Two new flavones glycosideswith antimicrobial activities from *Clerodendrumformicarum*Gürke(Lamiaceae)

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Abstract:

*Clerodendrumformicarum*Gürke from the Lamiaceae family is a Cameroonian medicinal plant. The crude methanol, methanol residual and ethyl acetate extracts of leaves have been phytochemically studied using chromatography column to afford four compounds; two new flavones glycoside: clerodendronone 1a (**3**) and clerodendronone 1b (**4**) along with two known compounds: 5,7-dihydroxy-4'-methoxyflavone (**1**) and 5-hydroxy-7,4'-dimethoxyflavone (**2**). Compound structures have been elucidated on the basis of their spectroscopy data and with literature information. The anti-microbial activities of extracts and three isolated compounds were performed. The antibacterial activity was evaluated against four gram positive, five gram negative and three fungus. Clerodendronone 1b (**4**) showed good antibacterial activity against bacterial gram negative *Shigellaflexineri*NR518 (MIC = 62.5 µg/ml) and moderate activity against *Staphylococcus aureus* NR46374 (MIC = 250 µ/ml). The ethyl acetate extract recorded good antibacterial activity against *Staphylococcus aureus* NR46003 (MIC = 125 µg/ml) and *Staphylococcus aureus* NR46374 (MIC = 125 µg/ml).

Key words: *Clerodendrumformicarum*, Lamiaceae, flavone, antimicrobial.

Contents:

Table S1: ^{13}C NMR data for clerodendronone 3-4 (125MHz) in DMSO [δ (ppm), *J* (Hz)]

Table S2: ^{1}H data for clerodendronone **3-4** (500MHz)in DMSO [δ (ppm), *J* (Hz)]

Figure S1:Important HMBC ( ) and 1H-1H COSY ( ) correlations of compound (**3**)

Figure S2: ESIMS of clerodendronone 1a (**3**)

Figure S3: ESIMS of clerodendronone 1b (**4**)

Figure S4: UV spectrum of clerodendronone 1a (**3**)

Figure S5: UV spectrum of clerodendronone 1b(**4**)

Figure S6: ^{1}H NMR spectrum (500 MHz, DMSO) of clerodendronone 1a (**3**)

Figure S7: ^{13}C spectrum (125 MHz, DMSO) of clerodendrunone 1a (**3**)

Figure S8: HMBC spectrum (500 MHz: ^{1}H, 125 MHz: ^{13}C, DMSO) of clerodendronone 1a (**3**)

Figure S9: ^{1}H ^{1}H COSY spectrum (500 MHz, DMSO) of clerodendronone 1a(**3**)

Figure S10: ^{1}H NMR spectrum (500 MHz, DMSO) of clerodendronone 1b(**4**)

Figure S11: ^{13}C spectrum (125 MHz, DMSO) of clerodendrunone1b(**4**)

Figure S12: HSQC spectrum (500 MHz: ^{1}H, 125 MHz: ^{13}C, DMSO) of clerodendronone 1b(**4**)

Figure S13: ^{1}H- ^{1}H COSY spectrum (500 MHz, DMSO) of clerodendronone 1b(**4**)

Table S3: Results of the antimicrobial activities

Table S1: ^{13}C NMR data for cleodendronone**3-4** (125MHz; DMSO-d_6)

C	**3**	**4**
2	164.3	163.8
3	103.7	103.8
4	182.5	182.0
5	161.5	161.1
6	100.0	99.5
7	164.3	163.0
8	96.4	94,9
9	157.4	156.9
10	104.2	106.3
1’	123.1	122.6
2’/6’	128.9	128.4
3’/5’	115.1	114.6
4’	162.9	162.4
OCH_3	56.0	55.5
1”	100.3	99.9
2”	77.6	77.1
3’	76.9	76.4
4”	73.5	73.0
5”	70.0	69.5
6”	61.0	66.6

Table S2: ^{1}H data for clerodendronone**3-4** (500MHz; DMSO-d_6; *J* in Hz)

Position	**3**		**4**	
	δ(H)	HMBC	δH	HMBC
3	6,96		6,96	
5-OH	12,92		12,92	
6	6,45	5, 7, 8, 10	6,46	5, 7, 8 ,10
7-OH				
8	6,86	6, 7, 9, 10	6,86	6, 7, 8, 10
9				
10				
1’				
2’/6’	8,06	2, 3’, 4’, 6’	8,06	2, 3’, 4’,6’
4’				
-OMe	3,86		3,86	
3’/5’	7,13		7,14	
1”	5,07(1H,d,*J*=5Hz)		5,06(1H,d, *J*=10Hz)	
2”	3,26		3,27	
3”	3,46		3,44	

4”	3,17	3,17
5”	3,29	3,30
6”	3,71; 3,47	3,70; 3,48
6”		

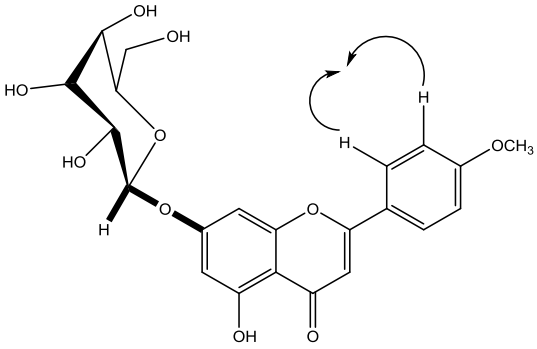

Figure S1:Important HMBC ( ) and 1H-1H COSY ( ) correlations of compound (**3**)

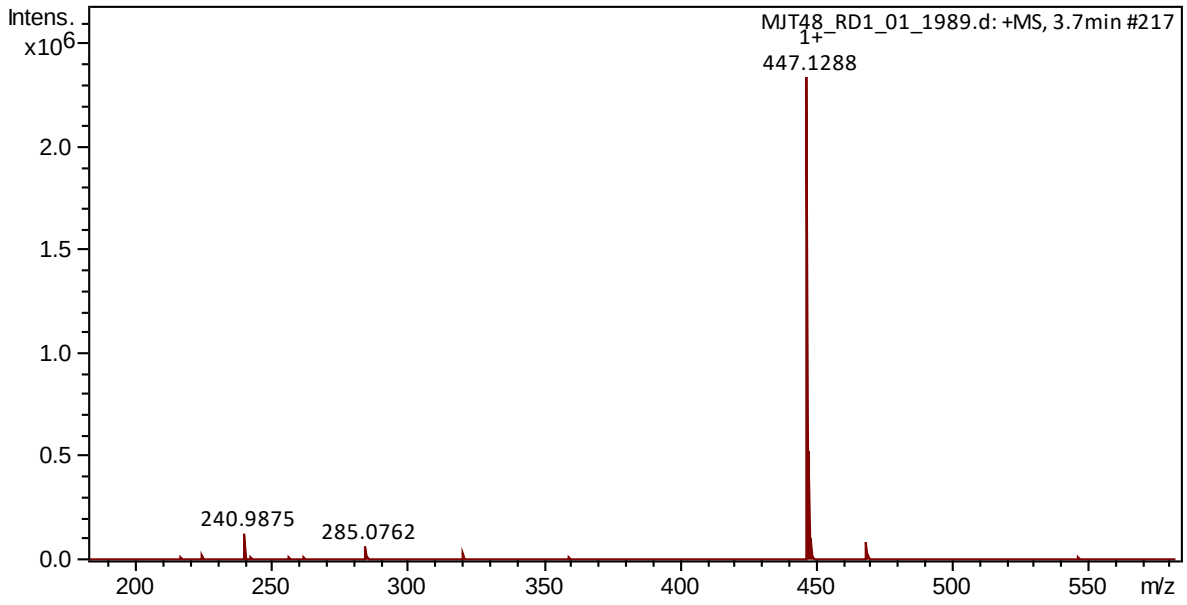

Figure S2: ESIMS of clerodendronone 1a (3)

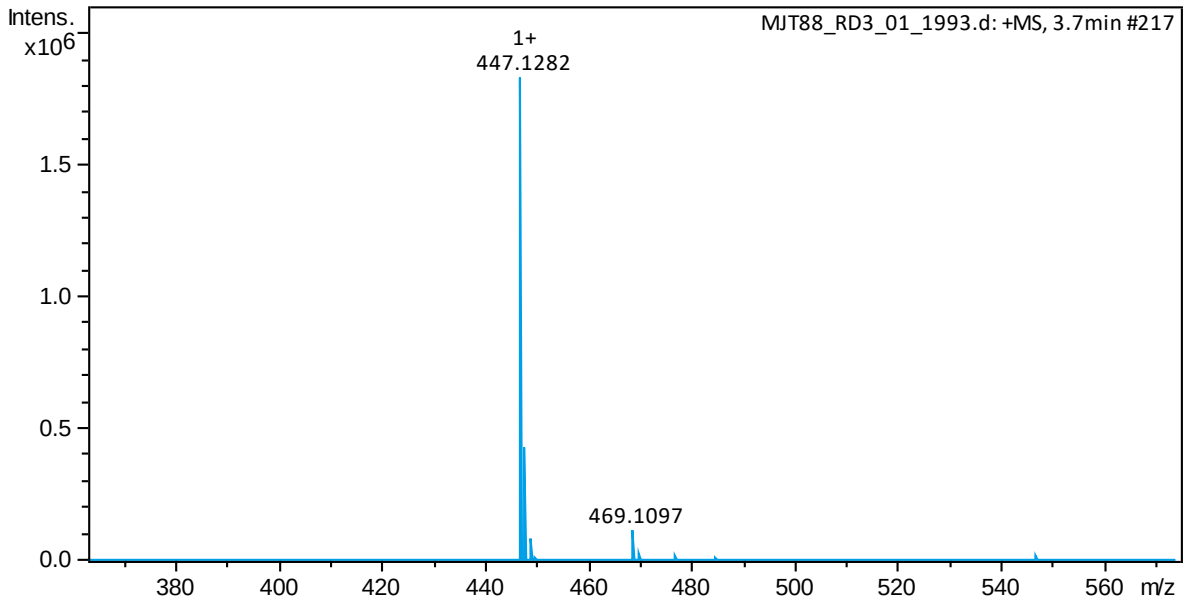

Figure S3: ESIMS of clerodendronone1b (4)

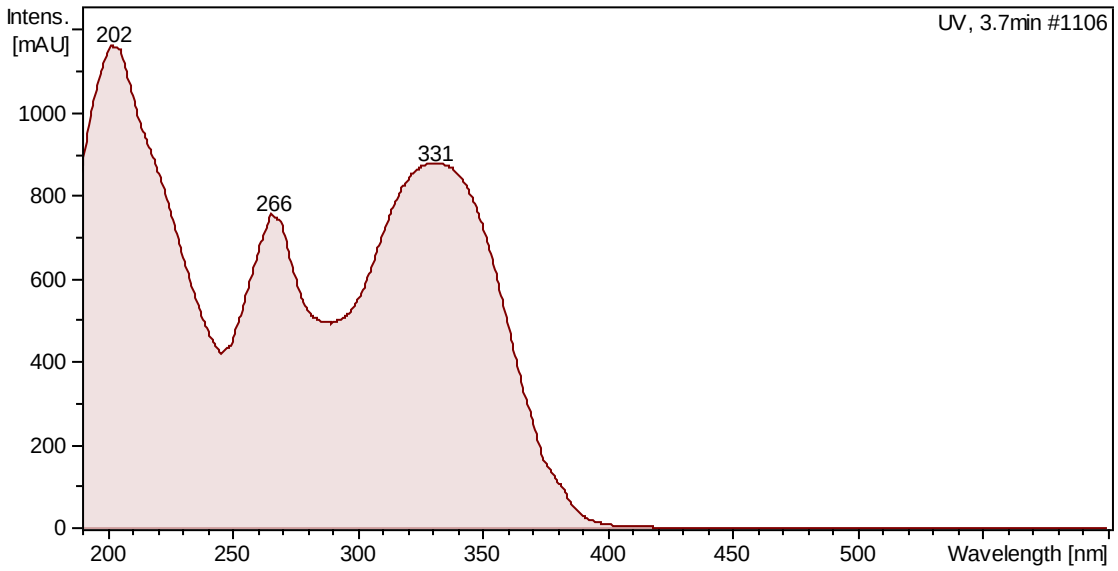

Figure S4: UV spectrum of clerodendronone 1a (3)

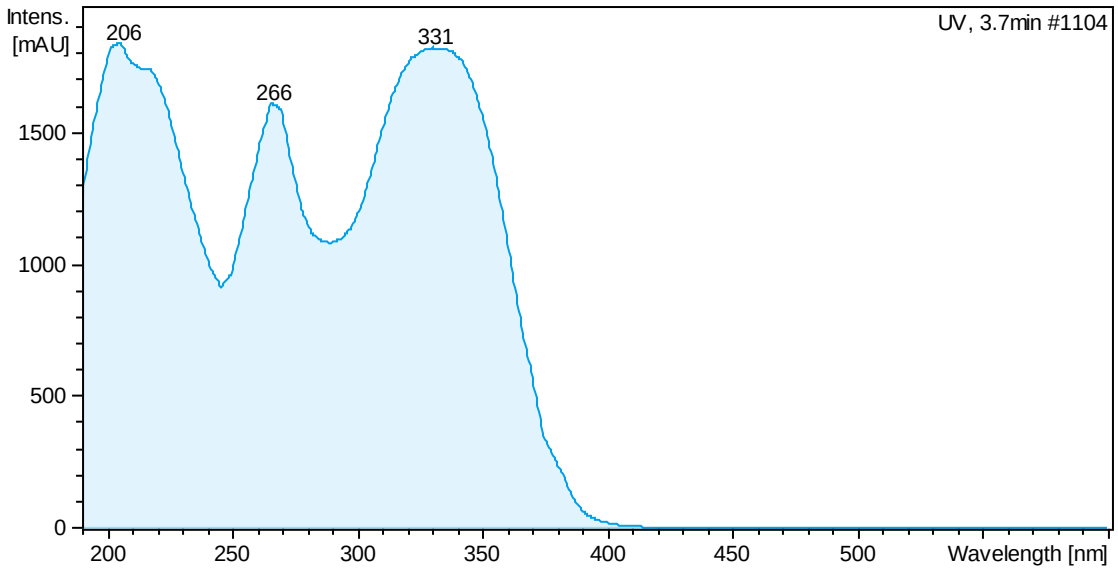

Figure S5: UV spectrum of clerodendronone 1b (4)

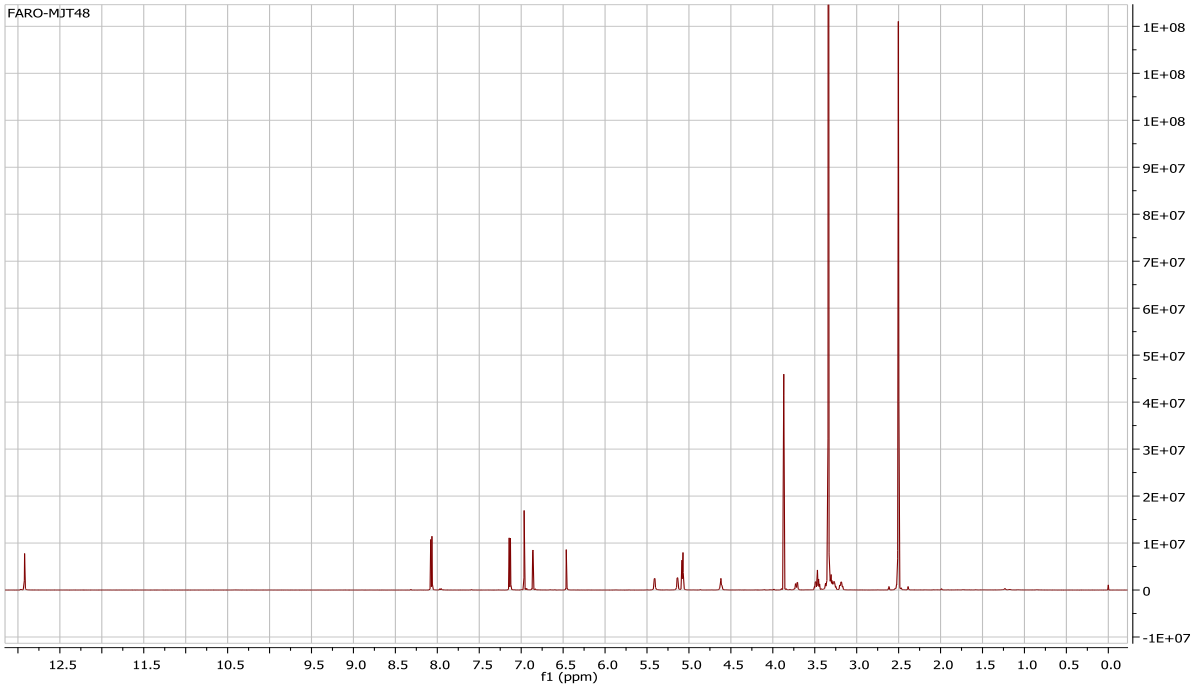

Figure S6: ^{1}H NMR spectrum (500 MHz, $CDCl_3$) of clerodendronone 1a(3)

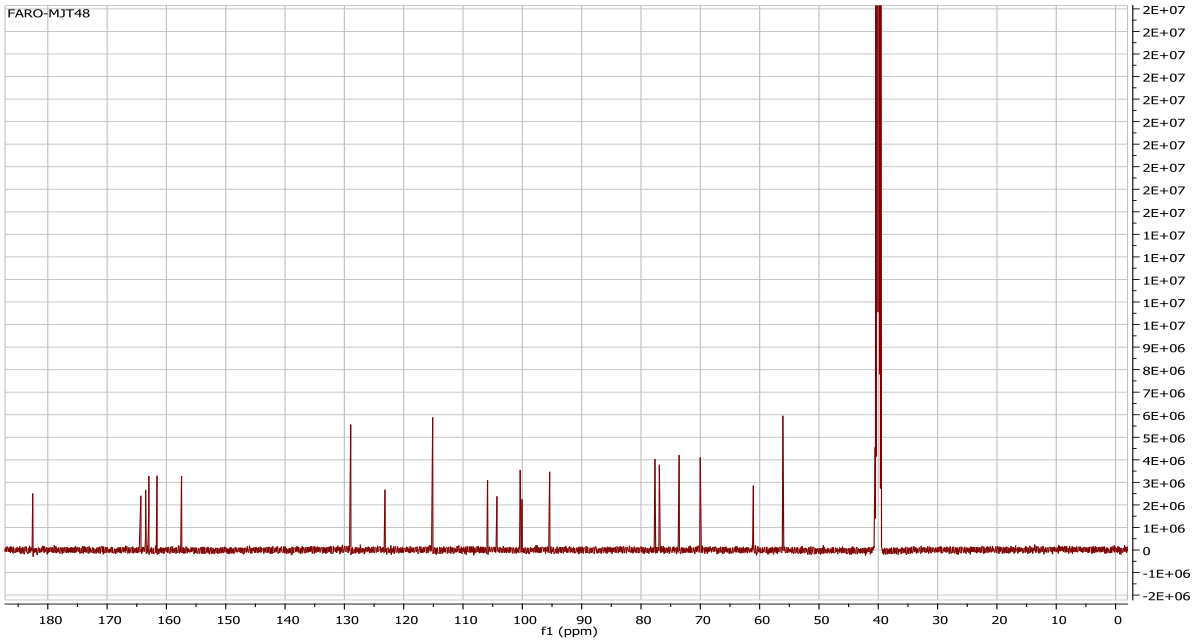

Figure S7: ^{13}C spectrum (125 MHz, DMSO) of clerodendrunone1a(3)

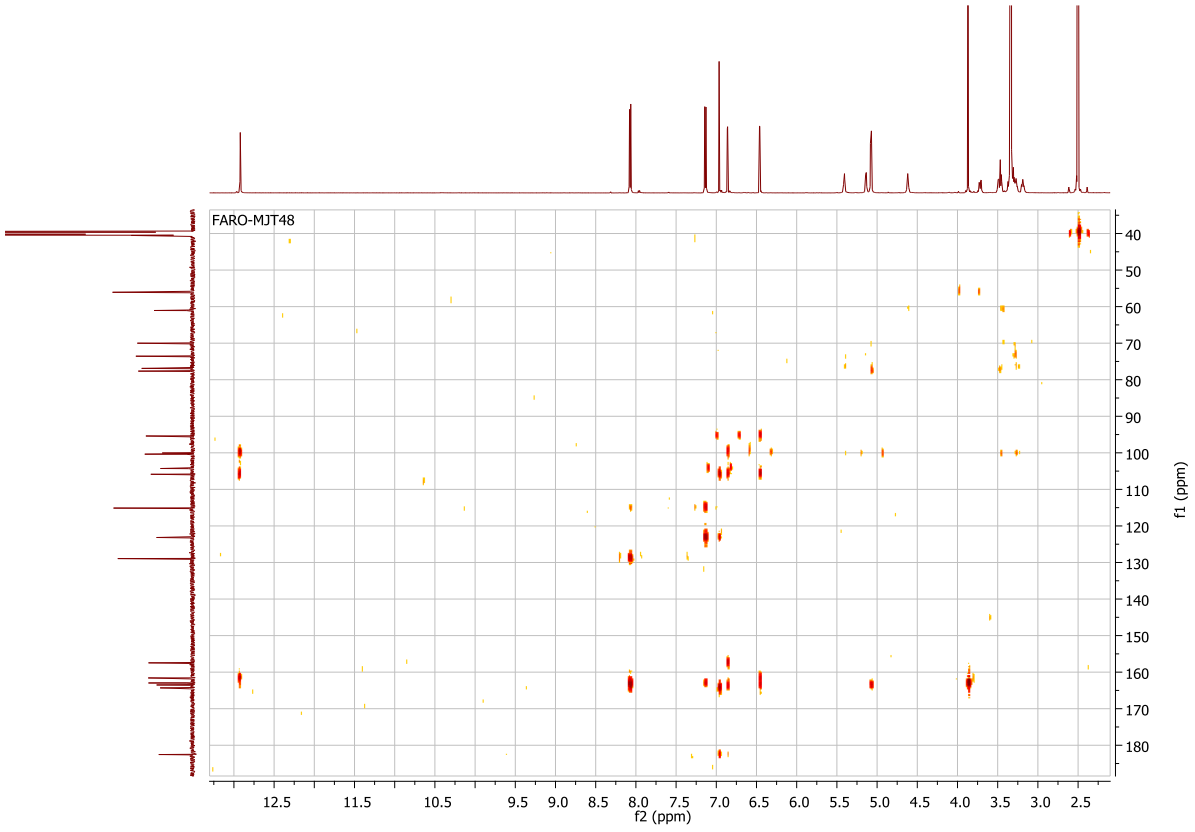

Figure S8: HMBC spectrum (500 MHz: ^{1}H, 125 MHz: ^{13}C, DMSO) of clerodendronone 1a(3)

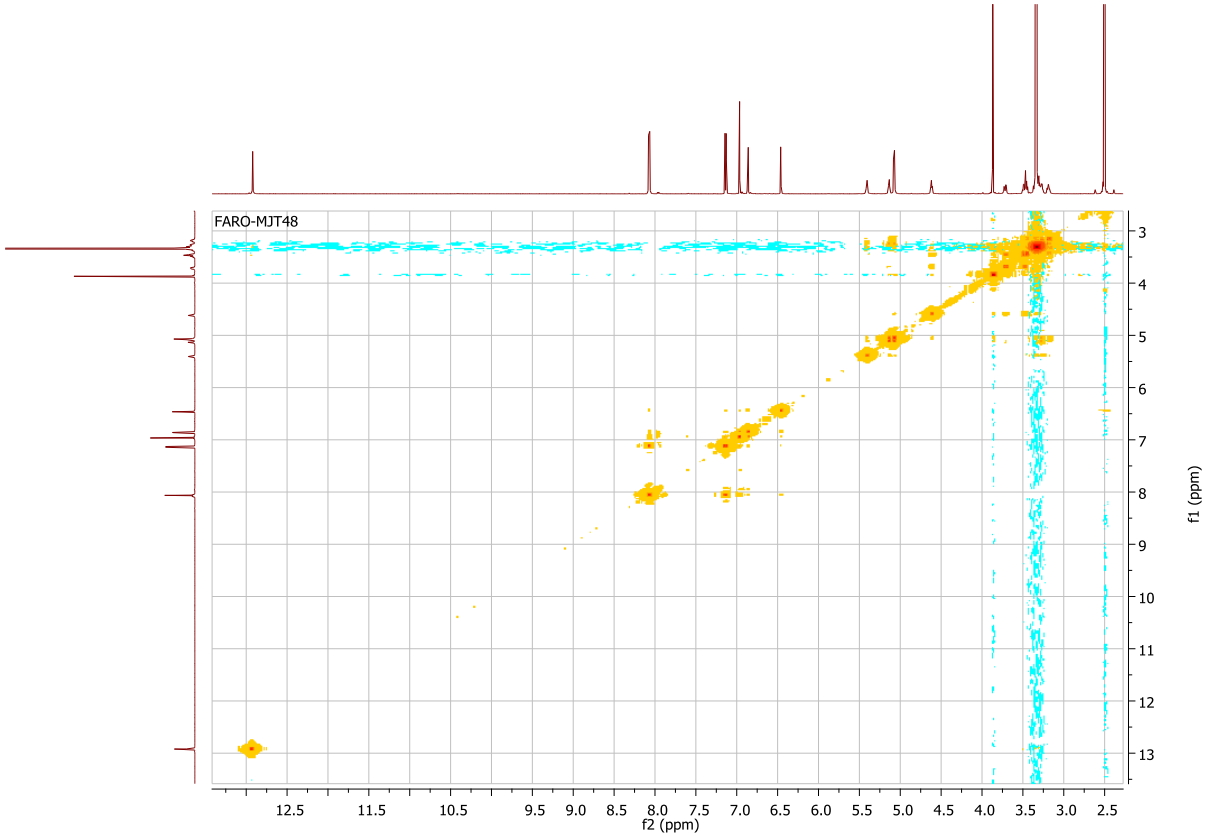

Figure S9: ^{1}H ^{1}H COSY spectrum (500 MHz, DMSO) of clerodendronone 1a(3)

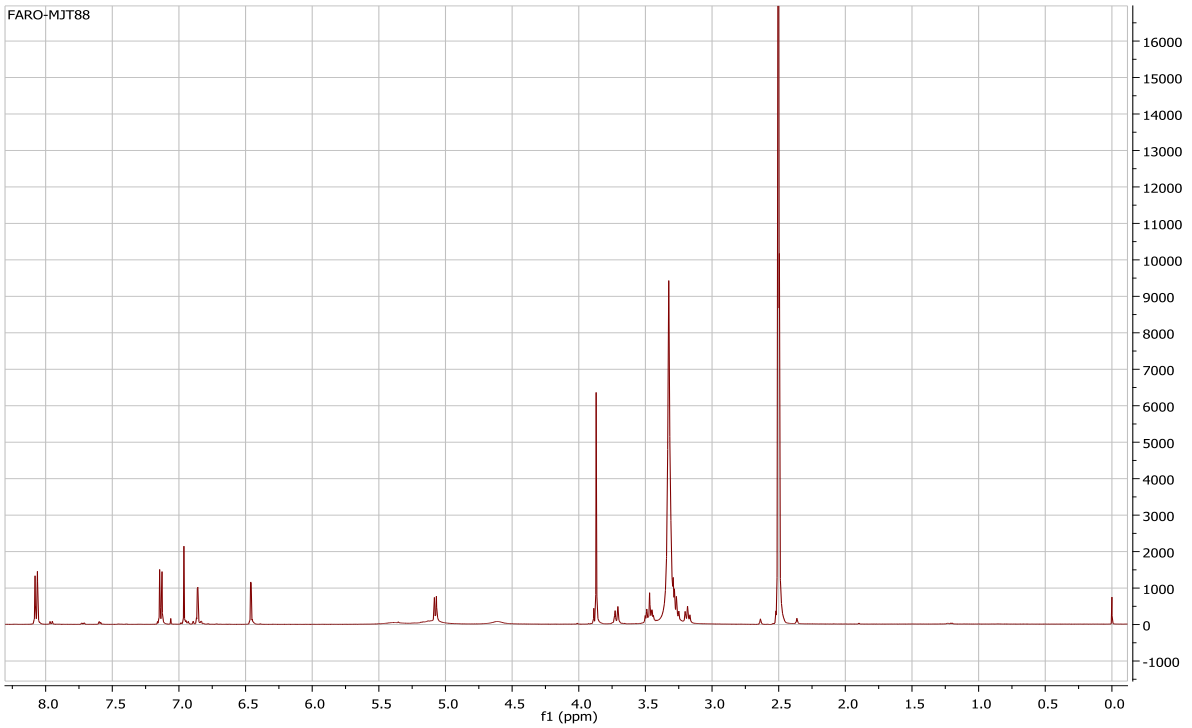

Figure S10: ^{1}H NMR spectrum (500 MHz, DMSO) of clerodendronone 1b (4)

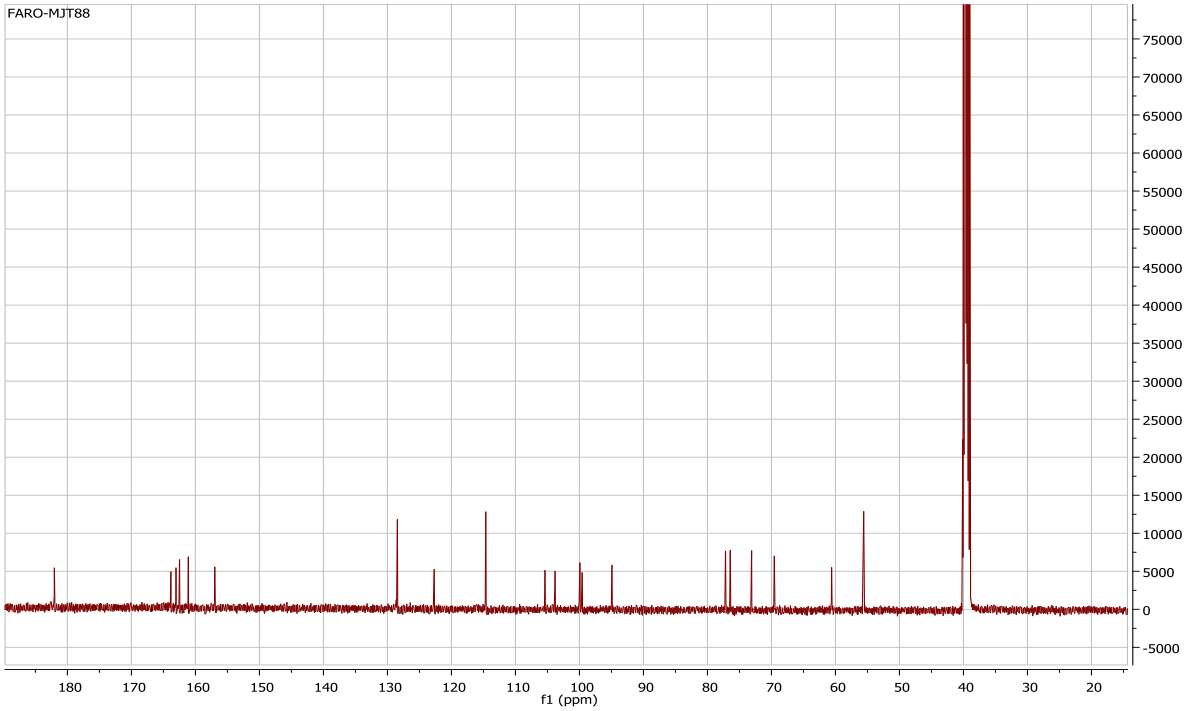

Figure S12: ^{13}C spectrum (125 MHz, DMSO) of clerodendrunone 1b (4)

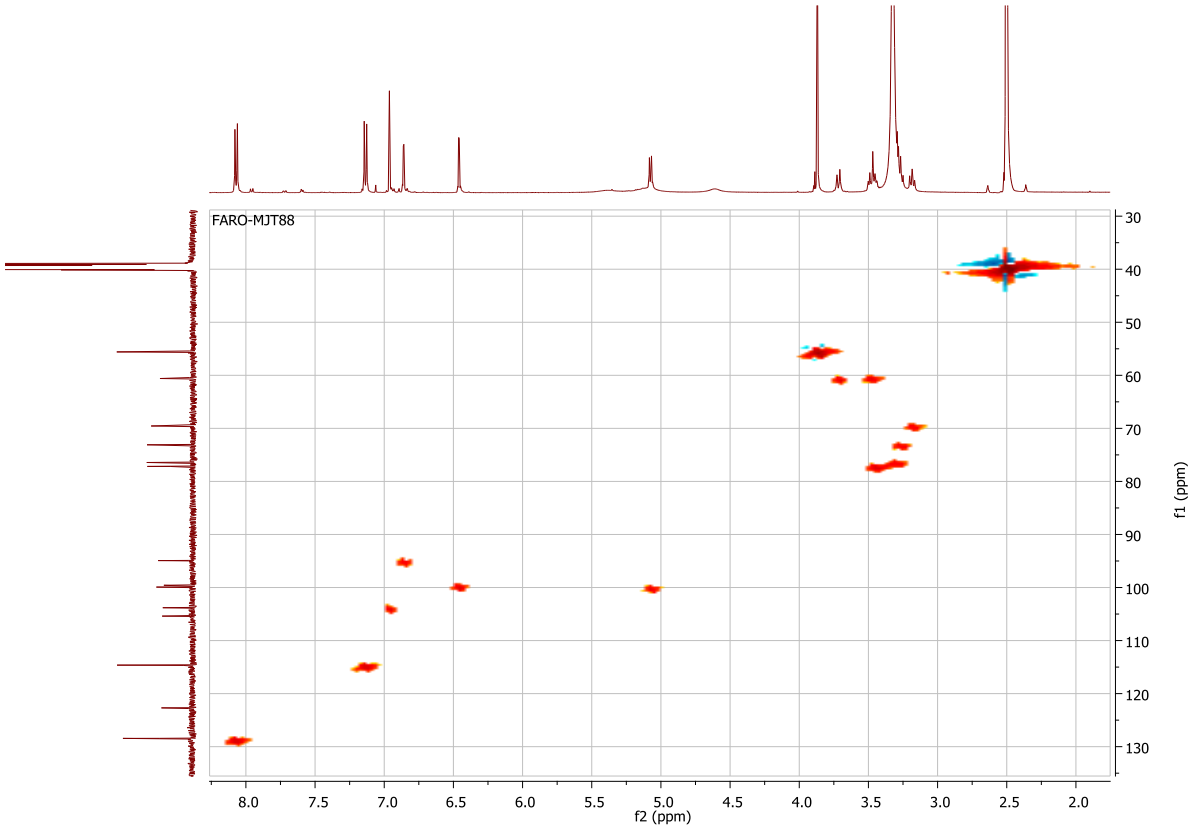

Figure S14: HSQC spectrum (500 MHz: ^{1}H, 125 MHz: ^{13}C, DMSO) of clerodendronone1b

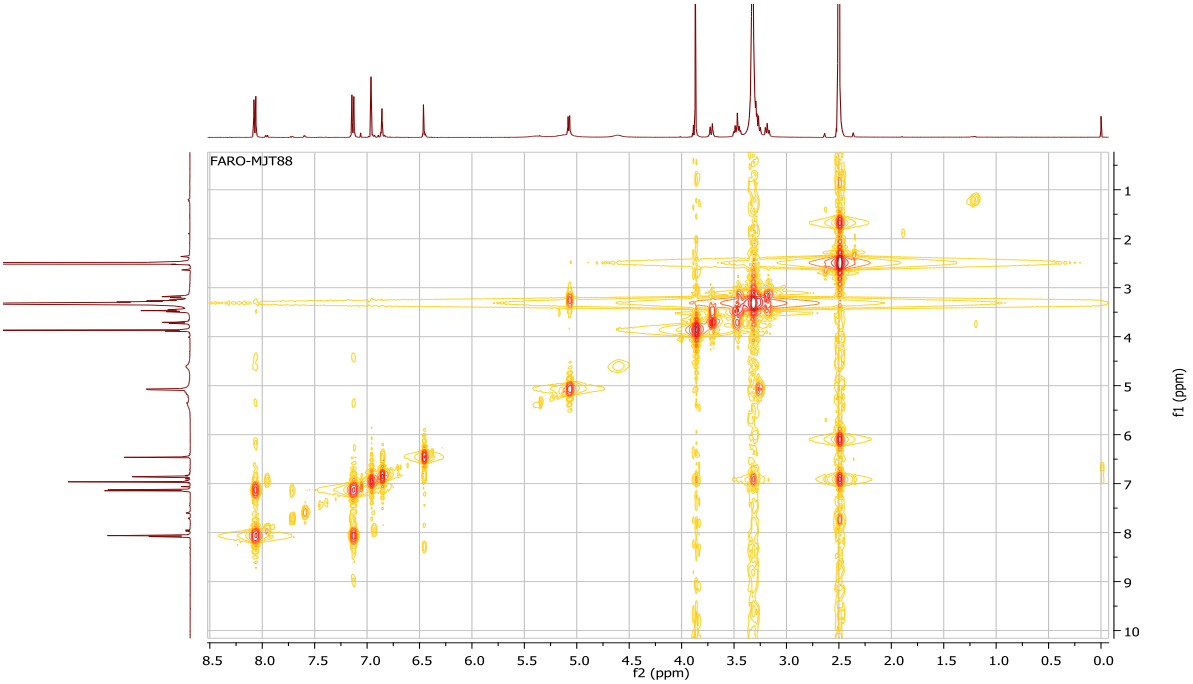

Figure S15: ^{1}H-^{1}H COSY spectrum (500 MHz, DMSO) of clerodendronone1b (4)

Table S3: Results of the antimicrobial activities

Extracts and compounds / **Microbial strain**	**CMEFCY**	**MREFCY**	**EAEFCY**	**HEFCY**	**1**	**3**	**4**	**Amoxicillin**	**Fluconazole**
Staphylococcus*.aureus* ATCC43300	500				>500	>500	>500	1	ND
Staphylococcus. *aureus* NR43003	>500	>500	500	500	>250	>250	>250	32	ND
Staphylococcus *aureus* NR46374	500	500	250	500	>250	>250	62.5	1	ND
Shigella*flexineria*NR518	500	>500	250	500	>250	>250	>250	1	ND
Klebsiella*pneumonia* NR41916	>500	>500	500	>500	>250	>250	>250	128	ND
Klebsiella*pneumonia* ATCC13883	>500	>500	>500	>500	>250	>250	>250	1	ND
Salmonelle*entérica*NR13555	500	500	125	500	>250	>250	>250	128	ND
Salmonelle*entérica*NR4311	>500	>500	>500	>500	>250	>250	>250	2	ND
Pseudomonas*aeruginosaPM601*	500	>500	125	>500	>250	>250	250	2	ND
Candida*krusei*6258	>500	>500	>500	>500	>250	>250	>250	ND	32
Candida*albicans*ATCC L 26	>500	>500	>500	>500	>250	>250	>250	ND	32
Candida*parapsilosis*ATCC 22019	>500	>500	>500	>500	>250	>250	>250	ND	16