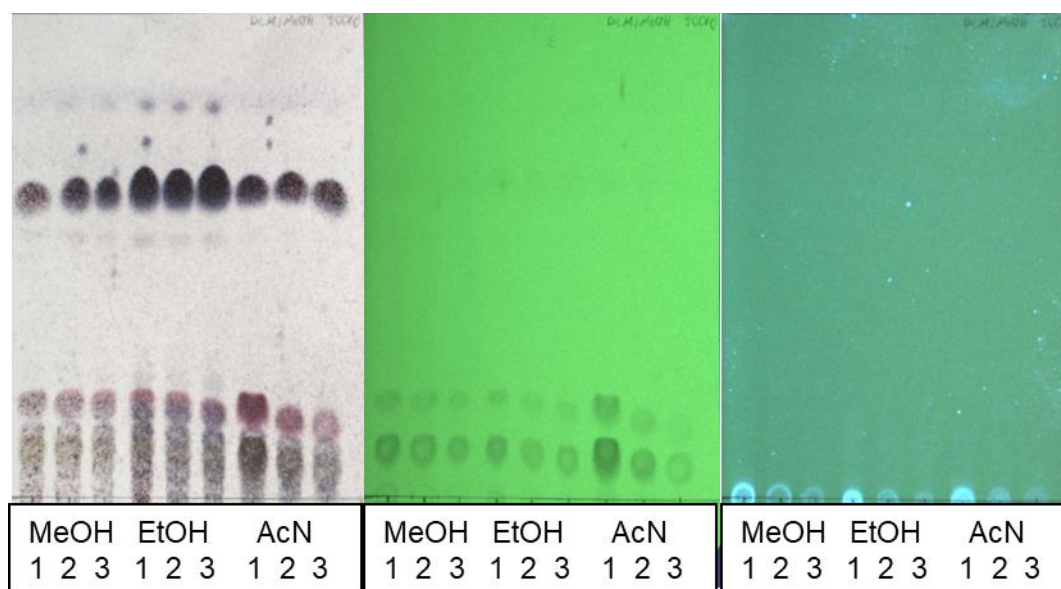


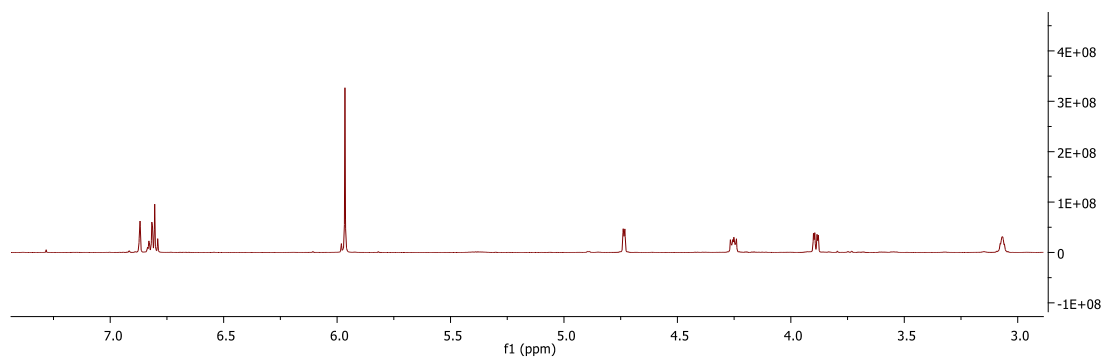
Supplementary Material

1 Supplementary Figures and Tables

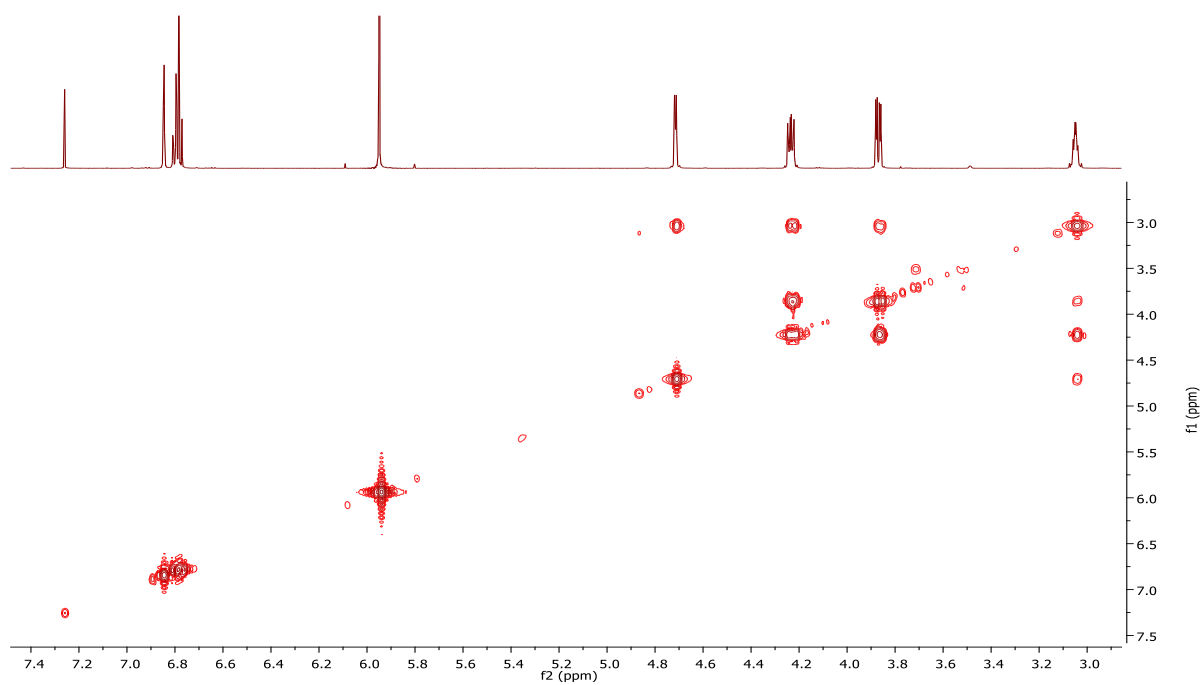
1.1 Supplementary Figures



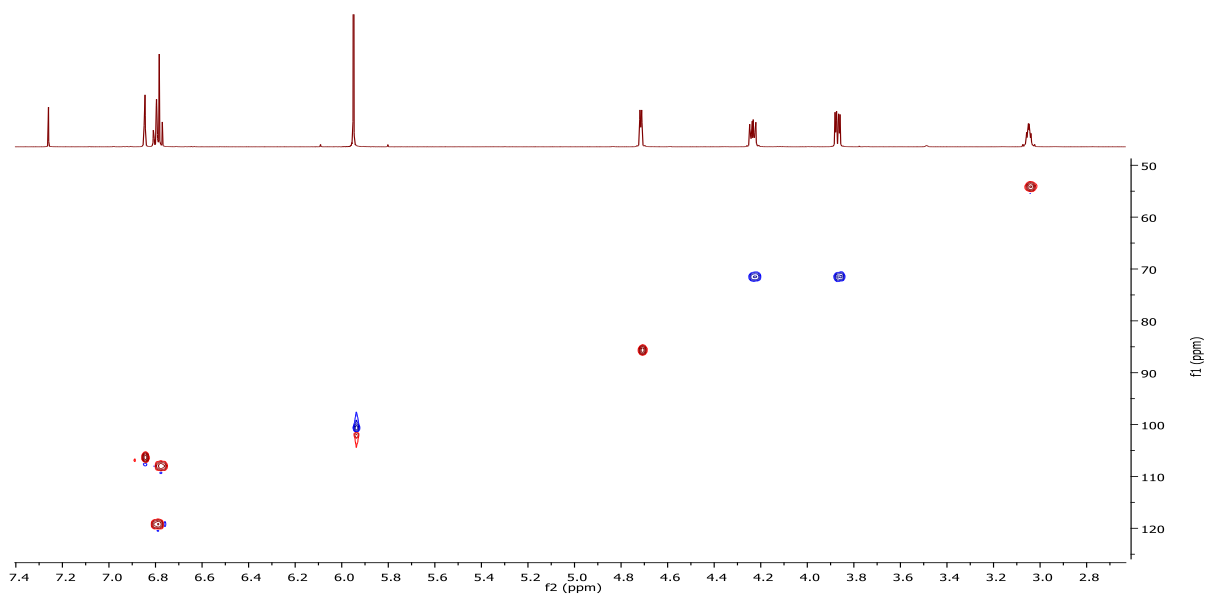
Supplementary Figure 1: TLC of systems ES15-ES17 in visible sprayed with vanillin solution (left photo), in 254 nm (middle photo) and in 366 nm (right photo).



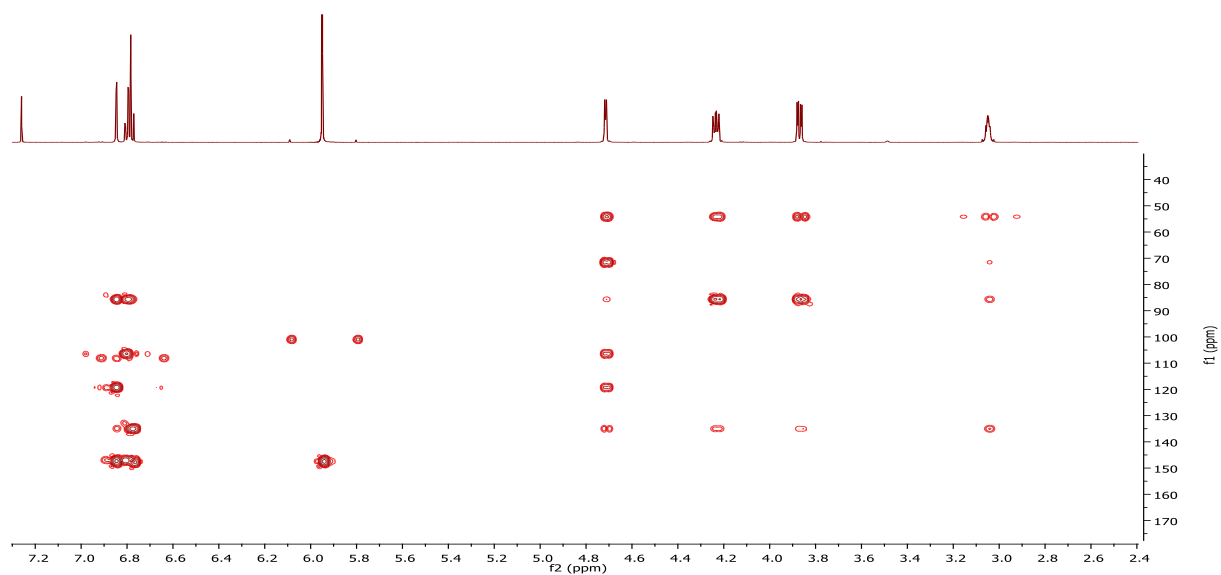
Supplementary Figure 2: a) ^1H NMR spectra of sesamin in CDCl_3 .



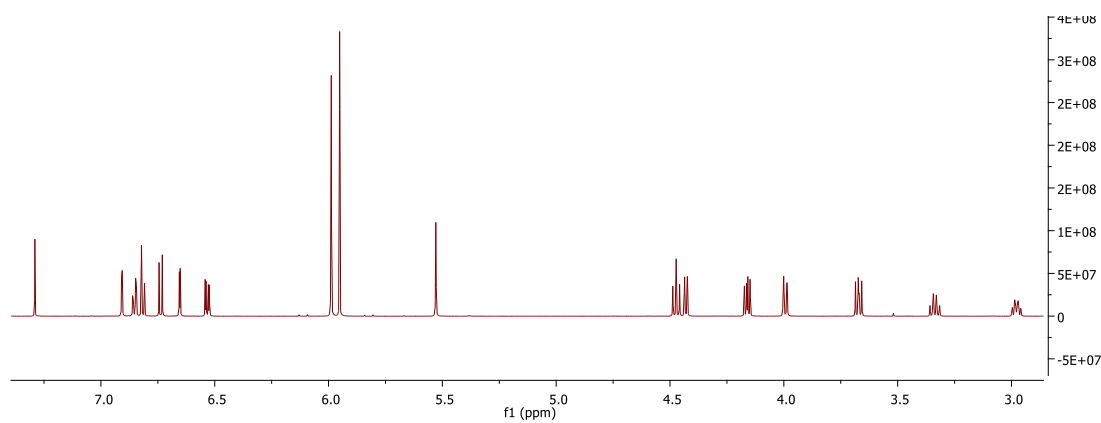
Supplementary Figure 2: b) 2D COSY NMR spectra of sesamin in CDCl₃.



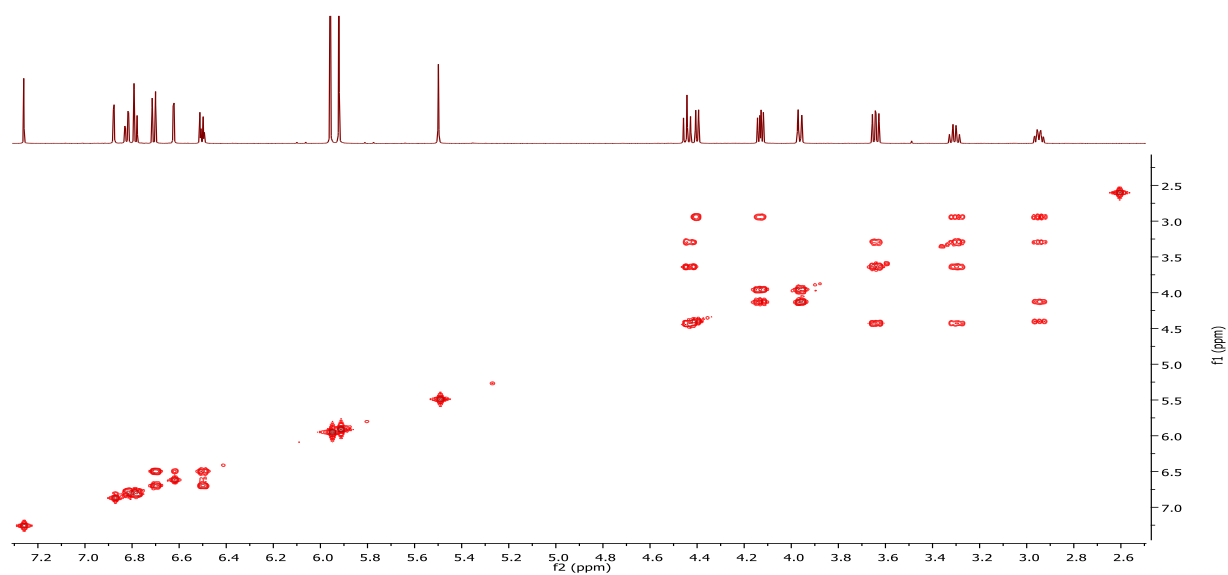
Supplementary Figure 2: c) 2D HSQC-DEPT NMR spectra of sesamin in CDCl₃.



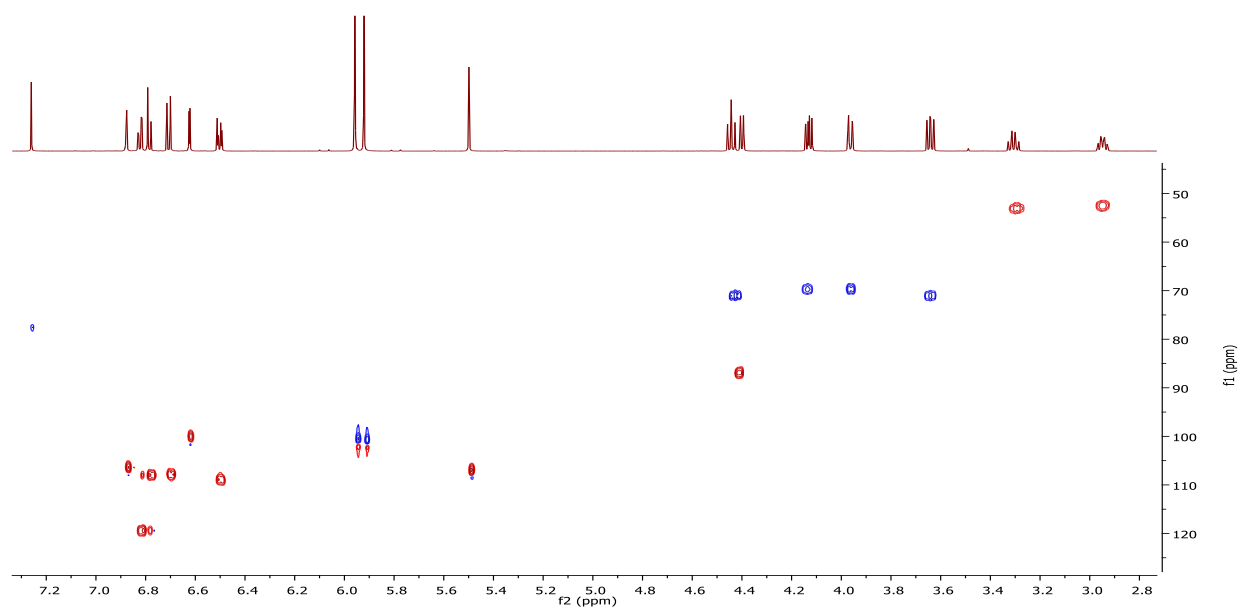
Supplementary Figure 2: d) 2D HMBC NMR spectra of sesamin in CDCl_3 .



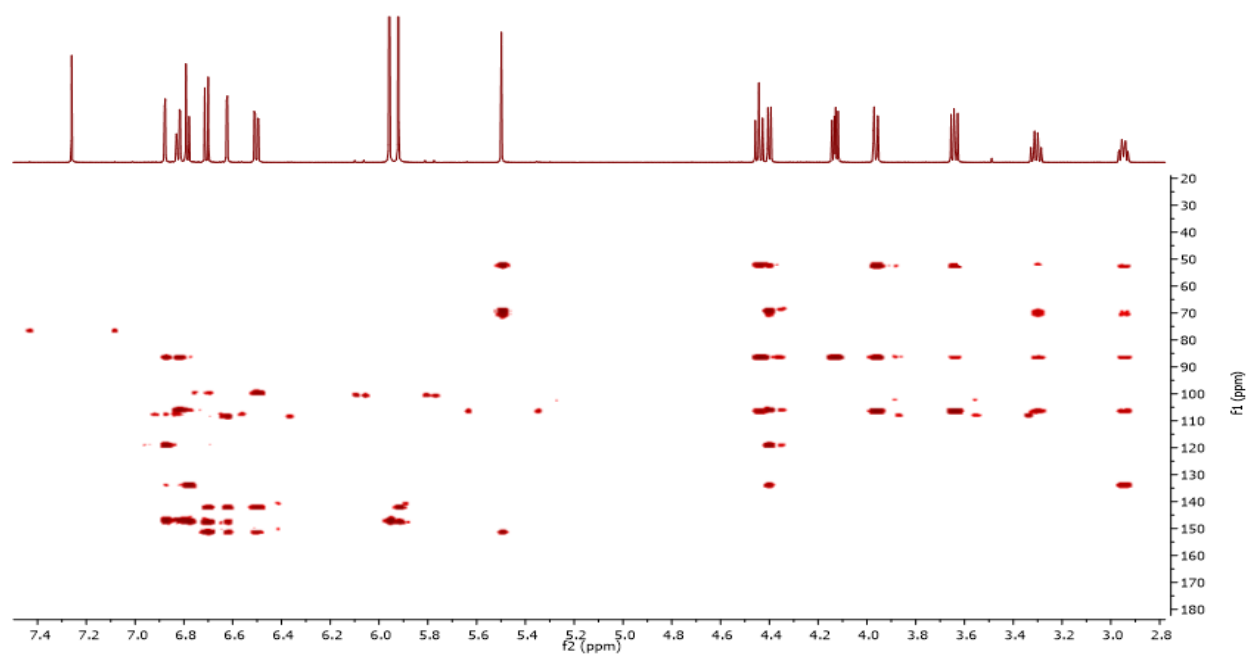
Supplementary Figure 3: a) ^1H NMR spectra of sesamolin in CDCl_3 .



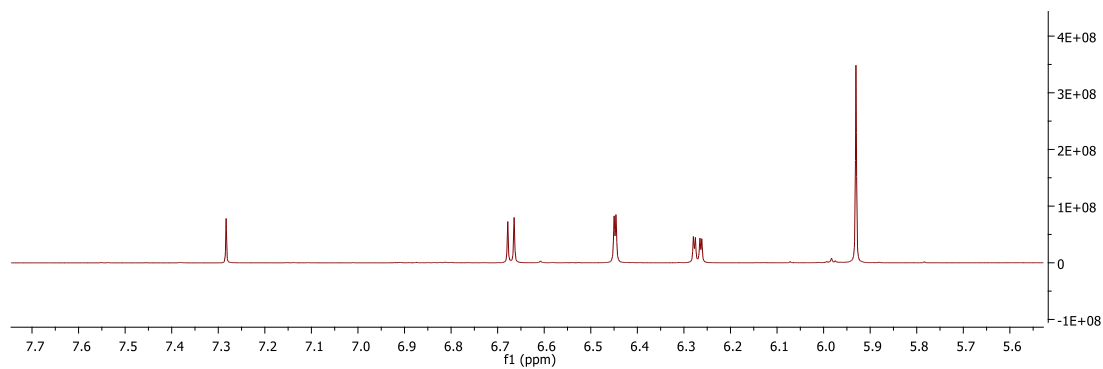
Supplementary Figure 3: b) 2D COSY NMR spectra of sesamolin in CDCl₃.



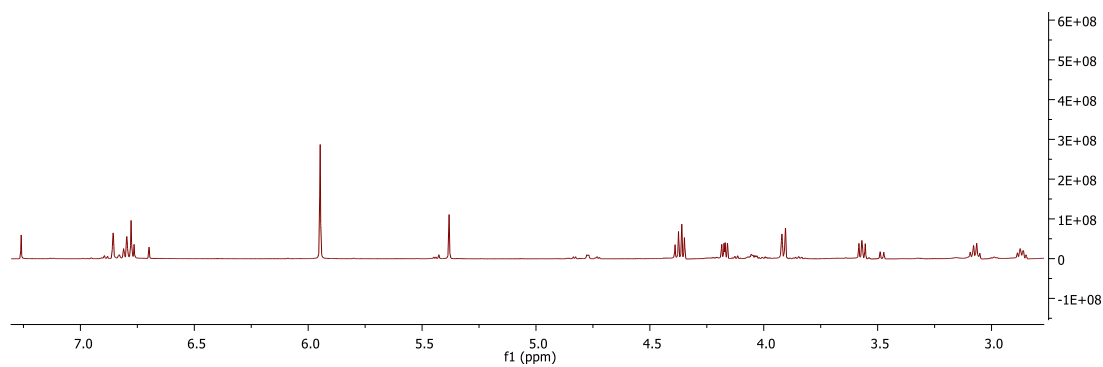
Supplementary Figure 3: c) 2D HSQC-DEPT NMR spectra of sesamolin in CDCl₃.



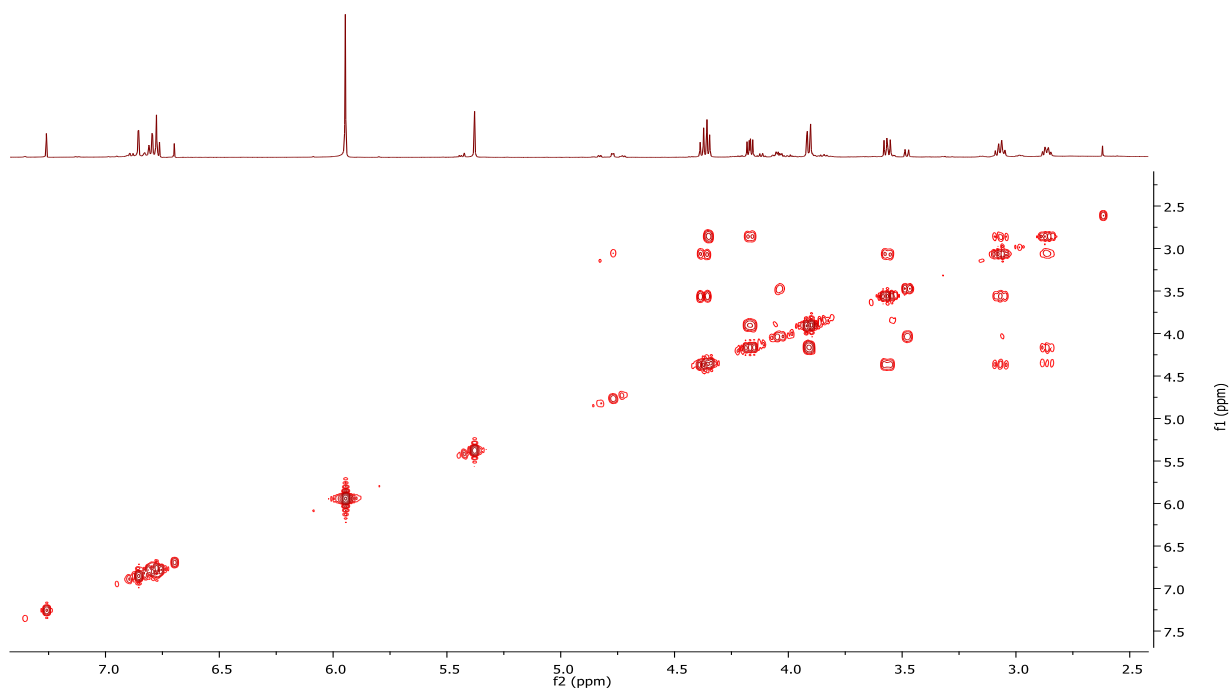
Supplementary Figure 3: d) 2D HMBC NMR spectra of sesamolin in CDCl_3 .



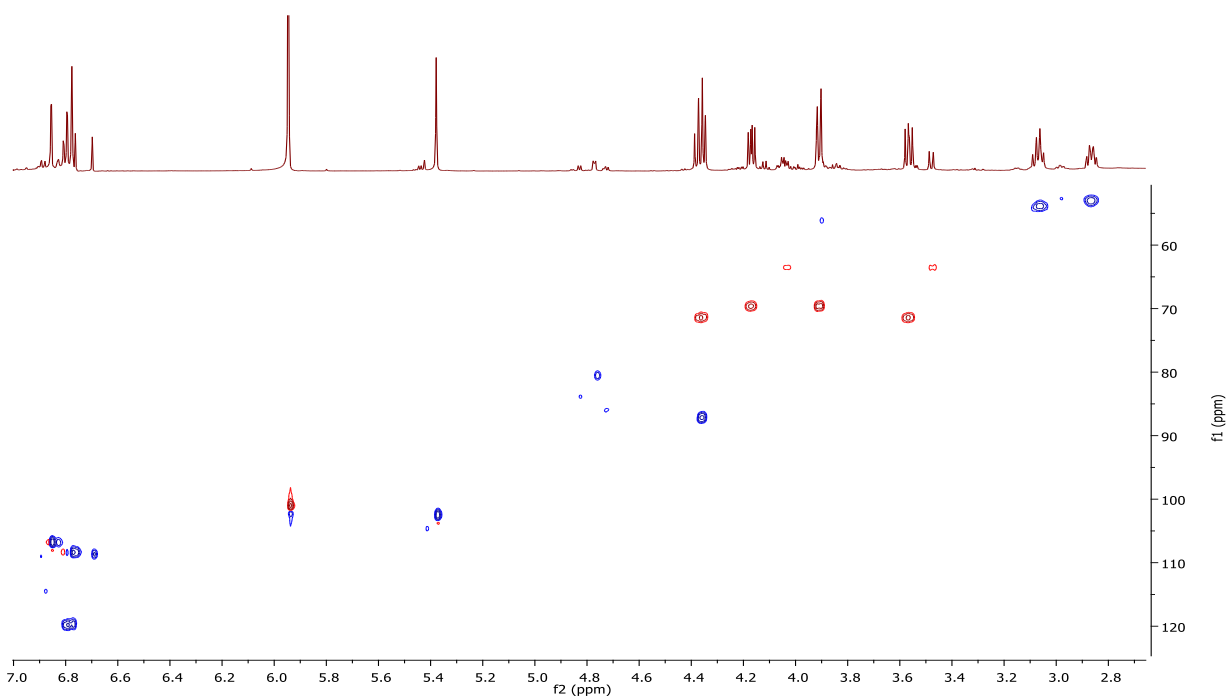
Supplementary Figure 4: ^1H NMR spectra of sesamol in CDCl_3 .



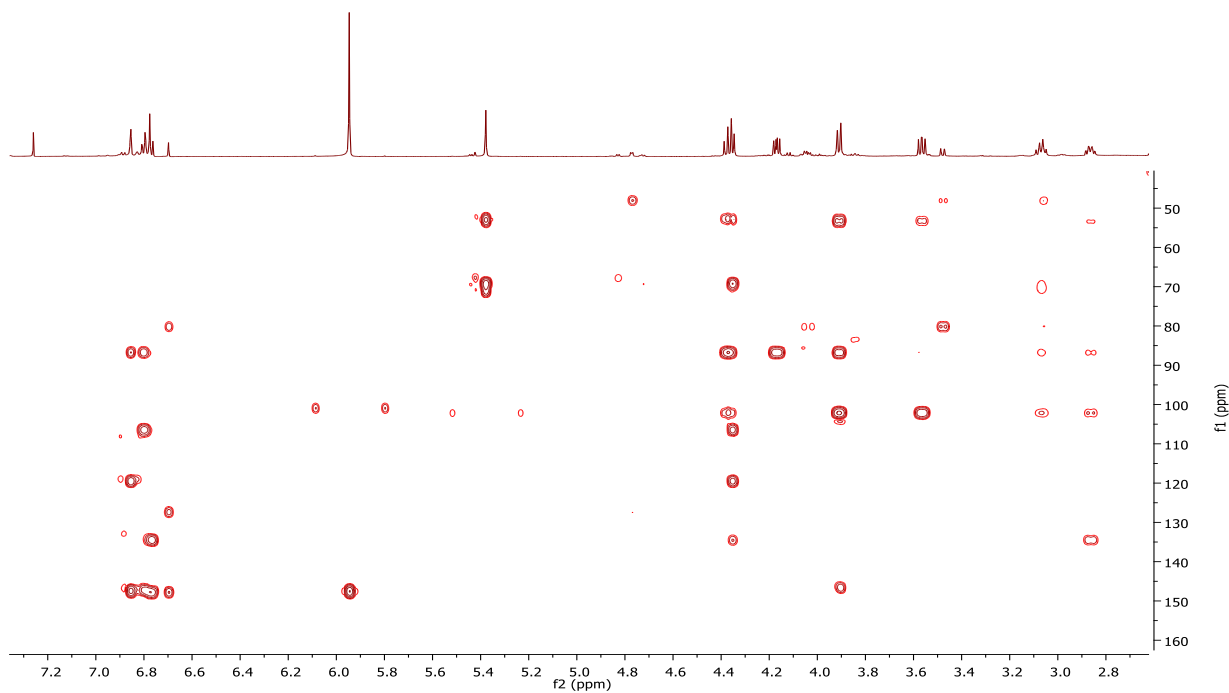
Supplementary Figure 5: a) ^1H NMR spectra of samin in CDCl_3 .



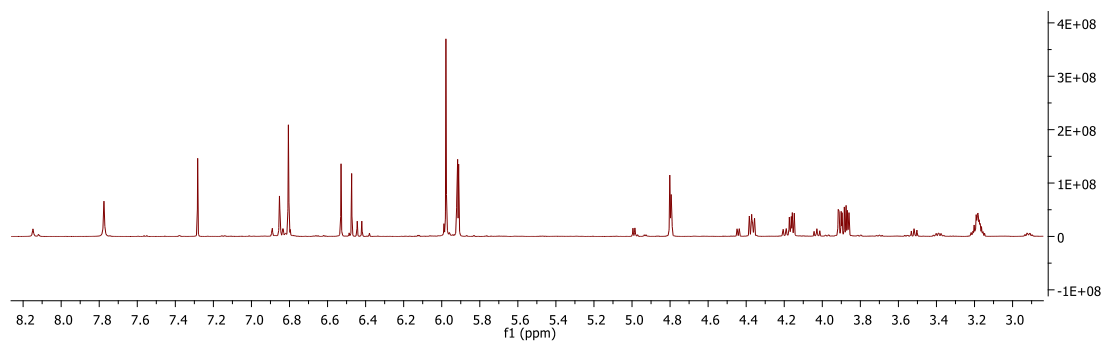
Supplementary Figure 5: b) 2D COSY NMR spectra of samin in CDCl₃.



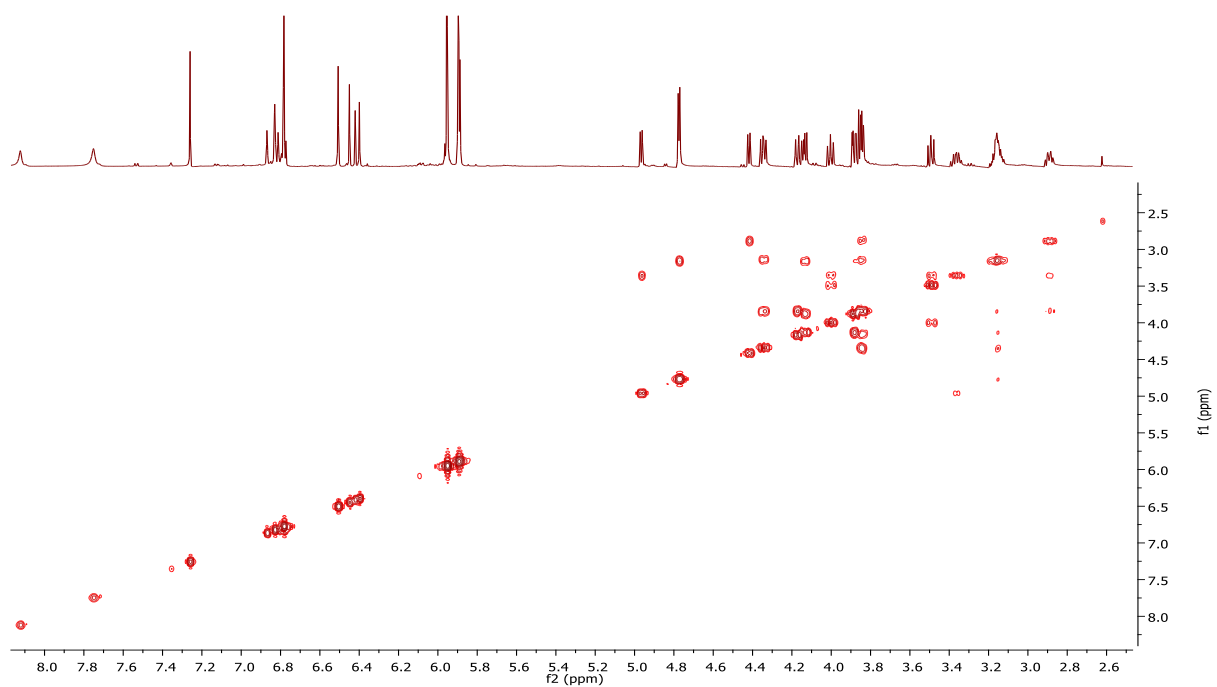
Supplementary Figure 5: c) 2D HSQC-DEPT NMR spectra of samin in CDCl₃.



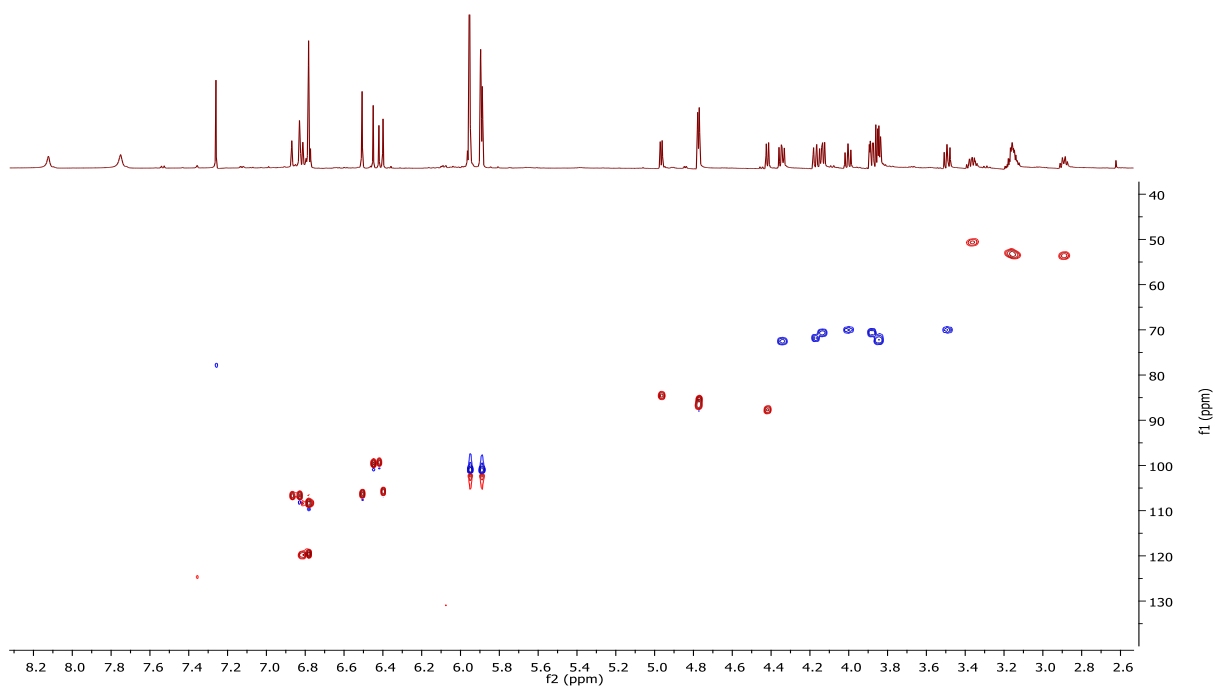
Supplementary Figure 5: d) 2D HMBC NMR spectra of samin in CDCl₃.



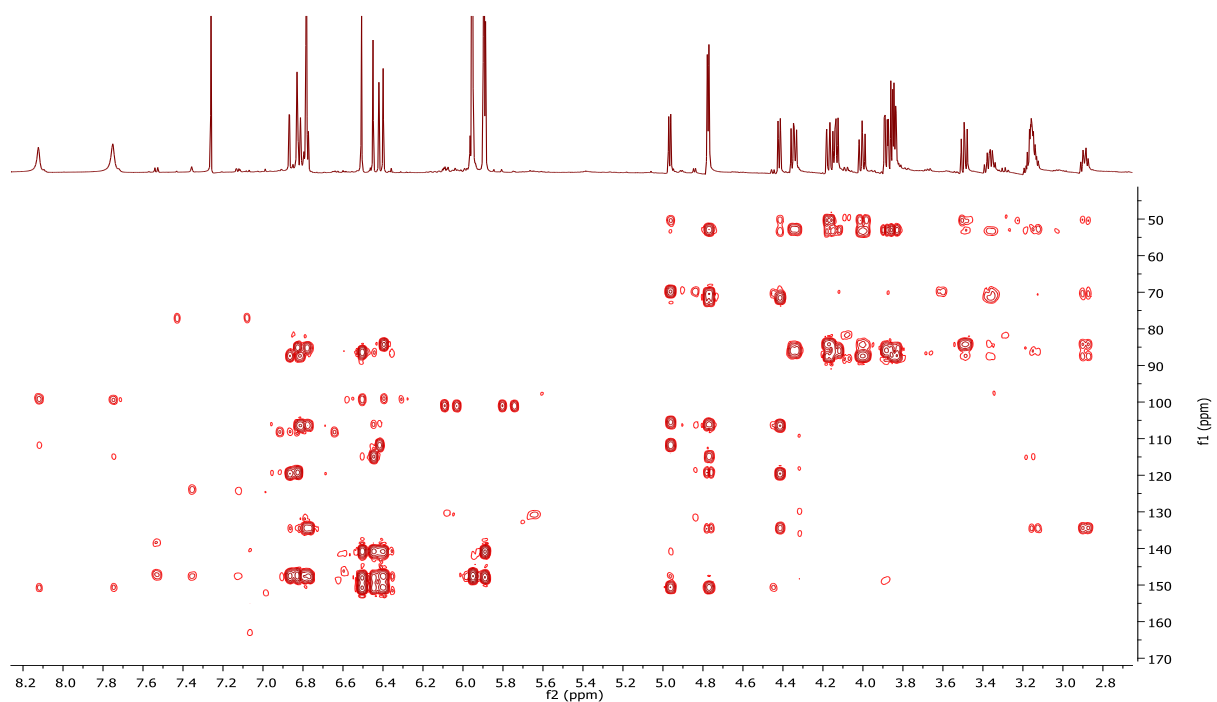
Supplementary Figure 6: a) ¹H NMR spectra of sesaminol-episesaminol in CDCl₃.



Supplementary Figure 6: b) 2D COSY NMR spectra of sesaminol-episesaminol in CDCl₃.



Supplementary Figure 6: c) 2D HSQC-DEPT NMR spectra of sesaminol-episesaminol in CDCl₃.



Supplementary Figure 6: d) 2D HMBC NMR spectra of sesaminol-episesaminol in CDCl_3 .

1.2 Supplementary Tables

Supplementary Table 1: Solubility of SO extract and separation of biphasic CPC solvent system.

System	n-Hex	n-Hept	EtOAc	AcN	EtOH	MeOH	H ₂ O	Solubility of SO extract*	Separation of two phases**
CS1	4	-	1	-	2	-	3	++	+++
CS2	3	-	2	-	2	-	3	++	+++
CS3	2	-	3	-	2	-	3	+++	+++
CS4	1	-	4	-	2	-	3	+++	+++
CS5	4	-	1	-	3	-	2	+++	+++
CS6	3	-	2	-	3	-	2	+++	+++
CS7	2	-	3	-	3	-	2	+++	+++
CS8	1	-	4	-	3	-	2	+++	+++
CS9	-	2	3	-	-	3	2	++	-
CS10	-	2	3	2	-		3	+++	-
CS11	-	2	3	1	-	2	2	++	-
CS12	-	2	3	2	-	1	2	++	-
CS13	-	2	3	1	-	1	3	+++	+++
CS14	-	4	3	-	3	-	2	++	+++
CS15	-	4	3	1	2	-	2	++	+++
CS16	-	3	3	-	3	-	2	++	-
CS17	4	-	2,5	1,5	3	-	2	+++	+++

Supplementary Table 2: Liquid-liquid extraction system that tested on SO.

System	n-Hex	n-Hept	SO	MeOH	EtOH	H ₂ O	AcN	H ₂ O + 5% CH ₃ COOH	H ₂ O + 10% CH ₃ COOH	BuOH	Comments
ES1	3	-	2	-	3	2	-	-	-	-	Creation of emulsion
ES2	3	-	2	-	2,5	2,5	-	-	-	-	Creation of emulsion
ES3	3	-	2	3	-	2	-	-	-	-	Creation of emulsion
ES4	3	-	2	3,5	-	1,5	-	-	-	-	Creation of emulsion
ES5	3	-	2	4	-	1	-	-	-	-	Creation of emulsion
ES6	4	-	1	3	-	2	-	-	-	-	Creation of emulsion
ES7	3	-	2	-	3	-	-	2	-	-	Creation of emulsion
ES8	3	-	2	-	3	-	-	-	2	-	Creation of emulsion
ES9	2	-	1	1	-	-	2	-	-	-	Creation of emulsion
ES10	3	-	2	1	-	-	4	-	-	-	Creation of emulsion
ES11	3	-	2	-	-	-	3	-	-	2	Separation in less than 1 min
ES12	3	-	1	-	-	-	4	-	-	1	Separation in less than 1 min
ES13	-	3	2	-	-	-	3	-	-	2	Separation in less than 1 min
ES14	-	3	1	-	-	-	4	-	-	1	Separation in less than 1 min
ES15	-	-	1	-	-	-	1	-	-	-	Separation in less than 45 sec
ES16	-	-	1	1	-	-	-	-	-	-	Separation in less than 45 sec
ES17	-	-	1	-	1	-	-	-	-	-	Separation in less than 45 sec

Supplementary Table 3: Partition coefficient of sesamin and sesamol in system ES11, ES12, ES13 and ES14.

Extraction systems	Distribution coefficient of sesamin ($K=C_{up}/C_{low}$)	Distribution coefficient of sesamol ($K=C_{up}/C_{low}$)
ES11	0,90	0,87
ES12	0,27	0,16
ES13	0,98	1,00
ES14	0,26	0,15

Supplementary Table 4: Area on HPLC chromatographs of sesamin and sesamolin in each of triple extraction for solvent systems ES15-ES17.

Extractions	Area of sesamin's peak	Area of sesamolin's peak
ES15 1th	13475090	8538380
ES15 2th	6255833	2946539
ES15 3th	2222615	945313
ES16 1th	6063140	2441181
ES16 2th	4429955	1837144
ES16 3th	3785633	1610077
ES17 1th	2177219	2177219
ES17 2th	1980610	1980610
ES17 3th	1547120	1547120

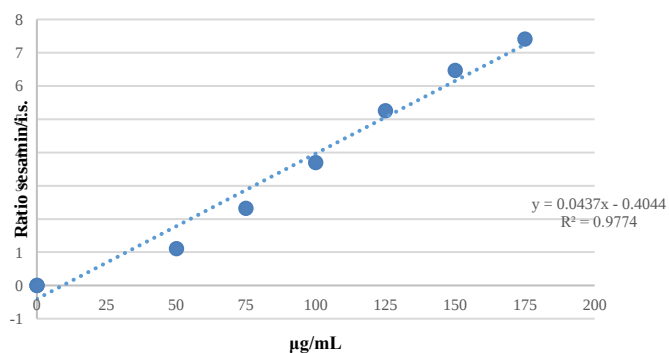
Supplementary Table 5. HPLC-HRMS (orbitrap) data of sesame oil total liquid-liquid extraction sample.

Rt	Experimental mass	Theoretical mass	Delta (ppm)	Molecular formula	RDB	ESI	Comments
8.76	137.0244	137.0246	1.625	C ₇ H ₄ O ₃	5.5	-	sesamol
10.32	249.0767	249.0768	-0.5135	C ₁₃ H ₁₄ O ₅	7.5	-	samin
10.55	371.1126	371.1125	0.2991	C ₂₀ H ₁₈ O ₇	11.5	+	Sesaminol/episesaminol
11.88	371.1142	371.1125	4.5752	C ₂₀ H ₁₈ O ₇	11.5	+	Sesamolin
12.88	355.1176	355.117	0.0859	C ₂₀ H ₁₈ O ₆	11.5	+	sesamin
20.89	279.2325	279.2319	2.1332	C ₁₈ H ₃₂ O ₂	3.5	-	Linoleic acid

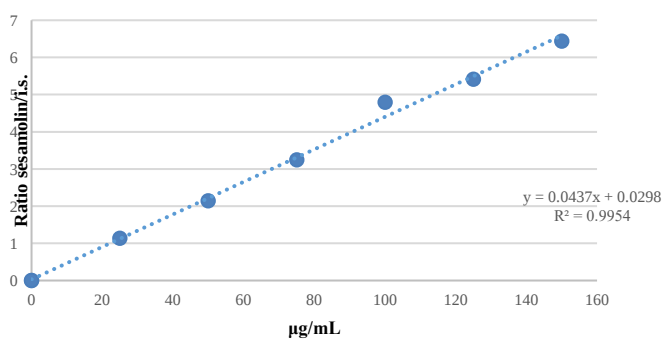
Supplementary Table 6. NMR signals of sesamin, sesamol, samin, sesaminol and episesaminol.

Protons	Sesamin	sesamolin	sesamol	samin		sesaminol		Episesaminol	
	¹ H (ppm)	¹ H (ppm)	¹ H (ppm)	¹ H (ppm)	¹³ C (ppm)	¹ H (ppm)	¹³ C (ppm)	¹ H (ppm)	¹³ C (ppm)
1	3.05, m	2.95, m		2.86, m	53.14	3.16, m	53.3	2,88, m	53.6
2	4.71, d J= 4.5 Hz	4.40, d J=7.1 Hz		4.35, d J=6.8 Hz	87.34	4.77, m	85.5	4.42, d J=7.0 Hz	87.8
3			6.43, d J=2.3 Hz						
4a	4.23, dd J= 9.2, 6.9 Hz	4.44, t J=9.0 Hz		4.38, t J=9.1 Hz	71.64	4.34, dd J=9.4, 7.5 Hz	72.6	4.17, brd J=9.5 Hz	71.9
4b	3.86, dd J= 9.2, 3.8 Hz	3.64, dd J=9.2, 7.4 Hz		3.57, dd J=9.1, 7.4 Hz	71.65	3.85, dd J=9.4, 5.3 Hz	72.6	3.85, m	71.9
5	3.05, m	3.31, m	6.25, dd J=8.4, 2.3 Hz	3.07, m	54.08	3.16, m	53.3	3.36, m	50.8
6	4.71, d J=4.5		6.65, d J=8.4 Hz	5.38, bs	102.6	4.78, bs	86.7	4.96, d J=5.0 Hz	84.6
8a	4.23, dd J= 9.2, 6.9 Hz	4.13, dd J=9.2, 5.9 Hz		4.17, dd J=9.1, 5.9 Hz	96.84	4.14, dd J=9.4, 2.4 Hz	70.6	4.00, d J=9.0 Hz	70.4
8b	3.86, dd J= 9.2, 3.8 Hz	3.96, dd J=9.1, 0.8 Hz		3.91, bd J=8.5 Hz	96.84	3.88, dd J=9.4, 2.4 Hz	70.6	3.49, d J=9.0 Hz	70.4
2'	6.85, d J=1.5 Hz	6.88, d J=1.7 Hz		6.86, d J=1.5 Hz	106.85	6.83, brs	106.7	6.86, brs	106.8
5'	6.77, d J=8.1 Hz	6.78, d J=8.0 Hz		6.77, d J=7.9 Hz	108.44	6.78, brs	108.4	6.78, d J=8.1 Hz	108.4
6'	6.80, dd J=8.1 Hz	6.82, dd J=8.0, 1.7 Hz		6.80, dd J=7.9, 1.5 Hz	119.91	6.78, brs	119.5	6.81, brd J=8.1 Hz	119.9
2''	6.85, d J=1.5 Hz	6.62, d J=2.3 Hz				6.0, s	106.4	6.40, s	105.9
5''	6.77, d J=8.1 Hz	6.71, d J=8.5 Hz				6.45, s	99.5	6.42, s	99.4
6''	6.80, dd J=8.1 Hz	6.82, dd J=8.5, 2.3 Hz							
-O-CH ₂ -O-	5.95, s		5.91, s	5.95, s	101.15				
-O-CH ₂ -O- a		5.92, s				5.95, s	101.0	5.95, s	101.0
-O-CH ₂ -O- b		5.96, s				5.89, s	101.1	5.89, s	101.1
-OH						7.75, brs	150.8	8.12, brs	150.9

1.3 Supplementary Diagrams



Supplementary Diagram 1: Quantification curve of sesamin using internal standard (i.s.).



Supplementary Diagram 2: Quantification curve of sesamol using internal standard (i.s.).