

Supplementary materials

Communication

Antioxidants from the Brown Alga *Dictyopteris undulata*

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Table S1: ¹H and ¹³C NMR spectroscopic data for chromazonarol (3),
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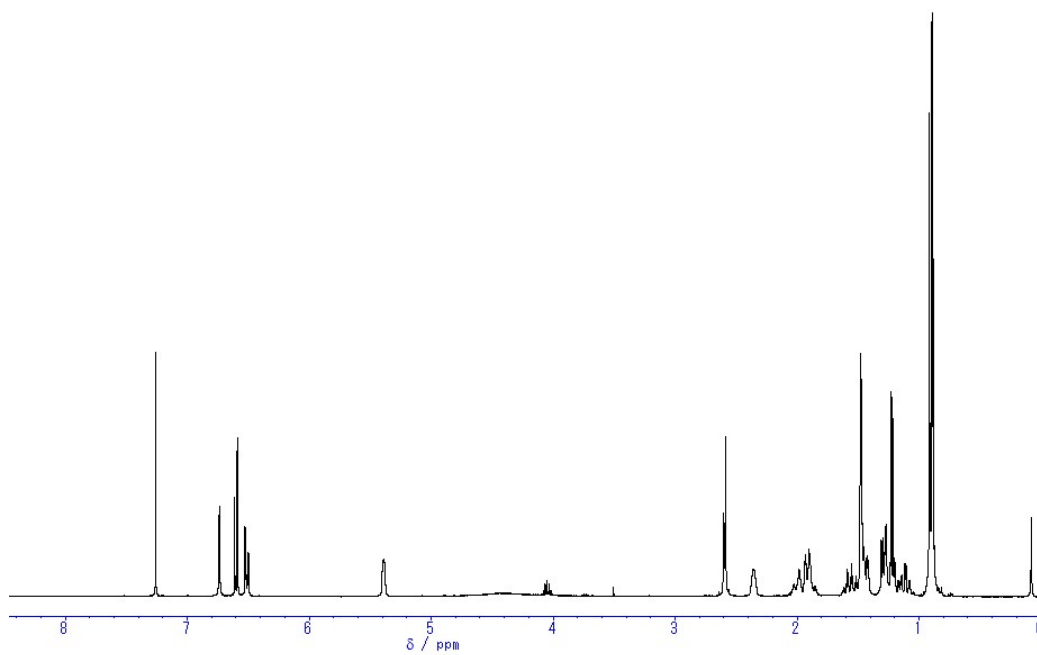


Figure S1: ^1H NMR spectrum of isozonarol in CDCl_3

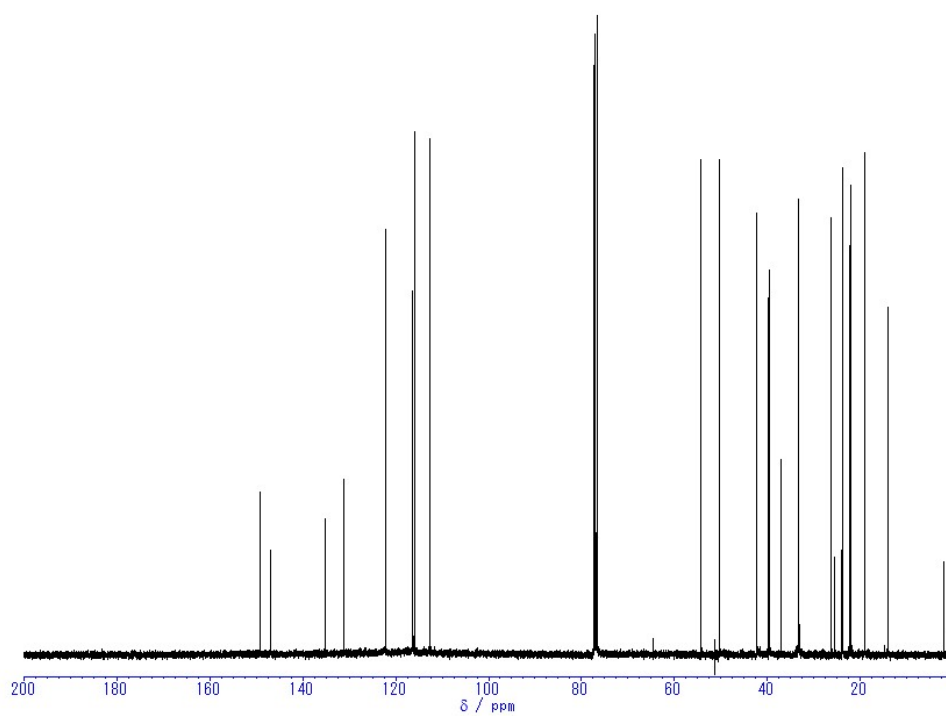


Figure S2: ^{13}C NMR spectrum of isozonarol in CDCl_3

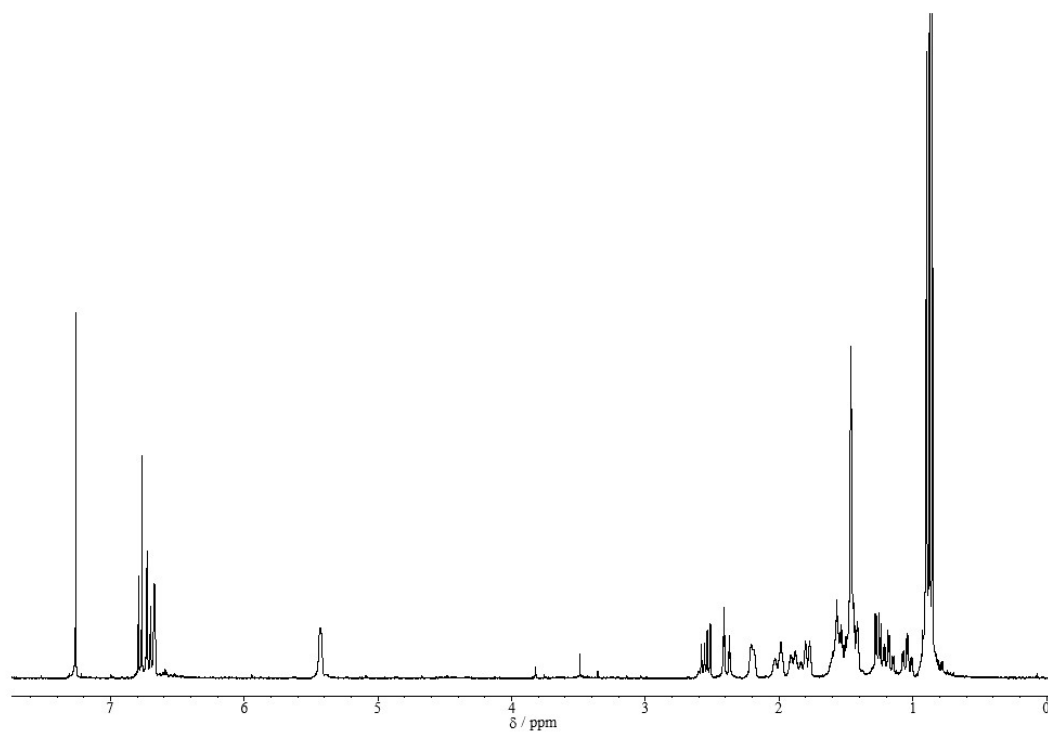


Figure S3: ^1H NMR spectrum of isozonarone in CDCl_3

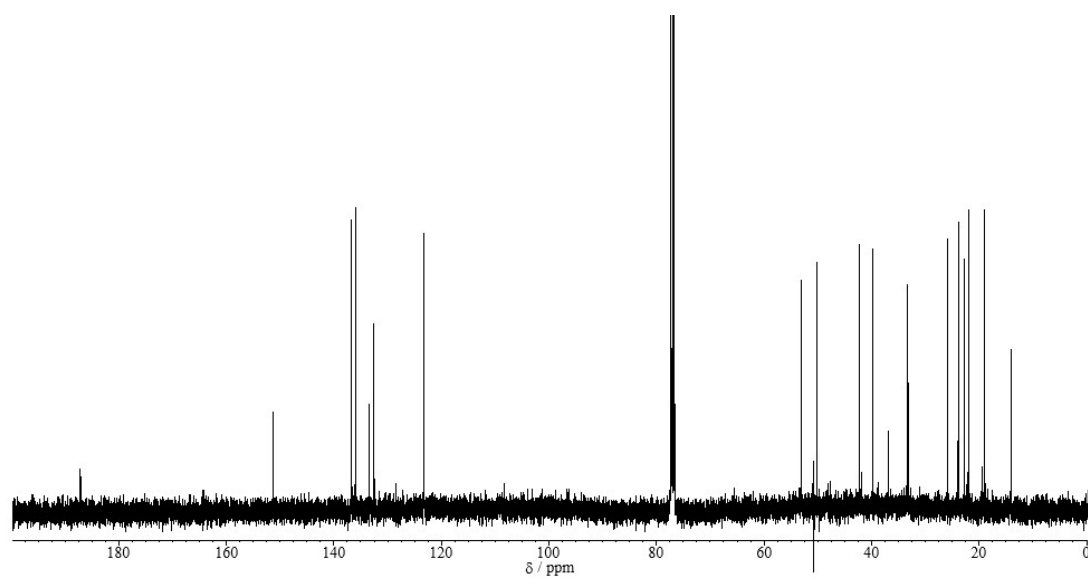


Figure S4: ^{13}C NMR spectrum of isozonarone in CDCl_3

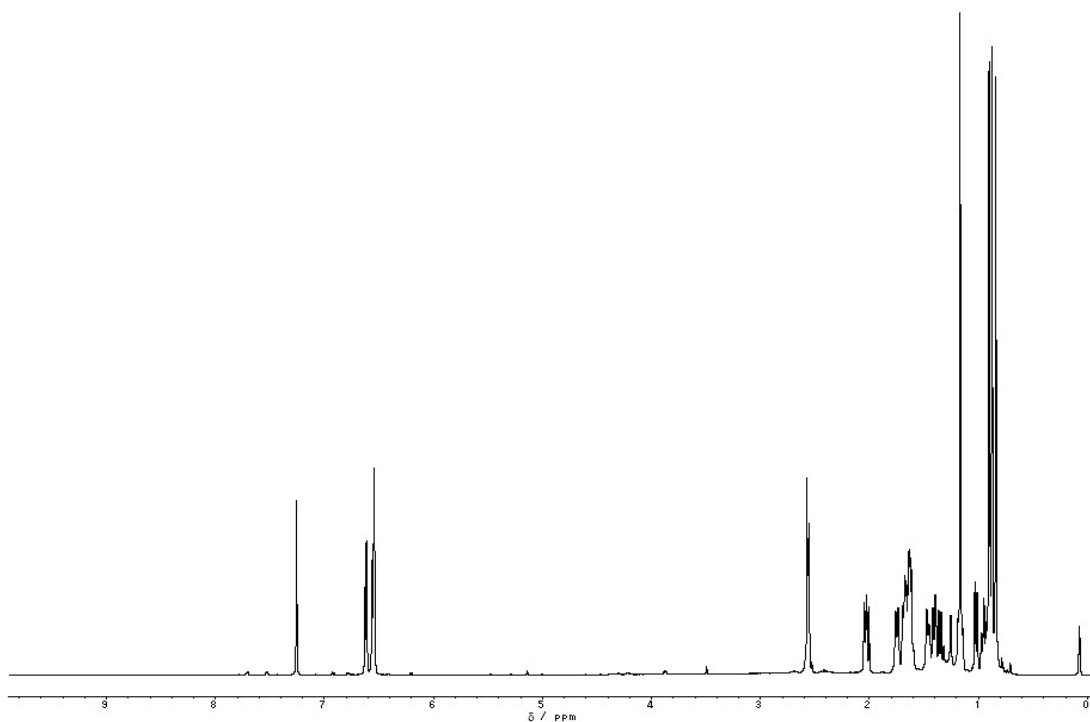


Figure S5: ^1H NMR spectrum of chromazonarol (**3**) in CDCl_3

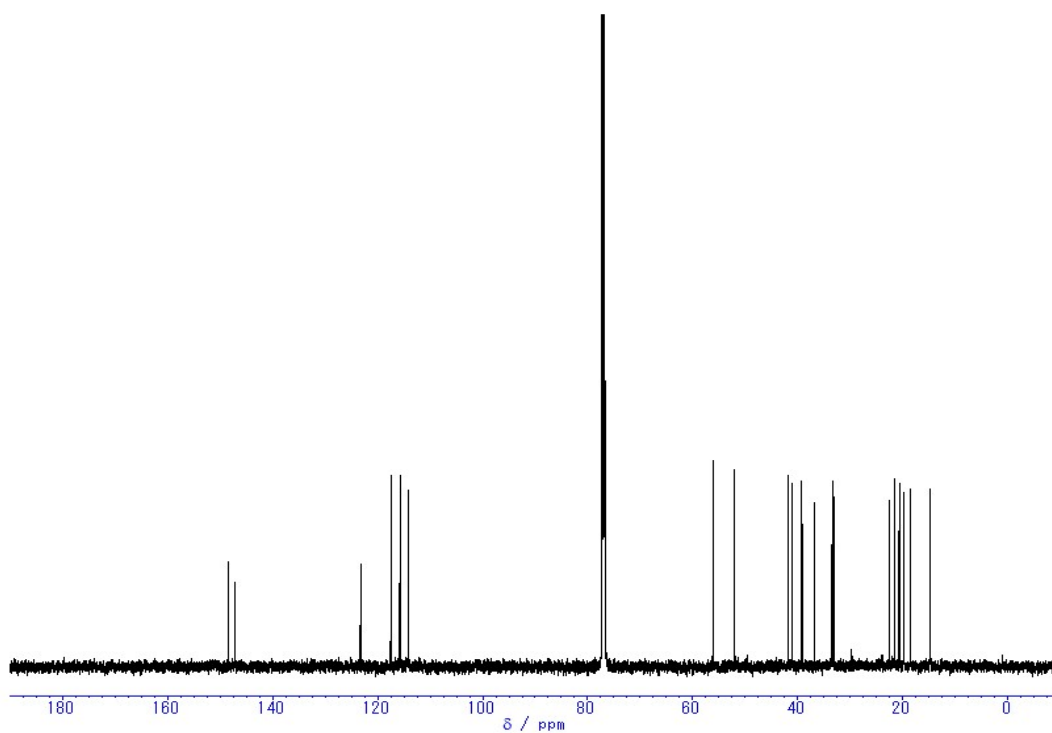


Figure S6: ^{13}C NMR spectrum of chromazonarol (**3**) in CDCl_3

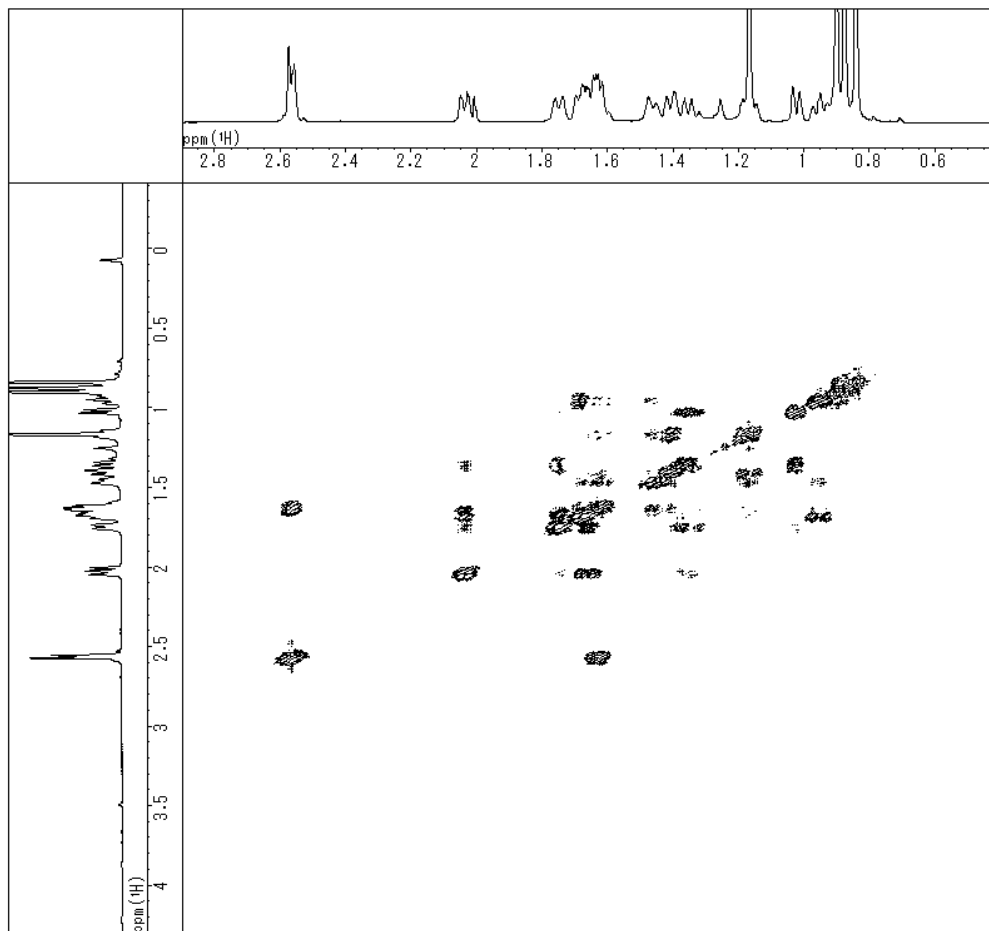


Figure S7: COSY spectrum of chromazonarol (3) in CDCl₃

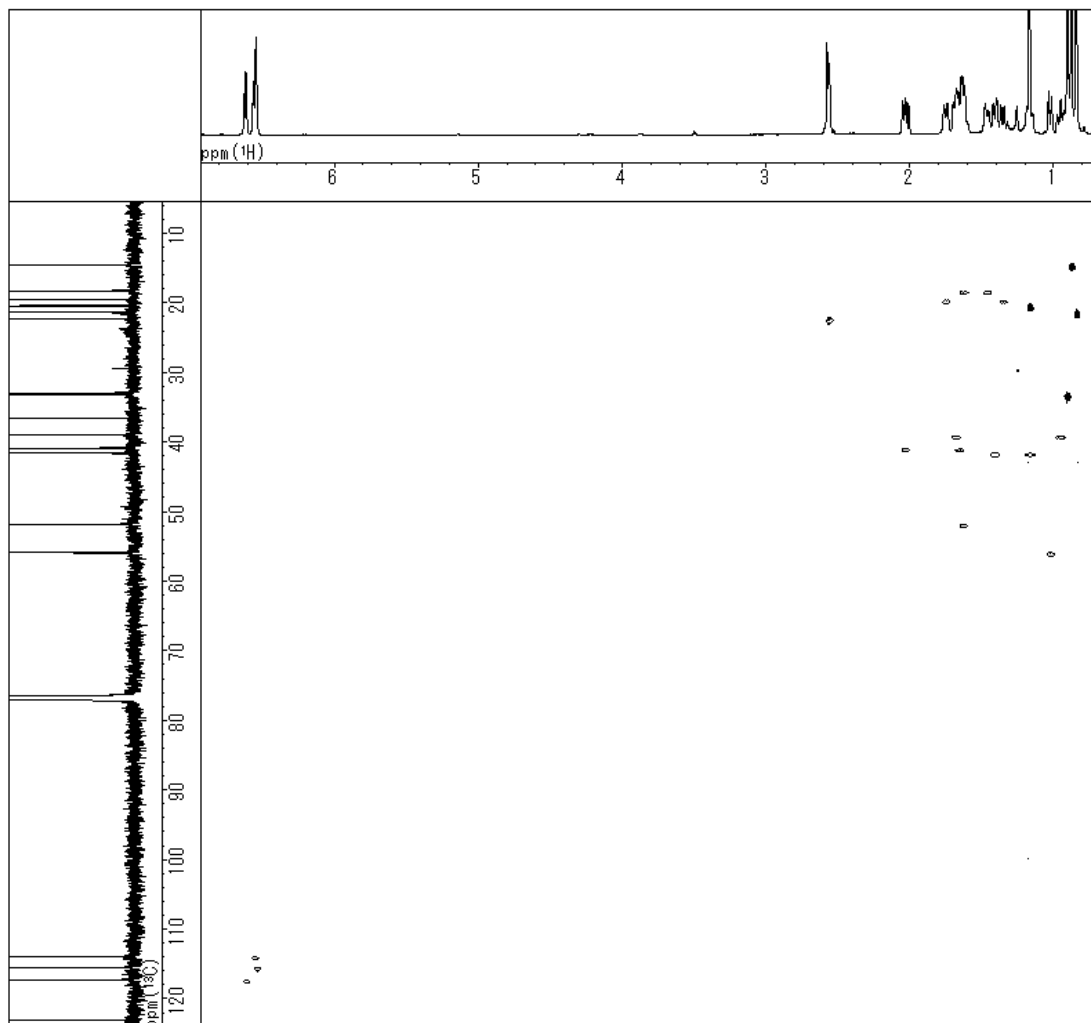


Figure S8: HSQC spectrum of chromazonarol (3) in CDCl₃

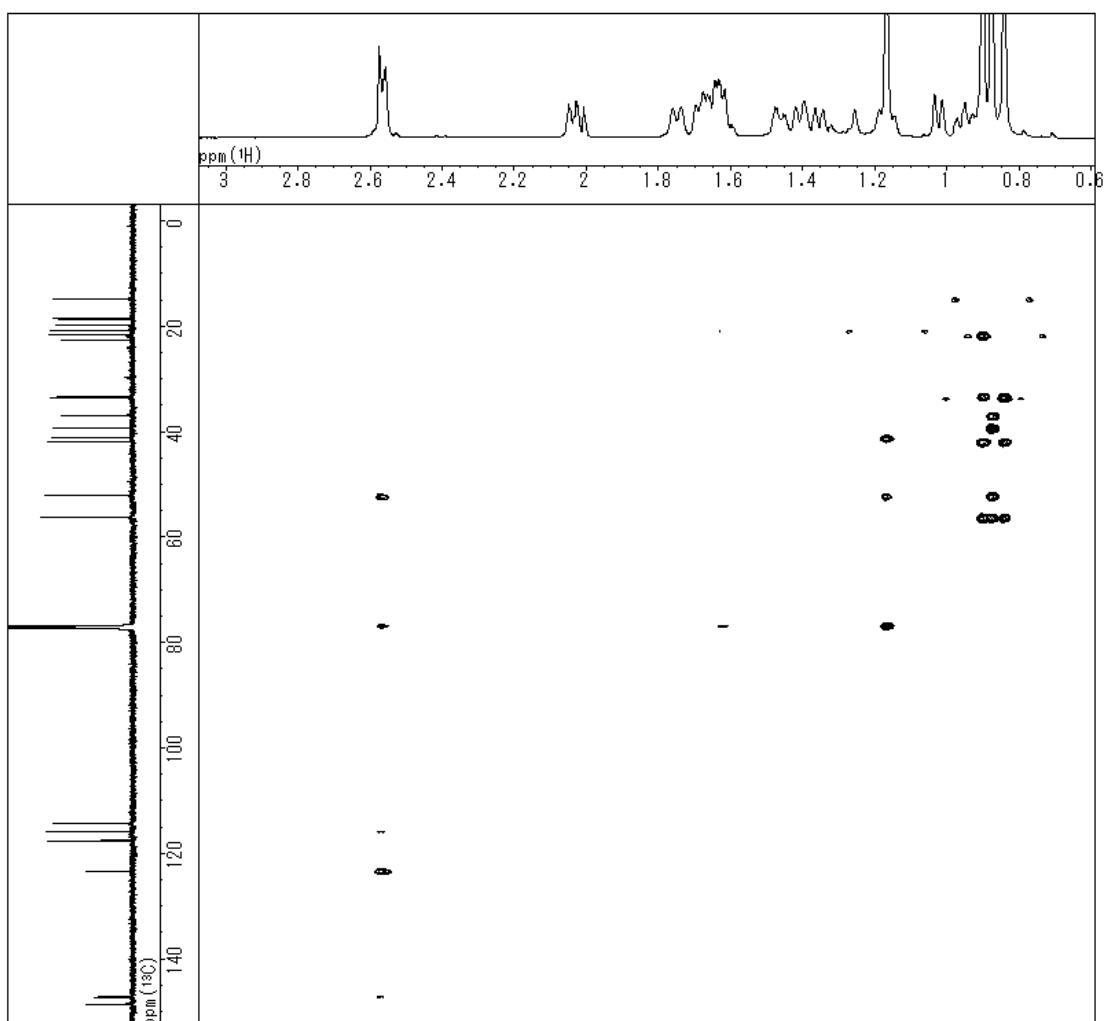


Figure S9: HMBC spectrum of chromazonarol (3) in CDCl₃

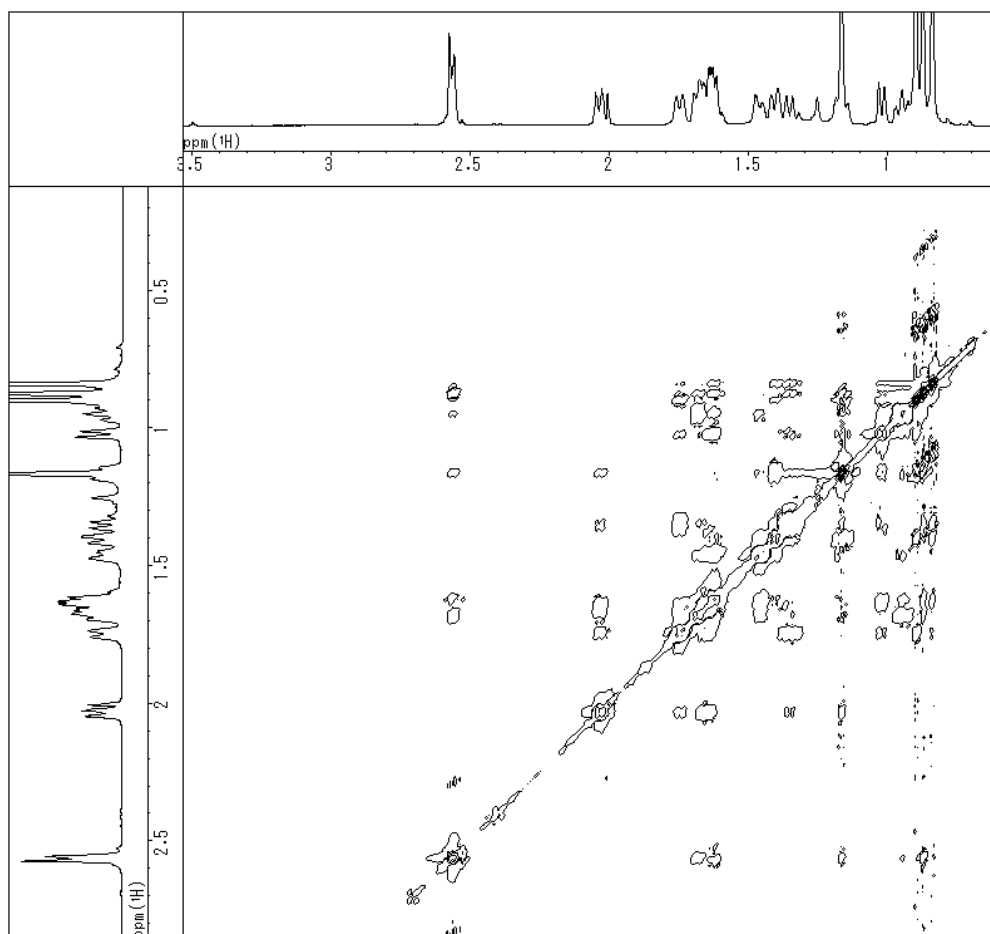


Figure S10: NOESY spectrum of chromazonarol (**3**) in CDCl₃

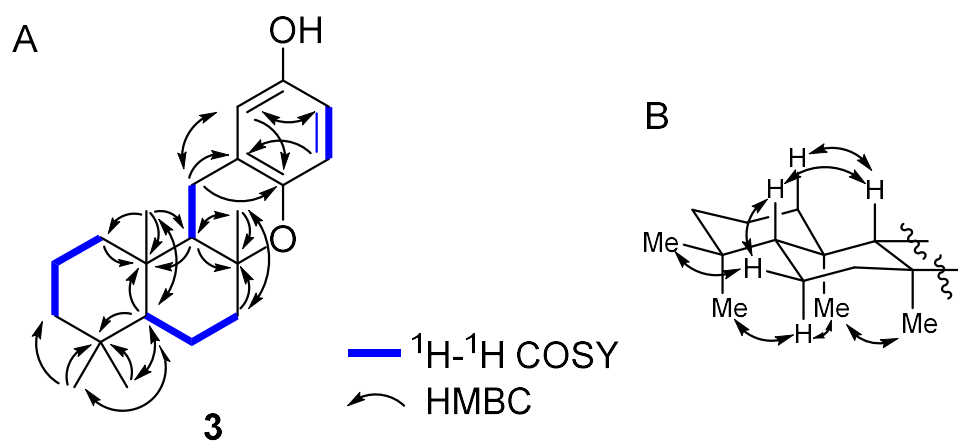


Figure S11: Key COSY, HMBC (A) and NOESY (B) correlations of chromazonarol (**3**)

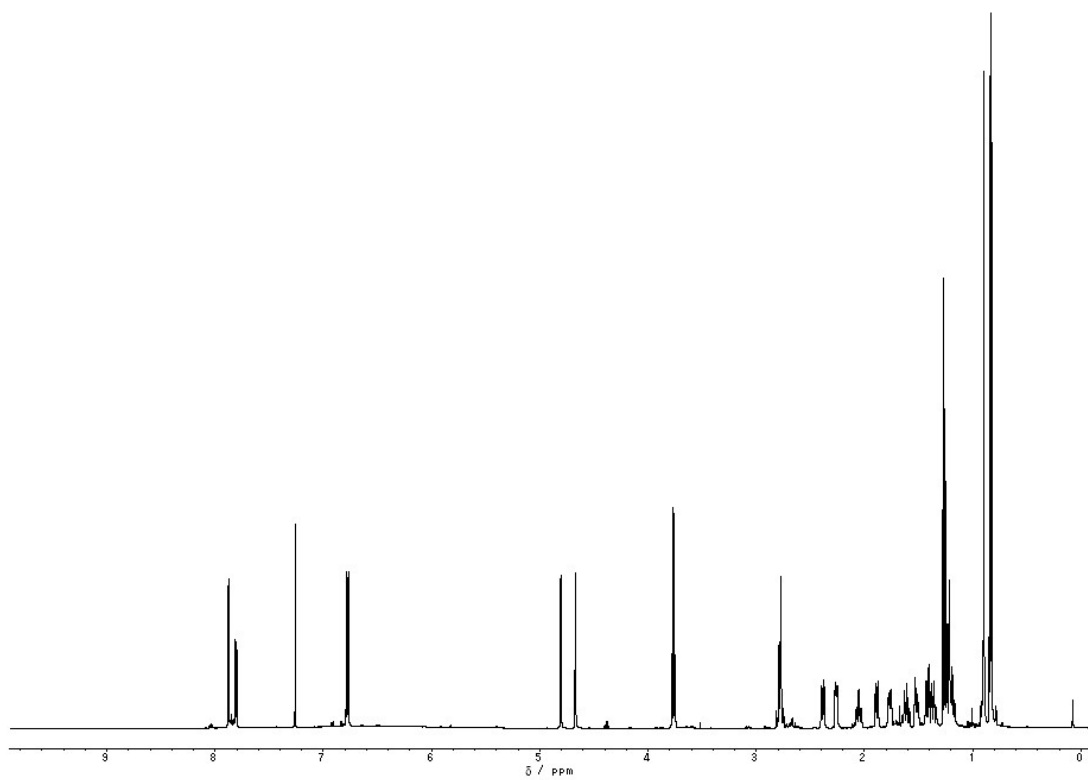


Figure S12: ^1H NMR spectrum of zonoaric acid (**4**) in CDCl_3

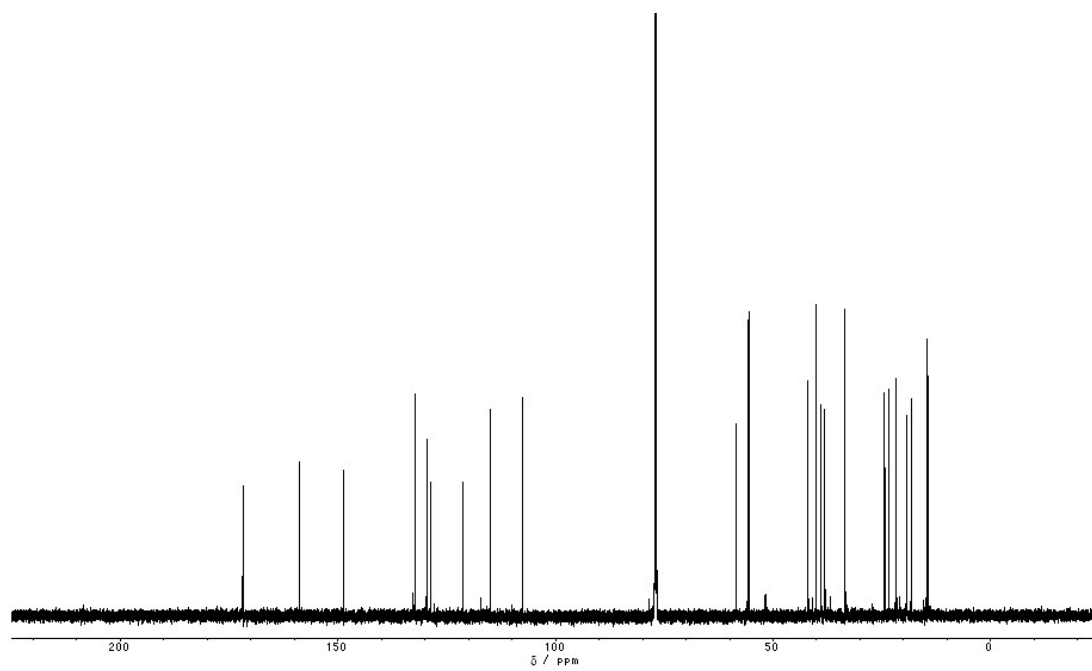


Figure S13: ^{13}C NMR spectrum of zonoaric acid (**4**) in CDCl_3

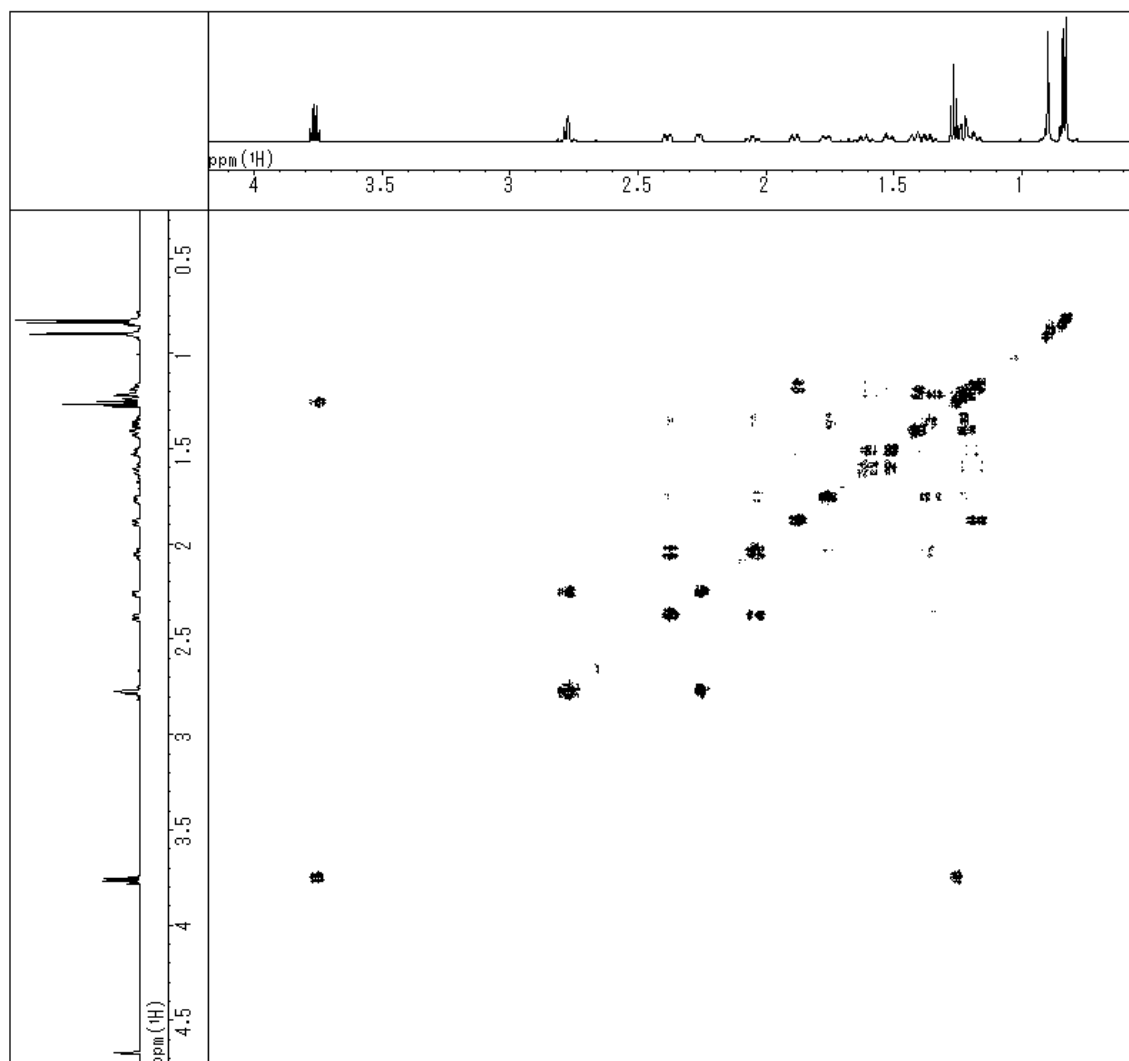


Figure S14: COSY spectrum of zonaric acid (4) in CDCl₃

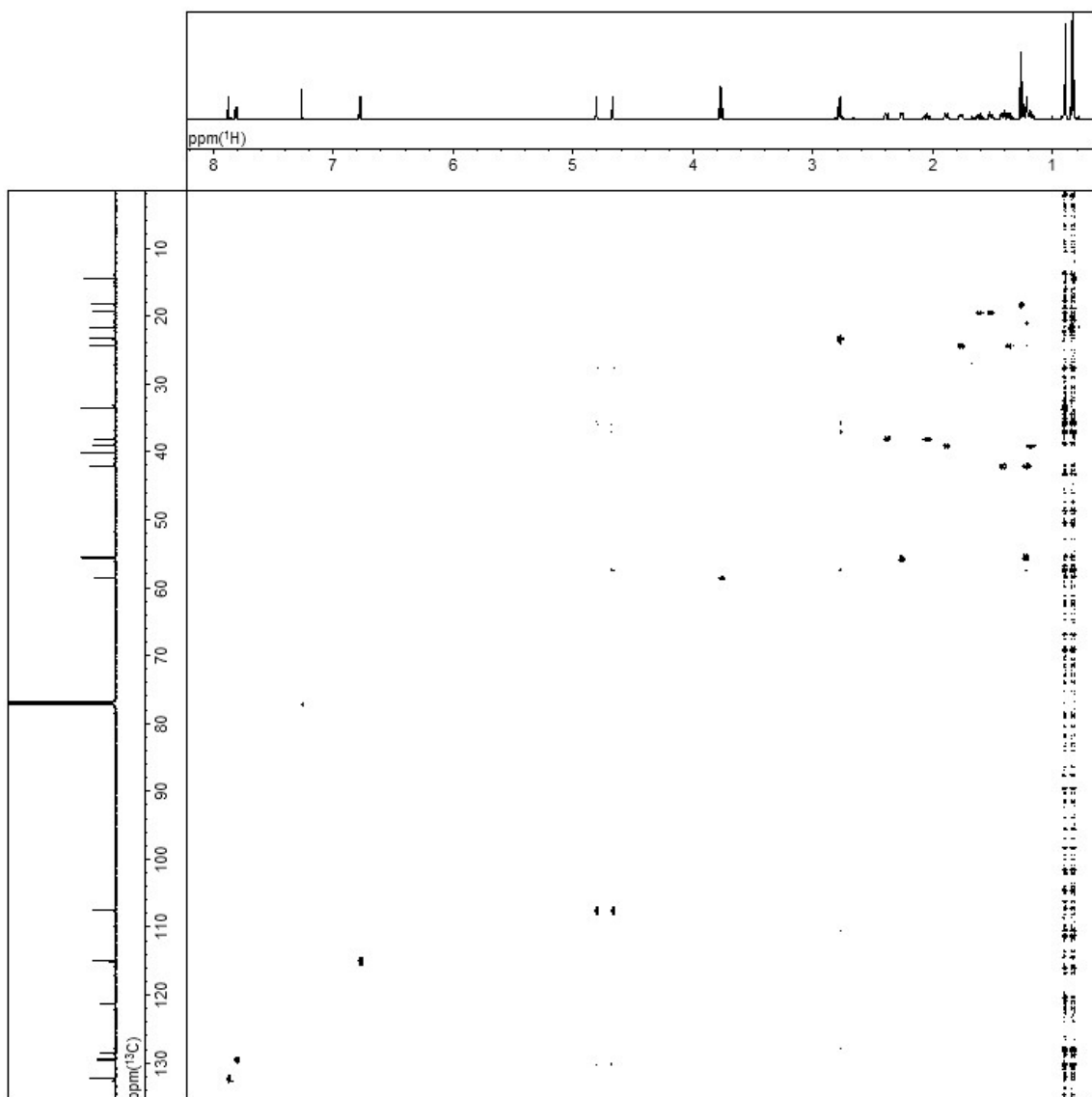


Figure S15: HSQC spectrum of zonoic acid (**4**) in CDCl₃

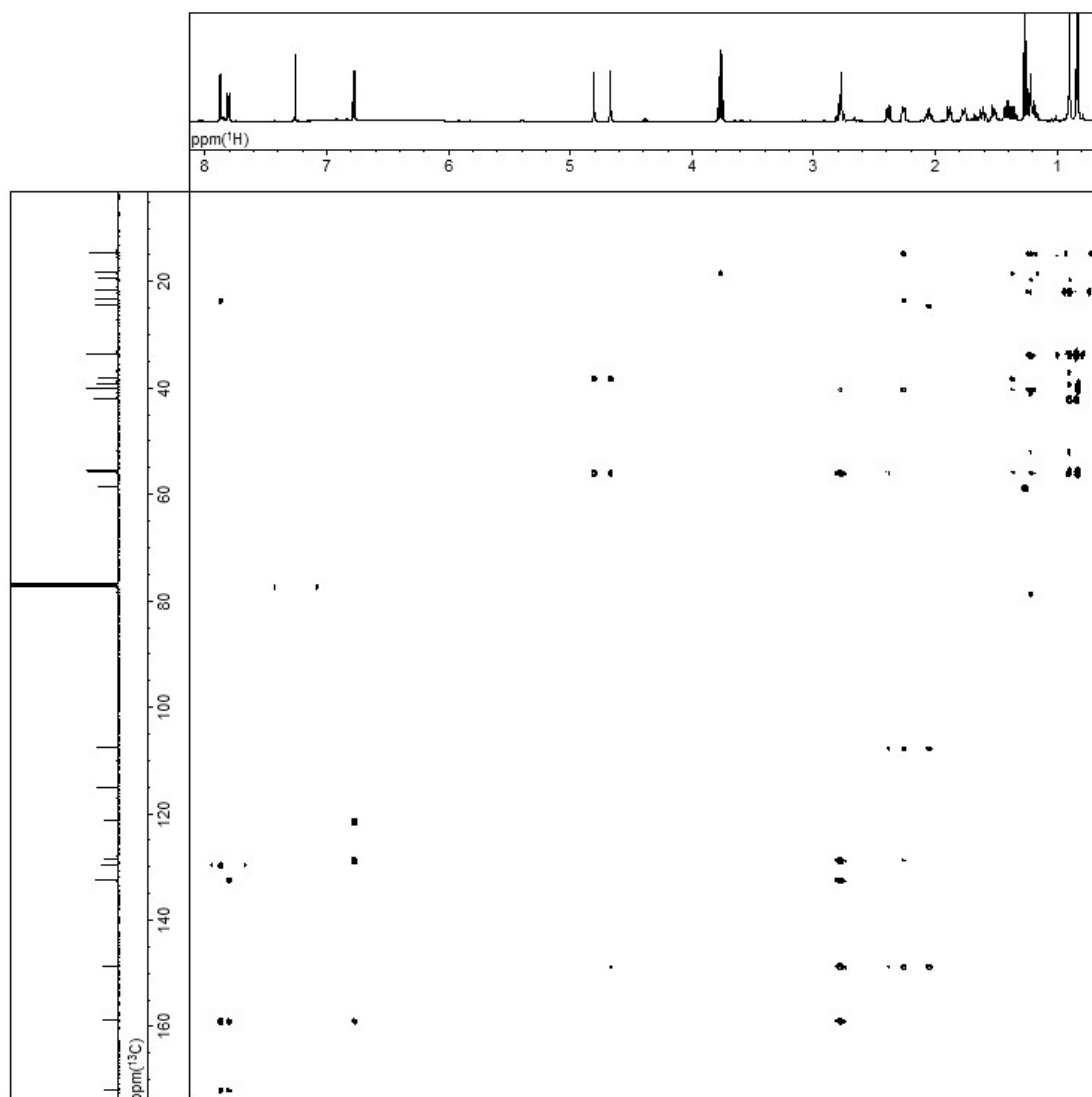


Figure S16: HMBC spectrum of zonaroic acid (4) in CDCl₃

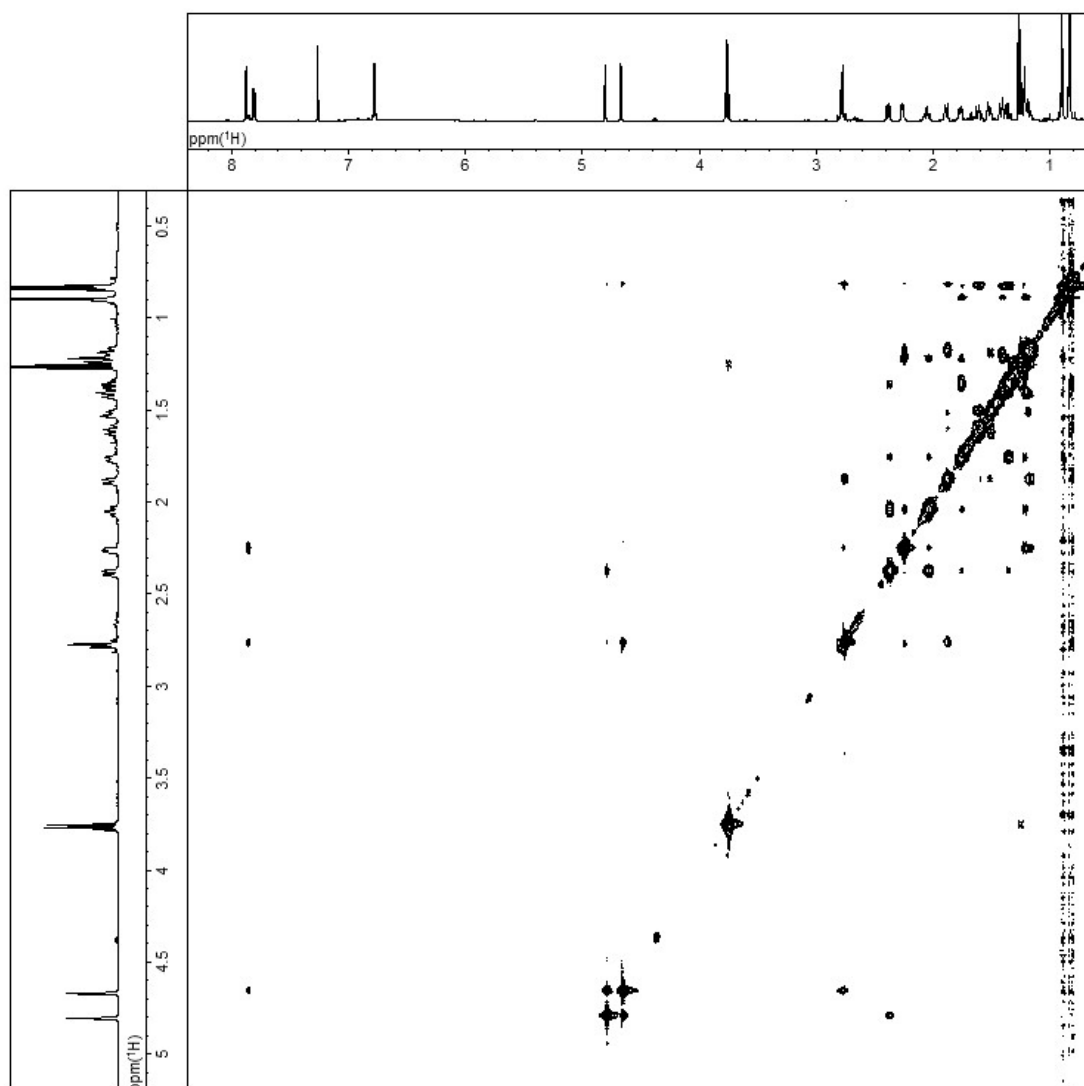


Figure S17: NOESY spectrum of zonaroic acid (4) in CDCl₃

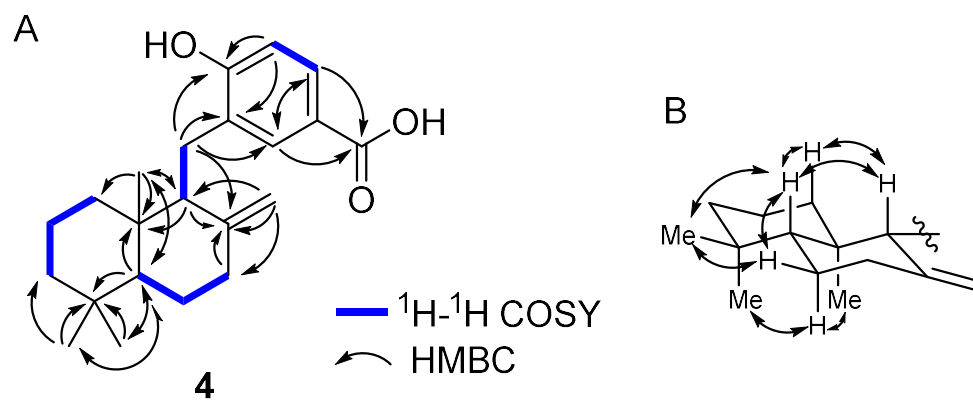


Figure S18: Key COSY, HMBC (A) and NOESY (B) correlations of zonaroic acid (**4**)

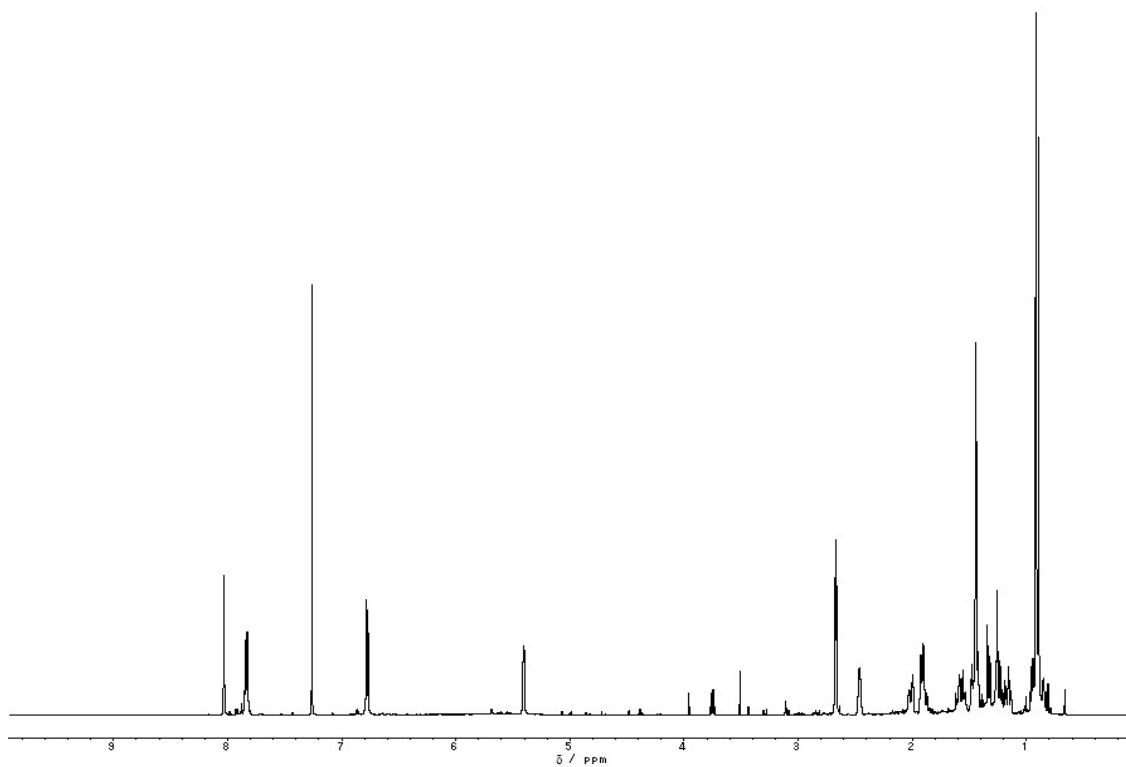


Figure S19: ^1H NMR spectrum of isozonaroic acid (**5**) in CDCl_3

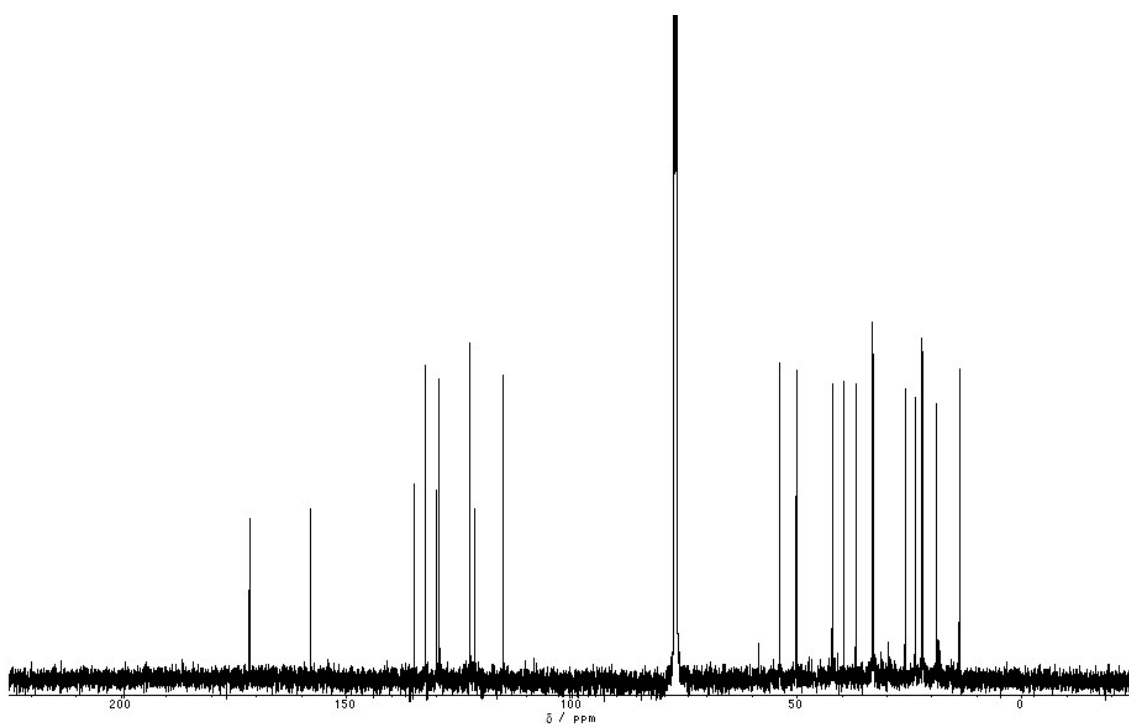


Figure S20: ^{13}C NMR spectrum of isozonaroic acid (**5**) in CDCl_3

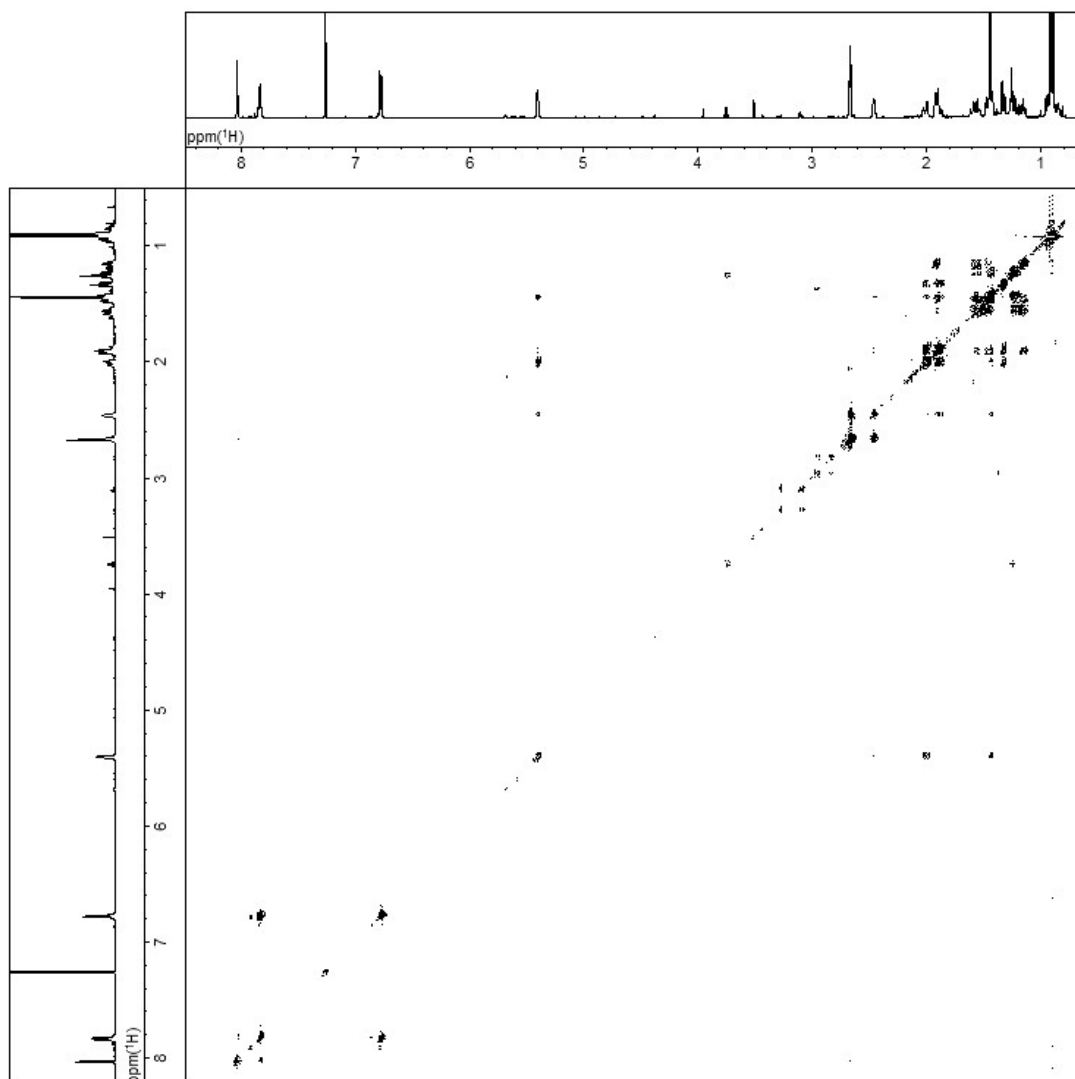


Figure S21: COSY spectrum of isozonaroic acid (5) CDCl₃

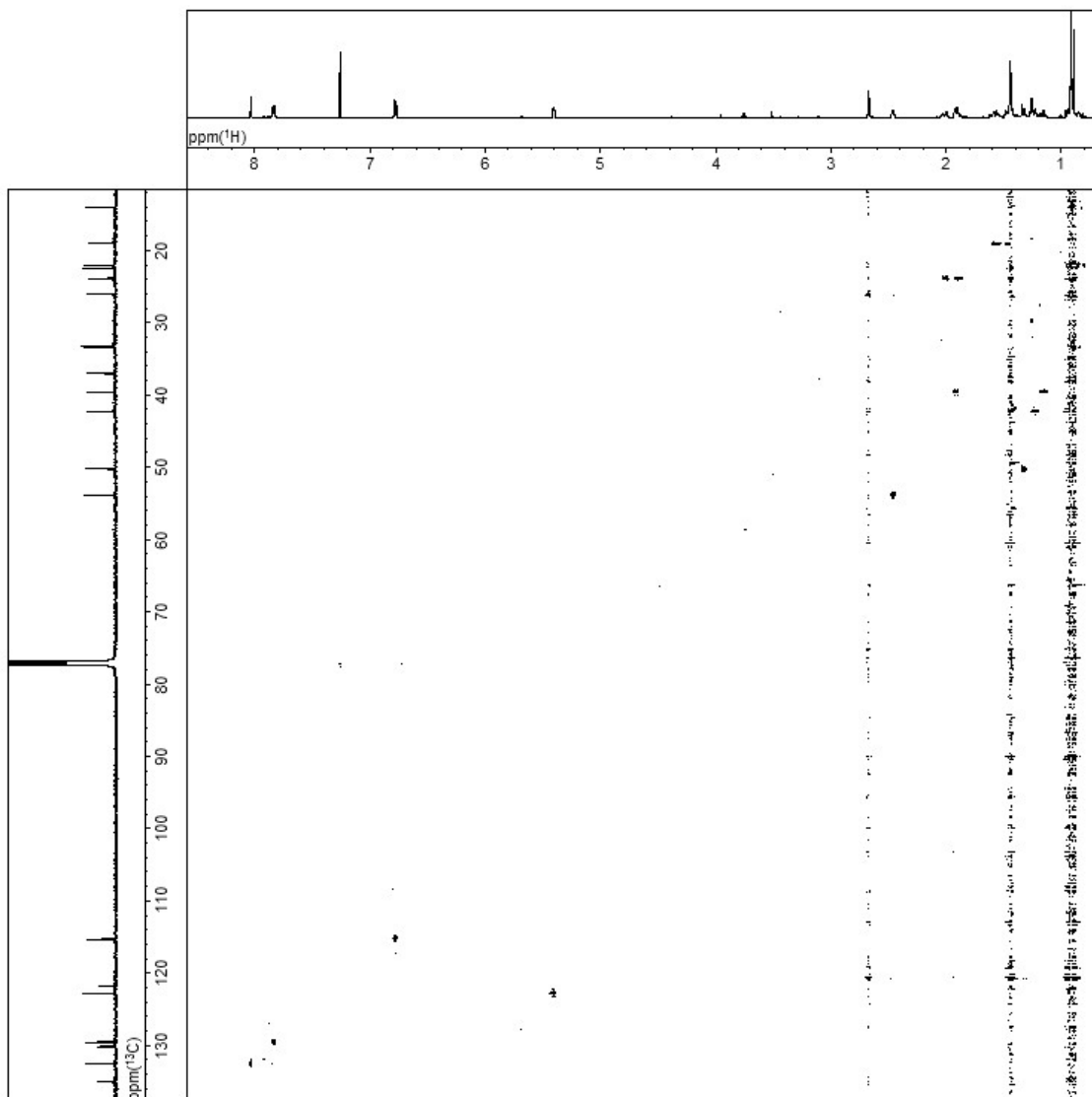


Figure S22: HSQC spectrum of isozonaroic acid (5) in CDCl₃

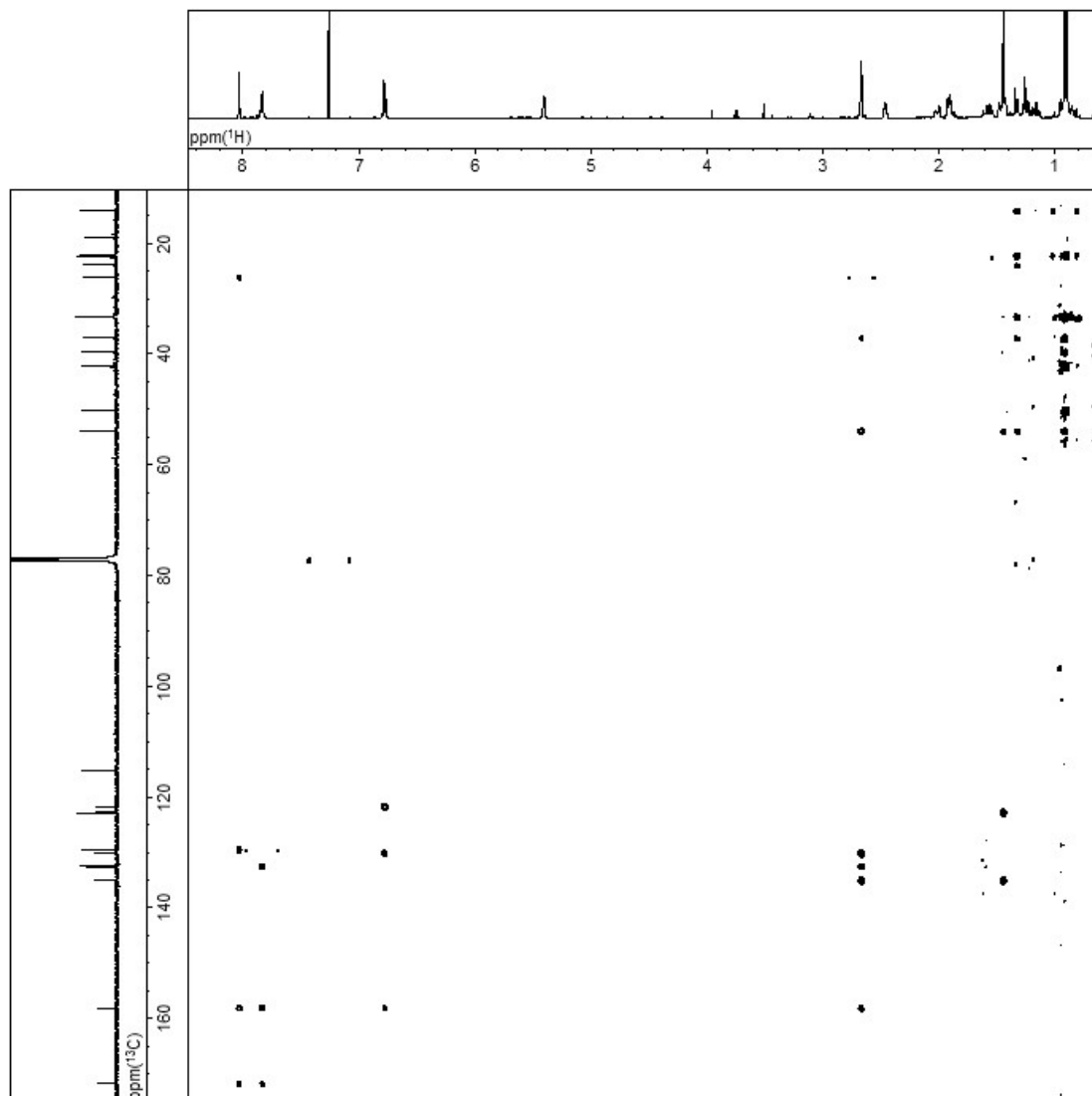


Figure S23: HMBC spectrum of isozonaroic acid (5) in CDCl₃

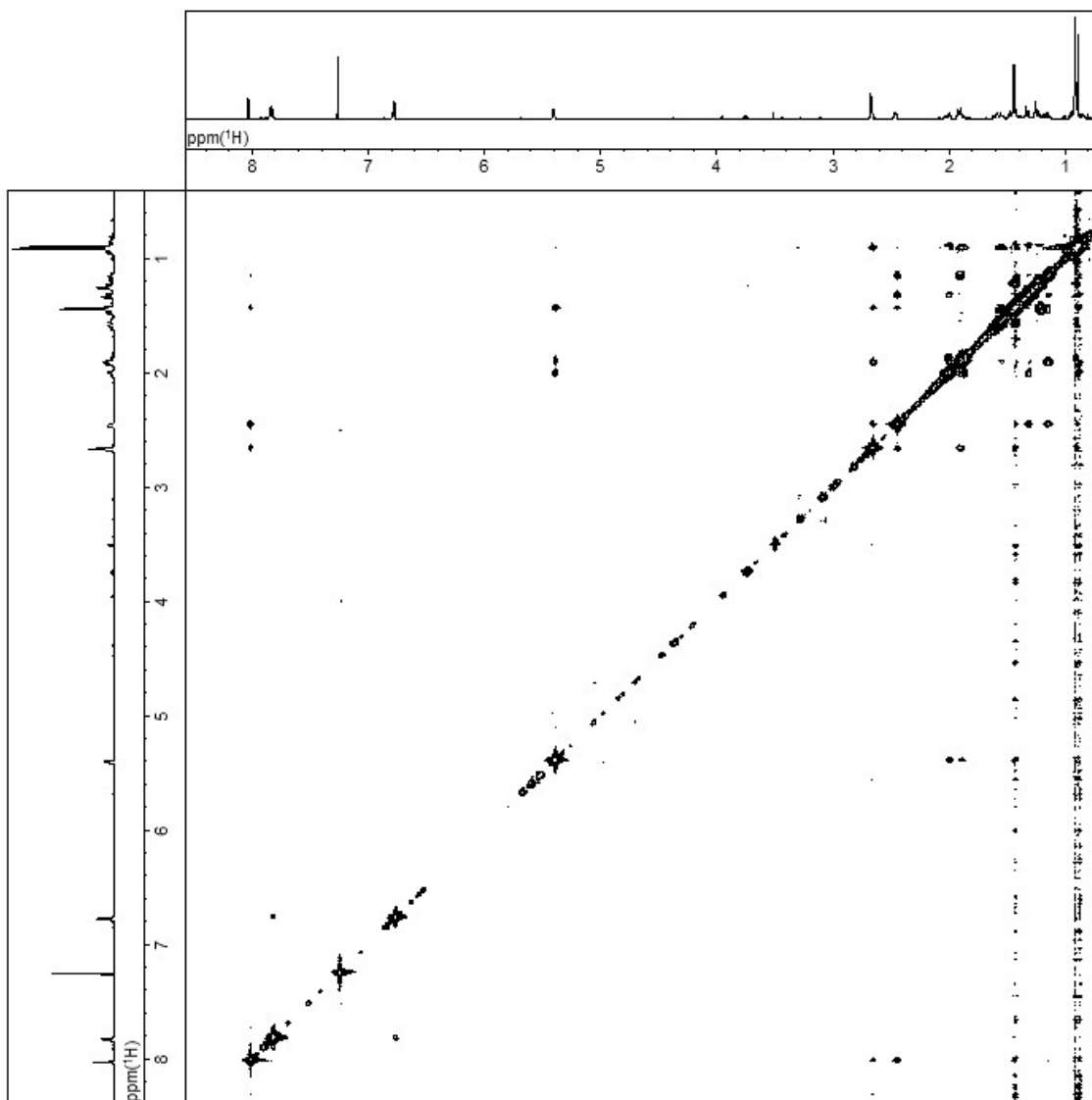


Figure S24: NOESY spectrum of isozonaroic acid (**5**) in CDCl₃

Table S1: ^1H and ^{13}C NMR spectroscopic data for chromazonarol (**3**), zonaroic acid (**4**) and isozonaroic acid (**5**) in CDCl_3

Carbon Number	Compound 3		Compound 4		Compound 5	
	^{13}C	^1H	^{13}C	^1H	^{13}C	^1H
1	39.2	0.95, 1.70	39.1	1.20, 1.88	39.5	1.16, 1.91
2	18.5	1.46, 1.63	19.4	1.61, 1.52	18.9	1.47, 1.57
3	41.8	1.17, 1.40	42.1	1.41, 1.24	42.1	1.23, 1.43
4	33.2		33.6		33.1	
5	56.1	1.02	55.5	1.21	50.1	1.33
6	19.7	1.35, 1.74	24.4	1.36, 1.76	23.8	1.90, 2.00
7	41.1	1.66, 2.03	38.1	2.05, 2.38	122.7	5.41
8	76.7		148.7		135.0	
9	52.1	1.62	55.8	2.26	53.8	2.46
10	36.8		40.1		36.9	
11	22.5	2.56	23.4	2.78	26.0	2.67
12	20.7	1.17	107.6	4.67, 4.81	22.4	1.44
13	21.6	0.84	21.7	0.84	22.0	0.92
14	33.4	0.90	33.6	0.90	33.2	0.89
15	14.8	0.88	14.5	0.83	13.9	0.91
1'	123.3		128.6		130.0	
2'	115.8	6.55	158.8		158.0	
3'	148.5		115.0	6.77	115.2	6.78
4'	114.2	6.56	129.5	7.81	129.4	7.83
5'	117.5	6.62	121.3		121.7	
6'	147.2		132.3	7.87	132.5	8.03
7'			171.9		171.6	