Supporting Information

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Chemical Constituents from the Roots of *Calophyllum pisiferum* Planch. & Triana and Their Cytotoxic and Antioxidant Activities

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Table S1: Comparative ¹³C NMR data of calopisifuran (1) and isodisparfuran A (Guilet *et al.*, 2001)

Position	$\delta_{\rm C}^{a}$ calopisifuran (1) in CDCl ₃	δ _C ^a isodisparfuran A* in CDCl ₃
1		
2	159.3	159.2
3	114.4	112.0
4	156.8	153.7
4a	104.9	100.0
5	163.0	154.2
6	103.9	115.0
7	156.1	162.7
8	109.8	106.1
8a	153.5	154.3
1'	139.0	137.1
2', 6'	127.7	127.9
3', 5'	127.2	128.1
4'	128.4	129.3
1''	204.3	207.3
2''	51.7	53.6
3''	25.0	25.6
4''	22.7	22.7
5''	22.7	22.7
2''	143.9	146.6
3''	104.7	104.9

^a Recorded in 125 MHz

Figure S1: Structures of calopisifuran (1) and isodisparfuran A

Table S2: Comparative ¹³C NMR data of 1-hydroxy-4,5-dimethoxyxanthone (2) and 1,8-dihydroxy-2-methoxyxanthone (*Witjeratne et al., 2006)

Position	$\delta_{\rm C}^{\ a}$ 1-hydroxy-4,5-dimethoxyxanthone (2)	$\delta_{\rm C}^{\ b}$ 1,8-dihydroxy-2-methoxyxanthone *
	in CDCl ₃	in CDCl ₃
1	150.7	150.2
2	106.0	147.8
3	120.9	121.3
4	142.8	105.8
4a	149.8	149.7
5	148.5	107.1
6	116.1	137.6
7	123.4	110.4
8	116.9	161.4
8a	118.5	107.4
9	183.0	186.7
9a	109.2	108.1
10a	147.0	156.6

1-hydroxy-4,5-dimethoxyxanthone (2)

1,8-dihydroxy-2-methoxyxanthone

Figure S2: 1-hydroxy-4,5-dimethoxyxanthone (2) and 1,8-dihydroxy-2-methoxyxanthone

^a Recorded in 75 MHz ^b Recorded in 150 MHz

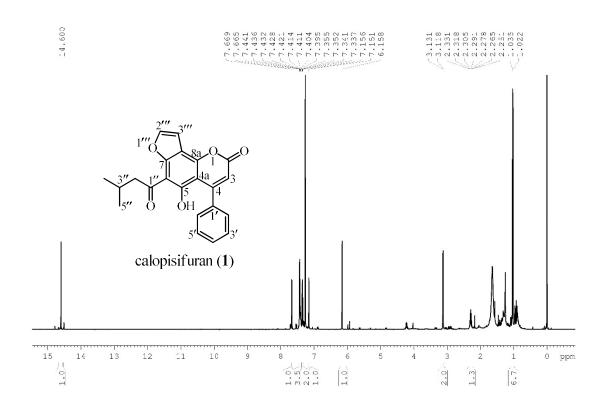


Figure S3: ¹H NMR (500 MHz, CDCl₃) spectrum of calopisifuran (1)

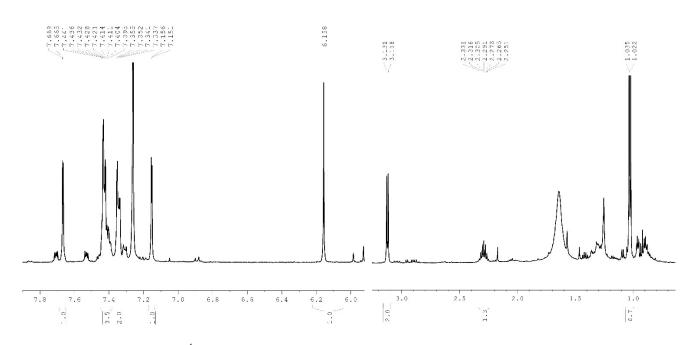


Figure S4: 1 H NMR (500 MHz, CDCl₃) spectrum of calopisifuran (1) (From $\delta_{H}1.0$ ppm to δ_{H} 7.8 ppm)

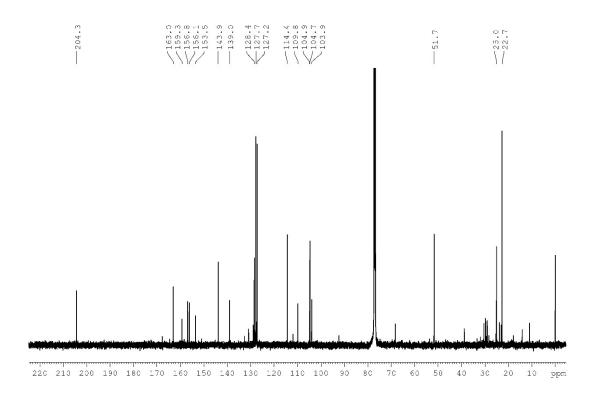


Figure S5:¹³C NMR (125 MHz, CDCl₃) spectrum of calopisifuran (1)

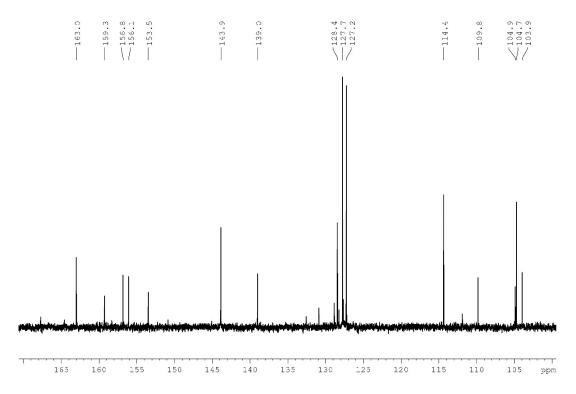


Figure S6: 13 C NMR (125 MHz, CDCl₃) spectrum of calopisifuran (1) (From $\delta_{\rm C}105$ ppm to $\delta_{\rm C}$ 165 ppm)

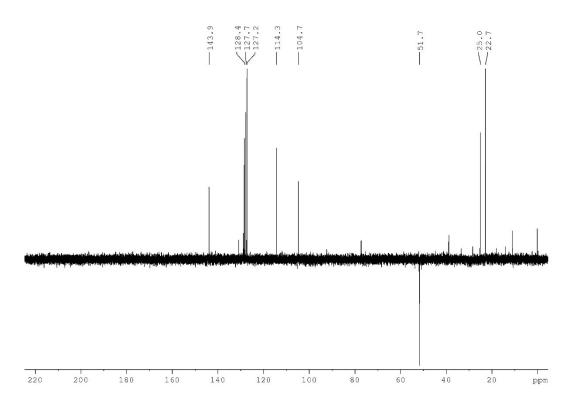


Figure S7: DEPT135 (125 MHz, CDCl₃) spectrum of calopisifuran (1)

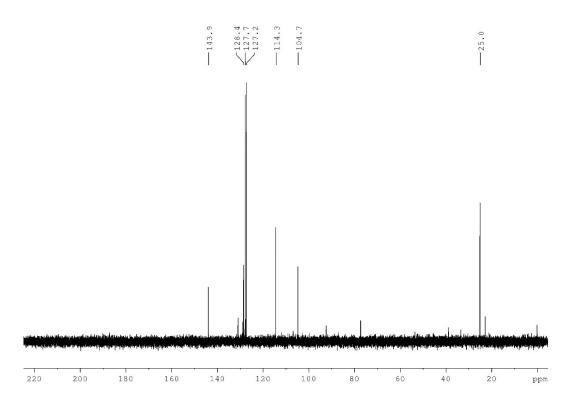


Figure S8: DEPT90 (125 MHz, CDCl₃) spectrum of calopisifuran (1)

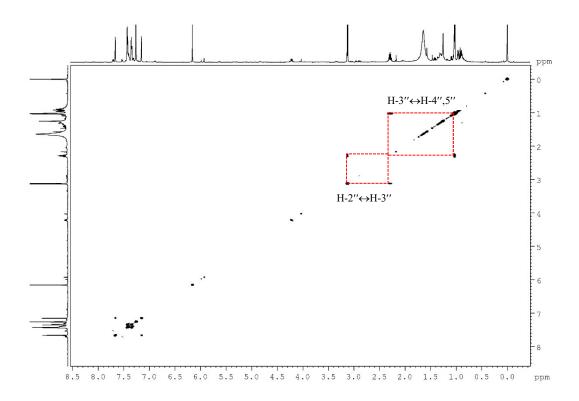


Figure S9: ¹H, ¹H-COSY spectrum of calopisifuran (1) in CDCl₃

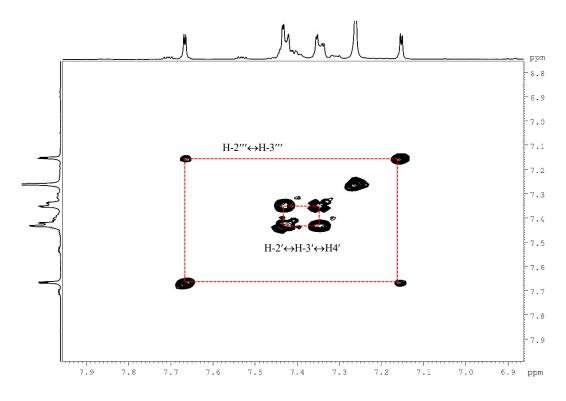


Figure S10: 1 H, 1 H-COSY spectrum of calopisifuran (1) in CDCl₃ (From δ_{H} 6.9 ppm to δ_{H} 7.9 ppm)

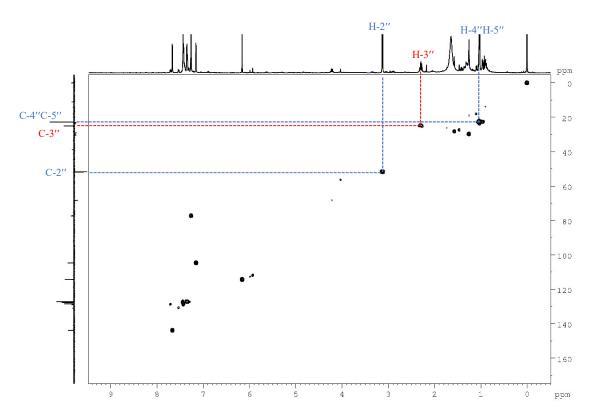


Figure S11: HMQC spectrum of calopisifuran (1) in CDCl₃

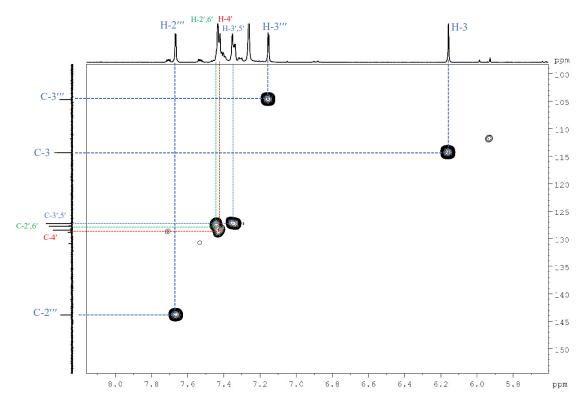


Figure S12: HMQC spectrum of calopisifuran (1) in CDCl₃ (From $\delta_{\rm H}$ 5.8 ppm to $\delta_{\rm H}$ 8.0 ppm and $\delta_{\rm C}$ 100 ppm to $\delta_{\rm C}$ 150 ppm)

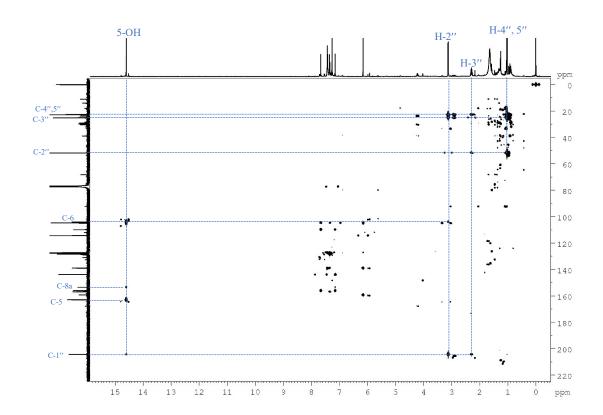


Figure S13: HMBC spectrum of calopisifuran (1) in CDCl₃

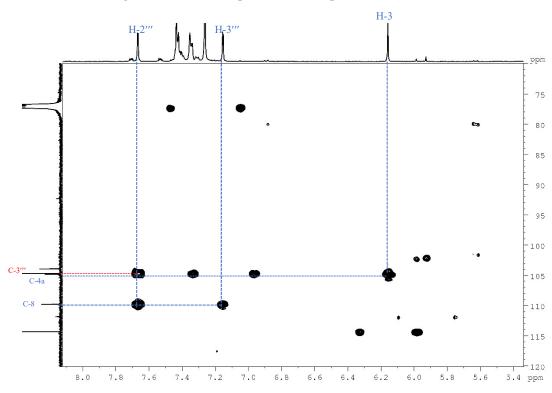


Figure S14: HMBC spectrum of calopisifuran (1) in CDCl₃ (From $\delta_{\rm H}$ 5.4 ppm to $\delta_{\rm H}$ 8.0 ppm $\delta_{\rm C}$ 72 ppm to $\delta_{\rm C}$ 120 ppm)

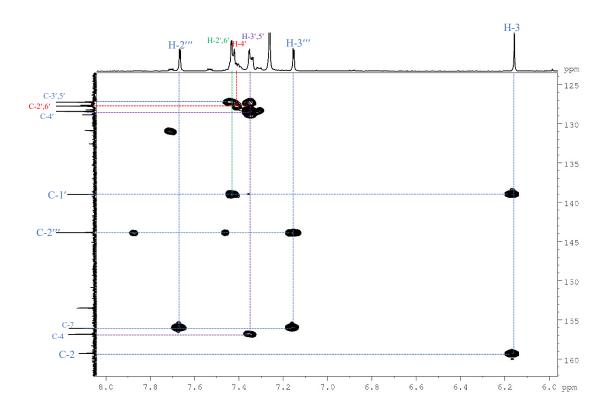


Figure S15: HMBC spectrum of calopisifuran (1) in CDCl₃ (From $\delta_{\rm H}$ 6.0 ppm to $\delta_{\rm H}$ 8.0 ppm $\delta_{\rm C}$ 125 ppm to $\delta_{\rm C}$ 160 ppm)

Table S3. All HMBC correlation of compound 1

position	$\delta_{\rm H} \left(J \text{ in Hz} \right)$	$\delta_{\rm C}({ m type})$	HMBC
3	6.16, s	114.4 (CH)	C-1', C-2, C-4a
2', 6'	7.44, br d	127.7 (CH)	C-1', C-3', 5'
3', 5'	7.35, m	127.2 (CH)	C-2', 6', C-4', C-4
4′	7.42, m	128.4 (CH)	C-2', 6'
2''	3.12, d (6.5)	51.7 (CH ₂)	C-1", C-3", C-4", 5", C-6
3''	2.29, sep (6.5)	25.0 (CH)	C-1", C-2", C-4", 5"
4", 5"	1.02, d (6.5)	22.7 (CH ₃)	C-2", C-3"
2'''	7.66, d (2.0)	143.9 (CH)	C-3''',C-7, C-8
3′′′	7.15, d (2.0)	104.7 (CH)	C-2", C-7, C-8
5-OH	14.60, s		C-1", C-5, C-6, C-8a

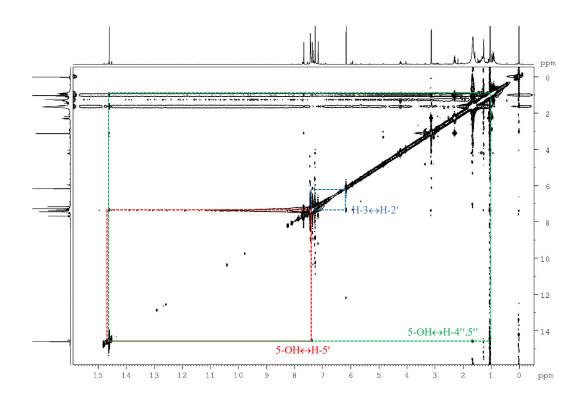


Figure S16: NOESY spectrum of calopisifuran (1) in CDCl

MS Spectrum Graph

Ret.Time:Averaged 0.107-0.200(Scan#:18-32)
BG Mode:Averaged 5.800-5.899(872-886)
Mass Peaks:7 Base Peak:361.07(4608) MS Stage:MS Polarity:Neg Segment1 - Event2 Precursor:----- Cutoff: Ionization Mode:ESI

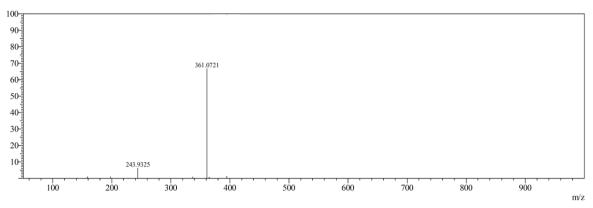


Figure S17: HR-ESI-MS spectrum of calopisifuran (1)

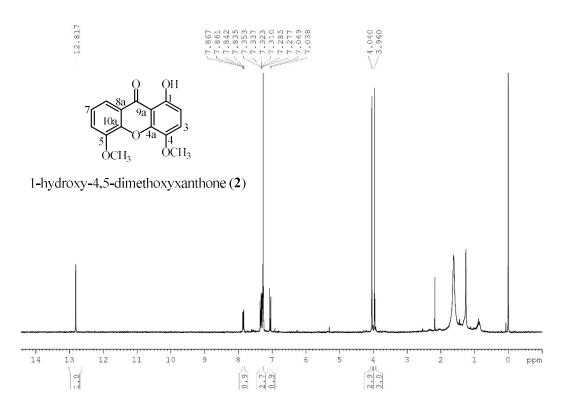


Figure S18: 1H NMR (300 MHz, CDCl₃) spectrum of 1-hydroxy-4,5-dimethoxyxanthone (2)

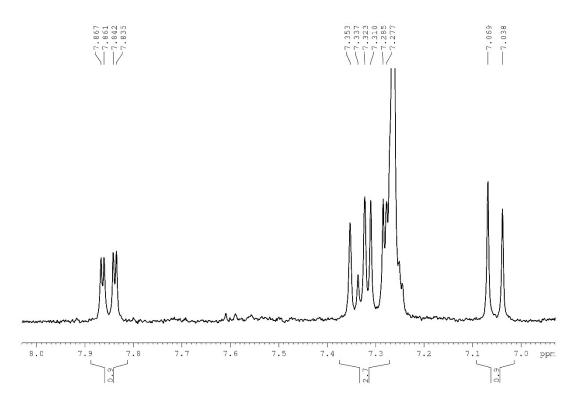


Figure S19: ¹H NMR (300 MHz, CDCl₃) spectrum of 1-hydroxy-4,5-dimethoxyxanthone (2) (From $\delta_{\rm H}$ 7.0 ppm to $\delta_{\rm H}$ 8.0 ppm)

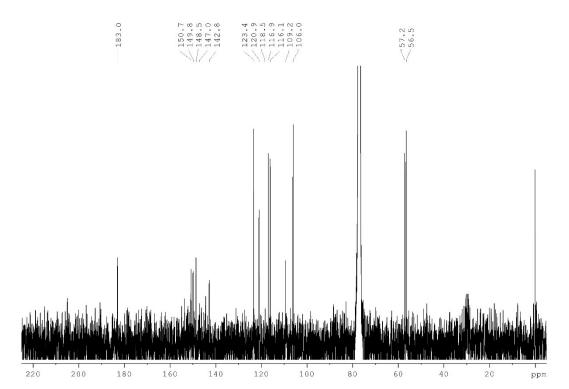


Figure S20: ¹³C NMR (75 MHz, CDCl₃) spectrum of 1-hydroxy-4,5-dimethoxyxanthone (2)

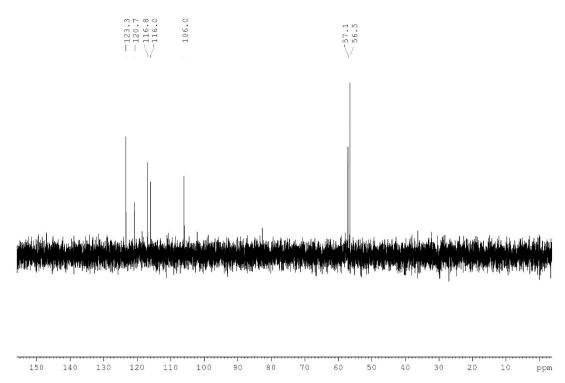


Figure S21: DEPT135 (75 MHz, CDCl₃) spectrum of 1-hydroxy-4,5-dimethoxyxanthone (2)



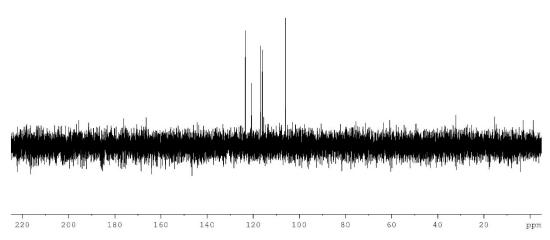


Figure S22: DEPT90 (75 MHz, CDCl₃) spectrum of 1-hydroxy-4,5-dimethoxyxanthone (2)

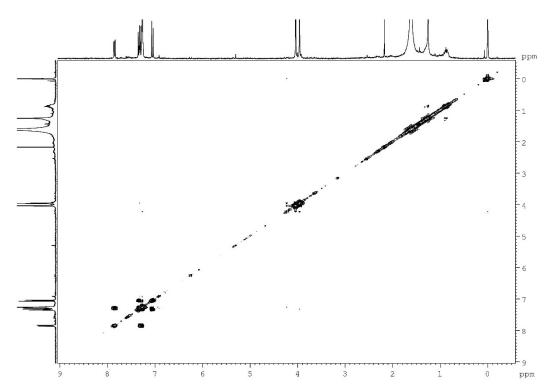


Figure S23: ¹H, ¹H-COSY spectrum of 1-hydroxy-4,5-dimethoxyxanthone (2) in CDCl₃

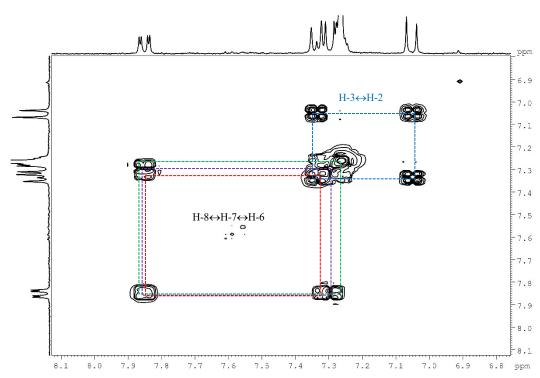


Figure S24: 1 H, 1 H-COSY spectrum of 1-hydroxy-4,5-dimethoxyxanthone (**2**) in CDCl₃ (From δ_{H} 6.8 ppm to δ_{H} 8.1 ppm)

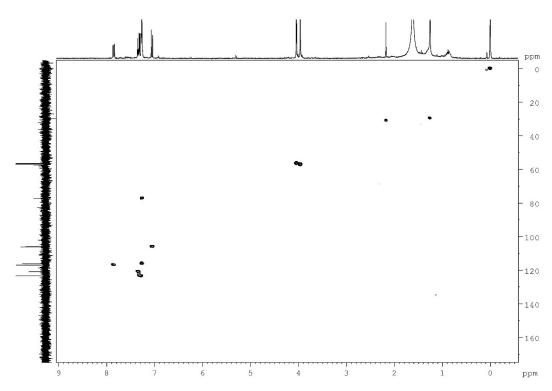


Figure S25: HMQC spectrum of 1-hydroxy-4,5-dimethoxyxanthone (2) in CDCl₃

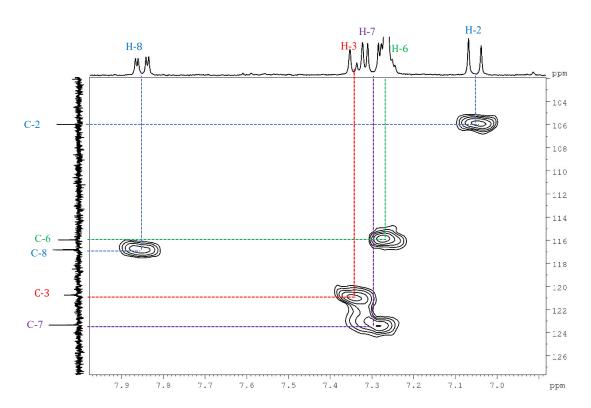


Figure S26: HMQC spectrum of 1-hydroxy-4,5-dimethoxyxanthone (2) in CDCl₃ (From $\delta_{\rm H}$ 6.0 ppm to $\delta_{\rm H}$ 8.0 ppm $\delta_{\rm C}$ 102 ppm to $\delta_{\rm C}$ 126 ppm)

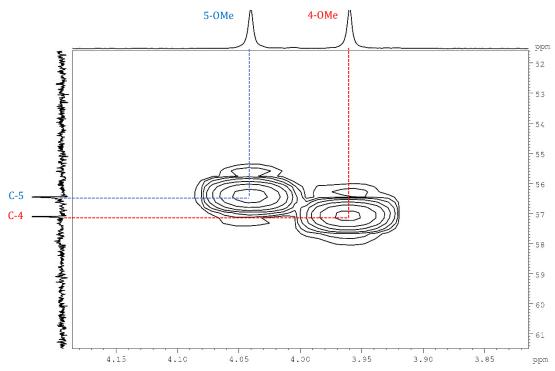


Figure S27: HMQC spectrum of 1-hydroxy-4,5-dimethoxyxanthone (2) in CDCl₃ (From $\delta_{\rm H}$ 3.8 ppm to $\delta_{\rm H}$ 4.2 ppm $\delta_{\rm C}$ 52 ppm to $\delta_{\rm C}$ 61 ppm)

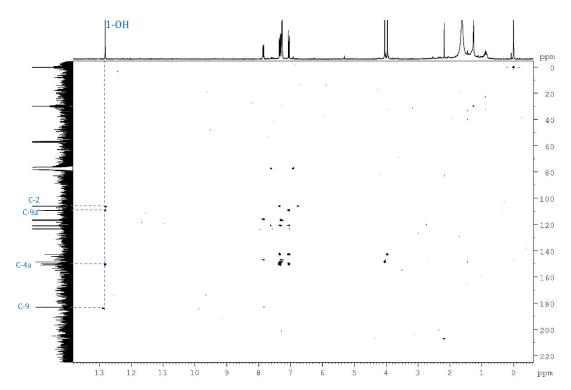


Figure S28: HMBC spectrum of 1-hydroxy-4,5-dimethoxyxanthone (2) in CDCl₃

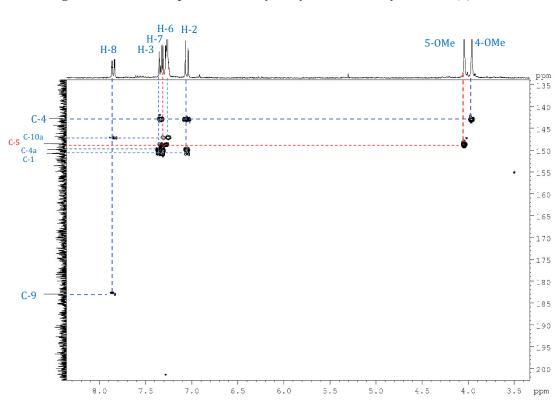


Figure S29: HMBC spectrum of 1-hydroxy-4,5-dimethoxyxanthone (2) in CDCl₃ (From δ_H 3.5 ppm to δ_H 8.0 ppm δ_C 135 ppm to δ_C 200 ppm)

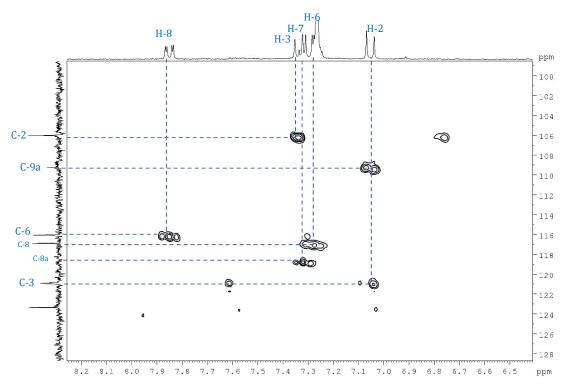


Figure S30:HMBC spectrum of 1-hydroxy-4,5-dimethoxyxanthone (**2**) in CDCl₃ (From $\delta_{\rm H}$ 6.5 ppm to $\delta_{\rm H}$ 8.2 ppm $\delta_{\rm C}$ 100 ppm to $\delta_{\rm C}$ 128 ppm)

TableS4. All HMBC correlation of compound 2

Table 7. This invide confeation of compound 2			
position	$\delta_{\rm H} \left(J { m in } { m Hz} ight)$	$\delta_{\rm C}({ m type})$	HMBC
2	7.06, d (9.0)	106.0 (CH)	C-1, C-3, C-4, C-9a
3	7.33, d (9.0)	120.9 (CH)	C-1, C-2, C-4, C-4a
6	7.25, dd (8.5, 2.0)	116.1 (CH)	C-8, C-10a
7	7.32, t (8.5)	123.4 (CH)	C-5, C-8a
8	7.85, dd (8.5, 2.0)	116.9 (CH)	C-6, C-9, C-10a
1-OH	12.81, s		C-2, C-4a, C-9, C-9a
4-OMe	3.96, s	57.2 (CH ₃)	C-4
5-OMe	4.04, s	56.5 (CH ₃)	C-5

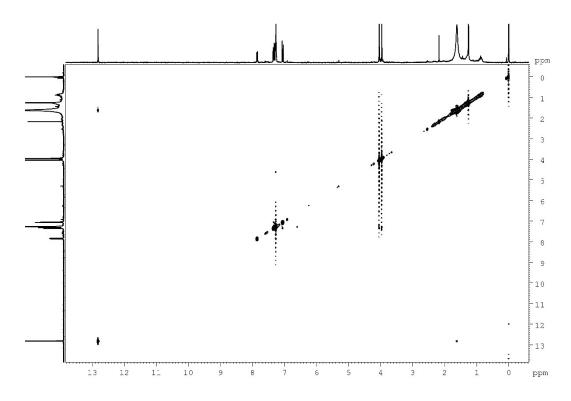


Figure S31: NOESY spectrum of 1-hydroxy-4,5-dimethoxyxanthone (2) in CDCl₃

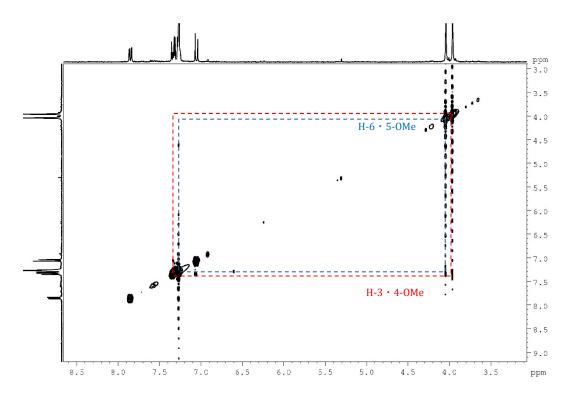


Figure S32: NOESY spectrum of 1-hydroxy-4,5-dimethoxyxanthone (2) in CDCl₃ (From δ_H 3.0 ppm to δ_H 8.5 ppm)

Ret.Time:Averaged 0.107-0.200(Scan#:18-32)
BG Mode:Averaged 5.800-5.899(872-886)
Mass Peaks:17 Base Peak:273.01(188922) MS Stage:MS Polarity:Pos Segment1 - Event2 Precursor:----- Cutoff: Ionization Mode:ESI

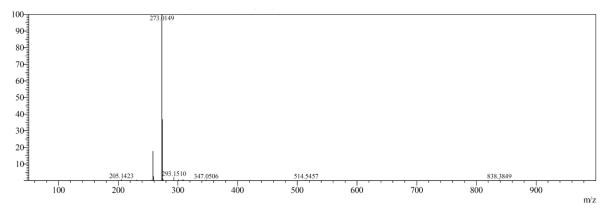


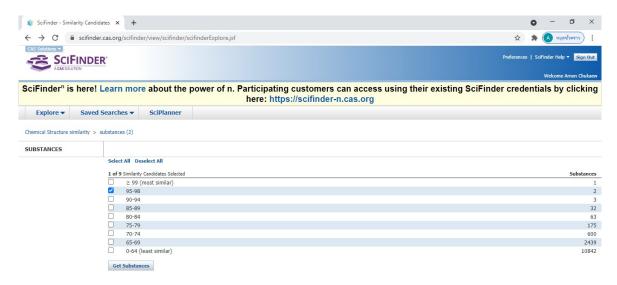
Figure S33: HR-ESI-MS spectrum of 1-hydroxy-4,5-dimethoxyxanthone (2)

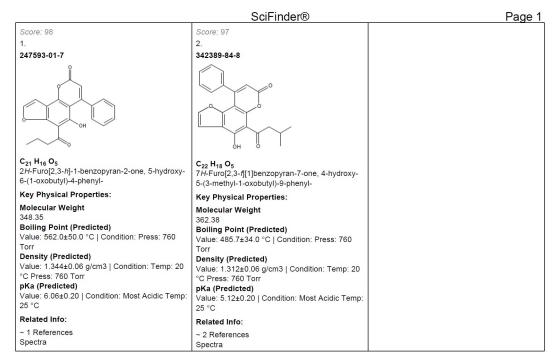
Scifinder search report

S1: Calophyllum pisiferum research report









S3: Scifinder search report with 95-98 % similarity report of compound 2.

