SUPPLEMENTARY MATERIAL

A new helvolic acid derivative from an endophytic *Fusarium* sp. of *Ficus carica*

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Abstract: A new helvolic acid derivative named helvolic acid methyl ester (1), together with two known helvolic acid compounds, helvolic acid (2) and hydrohelvolic acid (3), were isolated from the fermentation of endophytic fungus *Fusarium* sp. in *Ficus carica* leaves. Their structures were elucidated and identified by spectroscopic methods. Compounds 1-3 showed potent antifungal and antibacterial activities.

Keywords: Helvolic acid methyl ester; endophytic fungus; *Fusarium* sp.; *Ficus carica*; antifungal activity

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Supplementary material 1: The NMR of compound 1

Table S1. ^1H and ^{13}C NMR data of compound 1 (CDCl_3)

Position	δ_{C}	δ_{H} (J in Hz)	Position	δ_{C}	δ_{H} (J in Hz)
1	157.1	7.30(1H, d, $J=10.1$)	18	18.0	0.93 (3H, s)
2	127.8	5.85 (1H, d, $J=9.7$)	19	27.5	1.45 (3H, s)
3	201.4		20	130.3	
4	40.4	2.78 (1H, d, $J=12.0$)	21	172.9	
5	47.3	2.29 (1H, d, $J=12.0$)	22	28.8	2.46 (2H, m)
6	73.8	5.23 (1H, s)	23	28.3	2.10 (1H, m), 2.14 (1H, m)
7	208.8		24	122.8	5.11 (1H, s)
8	52.7		25	132.9	
9	41.8	2.63 (1H, s)	26	17.7	1.61 (3H, s)
10	38.2		27	25.7	1.69 (3H, s)
11	23.9	1.57 (1H, m), 1.87 (1H, m)	28	13.1	1.28 (3H, d, $J=6.5$)
12	25.9	1.81 (1H, m), 2.41 (1H, m)	29	18.3	1.18 (3H, s)
13	49.5	2.57 (1H, s)	30	170.1	
14	46.6		31	20.5	1.95 (3H, s)
15	40.7	1.89 (1H, m), 2.21 (1H, m)	32	168.8	
16	73.5	5.89 (1H, d, $J=8.2$)	33	20.7	2.11 (3H, s)
17	147.7		34	53.6	3.71 (3H, s)

^1H -NMR (400 MHz, CDCl_3) of compound 1

^{13}C -NMR (100 MHz, CDCl_3) of compound 1

Supplementary material 2: The NMR of compounds 2 and 3

$^1\text{H-NMR}$ (400 MHz, CDCl_3) of compound 2

$^{13}\text{C-NMR}$ (100 MHz, CDCl_3) of compound 2

5

^{13}C -NMR (100 MHz, CDCl_3) of compound 3

Supplementary material 3: HRESI-MS of compound 1

Supplementary material 4: Strain identification of FL10

The microscopic features of endophytic fungus FL10

The nucleotide sequence of FL10 (without primer sequences)

CCGTTCTCTTAATTTTTGTTGTCGACGGTCTACTGATCGAGGTCAACATTCAGAAGTT
GGGGTTTTACGGCATGGCCGCGCCGCGTTCCAGTTGCGAGGTGTTAGCTACTACGCAAT
GGAGGCTGCAGCGAGACCGCCAATGTATTTTCGGGGGCGGCACCGCCCAGAAGGGCAGA
GCCGATCCCCAACACCAAACCCGGGGGCTTGAGGGTTGAAATGACGCTCGAACAGGCA
TGCCCGCCGGAATACCAGCGGGCGCAATGTGCGTTCAAAGATTCGATGATTCACTGAAT
TCTGCAATTCACATTACTTATCGCATTTTGCTGCGTTCTTCATCGATGCCAGAACCAAGA
GATCCGTTGTTGAAAGTTTTGATTTATTTGTTTGTCTTACTCAGAAGTTACAATAAGAAA
CATTAGAGTTTGGGTCCTCTGGCGGGCCGTCCCGTTTTACGGGGCGCGGGGCTGATCCGC
CGAGGCAACATTAAGGTATGTTTCACAGGGGTTTGGGAGTTGTAAACTCGGTAATGATCC
CTCCGCAGGTTACCCCTACGGAA

System phylogenetic tree of strain FL10 based 18s rDNA-ITS sequence