

Supplementary information (1)

¹H-NMR data 500 MHz (CD₃OD) for compounds **1**, **2** and **3**.

	1	2	3
1-Hax	1.43	1.42	1.43
1-Heq	1.75	1.79	1.78
2-H	3.82 (dt, 11.7, 3.2)	3.83 (dt, 12.1, 3.4)	3.83 (dt, 12.0, 3.7)
3-H	3.94 (brs, W _{1/2} =7.7)	3.94 (brs, W _{1/2} =8.5)	3.94 (brs, W _{1/2} =8.1)
4-Hax	1.70	1.69	1.73
4-Heq	1.80	1.76	1.75
5-H	2.38 (dd, 12.8, 4.4)	2.38 (dd, 12.9, 4.4)	2.38 (dd, 12.9, 4.6)
7-H	5.81 (d, 1.9)	5.81 (d, 2.1)	5.81 (d, 2.3)
9-H	3.14 (m)	3.14 (m)	3.14 (m)
11-Hax	1.67	1.66	1.68
11-Heq	1.77	1.76	1.75
12-Hax	2.12 (td, 13.1, 4.7)	2.12 (td, 12.4, 4.1)	2.11 (td, 12.4, 4.8)
12-Heq	1.87 (m)	1.88 (m)	1.87 (m)
15-Ha	1.97	2.00	1.93
15-Hb	1.62	1.60	1.63
16-Ha	2.00	2.00	2.02
16-Hb	1.75	1.70	1.73
17-H	2.32 (brt, 9.0)	2.32 (m)	2.34 (brt, 8.7)
22-H	3.52 (brd, 10.7)	3.46 (brd, 11.1)	3.42 (brd, 11.1)
23-Ha	1.45	1.45	1.42
23-Hb	1.50	1.50	1.63
24-H	1.97 (m)	2.32 (m)	2.85 (m)
25-H	2.49 (dq, 10.7, 7.1)	2.44 (dq, 10.7, 7.1)	2.85 (dq, 8.3, 6.9)
28-H	4.19 (dq, 9.2, 6.1)	4.82 (qui, 6.7)	4.73 (qui, 6.5)
18-H ₃	0.89 (s)	0.89 (s)	0.89 (s)
19-H ₃	0.96 (s)	0.96 (s)	0.96 (s)
21-H ₃	1.19 (s)	1.21 (s)	1.21 (s)
27-H ₃	1.30 (d, 7.1)	1.24 (d, 7.0)	1.22 (d, 7.1)
29-H ₃	1.41 (d, 6.1)	1.29 (d, 6.6)	1.39 (d, 6.7)

Assignments were based on ¹H-¹H COSY and HMQC spectra.

Supplementary information (2)

¹H-NMR data (500 MHz, CDCl₃) for compounds **1a–4a**.

	1a	2a	3a	4a^a
1-Hax	1.55	1.53	1.55	
1-Heq	1.90	1.89	1.90	
2-Hax	5.08 (dt, 12.4, 4.1)	5.08 (dt, 12.3, 3.7)	5.07 (dt, 11.8, 3.3)	5.05 (m)
3-Heq	5.37 (brs, W _{1/2} =8.3)	5.37 (brs, W _{1/2} =10)	5.38 (brs, W _{1/2} =10)	5.33 (ddd, 5, 4, 3)
4-Hax	1.74	1.69	1.74	
4-Heq	1.87	1.88	1.88	
5-H	2.41 (dd, 13.4, 9.4)	2.41 (dd, 13.5, 4.0)	2.41 (dd, 16, 4.1)	
7-H	5.88 (d, 2.3)	5.88 (d, 2.4)	5.88 (d, 2.4)	5.86 (d, 2)
9-H	3.11 (brt, 8.3)	3.12 (brt, 8.2)	3.12 (brt, 8.1)	3.12 (ddd, 10, 8, 2)
11-Hax	1.67	1.67	b	
11-Heq	1.81	1.83	b	
12-Hax	2.12	2.16	2.15	
12-Heq	1.82	1.85	1.82	
15-Ha	b	b	b	
15-Hb	b	b	b	
16-Ha	1.99	1.98	2.00	
16-Hb	1.82	1.78	1.78	
17-H	2.30	2.33 (t, 9.3)	2.34 (t, 9.4)	
22-H	4.99 (dd, 10.7, 2.1)	4.97 (dd, 9.0, 4.7)	4.96 (dd, 11.2, 2.3)	4.99 (m)
23-Ha	1.59	1.58	1.60	
23-Hb	1.67	1.69	1.63	
24-H	1.67	2.10	2.45	
25-H	2.33 (dq, 9.8, 7.1)	2.37 (dq, 9.4, 7.1)	2.71 (qui, 8.0)	2.70 (dd, 8, 6)
28-H	4.13 (dq, 8.3, 6.2)	4.64 (qui, 6.7)	4.65 (qui, 6.6)	4.64 (qui, 7)
18-H ₃	0.86 (s)	0.86 (s)	0.86 (s)	0.85 (s)
19-H ₃	1.04 (s)	1.04 (s)	1.04 (s)	1.02 (s)
21-H ₃	1.25 (s)	1.28 (s)	1.26 (s)	1.28 (s)
27-H ₃	1.31 (d, 7.2)	1.28 (d, 7.0)	1.28 (d, 8.0)	1.22 (d, 6)
29-H ₃	1.43 (d, 6.1)	1.32 (d, 6.6)	1.44 (d, 6.7)	1.42 (d, 7)
OAc	2.02 (s), 2.12 (s)	2.02 (s), 2.12 (s)	2.02 (s), 2.12 (s),	1.99 (s), 2.10 (s),
	2.14 (s)	2.13 (s)	2.14 (s)	2.12 (s)

Assignments were based on ¹H-¹H COSY spectra. ^aAdopted from Ref. 13 and 14. ^bCould not be assigned due to poor S/N ratio.