

Supporting Information to

Screening of Panamanian Plant Extracts for Pesticidal Properties and HPLC-Based Identification of Active Compounds

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Plant name	Extract	Indication
Bocconia frutescens	MeOH (stem)	Fungicide
Miconia affinis	EtOAc (stem)	Fungicide
Bocconia frutescens	EtOAc (stem)	Fungicide
Miconia ligulata	EtOAc (leaves)	Fungicide
Piper gatunense	EtOAc (stem)	Fungicide
Clusia uvitana	EtOAc (leaves)	Fungicide
Salvia alvajaca	MeOH (root)	Insecticide
Simaba cedron	MeOH (stem)	Insecticide
Myrcia splendens	MeOH (leaves)	Insecticide
Psychotria erecta	MeOH (stem)	Insecticide
Psychotria suerrensis	MeOH (root)	Insecticide
Rollinia pittieri	EtOAc (leaves)	Insecticide
Rollinia mucosa	EtOAc (leaves)	Insecticide
Myrcia splendens	MeOH (branch)	Insecticide
Ocotea glaucosericea	EtOAc (stem)	Insecticide
Trichilia hirta	MeOH (stem)	Herbicide
Combretum aff. laxum	MeOH (leaves)	Herbicide
Erythroxylum macrophyllum	MeOH (leaves)	Herbicide
Picramnia antidesma	MeOH (root)	Herbicide

Tab. S1. List of the 19 active extracts from the extract screening

Fig. 1S. Profiles of the MeOH stem extracts of *Bocconia frutescens* for the plant pathogenic fungi *Botryotinia fuckeliana* (A), *Phytophthora infestans* (B), and *Septoria tritici* (C)



Fig. 2S. HPLC-DAD chromatograms of the crude extract and its polyamide fractions (PA1–PA5) of *Myrcia splendens*. SunFire C18 column (150 x 3 mm i.d., 3.5 µm); 5–100% MeCN/0.1% aqueous formic acid in 30min, 0.4 mL/min; detection: 210–700nm, maxplot.



Fig. 3S. HPLC-DAD chromatograms of the crude extract and its polyamide fractions (PA1–PA5) of *Combretum aff. laxum*. SunFire C18 column (150 x 3 mm i.d., 3.5 μm); 5–100% MeCN/0.1% aqueous formic acid in 30min, 0.4 mL/min; detection: 210–700nm, maxplot.



Fig. 4S. HPLC-DAD chromatograms of the crude extract and its polyamide fractions (PA1–PA5) of *Erythroxylum macrophyllum*. SunFire C18 column (150 x 3 mm i.d., 3.5 μm); 5–100% MeCN/0.1% aqueous formic acid in 30min, 0.4 mL/min; detection: 210–700nm, maxplot.



	1 ^b		2 ^b		3 °		4 ^d		5 ^c	
Position	δ _Η	δ _c	δ _Η	δc	δ _Η	δc	δ _Η	δc	δ _Η	δ _c
1	7.51 (s)	106.9	7.43 (s)	106.7	7.61 (s)	98.8	7.14 (s)	104.5	7.31 (s)	104.0
2	_	150.6	-	150.6	_	148.6	_	147.8	_	147.2
3	_	150.6	-	150.6	-	148.6	-	147.8	-	147.8
4	8.11 (s)	104.8	8.07 (s)	104.6	8.06 (s)	104.0	7.55 (s)	102.2	7.53 (s)	99.4
4a	_	121.4	-	121.5	-	120.7	-	118.9	-	124.9
4b	_	132.8	-	132.9	-	126.2	-	136.2	-	141.0
6	9.90 (s)	150.3	9.85 (s)	151.1	9.72 (s)	145.7	-	162.8	4.16 (s)	47.7
6a	-	110.9	-	120.6	-	109.8	-	111.1	-	112.3
7	-	147.8	-	147.1	-	139.0	-	146.6	-	144.2
8	-	149.2	-	151.6	-	147.5	-	146.6	-	146.6
9	7.93 (d, 8.8)	121.0	8.12 (d, 9.1)	127.2	7.83 (s)	103.8	7.22 (d, 8.6)	113.0	6.95 (d, 8.1)	107.1
10	8.47 (d, 8.8)	118.1	8.52 (d, 9.1)	119.4	_	152.8	7.74 (d, 8.6)	115.2	7.40 (d, 8.1)	116.1
10a	_	128.7	_	129.8	_	113.9	_	133.6	_	126.2
10b	_	127.3	-	126.6	_	123.5	_	115.9	_	123.7
11	8.56 (d, 8.9)	119.4	8.48 (d, 9.0)	119.1	8.71 (s)	99.6	7.96 (d, 8.6)	118.4	7.77 (d, 8.6)	120.0
12	8.16 (d, 8.9)	132.7	8.08 (d, 9.0)	132.2	_	155.0	7.51 (d, 8.6)	123.5	7.57 (d, 8.6)	123.9
12a	_	133.5	-	134.0	-	123.0	—	129.8	—	130.2
2,3-OCH ₂ O	6.28 (s)	104.0	6.24 (s)	103.8	6.32 (s)	102.3	6.08 (s)	101.1	6.14 (s)	100.9
5-NCH ₃	4.93 (s)	52.7	4.94 (s)	52.8	4.78 (s)	51.5	3.89 (s)	40.7	2.53 (s)	41.1
7,8-OCH ₂ O	6.53 (s)	106.2	-	-	6.51 (s)	103.6	6.25 (s)	102.7	6.10 (s)	101.1
7-OCH ₃	_	_	4.27 (s)	62.6	_	_	_	—	-	—
8-OCH ₃	-	_	4.11 (s)	57.4	_	_	-	_	-	_
10-OCH ₃	_	—	-	_	4.17 (s)	57.5	-	—	-	_
12-0CH ₃	—	—	—	—	4.12 (s)	55.7	—	—	_	_
^{a 13} C NMR data	a derived fro	om HSQ	C and HMB	C experi	ments; ^b re	corded i	n CD₃OD; ^c	recorded	in DMSO-	d ₆ ;
<u>recorded in C</u>	DCl ₃ .									

Tab. 2S. ¹H and ¹³C NMR^a data (500 MHz) of compounds **1–5**

	6					
Position	δ _H	δ _c				
1	_	196.7				
2	3.04 (t, 6.4)	40.6				
3	3.76 (t, 6.4)	57.0				
1'	—	127.6				
2'	7.43 (d, 1.7)	110.9				
3'	_	147.5				
4'	_	152.6				
5'	6.84 (d, 8.3)	114.8				
6'	7.49 (dd, 8.3, 1.7)	123.1				
3'-OCH ₃	3.81 (s)	55.3				
^{a 13} C NMR (^{a 13} C NMR data derived from HSQC and					
HMBC expe	HMBC experiments.					

Tab. 3S. ¹H and ¹³C NMR^a data (500 MHz) of compound **6** in DMSO-d₆

	12	b	25 ^c		
Position	δ _H	δc ^a	δ _H	δς	
1	—	119.4	_	123.2	
2	7.09 (s)	107.8	7.36 (s)	116.6	
3	—	143.9	-	144.6	
4	_	136.7	_	149.1	
5	_	143.9	6.77 (d, 8.1)	114.8	
6	7.09 (s)	107.8	7.28 (d, 8.1	121.4	
7	_	167.4	_	168.3	
^{a 13} C NMR data derived from HSQC and HMBC					
experiment	s; [□] recordec	l in CD₃O[D; ^c recorded in DM	SO-d ₆ .	

Tab. 4S. ¹H and ¹³C NMR^a data (500 MHz) of compounds 12 and 25

	7 ^b)	10	с
Position	δ _Η	δc ^a	δ _Η	δ _c
1	_	n.d.	_	114.5
2	_	n.d.	_	132.4
3	_	138.3	_	138.8
4	_	150.2	_	151.3
5	7.44 (s)	103.3	7.57 (s)	105.0
6	_	n.d.	_	115.7
7	—	n.d.	_	158.6
1'	_	108.5	_	113.0
2'	_	n.d.	_	137.9
3'	_	141.4	_	147.6
4'	_	n.d.	_	148.6
5'	7.47 (s)	113.2	_	154.3
6'	_	n.d.	_	105.9
7'	_	n.d.	_	154.9
3,4-OCH ₂ O	6.34 (s)	103.6	6.27 (s)	104.2
3'-OCH₃	4.04 (s)	60.2	4.25 (s)	62.3
4'-OCH ₃	_ `	_	4.00 (s)	62.3
5'-OCH₃	_	_	4.02 (s)	62.6
^{a 13} C NMR data	derived from	HSQC ar	nd HMBC	

Tab. 5S. 1 H and 13 C NMR^a (500 MHz) of compound 7 and 10

experiments; ^brecorded in DMSO-d₆; ^crecorded in CDCl₃; n.d.: not detected.

$\begin{array}{c c c c c c c c c c c c c c c c c c c $		8	
1a $0.73 (m)$ 46.7 1b $1.75 (dd, 12.5, 4.4)$ 67.4 2 $3.49 (ddd, 11.0, 9.3, 4.4)$ 67.4 3 $3.18 (d, 9.3)$ 75.5 4 $ 42.5$ 5 $1.22 (m)$ 46.0 6a $1.24 (m)$ 17.5 6b $1.41 (m)$ 75 7a $1.19 (m)$ 31.9 7b $1.44 (m)$ 31.9 8 $ 38.9$ 9 $1.55 (t, 8.8)$ 47.1 10 $ 37.4$ 11 $1.84 (m)$ 23.0 12 $5.18 (t, 3.3)$ 121.5 13 $ 143.9$ 14 $ 41.4$ 15a $0.99 (m)$ 27.2 15b $1.68 (m)$ 16a $1.49 (m)$ 22.6 17 $ 45.4$ 18 $2.76 (dd, 13.7, 3.9)$ 40.8 19a $1.07 (m)$ 45.7 20 $ 30.4$ 21a $1.44 (m)$ 33.3 22a $1.44 (m)$ 32.1 23a $3.06 (d, 10.6)$ 63.9 24 $0.56 (s)$ 13.7 25 $0.93 (s)$ 16.8 26 $0.72 (s)$ 16.9 27 $1.10 (s)$ 25.7 28 $ 178.6$ 29 $0.88 (s)$ 32.9	Position	δ _H	δς
1b $1.75 (dd, 12.5, 4.4)$ 40.7 2 $3.49 (ddd, 11.0, 9.3, 4.4)$ 67.4 3 $3.18 (d, 9.3)$ 75.5 4 $ 42.5$ 5 $1.22 (m)$ 46.0 6a $1.24 (m)$ 17.5 7a $1.19 (m)$ 75.5 7a $1.19 (m)$ 7b $1.44 (m)$ 31.9 8 $ 38.9$ 9 $1.55 (t, 8.8)$ 47.1 10 $ 37.4$ 11 $1.84 (m)$ 23.0 12 $5.18 (t, 3.3)$ 121.5 13 $ 143.9$ 14 $ 41.4$ 15a $0.99 (m)$ 27.2 16a $1.49 (m)$ 22.6 17 $ 45.4$ 18 $2.76 (dd, 13.7, 3.9)$ 40.8 19a $1.07 (m)$ 45.7 20 $ 30.4$ 21a $1.14 (m)$ 32.1 22b $1.63 (m)$ 32.1 23a $3.06 (d, 10.6)$ 63.9 23b $3.32 (d, 10.6)$ 63.9 24 $0.56 (s)$ 13.7 25 $0.93 (s)$ 16.8 26 $0.72 (s)$ 16.9 27 $1.10 (s)$ 25.7 28 $ 178.6$ 29 $0.88 (s)$ 32.9	1a	0.73 (m)	46 7
$\begin{array}{cccccccccccccccccccccccccccccccccccc$	1b	1.75 (dd, 12.5, 4.4)	40.7
$\begin{array}{cccccccccccccccccccccccccccccccccccc$	2	3.49 (ddd, 11.0, 9.3, 4.4)	67.4
$\begin{array}{cccccccccccccccccccccccccccccccccccc$	3	3.18 (d, 9.3)	75.5
$\begin{array}{cccccccccccccccccccccccccccccccccccc$	4	_	42.5
$\begin{array}{cccccccccccccccccccccccccccccccccccc$	5	1.22 (m)	46.0
6b1.41 (m)11.07a1.19 (m) 31.9 7b1.44 (m) 31.9 8- 38.9 91.55 (t, 8.8) 47.1 10- 37.4 111.84 (m)23.012 5.18 (t, 3.3)121.513-143.914-41.415a 0.99 (m) 27.2 15b1.68 (m)16a16a1.49 (m)22.617- 45.4 18 2.76 (dd, 13.7, 3.9)40.819a1.07 (m) 45.7 20- 30.4 21a1.14 (m) 33.3 22a1.44 (m) 32.1 23a 3.06 (d, 10.6) 63.9 24 0.56 (s) 13.7 25 0.93 (s)16.826 0.72 (s) 16.9 27 1.10 (s) 25.7 28- 178.6 29 0.88 (s) 32.9	6a	1.24 (m)	17.5
7a $1.19 (m)$ 31.9 $7b$ $1.44 (m)$ 31.9 8 $ 38.9$ 9 $1.55 (t, 8.8)$ 47.1 10 $ 37.4$ 11 $1.84 (m)$ 23.0 12 $5.18 (t, 3.3)$ 121.5 13 $ 143.9$ 14 $ 41.4$ $15a$ $0.99 (m)$ 27.2 $15b$ $1.68 (m)$ 27.2 $16a$ $1.49 (m)$ 22.6 $16b$ $1.91 (td, 13.5, 3.7)$ 22.6 17 $ 45.4$ 18 $2.76 (dd, 13.7, 3.9)$ 40.8 $19a$ $1.07 (m)$ 45.7 20 $ 30.4$ $21a$ $1.14 (m)$ 33.3 $22a$ $1.44 (m)$ 32.1 $23a$ $3.06 (d, 10.6)$ 63.9 24 $0.56 (s)$ 13.7 25 $0.93 (s)$ 16.8 26 $0.72 (s)$ 16.9 27 $1.10 (s)$ 25.7 28 $ 178.6$ 29 $0.88 (s)$ 32.9	6b	1.41 (m)	17.0
7b $1.44 (m)$ $0.1.3$ 8- 38.9 9 $1.55 (t, 8.8)$ 47.1 10- 37.4 11 $1.84 (m)$ 23.0 12 $5.18 (t, 3.3)$ 121.5 13- 143.9 14- 41.4 15a $0.99 (m)$ 27.2 15b $1.68 (m)$ 27.2 16a $1.49 (m)$ 22.6 16b $1.91 (td, 13.5, 3.7)$ 22.6 17- 45.4 18 $2.76 (dd, 13.7, 3.9)$ 40.8 19a $1.07 (m)$ 45.7 20- 30.4 21a $1.14 (m)$ 33.3 21b $1.32 (td, 13.6, 3.6)$ 33.3 22a $1.44 (m)$ 32.1 23a $3.06 (d, 10.6)$ 63.9 24 $0.56 (s)$ 13.7 25 $0.93 (s)$ 16.8 26 $0.72 (s)$ 16.9 27 $1.10 (s)$ 25.7 28- 178.6 29 $0.88 (s)$ 32.9	7a	1.19 (m)	31.9
$\begin{array}{cccccccccccccccccccccccccccccccccccc$	7b	1.44 (m)	01.0
$\begin{array}{cccccccccccccccccccccccccccccccccccc$	8	_	38.9
10 $ 37.4$ 11 1.84 (m) 23.0 12 $5.18 \text{ (t, }3.3)$ 121.5 13 $ 143.9$ 14 $ 41.4$ 15a 0.99 (m) 27.2 15b 1.68 (m) 27.2 16a 1.49 (m) 22.6 16b $1.91 \text{ (td, }13.5, 3.7)$ 22.6 17 $ 45.4$ 18 $2.76 \text{ (dd, }13.7, 3.9)$ 40.8 19a 1.07 (m) 45.7 20 $ 30.4$ 21a 1.14 (m) 33.3 22a 1.44 (m) 32.1 23a $3.06 \text{ (d, }10.6)$ 63.9 23b $3.32 \text{ (d, }10.6)$ 63.9 24 0.56 (s) 13.7 25 0.93 (s) 16.8 26 0.72 (s) 16.9 27 1.10 (s) 25.7 28 $ 178.6$ 29 0.88 (s) 32.9	9	1.55 (t, 8.8)	47.1
11 $1.84 (m)$ 23.0 12 $5.18 (t, 3.3)$ 121.5 13- 143.9 14- 41.4 15a $0.99 (m)$ 27.2 15b $1.68 (m)$ 27.2 16a $1.49 (m)$ 22.6 16b $1.91 (td, 13.5, 3.7)$ 22.6 17- 45.4 18 $2.76 (dd, 13.7, 3.9)$ 40.8 19a $1.07 (m)$ 45.7 20- 30.4 21a $1.14 (m)$ 33.3 21b $1.32 (td, 13.6, 3.6)$ 32.1 23a $3.06 (d, 10.6)$ 63.9 23b $3.32 (d, 10.6)$ 63.9 24 $0.56 (s)$ 13.7 25 $0.93 (s)$ 16.8 26 $0.72 (s)$ 16.9 27 $1.10 (s)$ 25.7 28- 178.6 29 $0.88 (s)$ 32.9	10	_	37.4
12 $5.18 (t, 3.3)$ 121.5 13- 143.9 14- 41.4 15a $0.99 (m)$ 27.2 15b $1.68 (m)$ 27.2 16a $1.49 (m)$ 22.6 16b $1.91 (td, 13.5, 3.7)$ 22.6 17- 45.4 18 $2.76 (dd, 13.7, 3.9)$ 40.8 19a $1.07 (m)$ 45.7 20- 30.4 21a $1.14 (m)$ 33.3 21b $1.32 (td, 13.6, 3.6)$ 33.3 22a $1.44 (m)$ 32.1 23a $3.06 (d, 10.6)$ 63.9 23b $3.32 (d, 10.6)$ 63.9 24 $0.56 (s)$ 13.7 25 $0.93 (s)$ 16.8 26 $0.72 (s)$ 16.9 27 $1.10 (s)$ 25.7 28- 178.6 29 $0.88 (s)$ 32.9	11	1.84 (m)	23.0
13 $-$ 143.914 $-$ 41.415a0.99 (m)27.215b1.68 (m)27.216a1.49 (m)22.616b1.91 (td, 13.5, 3.7)22.617 $-$ 45.4182.76 (dd, 13.7, 3.9)40.819a1.07 (m)45.720 $-$ 30.421a1.14 (m)33.322a1.63 (m)32.123a3.06 (d, 10.6)63.9240.56 (s)13.7250.93 (s)16.8260.72 (s)16.9271.10 (s)25.728 $-$ 178.6290.88 (s)32.9	12	5.18 (t, 3.3)	121.5
14- 41.4 $15a$ $0.99 (m)$ 27.2 $15b$ $1.68 (m)$ 27.2 $16a$ $1.49 (m)$ 22.6 $16b$ $1.91 (td, 13.5, 3.7)$ 22.6 17 - 45.4 18 $2.76 (dd, 13.7, 3.9)$ 40.8 $19a$ $1.07 (m)$ 45.7 $19b$ $1.62 (m)$ 30.4 $21a$ $1.14 (m)$ 33.3 $21b$ $1.32 (td, 13.6, 3.6)$ 32.1 $22a$ $1.44 (m)$ 32.1 $23a$ $3.06 (d, 10.6)$ 63.9 24 $0.56 (s)$ 13.7 25 $0.93 (s)$ 16.8 26 $0.72 (s)$ 16.9 27 $1.10 (s)$ 25.7 28 - 178.6 29 $0.88 (s)$ 32.9	13	—	143.9
15a $0.99 (m)$ 27.2 15b $1.68 (m)$ 27.2 16a $1.49 (m)$ 22.6 16b $1.91 (td, 13.5, 3.7)$ 22.6 17 $ 45.4$ 18 $2.76 (dd, 13.7, 3.9)$ 40.8 19a $1.07 (m)$ 45.7 19b $1.62 (m)$ 45.7 20 $ 30.4$ 21a $1.14 (m)$ 33.3 21b $1.32 (td, 13.6, 3.6)$ 33.3 22a $1.44 (m)$ 32.1 23a $3.06 (d, 10.6)$ 63.9 23b $3.32 (d, 10.6)$ 63.9 24 $0.56 (s)$ 13.7 25 $0.93 (s)$ 16.8 26 $0.72 (s)$ 16.9 27 $1.10 (s)$ 25.7 28 $ 178.6$ 29 $0.88 (s)$ 32.9	14	_	41.4
15b1.68 (m)1.1116a1.49 (m)22.616b1.91 (td, 13.5, 3.7)22.617-45.4182.76 (dd, 13.7, 3.9)40.819a1.07 (m)45.719b1.62 (m)45.720-30.421a1.14 (m)33.321b1.32 (td, 13.6, 3.6)33.322a1.44 (m)32.123a3.06 (d, 10.6)63.923b3.32 (d, 10.6)63.9240.56 (s)13.7250.93 (s)16.8260.72 (s)16.9271.10 (s)25.728-178.6290.88 (s)32.9	15a	0.99 (m)	27.2
16a $1.49 (m)$ 22.6 16b $1.91 (td, 13.5, 3.7)$ 22.6 17- 45.4 18 $2.76 (dd, 13.7, 3.9)$ 40.8 19a $1.07 (m)$ 45.7 19b $1.62 (m)$ 45.7 20- 30.4 21a $1.14 (m)$ 33.3 21b $1.32 (td, 13.6, 3.6)$ 33.3 22a $1.44 (m)$ 32.1 23a $3.06 (d, 10.6)$ 63.9 24 $0.56 (s)$ 13.7 25 $0.93 (s)$ 16.8 26 $0.72 (s)$ 16.9 27 $1.10 (s)$ 25.7 28- 178.6 29 $0.88 (s)$ 32.9	15b	1.68 (m)	
16b $1.91 (td, 13.5, 3.7)$ 45.417-45.418 $2.76 (dd, 13.7, 3.9)$ 40.819a $1.07 (m)$ 45.719b $1.62 (m)$ 45.720-30.421a $1.14 (m)$ 33.321b $1.32 (td, 13.6, 3.6)$ 33.322a $1.44 (m)$ 32.123a $3.06 (d, 10.6)$ 63.923b $3.32 (d, 10.6)$ 63.924 $0.56 (s)$ 13.725 $0.93 (s)$ 16.826 $0.72 (s)$ 16.927 $1.10 (s)$ 25.728-178.629 $0.88 (s)$ 32.9	16a	1.49 (m)	22.6
$\begin{array}{cccccccccccccccccccccccccccccccccccc$	16b	1.91 (td, 13.5, 3.7)	4 - 4
18 $2.76 (dd, 13.7, 3.9)$ 40.8 $19a$ $1.07 (m)$ 45.7 $19b$ $1.62 (m)$ 45.7 20 $ 30.4$ $21a$ $1.14 (m)$ 33.3 $21b$ $1.32 (td, 13.6, 3.6)$ 33.3 $22a$ $1.44 (m)$ 32.1 $22b$ $1.63 (m)$ 32.1 $23a$ $3.06 (d, 10.6)$ 63.9 $23b$ $3.32 (d, 10.6)$ 63.9 24 $0.56 (s)$ 13.7 25 $0.93 (s)$ 16.8 26 $0.72 (s)$ 16.9 27 $1.10 (s)$ 25.7 28 $ 178.6$ 29 $0.88 (s)$ 32.9	17		45.4
19a $1.07 (m)$ 45.7 19b $1.62 (m)$ 30.4 20- 30.4 21a $1.14 (m)$ 33.3 21b $1.32 (td, 13.6, 3.6)$ 33.3 22a $1.44 (m)$ 32.1 22b $1.63 (m)$ 32.1 23a $3.06 (d, 10.6)$ 63.9 23b $3.32 (d, 10.6)$ 63.9 24 $0.56 (s)$ 13.7 25 $0.93 (s)$ 16.8 26 $0.72 (s)$ 16.9 27 $1.10 (s)$ 25.7 28- 178.6 29 $0.88 (s)$ 32.9	18	2.76 (dd, 13.7, 3.9)	40.8
$\begin{array}{cccccccccccccccccccccccccccccccccccc$	19a	1.07 (m)	45.7
$\begin{array}{cccccccccccccccccccccccccccccccccccc$	19D	1.62 (M)	20.4
$\begin{array}{cccccccccccccccccccccccccccccccccccc$	20		30.4
$\begin{array}{cccccccccccccccccccccccccccccccccccc$	21a	1.14 (M)	33.3
$\begin{array}{cccccccccccccccccccccccccccccccccccc$	210	1.32 (Id, 13.6, 3.6)	
$\begin{array}{cccccccccccccccccccccccccccccccccccc$	22a 22h	1.44 (M) 1.62 (m)	32.1
$\begin{array}{cccccccccccccccccccccccccccccccccccc$	220		
230 3.32 (d, 10.6) 24 0.56 (s) 13.7 25 0.93 (s) 16.8 26 0.72 (s) 16.9 27 1.10 (s) 25.7 28 - 178.6 29 0.88 (s) 32.9	208 226	3.00 (0, 10.0) 3.22 (d. 10.6)	63.9
$\begin{array}{cccccccccccccccccccccccccccccccccccc$	230	3.32(0, 10.6)	107
$\begin{array}{cccccccccccccccccccccccccccccccccccc$	24 25	0.30(S)	10.7
$\begin{array}{cccccccccccccccccccccccccccccccccccc$	20	0.33(8)	10.0
$\begin{array}{cccccccccccccccccccccccccccccccccccc$	20 27	0.72(3)	10.9 25.7
29 0.88 (s) 32.9	21 28		20.1 178 G
2.9 0.00 (5) 32.9	20	 0.88 (c)	32 0
0.88(s) 23.4	30	0.88 (s)	23.4

Tab. 6S. ¹H and ¹³C NMR data (500 MHz) of compound **8** in DMSO-d₆

	13		14	
Position	δ _H	δ _c	δ _H	δ _c
2	_	158.8	_	n.d.
3	-	135.9	_	135.8
4	_	n.d.	_	n.d.
5	-	n.d.	_	162.7
6	6.17 (d, 1.8)	99.8	6.17 (s)	99.5
7	_	n.d.	_	165.7
8	6.35 (d, 1.8)	94.6	6.35 (s)	94.3
9	_	n.d.	_ ` `	158.3
10	-	n.d.	_	105.5
1'	-	121.5	_	121.3
2'	7.34 (s)	110.0	7.37 (s)	109.7
3'	_	146.3	_	145.8
4'	_	139.8	_	137.8
5'	-	146.3	_	145.8
6'	7.34 (s)	110.0	7.37 (s)	109.7
1"	5.15 (d, 7.9)	105.2	5.13 (d, 7.8)	105.2
2"	3.87 (dd, 9.5, 7.9)	73.0	3.85 (dd, 9.5, 7.8)	72.9
3"	3.62 (dd, 9.5, 2.9)	74.8	3.61 (m)	74.6
4''	3.91 (d, 2.9)	69.9	3.89 (d, 2.5)	69.6
5"	3.81 (t, 6.4)	74.3	3.52 (t, 6.1)	76.6
6"a	4.25 (dd, 11.1, 5.9)	62.6	3.61 (m)	61.6
6''b	4.33 (dd, 11.1, 6.9)	03.0	3.67 (dd, 11.2, 5.9)	01.0
1'''	_	121.1	_	_
2'''	6.91	110.0	_	_
3'''	_	146.3	_	_
4'''	_	138.2	_	_
5'''	_	146.3	_	_
6'''	6.91	110.0	_	_
7'''	_	167.8	_	_
^{a 13} C NMR o	data derived from HSQC a	nd HMBC	experiments; n.d.: not dete	cted.

Tab. 7S. ¹H and ¹³C NMR^a (500 MHz) of compounds **13** and **14** in CD_3OD

	15		16		17	•
Position	δ _Η	δ _C	δ _Η	δ _C	δ _Η	δ _c
2	-	158.9	-	158.9	_	n.d.
3	-	135.9	-	135.8	_	n.d.
4	-	179.2	-	n.d.	_	n.d.
5	-	163.2	-	163.6	_	n.d.
6	6.20 (d, 2.0)	99.6	6.20 (d, 1.7)	99.7	6.18 (s)	99.2
7	-	165.5	-	165.4	_	n.d.
8	6.36 (d, 2.0)	94.5	6.36 (d, 1.7)	94.6	6.37 (s)	94.2
9	-	158.0	-	158.2	_	n.d.
10	-	105.4	-	105.6	_	n.d.
1'	-	121.5	-	n.d.	_	123.3
2'	6.95 (s)	109.3	7.34 (d, 2.1)	116.9	7.35 (s)	108.5
3'	-	146.4	-	146.2	_	147.5
4'	-	137.4	-	149.1	_	137.1
5'	-	146.4	6.92 (d, 6.3)	116.2	_	147.5
6'	6.95 (s)	109.3	7.30 (dd, 6.3, 2.1)	122.7	7.35 (s)	108.5
1"	5.32 (d, 1.5)	103.4	5.36 (d, 1.3)	103.3	_	—
2"	4.23 (dd, 3.3, 1.5)	71.7	4.23 (dd, 3.1, 1.3)	71.7	_	—
3"	3.79 (dd, 9.5, 3.3)	71.9	3.76 (dd, 9.3, 3.1)	72.1	_	—
4"	3.35 (t, 9.6)	73.2	3.35 (9.4)	73.2	_	_
5"	3.52 (dq, 9.7, 6.2)	71.8	3.43 (dq, 9.6, 6.1)	71.8	_	_
6"	0.97 (d, 6.2)	17.6	0.95 (d, 6.1)	17.5	—	_
^{a 13} C NMR (data derived from HSQC	and HM	BC experiments; n.d.: nc	t detecte	d.	

Tab. 8S. ¹H and ¹³C NMR^a (500 MHz) of compounds **15–17** in CD_3OD

	19		26	
Position	δ _H	δ _c	δ _Η	δ _c
2	_	157.1	_	n.d
3	_	n.d.	_	135.0
4	-	n.d.	-	n.d
5	-	n.d.	-	n.d
6	6.24 (d, 1.2)	98.5	6.44 (d, 1.6)	99.1
7	-	n.d.	-	n.d
8	6.44 (d, 1.2)	93.2	6.75 (d, 1.6)	94.1
9	-	n.d.	-	n.d
10	-	104.2	-	105.6
1'	-	n.d.	-	n.d
2'	6.86 (s)	107.8	7.36 (d, 1.8)	115.5
3'	-	150.7	-	145.0
4'	-	137.9	-	148.1
5'	-	150.7	6.89 (d, 8.2)	115.2
6'	6.86 (s)	107.8	7.30 (dd, 8.2, 1.8)	120.9
1"	5.16 (d, 1.0)	101.8	5.28 (s)	101.6
2"	4.00 (m)	69.7	4.00 (bs)	69.8
3"	3.56 (m)	70.1	3.55 (dd, 9.2, 3.1)	70.2
4"	3.16 (m)	71.0	3.18 (m)	71.0
5"	3.22 (m)	70.0	3.28 (m)	70.2
6"	0.83 (d, 6.1)	17.1	0.85 (d, 6.1)	17.3
1'''	-	_	5.55 (s)	98.2
2'''	-	_	3.86 (bs)	69.5
3'''	-	—	3.65 (dd, 9.2, 3.0)	70.0
4'''	-	_	3.32 (m)	71.4
5'''	-	_	3.46 (m)	69.8
6'''	-	_	1.14 (d, 6.1)	17.6
4'-OCH ₃	3.75 (s)	59.3		_
^a ¹³ C NMR data	a derived from HSQ	C and HM	BC experiments; n.d.: not	
detected.				

Tab. 9S. ¹H and ¹³C NMR^a (500 MHz) of compounds **19** and **26** in DMSO-d₆

	20		21		22		23	
Position	δ _H	δ _c	δ _H	δ _C	δ _H	δ _C	δ _H	δ _C
2	_	158.7	-	158.9	-	158.9	-	159.3
3	_	135.1	_	135.7	_	135.2	_	135.9
4	—	178.9	_	n.d.	—	178.7	—	n.d.
5	_	163.3	—	163.6	_	163.4	-	163.9
6	6.18 (d, 1.8)	99.3	6.21 (s)	99.3	6.19 (d, 1.9)	99.6	6.21 (s)	99.8
7	_	165.5	_	165.3	-	165.2	-	165.8
8	6.35 (d, 1.8)	94.2	6.37 (s)	94.2	6.36 (d, 1.9)	94.4	6.38 (s)	94.7
9	_	157.9	_	157.8	_	158.0	_	158.3
10	_	105.4	_	105.6	_	105.4	_	106.0
1'	_	121.6	_	121.7	-	n.d.	-	n.d.
2'	7.00 (s)	109.3	7.02 (s)	109.3	7.37 (d, 2.0)	116.7	7.40 (m)	116.9
3'	_	146.2	_	146.4	_	146.0	_	146.5
4'	_	137.2	_	137.5	_	149.3	_	149.6
5'	_	146.2	_	146.4	6.94 (d, 8.3)	116.2	6.96 (d, 8.7)	116.5
6'	7.00 (s)	109.3	7.02 (s)	109.3	7.33 (dd, 8.3, 2.0)	122.6	7.40 (m)	123.0
1"	5.51 (d, 1.1)	100.0	5.34 (d, 1.1)	103.0	5.50 (d, 1.5)	100.2	5.41 (bs)	103.3
2"	5.64 (dd, 3.1, 1.1)	73.0	4.51 (dd, 2.8, 1.1)	69.5	5.64 (dd, 3.2, 1.5)	73.3	4.49 (m)	69.9
3"	4.08 (dd, 8.9, 3.1)	70.2	5.27 (dd, 8.9, 2.8)	75.0	4.04 (dd, 8.9, 3.2)	70.5	5.24 (9.7, 3.0)	75.3
4''	3.50 (m)	73.4	3.70 (m)	70.5	3.47 (m)	73.5	3.69 (t, 9.7)	70.9
5"	3.53 (m)	71.7	3.70 (m)	71.8	3.47 (m)	71.9	3.59 (m)	72.2
6"	1.05 (d, 5.6)	17.2	1.02 (d, 4.5)	17.1	1.04 (d, 5.4)	17.4	1.01 (d, 6.1)	17.6
1'''	_	120.8	_	121.2	_	121.0	_	121.7
2'''	7.09 (s)	110.0	7.19 (s)	110.1	7.09 (s)	110.2	7.19 (s)	110.5
3'''	_ ` `	145.6	_ ` `	145.8	_ ` `	146.0	_ ` `	146.3
4'''	_	139.3	_	139.5	_	139.4	_	139.9
5'''	_	145.6	_	145.8	_	146.0	_	146.3
6'''	7.09 (s)	110.0	7.19 (s)	110.1	7.09 (s)	110.2	7.19 (s)	110.5
7'''	_ ` ´	166.9	_`´	168.2	_`´	167.1	– `´	168.4
^{a 13} C NMR o	data derived from	HSQC an	d HMBC experime	ents; n.d.:	not detected.			

Tab. 10S. ¹H and ¹³C NMR^a (500 MHz) of compounds 20-23 in CD₃OD

	24					
Position	δ _Η	δ _c				
1	—	n.d.				
2a 2b	1.71 (d, 12.8) 1.89 (m)	37.2				
3	3.76 (m)	68.1				
4	3.63 (m)	70.6				
5	5.26 (bs)	70.4				
6a 6b	1.85 (m) 1.93 (m)	35.6				
1'		165.6				
2'	6.20 (d, 15.9)	114.6				
3'	7.47 (d, 15.9)	144.1				
4'	—	125.2				
5'	7.04 (s)	114.4				
6'	—	145.3				
7'	—	147.6				
8'	6.78 (d, 7.9)	115.6				
9'	6.96 (d, 7.9)	120.7				
1-COOH	—	n.d.				
^{a 13} C NMR c	^{a 13} C NMR data derived from HSQC and					
HMBC expe	eriments; n.d.: not d	etected.				

Tab. 11S. ¹H and ¹³C NMR^a (500 MHz) of compounds 24 in DMSO-d₆

	27		28		29	
Position	δ _H	δ _c	δ _Η	δc ^a	δ _Η	δ _c ^a
2	-	154.7	—	156.2	—	n.d.
3	_	136.0	—	n.d.	—	n.d.
4	-	173.2	-	n.d.	—	n.d.
5	-	158.4	-	160.9	—	n.d.
6	6.86 (s)	102.4	6.19 (s)	98.5	6.35 (s)	97.5
7	-	163.8	—	163.9	—	164.6
8	-	95.7	—	93.3	—	91.6
9	-	157.7	-	156.0	—	n.d.
10	-	109.0	—	103.5	—	n.d.
1'	-	122.5	—	120.9	—	121.8
2'	7.57 (s)	115.8	7.54 (m)	116.0	7.56 (s)	115.3
3'	-	145.9	—	144.4	—	145.5
4'	-	150.0	—	147.6	—	149.7
5'	7.03 (d, 8.5)	111.3	6.85 (d, 7.8)	114.9	7.04 (d, 8.7)	110.9
6'	7.74 (d, 8.5)	121.5	7.54 (m)	121.2	7.72 (d, 8.7)	120.9
1"	5.25 (d, 6.9)	101.4	5.34 (bd)	101.0	5.39 (d, 6.6)	100.6
2"	3.26 (m)	74.1	3.25 (m)	73.8	3.22 (m)	73.5
3"	3.27 (m)	75.7	3.24 (m)	76.1	3.23 (m)	75.8
4"	3.12 (m)	69.8	3.30 (m)	70.3	3.10 (m)	69.4
5"	3.28 (m)	76.5	3.26 (m)	75.6	3.25 (m)	75.4
6"a	3.34 (m)	66.0	3.30 (m)	66.8	3.31 (m)	66 /
6''b	3.71 (d, 11.1)	00.9	3.72 (d, 10.8)	00.0	3.69 (m)	00.4
1'''	4.42 (bs)	100.8	4.40 (s)	100.4	4.39 (s)	100.3
2'''	3.42 (m)	70.4	3.42 (m)	70.1	3.41 (m)	69.9
3'''	3.33 (m)	70.7	3.08 (m)	69.8	3.29 (m)	70.1
4'''	3.10 (m)	71.9	3.09 (m)	71.6	3.08 (m)	71.3
5'''	3.30 (m)	68.3	3.29 (m)	67.8	3.27 (m)	67.8
6'''	0.99 (d, 5.9)	17.9	1.00 (d, 4.4)	17.5	0.97 (d, 6.0)	17.4
1''''	4.84 (d, 7.4)	103.7				
2""	3.42 (m)	73.6				
3''''	3.34 (m)	75.9				
4''''	3.21 (m)	69.9				
5''''	3.41 (m)	77.7				
6''''a	3.53 (dd, 11.1, 6.0)	60.0				
6''''b	3.77 (d, 11.1)	00.9				
7-OCH ₃	3.89 (s)	56.2	—	_	3.86 (s)	55.3
4'-0CH ₃	3.86 (s)	55.7	_	_	3.86 (s)	55.3
^{a 13} C NMR o	data derived from HSQC a	nd HMBC	experiments; n.d.: n	ot detected	d.	

Tab. 12S. ¹H and ¹³C NMR (500 MHz) of compounds 27–29 in DMSO-d₆