9^{b}$	С	-	-	-	-
$\begin{array}{cccccccccccccccccccccccccccccccccccc$	2	76.0	СН	4.10	dd (8.1, 5.4)	2-OH, 3	1
$ \begin{array}{cccccccccccccccccccccccccccccccccccc$	2-OH	-	-	2.34	d (5.6)	2	1
$ \begin{array}{cccccccccccccccccccccccccccccccccccc$	3	76.6	СН	3.79	ddd (8.5, 5.7, 3.1)	2, 4a, 4b	-
$ \begin{array}{cccccccccccccccccccccccccccccccccccc$	3-OMe	56.5	$\mathrm{CH}_3$	3.13	S	-	3
$ \begin{array}{cccccccccccccccccccccccccccccccccccc$	4a	21.2	CЦ	1.40	ddd (16.2, 5.9, 2.8)	3, 4b, 5	-
$ \begin{array}{cccccccccccccccccccccccccccccccccccc$	4b	51.2	$CH_2$	2.14	dt (15.6, 3.6)	3, 4a, 5	-
$ \begin{array}{cccccccccccccccccccccccccccccccccccc$	5	79.1	CH	3.98	m	4a, 4b, 6b	-
$ \begin{array}{cccccccccccccccccccccccccccccccccccc$	6a	201	СЦ	1.41	m	6b, 7a, 7b	7
$ \begin{array}{cccccccccccccccccccccccccccccccccccc$	6b	20.1	$CH_2$	1.79	m	5, 6a, 7a, 7b	5
7b $34,9$ $CH_2$ $2.17$ m $6a, 6b, 7a$ $6,8$ 8 $106, 5^b$ C       -       -       -       -         9 $215, 9^b$ C       -       -       -       -         10 $45, 5^b$ C       -       -       -       -         11 $82.1$ CH $4.42$ dd (11.9, 2.0) $12a, 12b$ $8, 9, 10, 21$ 12a $37.4$ CH2 $1.41$ m $11, 12b, 13$ -         12b $37.4$ CH2 $1.41$ m $11, 12a, 13$ -         13       74.1       CH $3.94$ dt (10.5, 2.8) $12a, 12b, 14a, 14b$ -         13-OMe       55.8       CH3 $3.29$ s       -       13         14a $36.7$ CH2 $2.60$ ddd (14.0, 11.3, 3.1) $13, 14b, 15$ -         15 $71.7$ CH $5.71$ dd (11.3, 3.1) $14a, 14b, 17$ -         16 $135.5^b$ C       -       -       -       -         17 $132.2$ CH	7a	24.0	CЦ	1.84	m	6a, 6b, 7b	6, 8
$ \begin{array}{c ccccccccccccccccccccccccccccccccccc$	7b	54.9	$CH_2$	2.17	m	6a, 6b, 7a	6,8
$\begin{array}{cccccccccccccccccccccccccccccccccccc$	8	106.5 <sup><i>b</i></sup>	С	-	-	-	-
$ \begin{array}{cccccccccccccccccccccccccccccccccccc$	9	215.9 <sup>b</sup>	С	-	-	-	-
$\begin{array}{cccccccccccccccccccccccccccccccccccc$	10	45.5 <sup>b</sup>	С	-	-	-	-
$ \begin{array}{cccccccccccccccccccccccccccccccccccc$	11	82.1	СН	4.42	dd (11.9, 2.0)	12a, 12b	8, 9, 10, 21
$ \begin{array}{cccccccccccccccccccccccccccccccccccc$	12a	374	CH	1.41	m	11, 12b, 13	-
$\begin{array}{cccccccccccccccccccccccccccccccccccc$	12b	57.т		2.00	ddd (13.6, 12.0, 2.6)	11, 12a, 13	-
$\begin{array}{c ccccccccccccccccccccccccccccccccccc$	13	74.1	СН	3.94	dt (10.5, 2.8)	12a, 12b, 14a, 14b	-
$ \begin{array}{cccccccccccccccccccccccccccccccccccc$	13-OMe	55.8	$\mathrm{CH}_3$	3.29	S	-	13
14b36.7 $CH_2$ 2.60ddd (14.2, 11.2, 3.0)13, 14a, 15-1571.7CH5.71dd (11.3, 3.1)14a, 14b, 17-16135.5C17132.2CH4.99d (10.6)15, 18, 23-1843.2CH2.65m17, 24a, 24b-19a24.3CH20.90m19b, 20-19b24.3CH21.19m19a, 20-2012.1CH30.72t (7.4)19a, 19b18, 192125.0CH30.95s-9, 10, 11, 222218.0CH30.92s-9, 10, 11, 212317.7CH31.77d (1.3)1715, 16, 1724a66.6CH2 $\frac{3.42}{3.65}$ ddd (14.7, 9.8, 5.2)18, 24b1724b66.6CH2 $\frac{3.42}{3.65}$ ddd (10.5, 6.4, 4.6)18, 24a17	14a	267	CЦ	1.49	ddd (14.0, 11.3, 3.1)	13, 14b, 15	-
$ \begin{array}{cccccccccccccccccccccccccccccccccccc$	14b	50.7	$CH_2$	2.60	ddd (14.2, 11.2, 3.0)	13, 14a, 15	-
$ \begin{array}{cccccccccccccccccccccccccccccccccccc$	15	71.7	СН	5.71	dd (11.3, 3.1)	14a, 14b, 17	-
$ \begin{array}{cccccccccccccccccccccccccccccccccccc$	16	135.5 <sup>b</sup>	С	-	-	-	-
$ \begin{array}{cccccccccccccccccccccccccccccccccccc$	17	132.2	СН	4.99	d (10.6)	15, 18, 23	-
$ \begin{array}{cccccccccccccccccccccccccccccccccccc$	18	43.2	СН	2.65	m	17, 24a, 24b	-
$ \begin{array}{c ccccccccccccccccccccccccccccccccccc$	19a	24.2	CЦ	0.90	m	19b, 20	-
$ \begin{array}{cccccccccccccccccccccccccccccccccccc$	19b	24.3		1.19	m	19a, 20	-
$ \begin{array}{cccccccccccccccccccccccccccccccccccc$	20	12.1	$\mathrm{CH}_3$	0.72	t (7.4)	19a, 19b	18, 19
$ \begin{array}{cccccccccccccccccccccccccccccccccccc$	21	25.0	$\mathrm{CH}_3$	0.95	S	-	9, 10, 11, 22
$\begin{array}{cccccccccccccccccccccccccccccccccccc$	22	18.0	$\mathrm{CH}_3$	0.92	S	-	9, 10, 11, 21
$\begin{array}{cccccccccccccccccccccccccccccccccccc$	23	17.7	$\mathrm{CH}_3$	1.77	d (1.3)	17	15, 16, 17
24b $3.65$ ddd (10.5, 6.4, 4.6) 18, 24a 17	24a	66.6	$C^{\Pi}$	3.42	ddd (14.7, 9.8, 5.2)	18, 24b	17
	24b	00.0	$C\Pi_2$	3.65	ddd (10.5, 6.4, 4.6)	18, 24a	17

Table 1. 600 MHz NMR data for peloruside C-11 hemiacetal (5) in  $C_6D_6$ .

<sup>*a*</sup> Assigned from HSQC data. <sup>*b*</sup> Assigned from HMBC data.

Denitien	13	2	<sup>1</sup> H		0001/	
Position	$\delta_{ m C}{}^a$	mult.	$\delta_{ m H}$	mult. ( <i>J</i> ,Hz)	COSY	HMBC
	L					
1	173.7 <sup>b</sup>	С	-	-	-	-
2	72.4	СН	3.89	dd (6.0, 2.5)	2-OH, 3	1, 3
2-OH	-	-	3.32	d (2.5)	2	1
3	78.5	СН	3.12	dt (6.5, 1.6)	2, 4b	2
3-OMe	56.6	$CH_3$	3.14	S	-	3
4a	35 7	CH	1.24	ddd (15.2, 11.0, 7.2)	3, 4b, 5	-
4b	55.7		1.50	dt (15.2, 2.1)	4a, 5	-
5	72.1	СН	4.62	m	4a, 4b, 6a, 6b	-
6a	35.2	CH.	1.66	m	5, 6b, 7	-
6b	33.2	$CH_2$	1.71	m	5, 6a, 7	-
7	76.6	CH	4.10	ddd (9.6, 3.8, 2.8)	6a, 6b, 8	-
7-OMe	56.9	$CH_3$	3.22	S	-	7
8	73.4	СН	4.91	dd (6.0, 4.2)	7, 8-OH	7, 9
8-OH		-	3.59	d (6.0)	8	9
9	215.3 <sup><i>b</i></sup>	С	-	-	-	-
10	51.6 <sup>b</sup>	С	-	-	-	-
11	73.8	CH	4.37	d (10.8)	11-OH, 12a, 12b	-
11-OH	-	-	3.99	d (1.7)	11	-
12a	22.7	СЦ	1.67	m	11, 12b, 13	-
12b	32.1	СП2	1.78	ddd (15.5, 10.7, 4.9)	11, 12a, 13	-
13	77.2	CH	3.74	app. sextet (4.3)	12a, 12b, 14a, 14b	-
13-OMe	56.2	$CH_3$	3.03	S	-	13
14a	24.2	CU	1.86	ddd (14.3, 8.7, 3.1)	14b	-
14b	34.2	$CH_2$	1.92	ddd (14.2, 9.1, 4.4)	13, 14a, 15	-
15	73.9	СН	3.96	br d (7.8)	14a, 17	-
16	134.8 <sup>b</sup>	С	-	-	-	-
17	125.0	СН	5.43	d (4.1)	15, 18, 23	-
18	36.5	СН	1.69	m	17, 19, 24a, 24b	-
19	26.5	$\mathrm{CH}_2$	1.36	m	18, 20	-
20	11.6	$CH_3$	0.84	t (7.5)	19	-
21	19.1	$CH_3$	1.27	S	22	9, 10, 11, 22
22	21.5	CH <sub>3</sub>	1.15	S	21	9, 10, 11, 21
23	19.2	CH <sub>3</sub>	1.49	S	17	15, 16, 17
24a		 -	3.49	dd (11.0, 4.1)	18, 24b	-
24b	66.1	$CH_2$	3.56	dd (11.1. 3.4)	18, 24a	_
-					-,	

Table 2. 600 MHz NMR data for *seco*-peloruside A  $\delta$ -lactone (6) in C<sub>6</sub>D<sub>6</sub>.

<sup>*a*</sup> Assigned from HSQC data. <sup>*b*</sup> Assigned from HMBC data.

Desition		<sup>1</sup> H	NOESY		
FOSILIOII	$\delta_{ m H}$	mult., $J(Hz)$	NOEST		
1	-	-	_		
2	3.89	dd (6.0, 2.5)	2-OH. 3. 3-OMe. 4b. 5		
2-OH	3.32	d (2.5)	2, 3		
3	3.12	dt (6.5, 1.6)	2, 2-OH, 4a, 4b		
3-OMe	3.14	S	2, 4b		
4a	1.24	ddd (15.2, 11.0, 7.2)	3, 4b, 6a		
4b	1.50	dt (15.2, 2.1)	3, 4a, 5, 6b		
5	4.62	m	2, 4b, 6a/6b, 7(w)		
6a	1.66	m	5		
6b	1.71	m	4b, 5		
7	4.10	ddd (9.6, 3.8, 2.8)	5(w), 6a/6b, 7-OMe, 8, 21, 22		
7-OMe	3.22	S	5, 7, 8, 21, 22		
8	4.91	dd (6.0, 4.2)	7, 7-OMe, 11, 21, 22		
8-OH	3.59	d (6.0)	6a/6b, 8		
9	-	-	-		
10	-	-	-		
11	4.37	d (10.8)	8, 11-OH, 14a, 6a/12a, 21, 22		
11-OH	3.99	d (1.7)	11		
12a	1.67	m	13, 15		
12b	1.78	ddd (15.5, 10.7, 4.9)	13, 13-OMe, 15		
13	3.74	app. sextet (4.3)	12a, 12b, 13-OMe, 14a, 14b,		
13-OMe	3.03	S	12b, 13, 14a, 14b		
14a	1.86	ddd (14.3, 8.7, 3.1)	11, 13, 13-OMe, 14a, 23		
14b	1.92	ddd (14.2, 9.1, 4.4)	11, 13, 13-OMe, 14b, 23		
15	3.96	br d (7.8)	12a, 12b, 14a, 14b, 24a, 23		
16	-	-	-		
17	5.43	d (4.1)	12b, 18, 19, 20, 23		
18	1.69	m	17, 24a, 24b, 19, 20		
19	1.36	m	17, 18, 20		
20	0.84	t (7.5)	12b, 17, 18, 19		
21	1.27	S	7, 7-OMe, 8, 11, 12a, 12b, 22		
22	1.15	S	7, 7-OMe, 8, 11, 12a, 12b, 21		
23	1.49	S	14a, 14b, 17, 23		
24a	3.49	dd (11.0, 4.1)	15, 18		
24b	3.56	dd (11.1, 3.4)	18		
24-OH	-				

**Table 3.** 600 MHz <sup>1</sup>H and NOESY NMR data for *seco*-peloruside A  $\delta$ -lactone (6) in C<sub>6</sub>D<sub>6</sub>.

Compound	$IC_{50}[IC_{50}(1)]$	G <sub>2</sub> /M Accumulation (1, Control)
3	$221 \pm 19$ nM (15 ± 1 nM) (n = 2) <sup>a</sup>	$13 \pm 1 (68 \pm 8\%, 20 \pm 4\%)^b (n = 3)$
4	$> 2 \mu M (10 \pm 4 nM) (n = 3)$	<u>_</u> c
5	$> 15 \ \mu M^b$	_c
6	$> 7 \mu M$	_c

Table 4. Mean  $IC_{50}$  and cell cycle arrest values (HL-60) for compounds 3–6.

<sup>*a*</sup> Number of separate preparations. <sup>*b*</sup> HL-60 and 1A9 cell lines. <sup>*c*</sup> Not performed.

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F1 (ppm)









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F1 (ppm)



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(sample is a mixture of peloruside C and mycalamide A)

![](_page_17_Figure_2.jpeg)

![](_page_18_Figure_0.jpeg)

Electronic Supplementary Material (ESI) for Argandis and Bismolarriar Chemistry This journal 19 © The Royal Society of Chemistry 2011

contains d5 pyridine

![](_page_19_Figure_2.jpeg)

![](_page_20_Figure_1.jpeg)

![](_page_21_Figure_1.jpeg)

![](_page_22_Figure_1.jpeg)

F1 (ppm)

NOESTERUM Respection of Gelora Actendic 4) (CDC 4, CDC 4, CDC 4) This journal is © The Royal Society of Chemistry 2011

![](_page_23_Figure_1.jpeg)

![](_page_24_Figure_0.jpeg)

Electronic Supplementary Material (ESI) for Organdic and Biomolecular Chemistry

![](_page_25_Figure_1.jpeg)

Electronic Supplementary Material (ESI) for Organdic and Biomolecular Chemistry This journal of the Rayan SMR spectrum of bomiacetal 5 ( $C_6D_6$ , 600 MHz)

![](_page_26_Figure_1.jpeg)

![](_page_26_Figure_2.jpeg)

![](_page_27_Figure_1.jpeg)

![](_page_28_Figure_0.jpeg)

Electronic Supplementary Material (ESI) for Organctic and Biomolecular Chemistry 600 MHz) This journal is the metroyal society of Chemistry 2011 A O-factoric (6) ( $C_6D_6$ , 600 MHz)

![](_page_29_Figure_1.jpeg)

![](_page_30_Figure_1.jpeg)

F1 (ppm)

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![](_page_31_Figure_1.jpeg)

Electronic Supplementary Material (ESI) for Organdic and Biomolecular Chemistry TIAS  $\mathcal{G}_{4}$  and  $\mathcal{G}_{6}$  ( $\mathcal{G}_{6}$ ) ( $\mathcal{G}_{6}$ 

![](_page_32_Figure_1.jpeg)