Supporting Materials

Curvulin and Phaeosphaeride A from *Paraphoma* sp. VIZR 1.46 Isolated from *Cirsium arvense* as Potential Herbicides

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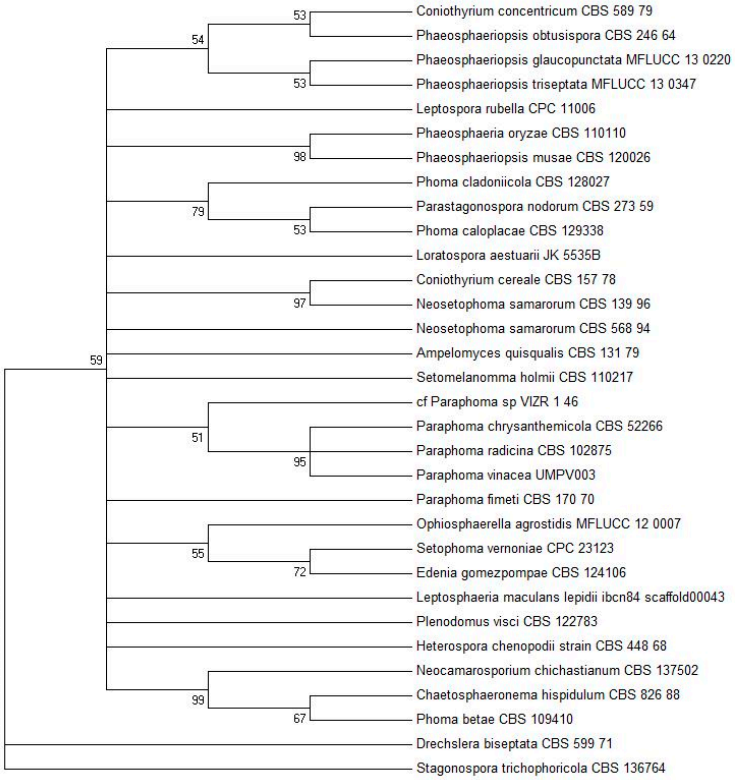

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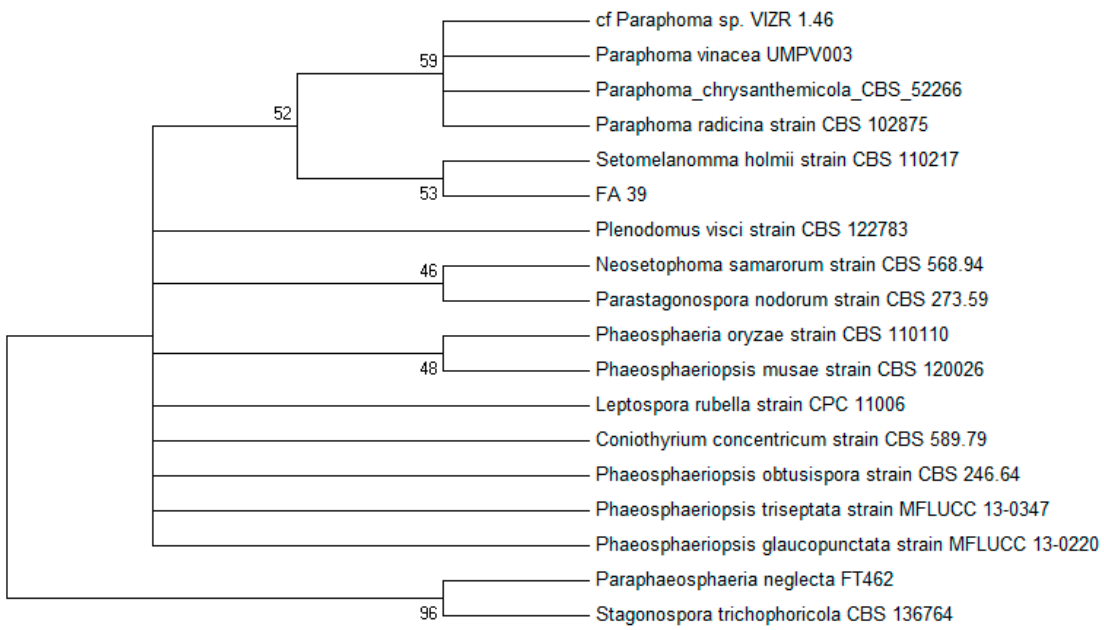

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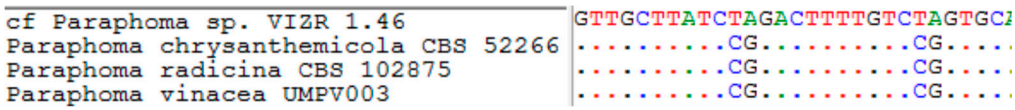

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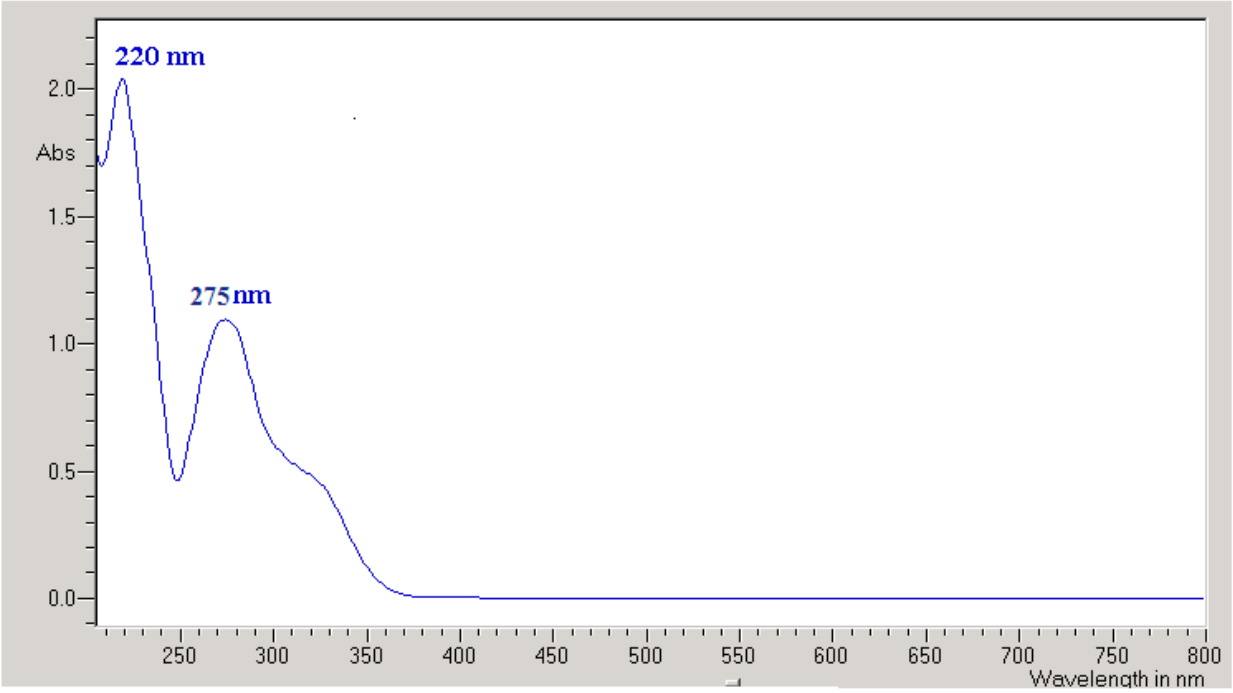


Figure S4 – UV spectrum of curvulin, recorded in MeCN

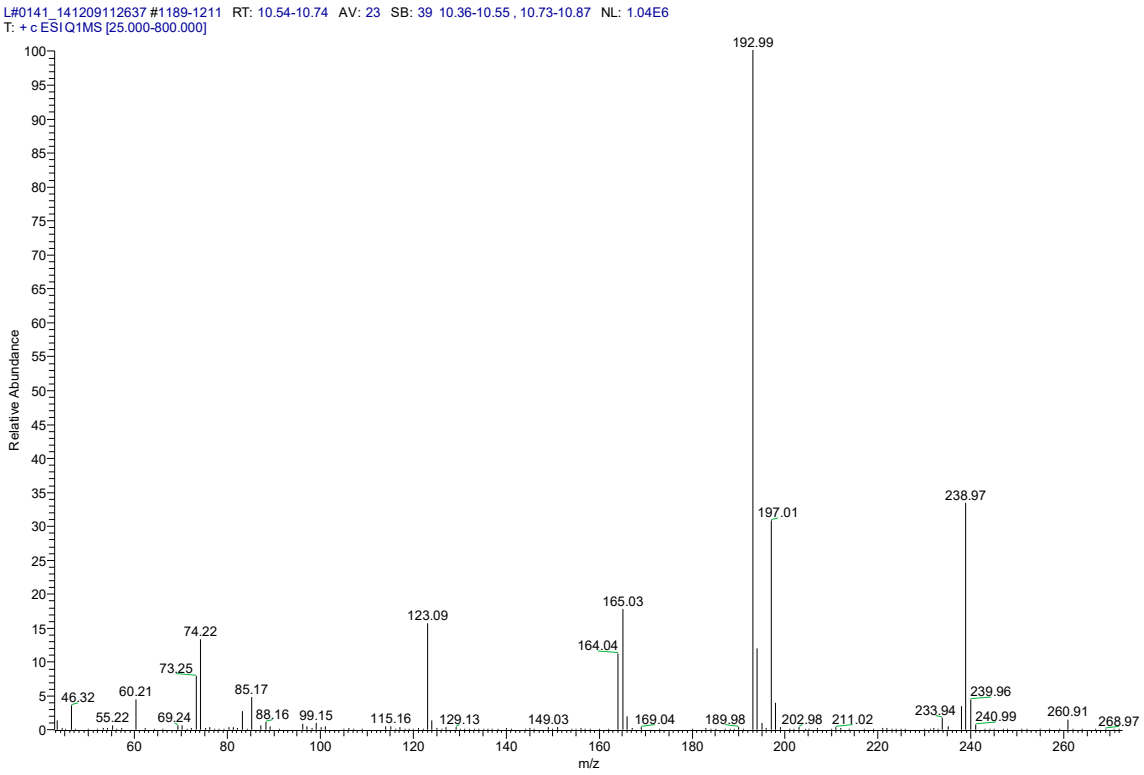


Figure S5 – ESI Mass spectrum of curvulin, recorded in positive mode

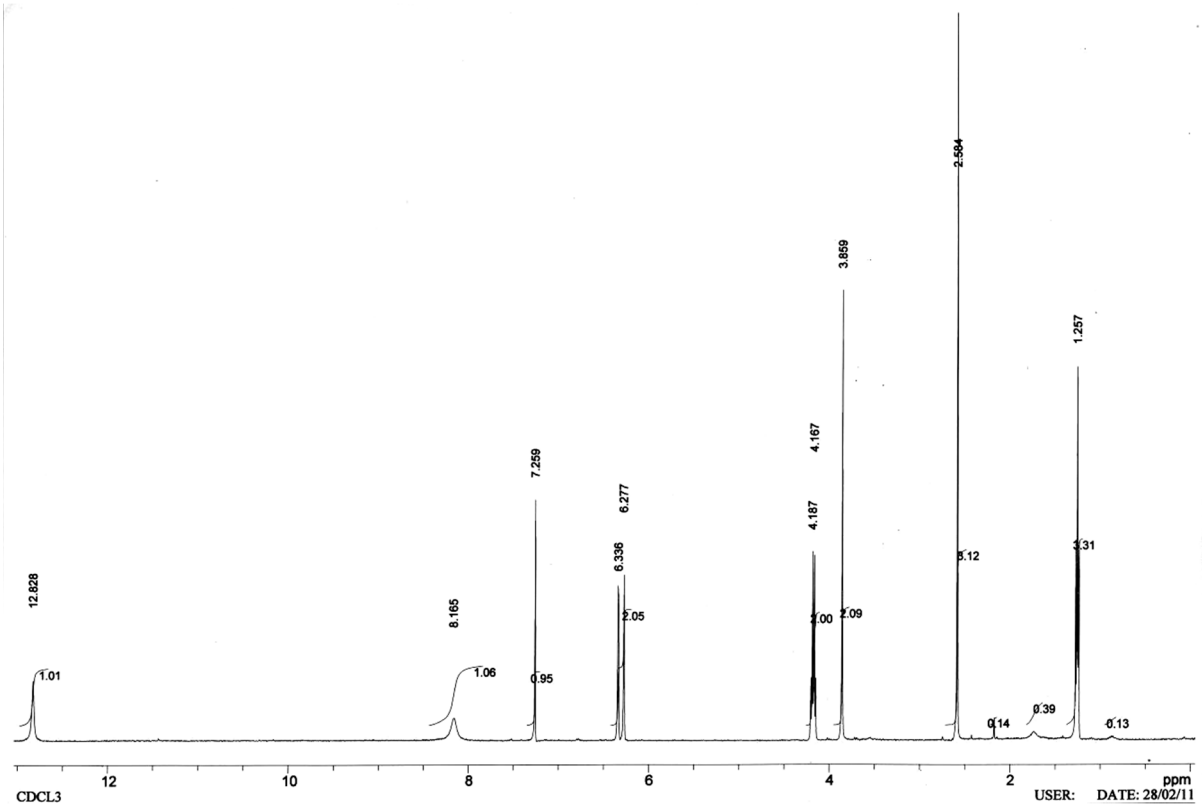


Figure S6 - ^{1}H-NMR spectrum of curvulin ($CDCl_3$, 400 MHz)

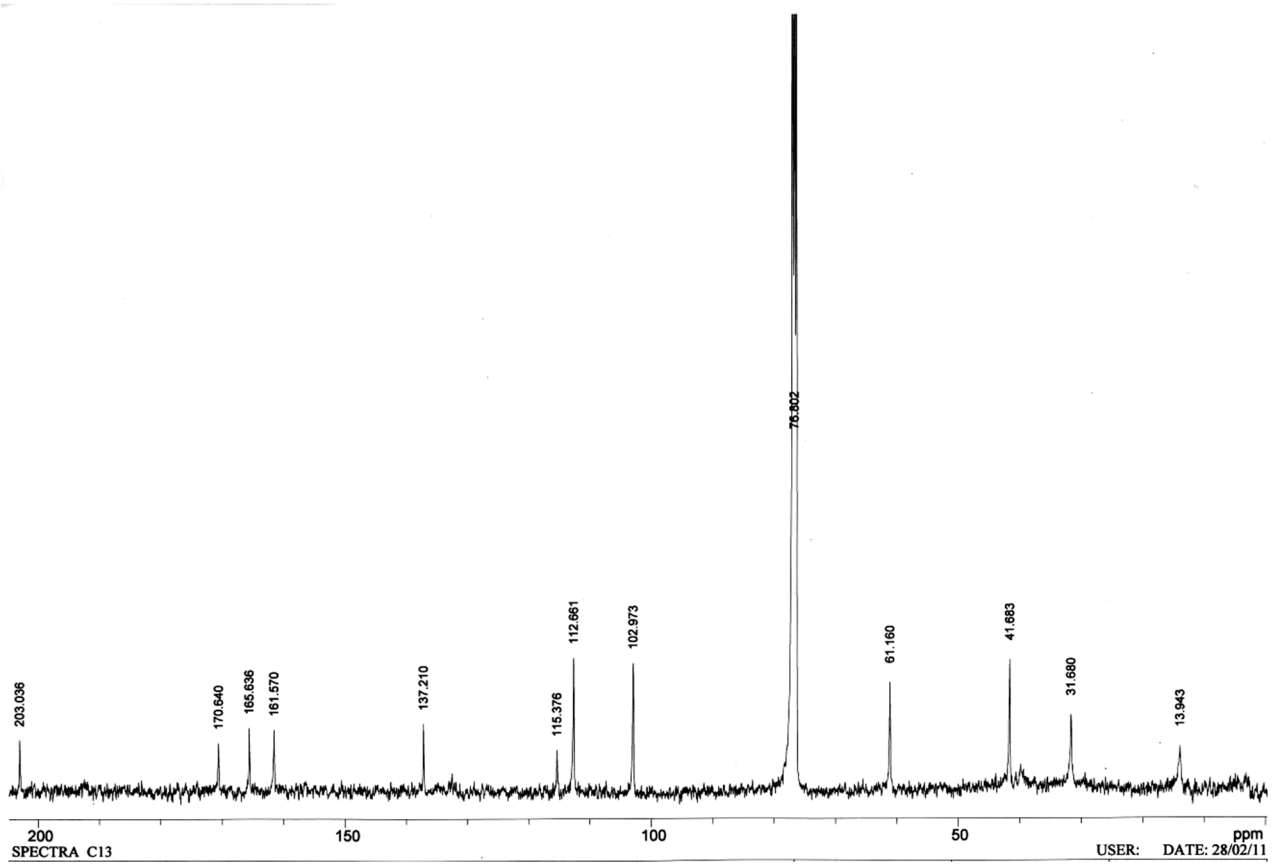


Figure S7 – ^{13}C-NMR spectrum of curvulin ($CDCl_3$, 100 MHz)

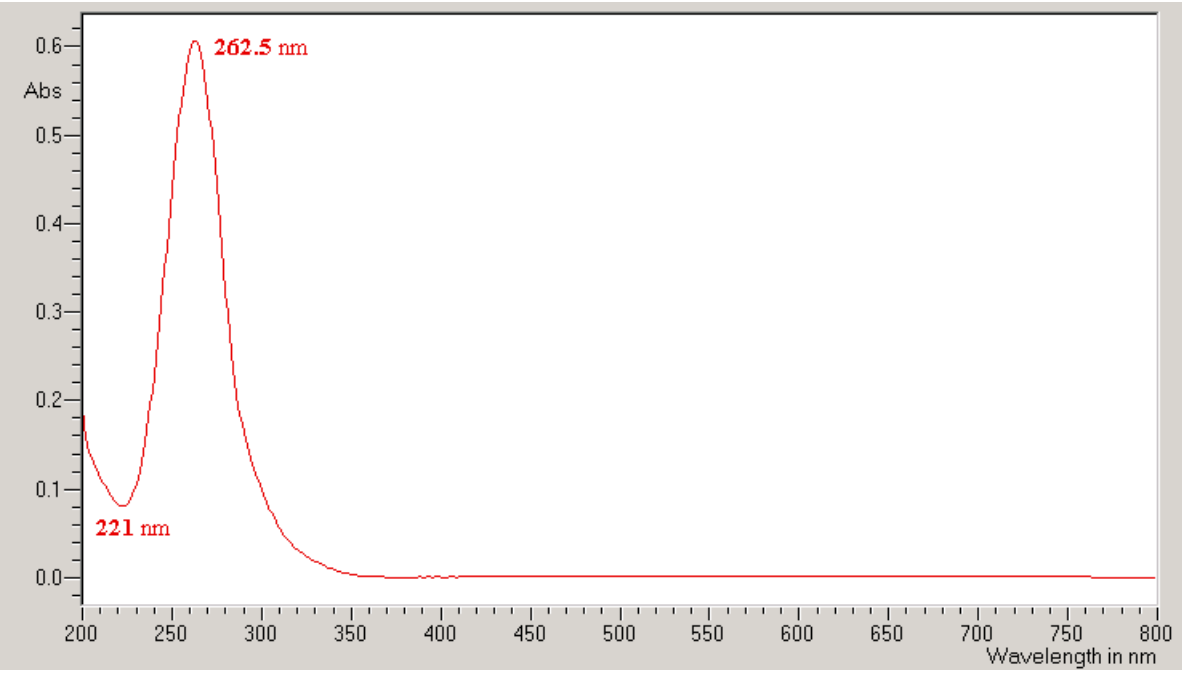


Figure S8 – UV spectrum of phaeosphaeride A, dissolved in MeCN

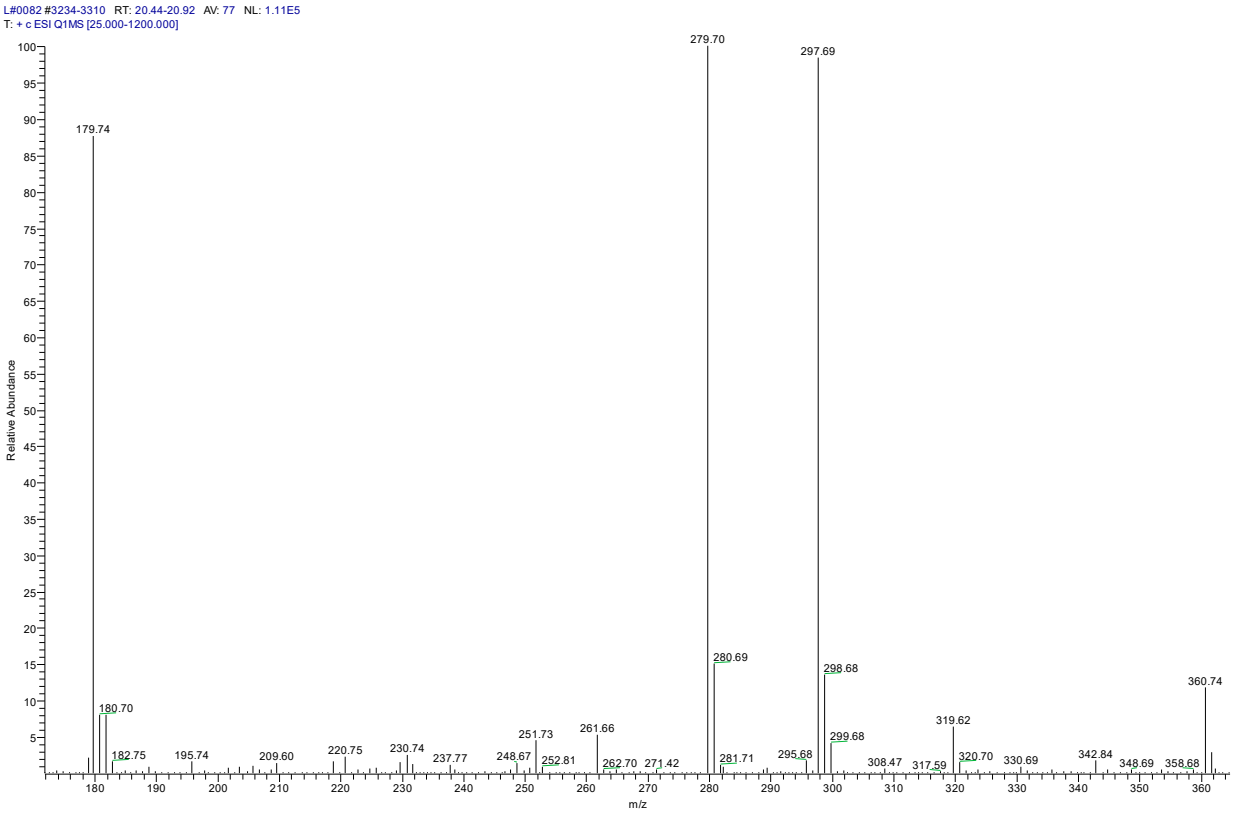


Figure S9 – ESI Mass spectrum of phaeosphaeride A, recorded in positive mode

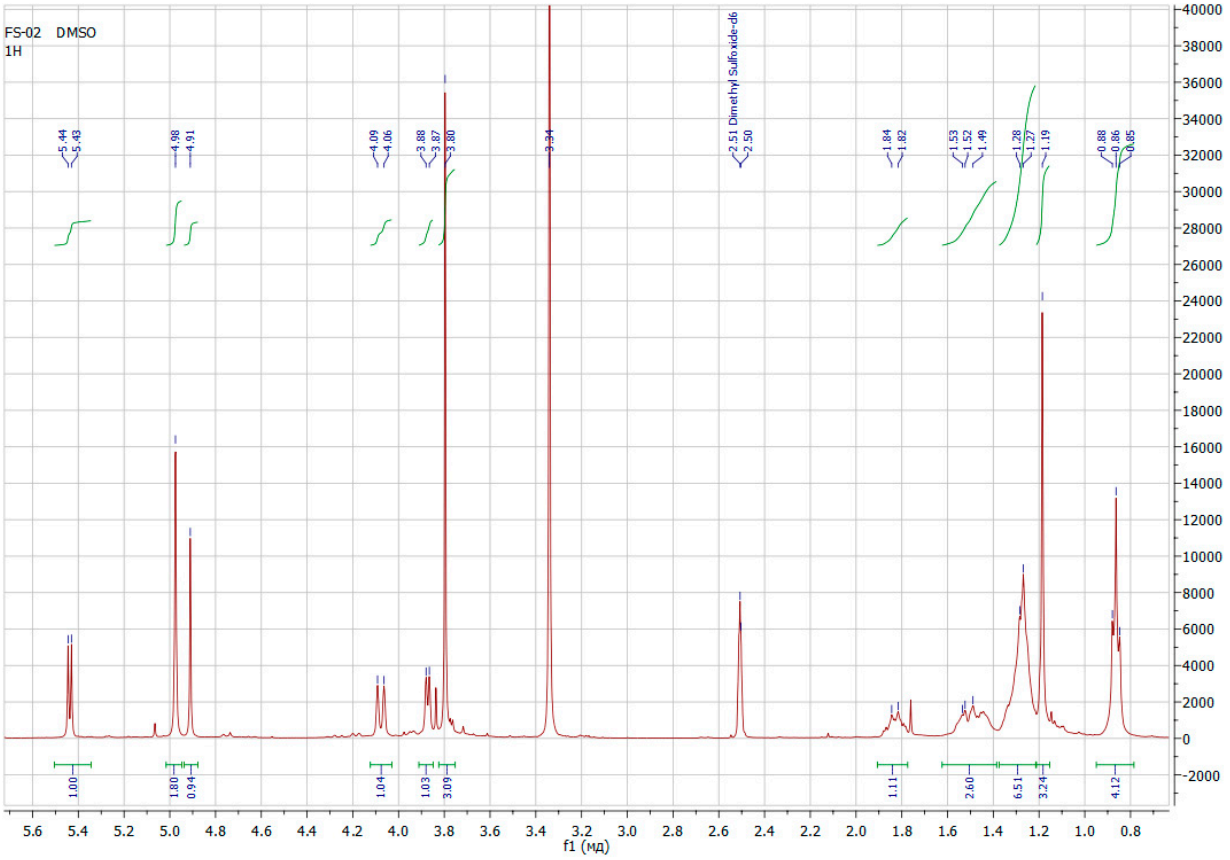


Figure S10 - ^{1}H-NMR spectrum of phaeosphaeride A (DMSO d-6, at 400 MHz)

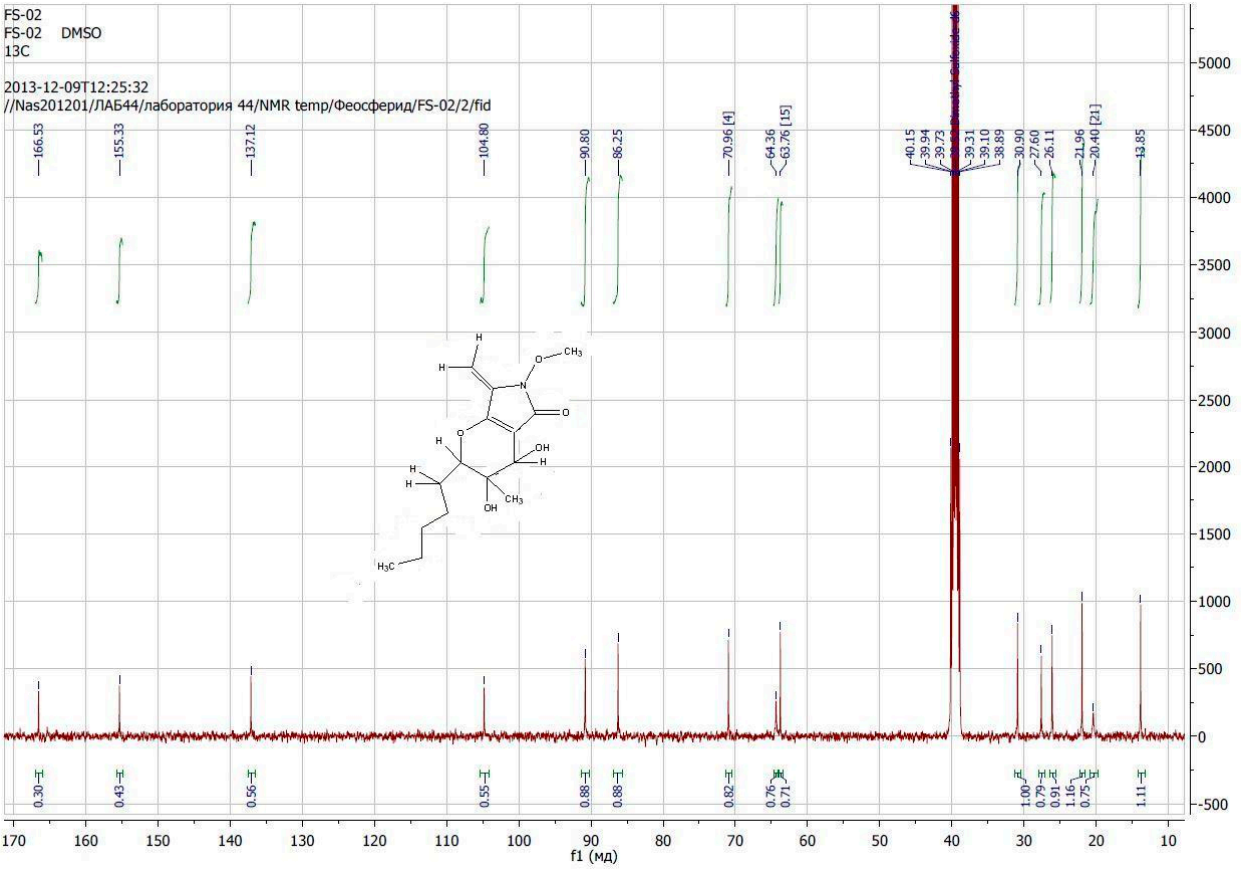


Figure S11 - ^{13}C -NMR spectrum of phaeosphaeride A (DMSO d-6, at 100 MHz)

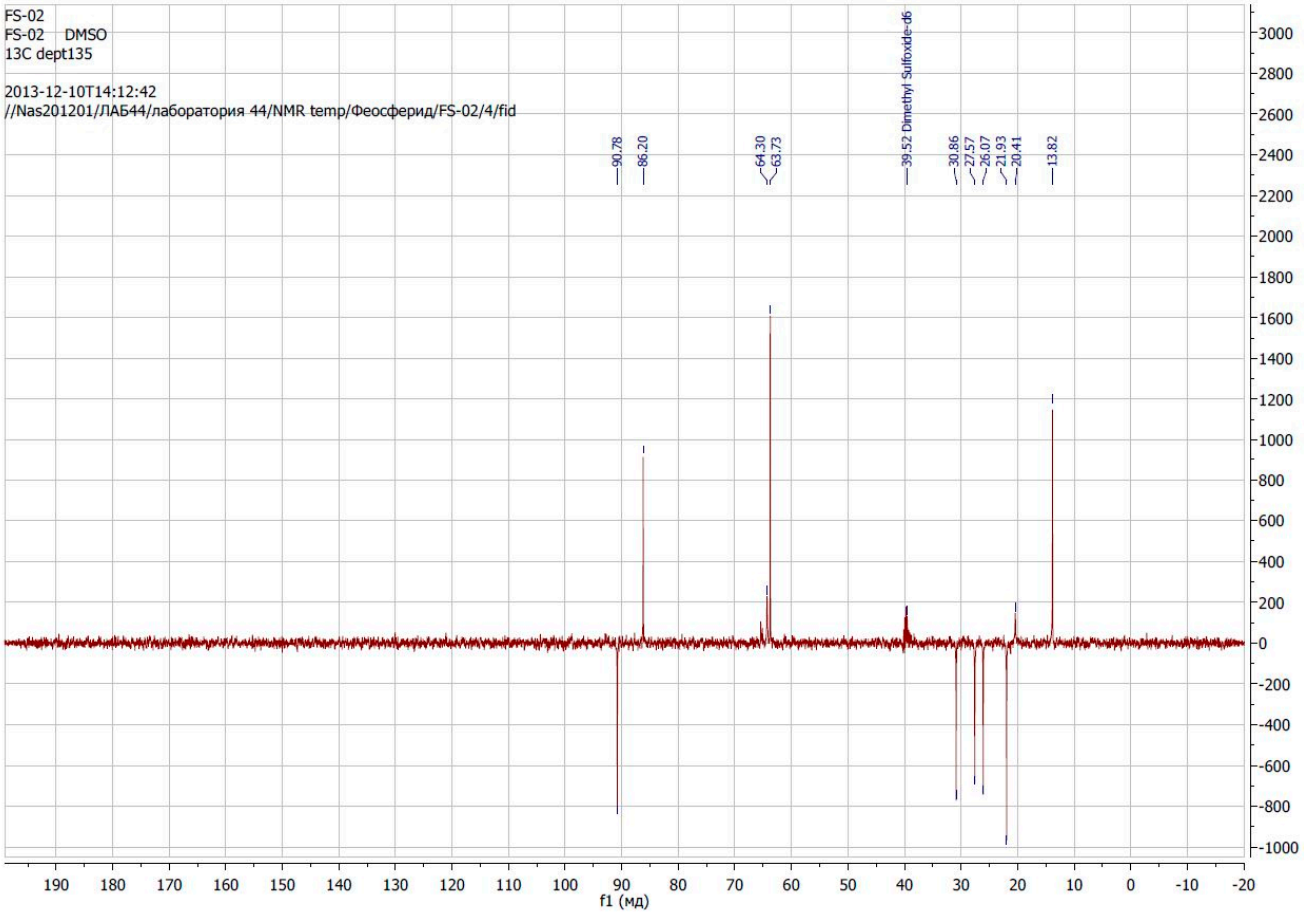


Figure S12 - ^{13}C DEPT spectrum of phaeosphaeride A (DMSO d-6, at 100 MHz)

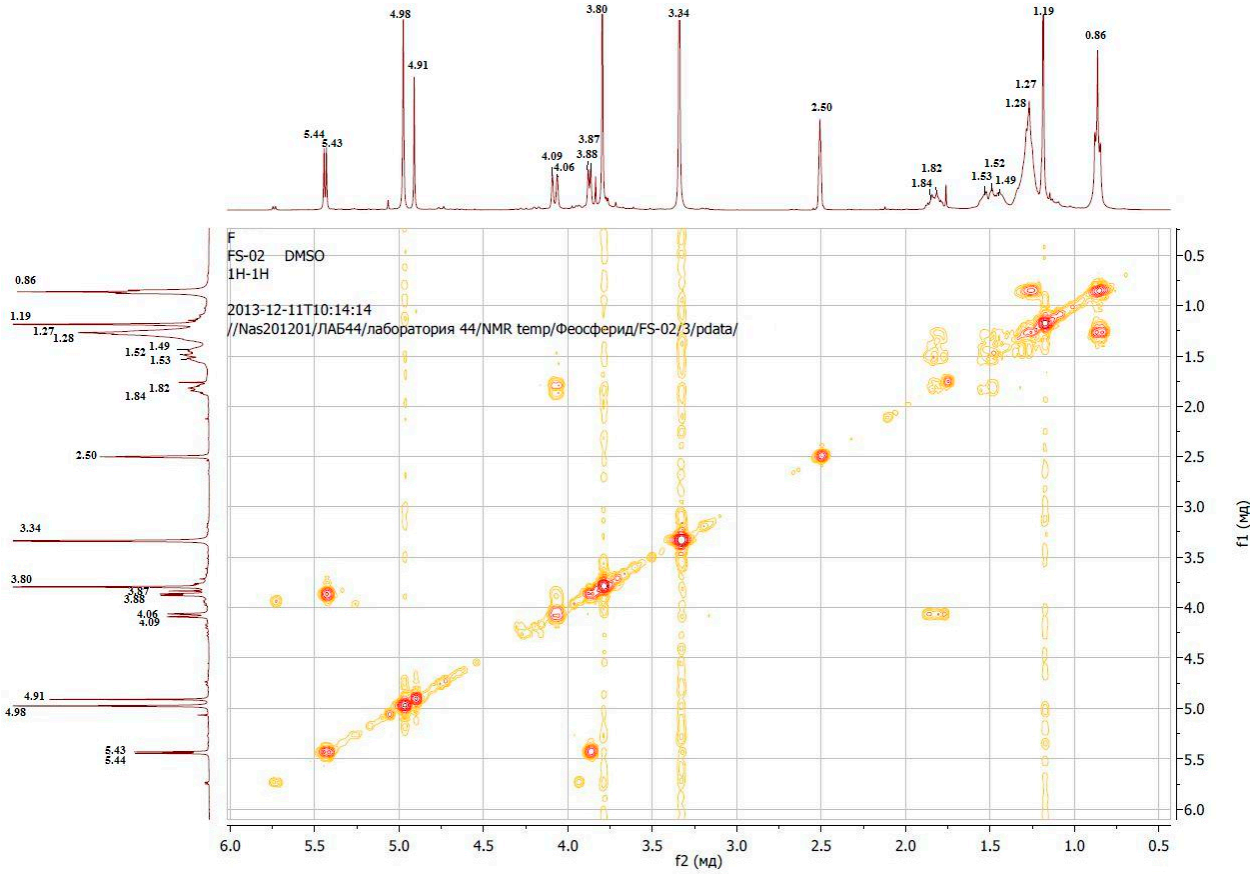


Figure S13 - ^{1}H,^{1}H COSY spectrum of phaeosphaeride A (DMSO d-6, at 100 MHz)

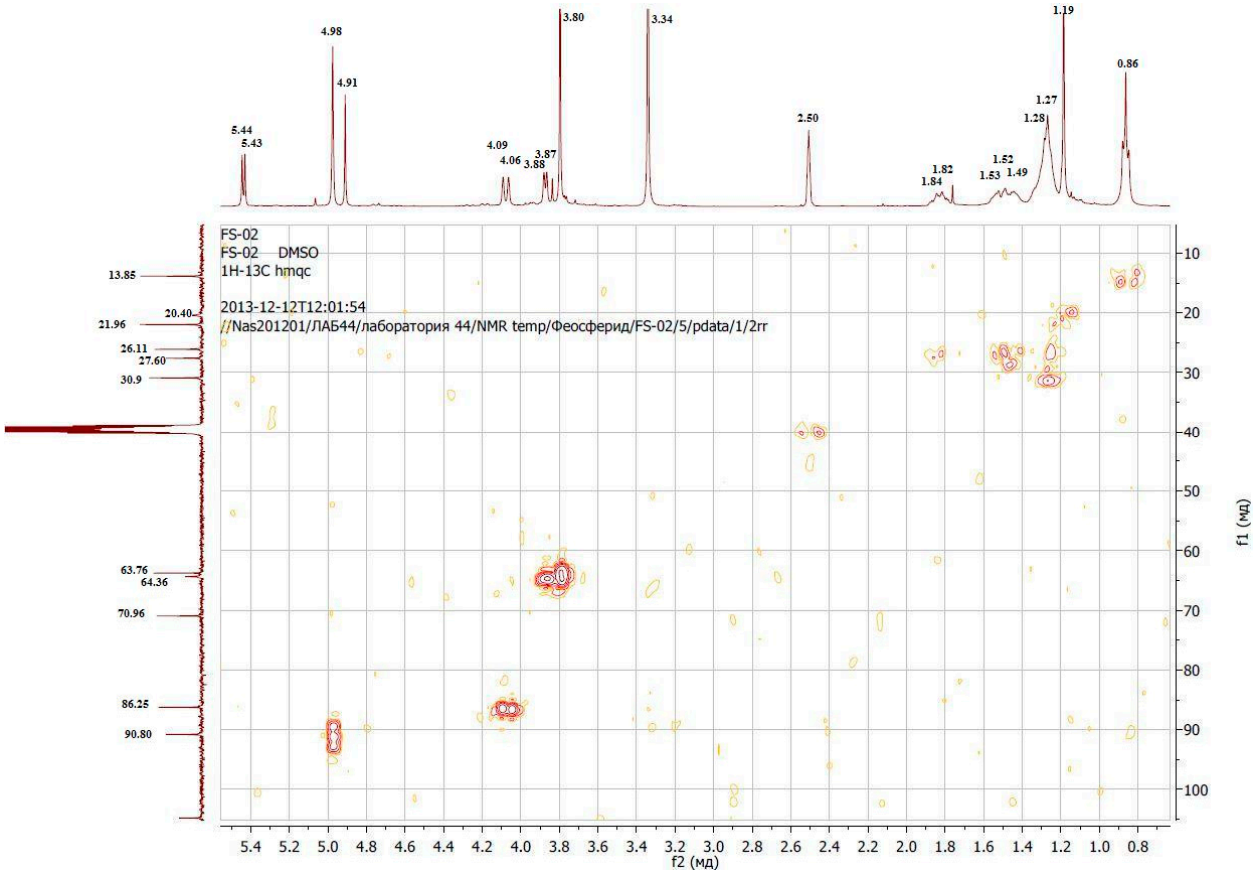


Figure S14 - $^{1}H,^{13}C$ HMQC spectrum of phaeosphaeride A (DMSO d-6)

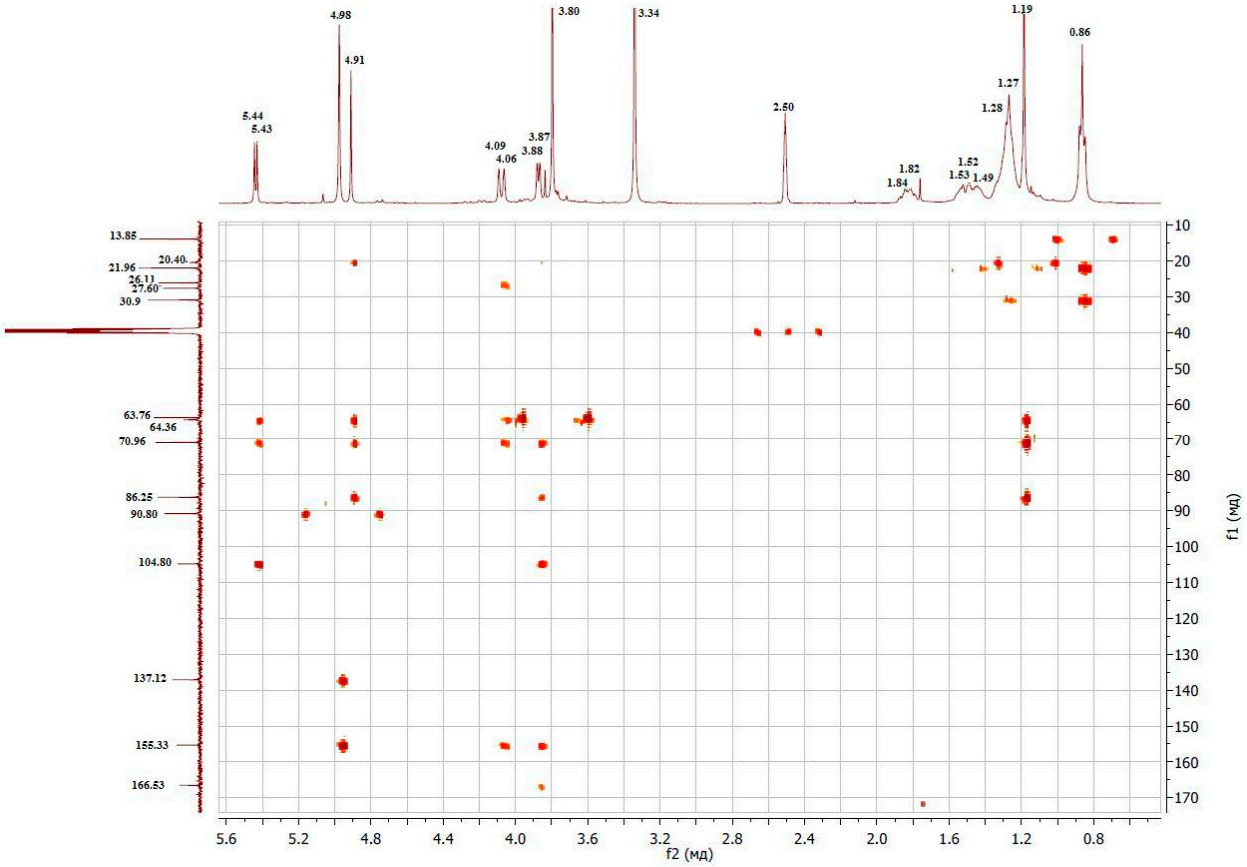


Figure S15 - $^{1}H,^{13}C$ HMBC spectrum of phaeosphaeride A (DMSO d-6)

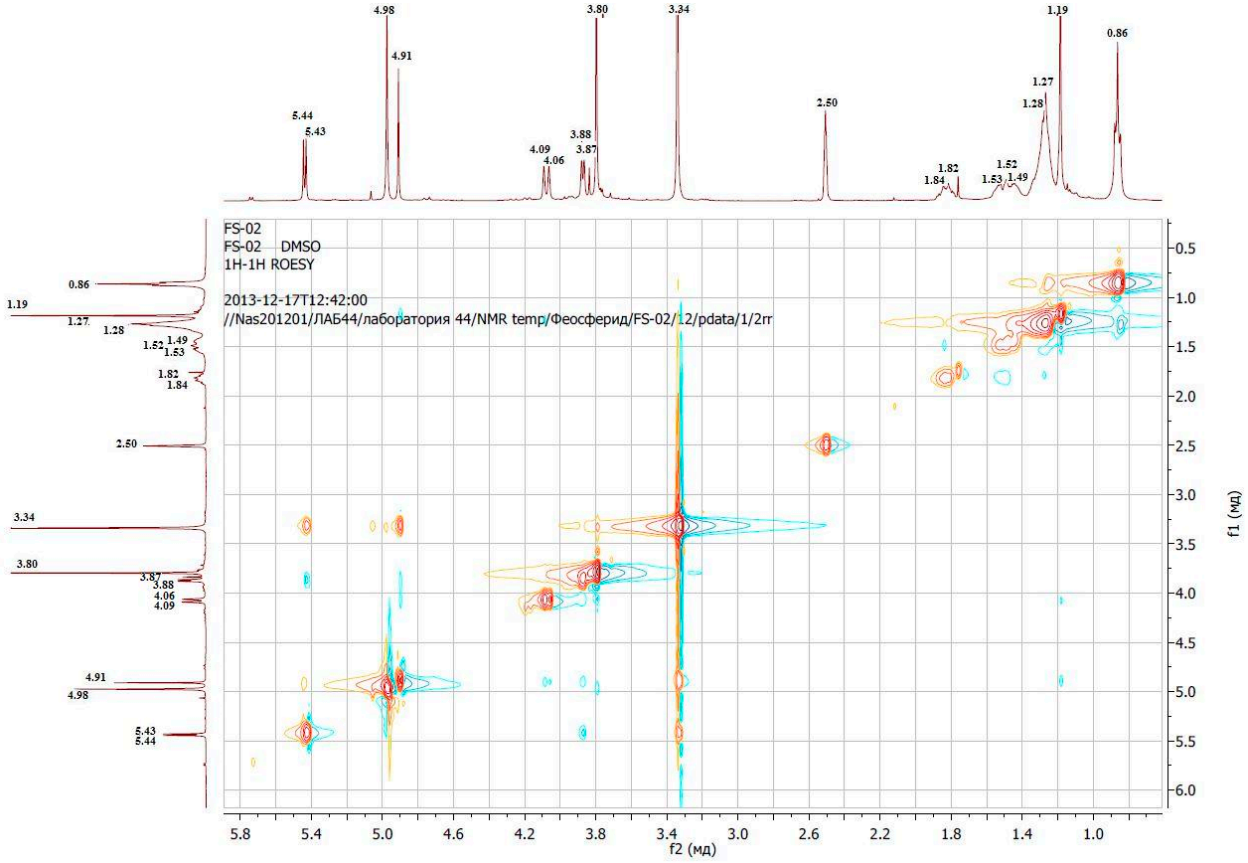
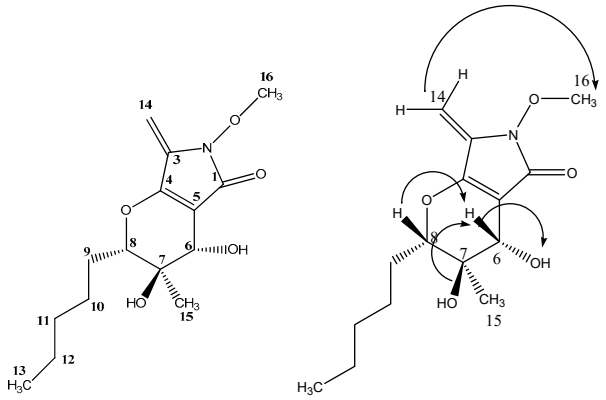


Figure S16 - ^{1}H,^{1}H ROESY spectrum of phaeosphaeride A (DMSO d-6, 400 MHz)



a b

Figure S 17 - a) Structure of phaeosphaeride A (**2**) (numbering of atoms is given according to those given by Maloney et al. 2006; b) Selected ROESY (^{1}H to ^{1}H) NMR correlations

Table S1. -^{1}H and ^{13}C NMR data of phaeosphaeride A (in DMSOd-6)[a,b]

Position	δC[c]	δH (J in Hz)	HMBC
1	166.5 s	-	
3	137.1 s	-	H_2-14
4	155.3 s	-	H-6, H_2-14
5	104.8 s	-	H-6
6	64.4 d	3.87 (d, 4.0)	
7	71.0 s	-	HO-6
8	86.3 d	4.08 (d, 12 Hz,)	HO-6, HO-7, H-6, H_2-11
9	27.6 t	1.82 (m)1.52 (m)	
10	26.1 t	1.49 (m, 2H)	
11	30.9 t	1.27 (m, 2H)	
12	22.0 t	1.28 (m, 2H)	
13	13.9 q	0.86 (t, 6.4 Hz, 3H)	
14	90.8 t	4.98 (s, 2H)	
15	20.4 q	1.19 (s, 3H)	HO-7
16	63.8 q	3.80 (s, 3H)	
HO-6		5.42 (d, 4.0)	
HO-7		4.92 (s, 1H)	

[a]The chemical shifts are in δ values (ppm) from TMS. [b]2D ^{1}H,1H (COSY) ^{13}C,^{1}H (HMQC) NMR experiments delineated the correlations of all the protons and the corresponding carbons.
[c]Multiplicities were assigned by DEPT spectrum.

Table S2. – Summary of three-way ANOVA analysis of the effect of adjuvants, solvents and wounding on phytotoxicity of phaeosphaeride A against *Cirsium arvense*

Factors	SS	DF	MS	F	p
adjuvant	17,0727	5	3,4145	7,509	0,000001
solvent	1,4592	1	1,4592	3,209	0,074387
wounding	132,7092	1	132,7092	291,833	0,000000
adjuvant x solvent	8,6860	5	1,7372	3,820	0,002335
adjuvant x wounding	3,5335	5	0,7067	1,554	0,173474
solvent x wounding	8,9253	1	8,9253	19,627	0,000014
adjuvant x solvent x wounding	4,7507	5	0,9501	2,089	0,067078
Error	120,0525	264	0,4547		

Control

Phaeosphaeride A (ca. 0.25%) + Hasten (0.1%)

Phaeosphaeride A (ca. 0.25%) + water

Phaeosphaeride A (ca. 0.25%) + Biopower (0.1%)

Figure S 18 – Effect of adjuvants on herbicidal activity of 0.5% semi-purified extract (ca. 0.25% phaeosphaeride A) from solid state culture of *Paraphoma* sp. VIZR 1.46 on *Cirsium arvense* plants (48 hours after treatment)