

Supporting Information

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Chemical Constituents and Anti-influenza Viral Activity of the Leaves of Vietnamese Plant *Elaeocarpus tonkinensis*

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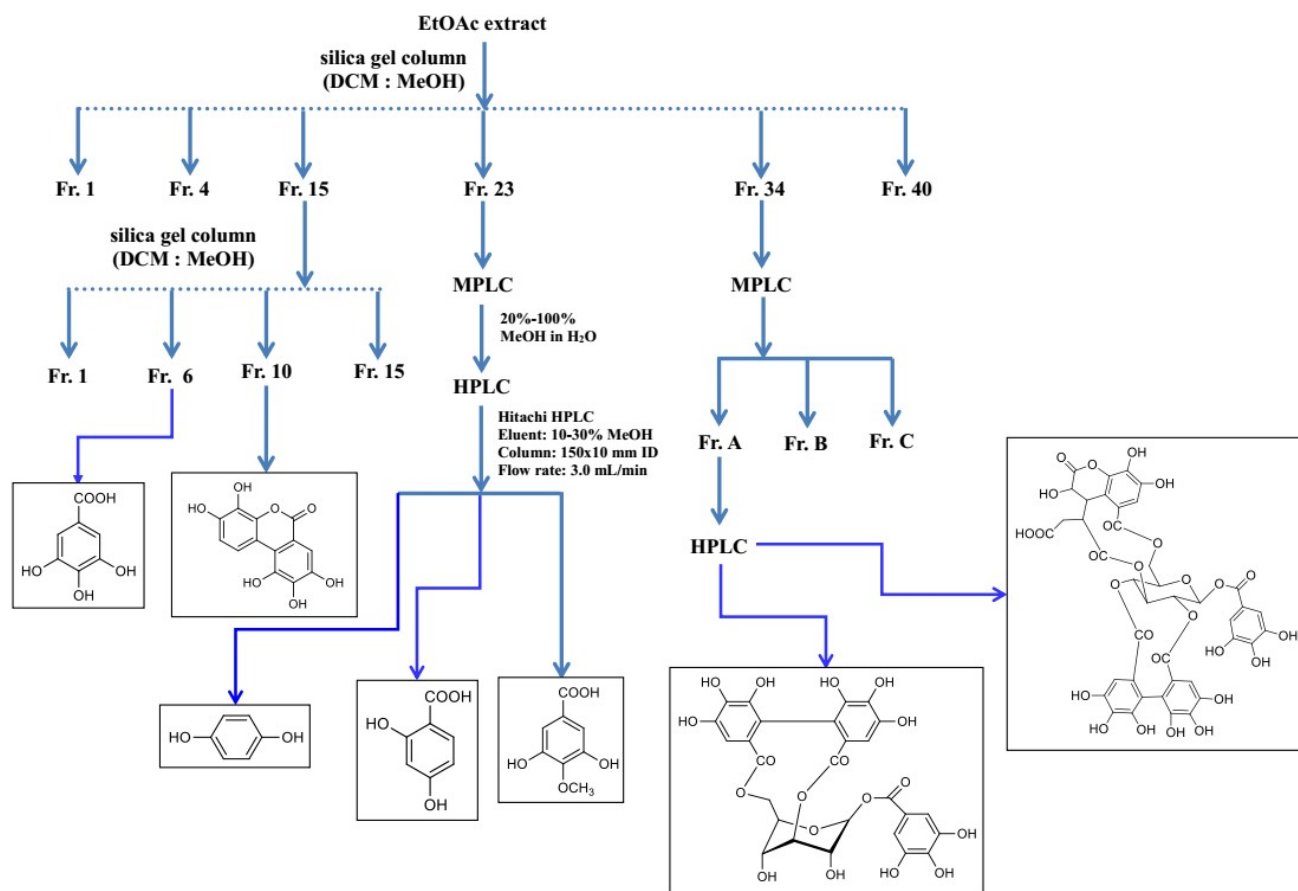


Figure S2: Isolation scheme of the compounds from EtOAc layer of *E. tonkinensis*

Table S1. Summary of ^1H (500 MHz) and ^{13}C (125 MHz) NMR spectroscopic data for compound 7

Position ^b	7		Corilagin (<i>Phytochemistry</i> ¹)	
	δ_{H} mult. (<i>J</i> in Hz)	δ_{C}	δ_{H} mult. (<i>J</i> in Hz)	¹ δ_{C}
Glucose				
1	6.41	93.7	6.36	95.1
2	4.00	68.1	3.99	69.5
3	4.88	70.2	4.81	71.6
4	4.50	61.1	4.47	62.5
5	4.58	74.8	4.52	76.2
6	4.21	63.6	4.15	65.0
	5.00		4.97	
1- <i>O</i> -Galloyl				
1'''	7.09	119.3	7.06	120.7
2''', 6'''		109.6		111.0
3''', 5'''		145.0		146.4
4'''		139.0		140.5
7'''		165.4		166.7
HHDP (3- <i>O</i> end)				
1	6.72	115.8	6.69	117.3
2		143.9		145.5
3		136.8		138.3
4		144.2		145.7
5		108.8		110.3
6		124.1		125.5
7		167.1		168.6
HHDP (6- <i>O</i> end)				
1'	6.69	115.3	6.66	116.8
2'		143.8		145.4
3'		136.3		137.8
4'		144.7		146.0
5'		107.0		108.4
6'		124.1		125.6
7'		168.7		170.2

^a Recorded in CD₃OD, all assignments are unequivocal, couplings were estimated by first-order analysis of multiplet patterns, ^bNumbering as in Figure 3 of the paper.

[1] Y. Sudjaroen, W. E. Hull, G. Erben, G. Würtele, S. Changbumrung, C. M. Ulrich, and R. W. Owen (2012). Isolation and characterization of ellagitannins as the major polyphenolic components of Longan (*Dimocarpus longan* Lour) seeds, *Phytochemistry* **77**, 226-237.

Table S2. Summary of ^1H (500 MHz) and ^{13}C (125 MHz) NMR spectroscopic data for compound **8**

Position ^b	8		Chebulagic acid (<i>Phytochemistry</i> ²⁾)	
	δ_{H} mult. (<i>J</i> in Hz)	δ_{C}	δ_{H} mult. (<i>J</i> in Hz)	$^1\delta_{\text{C}}$
Glucose				
1	6.51 (1H, m)	92.5	6.51 (1H, m)	92.6
2	5.39 (1H, m)	71.1	5.39 (1H, dd, 2.4, 1.2)	71.2
3	5.83 (1H, m)	62.4	5.83 (1H, dd, 3.7, 1.1)	62.5
4	5.23 (1H, d, 3.5)	66.8	5.23 (1H, d, 1.5)	66.8
5	-	74.5	4.82 (1H, dd, 10.1, 7.9)	74.3
6	4.90 (1H)	64.7	4.90 (1H)	64.8
	4.39 (1H, dd, 10.5, 8.0)		4.37 (1H, d, 10.9)	
1- <i>O</i> -Galloyl				
1'''		120.1		120.2
2''', 6'''	7.08 (2H, s)	110.9	7.08 (2H, s)	110.9
3''', 5'''		146.5		146.6
4'''		140.8		140.9
7'''		166.2		166.3
HHDP (3- <i>O</i> end)				
1		117.6		117.7
2		145.5		145.6
3		138.6		138.7
4		145.6		145.7
5	6.84 (1H, s)	110.4	6.84 (1H, s)	110.5
6		124.5		124.6
7		167.5		167.5
HHDP (6- <i>O</i> end)				
1'		116.2		116.3
2'		145.3		145.4
3'		137.5		137.6
4'		146.1		146.2
5'	6.64 (1H, s)	108.2	6.64 (1H, s)	108.3
6'		125.6		125.7
7'		170.1		174.5
2- <i>O</i> -4- <i>O</i> -Chebuloyl				
1'		170.7		170.8
2'	-	67.0	4.80 (1H, d, 7.2)	67.1
3'	5.06 (1H, dd, 7.0, 1.0)	41.7	5.04 (1H, d, 1.6)	41.8
4'	3.81 (1H, dd, 11.5, 2.0)	40.0	3.80 (1H, dd, 11.9, 3.5)	40.1
5'	2.00 (1H, m)	30.7	2.12 (1H, d, 17.0)	30.7
	1.20 (1H, m)		2.19 (1H)	
6'		174.9		175.2
7'		174.4		174.5
1''		119.0		119.1
2''	7.48 (1H, s)	117.6	7.48 (1H, s)	117.7
3''		147.4		147.4
4''		140.4		140.5
5''		141.4		141.5
6''		115.9		116.1
7''		166.4		166.5

^a Recorded in CD₃OD, all assignments are unequivocal, couplings were estimated by first-order analysis of multiplet patterns, ^bNumbering as in Figure 3 of the paper.

[2] B. Pfundstein, S. K. El-Desouky, W. E. Hull, R. Haubner, G. Erben, and R. W. Owen (2010). Polyphenolic compounds in the fruits of Egyptian medicinal plants (*Terminalia bellerica*, *Terminalia chebula* and *Terminalia horrida*): characterization, quantitation and determination of antioxidant capacities, *Phytochemistry* **71**, 1132-1148.

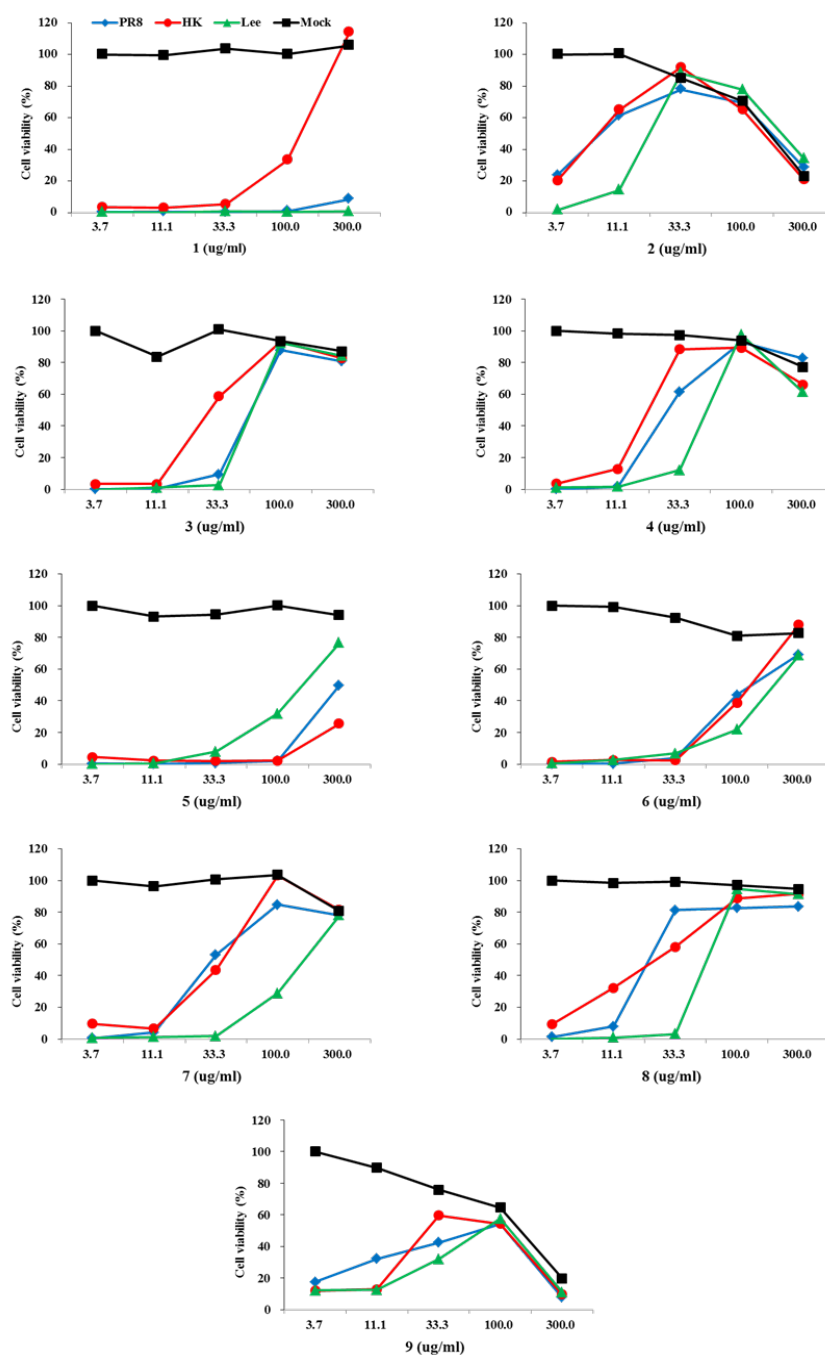


Figure S3. Antiviral activity of substances isolated from *E. tonkinensis* against PR8, HK and Lee in MDCK cells. Cell monolayers were mock-infected or infected with influenza A and B viruses at an MOI of 0.001 for 1 h. After washing with PBS, compounds serially diluted in MEM with 2 μ g/mL TPCK-trypsin were added to the wells and incubated for 3 days. Cell viability was measured by FDA assay. **1**, trolliamide; **2**, gallic acid; **3**, urolithin M-5; **4**, hydroquinone; **5**, 2,4-dihydroxybenzoic acid; **6**, 3,5-dihydroxy-4-methoxybenzoic acid; **7**, corilagin; **8**, chebulagic acid; **9**, shikimic acid.