

Employing an *in-silico* approach in the evaluation of *Aloe vera* metabolites as inhibitors of Omicron RBD and the ROS-dependent cellular signaling processes**Billy Johnson Kepel¹, Marko Jeremia Kalalo², Trina Ekawati Tallei^{3,4}, Fatimawali^{2,4*}**¹Department of Chemistry, Faculty of Medicine, Sam Ratulangi University, Manado, Indonesia.²Pharmacy Study Program, Faculty of Mathematics and Natural Sciences, Sam Ratulangi University, Manado, Indonesia.³Biology Department, Faculty of Mathematics and Natural Sciences, Sam Ratulangi University, Manado, Indonesia.⁴Biotechnology Department, The University Center of Excellence for Biotechnology and Conservation of Wallacea, Sam Ratulangi University, Manado, Indonesia.doi: <https://doi.org/10.7324/JAPS.2023.130304>**Supplementary Material**

Table Supplementary 1. Leaf skin metabolites

Peak	Metabolite	Synonym	Pubchem CID
1	(2E,5E)-4-acetyl-7-bromo-8-hydroxy-2,5-bis(1-hydroxyethylidene)-3-methylanthracene-1,6,9,10-tetron	Triacetyl-bromo-emodin	137227996
2	1,8-dihydroxy-3-methyl-6-[(2S,3R,4S,5S,6R)-3,4,5-trihydroxy-6-[(2R,3R,4R,5R,6S)-3,4,5-trihydroxy-6-methyloxan-2-yl]oxymethyl]oxan-2-yl]oxyanthracene-9,10-dione	6-O-(alpha-L-rhamnopyranosyl)-(1->6)-Beta-D-glucopyranosyl)emodin	49831797
3	1,8-dihydroxy-3-methyl-6-[(2S,3R,4S,5S,6R)-3,4,5-trihydroxy-6-[(2R,3R,4R,5R,6S)-3,4,5-trihydroxy-6-methyloxan-2-yl]oxymethyl]oxan-2-yl]oxyanthracene-9,10-dione	6-O-(alpha-L-rhamnopyranosyl)-(1->6)-Beta-D-glucopyranosyl)emodin	49831797
4	methyl (6aR,7S,10aR)-6a,7,10a,12-tetrahydroxy-8-methoxy-1-methyl-6,10,11-trioxo-3-[(2S,3R,4R,5R,6S)-3,4,5-trihydroxy-6-methyloxan-2-yl]oxy-7H-tetracene-2-carboxylate	8-Demethyl-8-(alpha-L-rhamnosyl)tetracenomycin C	86289504
5	[(2R,3R,4S,5R,6R)-3,4,5-triacetyloxy-6-[(9R)-4,5,9-triacetyloxy-2-(acetyloxymethyl)-10-oxoanthracen-9-yl]oxan-2-yl]methyl acetate	(10R)-1,8,10alpha-Triacetoxy-3-acetoxyethyl-10-(2-O,3-O,4-O,6-O-tetraacetyl-beta-D-glucopyranosyl)anthrone	14889739
6	1-hydroxy-10-[4-hydroxy-2-(hydroxymethyl)-10-oxo-5-[(2S,3R,4S,5S,6R)-3,4,5-trihydroxy-6-(hydroxymethyl)oxan-2-yl]oxy-9H-anthracen-9-yl]-3-(hydroxymethyl)-8-	Aloe-emodin dianthrone diglucoside	127355

	[(2S,3R,4S,5S,6R)-3,4,5-trihydroxy-6-(hydroxymethyl)oxan-2-yl]oxy-10H-anthracen-9-one		
7	(9R)-9-[(9S)-2-carboxy-5-[(2S,3R,4S,5S,6R)-4,5-dihydroxy-6-(hydroxymethyl)-3-oxalooxyoxan-2-yl]oxy-4-hydroxy-10-oxo-9H-anthracen-9-yl]-4-hydroxy-10-oxo-5-[(2S,3R,4S,5S,6R)-3,4,5-trihydroxy-6-(hydroxymethyl)oxan-2-yl]oxy-9H-anthracene-2-carboxylic acid	-	131751545
8	1,6-dihydroxy-8-[4-hydroxy-5-[5-hydroxy-4-[5-[5-hydroxy-4-(5-hydroxy-6-methyloxan-2-yl)oxy-6-methyloxan-2-yl]oxy-6-methyloxan-2-yl]oxy-6-methyloxan-2-yl]oxy-6-methyloxan-2-yl]oxy-3-methyl-5,6-dihydrobenzo[a]anthracene-7,12-dione	Landomycin X	156580396
9	1,6-dihydroxy-3-methyl-8-[(2S,3R,4S,5S,6R)-3,4,5-trihydroxy-6-[(2R,3R,4S,5S,6R)-3,4,5-trihydroxy-6-(hydroxymethyl)oxan-2-yl]oxymethyl]oxan-2-yl]oxyanthracene-9,10-dione	Emodin-8-o-beta-gentiobioside	71587230
10	1,6-dihydroxy-3-methyl-8-[(2S,3R,4S,5S,6R)-3,4,5-trihydroxy-6-[(2R,3R,4S,5S,6R)-3,4,5-trihydroxy-6-(hydroxymethyl)oxan-2-yl]oxymethyl]oxan-2-yl]oxyanthracene-9,10-dione	Emodin-8-o-beta-gentiobioside	71587230
11	1,6-dihydroxy-3-methyl-8-[(2S,3R,4S,5S,6R)-3,4,5-trihydroxy-6-[(2R,3R,4S,5S,6R)-3,4,5-trihydroxy-6-(hydroxymethyl)oxan-2-yl]oxymethyl]oxan-2-yl]oxyanthracene-9,10-dione	Emodin-8-o-beta-gentiobioside	71587230
12	1,6-dihydroxy-3-methyl-8-[(2S,3R,4S,5S,6R)-3,4,5-trihydroxy-6-[(2R,3R,4S,5S,6R)-3,4,5-trihydroxy-6-(hydroxymethyl)oxan-2-yl]oxymethyl]oxan-2-yl]oxyanthracene-9,10-dione	Emodin-8-o-beta-gentiobioside	71587230
13	1,6-dihydroxy-3-methyl-8-[(2S,3R,4S,5S,6R)-3,4,5-trihydroxy-6-[(2R,3R,4S,5S,6R)-3,4,5-trihydroxy-6-(hydroxymethyl)oxan-2-yl]oxymethyl]oxan-2-yl]oxyanthracene-9,10-dione	Emodin-8-o-beta-gentiobioside	71587230
14	1,6-dihydroxy-3-methyl-8-[(2S,3R,4S,5S,6R)-3,4,5-trihydroxy-6-[(2R,3R,4S,5S,6R)-3,4,5-trihydroxy-6-(hydroxymethyl)oxan-2-yl]oxymethyl]oxan-2-yl]oxyanthracene-9,10-dione	Emodin-8-o-beta-gentiobioside	71587230
15	1,6-dihydroxy-3-methyl-8-[(2S,3R,4S,5S,6R)-3,4,5-trihydroxy-6-[(2R,3R,4S,5S,6R)-3,4,5-trihydroxy-6-	Emodin-8-o-beta-gentiobioside	71587230

	(hydroxymethyl)oxan-2-yl]oxymethyl]oxan-2-yl]oxyanthracene-9,10-dione		
16	(7S,9S)-9-ethyl-4,6,9,11-tetrahydroxy-7-[(2R,4S,5S,6S)-4-hydroxy-5-[(2S,4S,5S,6S)-4-hydroxy-5-[(2S,5S,6S)-5-hydroxy-6-methyloxan-2-yl]oxy-6-methyloxan-2-yl]oxy-8,10-dihydro-7H-tetracene-5,12-dione	L-Rhodinose-2-deoxy-L-fucose-2-deoxy-L-fucose-10-decarbomethoxy-epsilon-rhodomycinone	139589982
17	1-hydroxy-10-[4-hydroxy-2-(hydroxymethyl)-10-oxo-5-[(2S,3R,4S,5S,6R)-3,4,5-trihydroxy-6-(hydroxymethyl)oxan-2-yl]oxy-9H-antracen-9-yl]-3-(hydroxymethyl)-8-[(2S,3R,4S,5S,6R)-3,4,5-trihydroxy-6-(hydroxymethyl)oxan-2-yl]oxy-10H-antracen-9-one	Aloe-emodin dianthrone diglucoside	127355
18	(10S)-10-[(9S)-3-carboxy-5-hydroxy-4,6,9-trimethyl-10-oxo-2-[(2R,3R,4S,5R,6R)-3,4,5-trihydroxy-6-(hydroxymethyl)oxan-2-yl]oxyanthracen-9-yl]peroxy-3,8-dihydroxy-1,7,10-trimethyl-9-oxoanthracene-2-carboxylic acid	Adxanthromycin A	70678713
19	(10S)-10-[(9S)-3-carboxy-5-hydroxy-4,6,9-trimethyl-10-oxo-2-[(2R,3R,4S,5R,6R)-3,4,5-trihydroxy-6-(hydroxymethyl)oxan-2-yl]oxyanthracen-9-yl]peroxy-3,8-dihydroxy-1,7,10-trimethyl-9-oxoanthracene-2-carboxylic acid	Adxanthromycin A	70678713
20	(10S)-10-[(9S)-3-carboxy-5-hydroxy-4,6,9-trimethyl-10-oxo-2-[(2R,3R,4S,5R,6R)-3,4,5-trihydroxy-6-(hydroxymethyl)oxan-2-yl]oxyanthracen-9-yl]peroxy-3,8-dihydroxy-1,7,10-trimethyl-9-oxoanthracene-2-carboxylic acid	Adxanthromycin A	70678713
21	(10S)-10-[(9S)-3-carboxy-5-hydroxy-4,6,9-trimethyl-10-oxo-2-[(2R,3R,4S,5R,6R)-3,4,5-trihydroxy-6-(hydroxymethyl)oxan-2-yl]oxyanthracen-9-yl]peroxy-3,8-dihydroxy-1,7,10-trimethyl-9-oxoanthracene-2-carboxylic acid	Adxanthromycin A	70678713
22	(10S)-10-[(9S)-3-carboxy-5-hydroxy-4,6,9-trimethyl-10-oxo-2-[(2R,3R,4S,5R,6R)-3,4,5-trihydroxy-6-(hydroxymethyl)oxan-2-yl]oxyanthracen-9-yl]peroxy-3,8-dihydroxy-1,7,10-trimethyl-9-oxoanthracene-2-carboxylic acid	Adxanthromycin A	70678713
23	1-hydroxy-10-[4-hydroxy-2-(hydroxymethyl)-10-oxo-5-[(2S,3R,4S,5S,6R)-3,4,5-trihydroxy-6-(hydroxymethyl)oxan-2-yl]oxy-9H-antracen-9-yl]-3-(hydroxymethyl)-8-[(2S,3R,4S,5S,6R)-3,4,5-trihydroxy-6-(hydroxymethyl)oxan-2-yl]oxy-10H-antracen-9-one	Aloe-emodin dianthrone diglucoside	127355

24	(6R)-8-[(2S,4R,5S,6R)-5-[(2S,4R,5R,6R)-4-[(2S,5S,6S)-5-[(2S,4R,5S,6R)-5-[(2S,4R,5S,6R)-4,5-dihydroxy-6-methyloxan-2-yl]oxy-4-hydroxy-6-methyloxan-2-yl]oxy-5-hydroxy-6-methyloxan-2-yl]oxy-4-hydroxy-6-methyloxan-2-yl]oxy-1,6,11-trihydroxy-3-methyl-5,6-dihydrobenzo[a]anthracene-7,12-dione	Landomycin B	53297405
25	(6R)-8-[(2S,4R,5S,6R)-5-[(2S,4R,5R,6R)-4-[(2S,5S,6S)-5-[(2S,4R,5S,6R)-5-[(2S,4R,5S,6R)-4,5-dihydroxy-6-methyloxan-2-yl]oxy-4-hydroxy-6-methyloxan-2-yl]oxy-5-hydroxy-6-methyloxan-2-yl]oxy-4-hydroxy-6-methyloxan-2-yl]oxy-1,6,11-trihydroxy-3-methyl-5,6-dihydrobenzo[a]anthracene-7,12-dione	Landomycin B	53297405
26	8-[(2S,4R,5S,6R)-5-[(2S,4R,5R,6R)-4-[(2S,5S,6S)-5-[(2S,4R,5S,6R)-5-[(2S,4R,5S,6R)-4,5-dihydroxy-6-methyloxan-2-yl]oxy-4-hydroxy-6-methyloxan-2-yl]oxy-6-methyloxan-2-yl]oxy-5-hydroxy-6-methyloxan-2-yl]oxy-4-hydroxy-6-methyloxan-2-yl]oxy-1,11-dihydroxy-3-methylbenzo[a]anthracene-7,12-dione	Landomycin W	50993663

Table Supplementary 2. Gel metabolites

Peak	Metabolite	Synonym	Pubchem CID
1	1-hydroxy-3-(hydroxymethyl)-10-[(2S,3R,4R,5S,6R)-3,4,5-trihydroxy-6-(hydroxymethyl)oxan-2-yl]-8-[(2R,3R,4S,5S,6R)-3,4,5-trihydroxy-6-(hydroxymethyl)oxan-2-yl]oxy-10H-anthracen-9-one	Aloin 8-O-alpha-D-glucopyranoside	101423794
2	1,2,3,6,8-pentadeuterio-4,5-dihydroxy-7-(hydroxymethyl)anthracene-9,10-dione	Aloe-emodin-d5	71313110
3	1-hydroxy-10H-anthracen-9-one	1-Hydroxyanthrone	150937
4	1,8-dihydroxy-3-methyl-6-[(2S,3R,4S,5S,6R)-3,4,5-trihydroxy-6-[(2R,3R,4R,5R,6S)-3,4,5-trihydroxy-6-methyloxan-2-yl]oxymethyl]oxan-2-yl]oxyanthracene-9,10-dione	6-O-(alpha-L-rhamnopyranosyl)-(1->6)-Beta-D-glucopyranosyl)emodin	49831797
5	1,8-dihydroxy-3-methyl-6-[(2S,3R,4S,5S,6R)-3,4,5-trihydroxy-6-[(2R,3R,4R,5R,6S)-3,4,5-trihydroxy-6-methyloxan-2-yl]oxymethyl]oxan-2-yl]oxyanthracene-9,10-dione	6-O-(alpha-L-rhamnopyranosyl)-(1->6)-Beta-D-glucopyranosyl)emodin	49831797
6	methyl (6aR,7S,10aR)-6a,7,10a,12-	8-Demethyl-8-(alpha-L-	86289504

	tetrahydroxy-8-methoxy-1-methyl-6,10,11-trioxo-3-[(2S,3R,4R,5R,6S)-3,4,5-trihydroxy-6-methyloxan-2-yl]oxy-7H-tetracene-2-carboxylate	rhamnosyl)tetrenomycin C	
7	Methyl (6aR,7S,10aR)-6a,7,10a,12-tetrahydroxy-8-methoxy-1-methyl-6,10,11-trioxo-3-[(2S,3R,4R,5S,6S)-3,4,5-trimethoxy-6-methyloxan-2-yl]oxy-7H-tetracene-2-carboxylate	12-demethyl-elloramycin	86289508
8	[(2R,3R,4S,5R,6R)-3,4,5-triacetyloxy-6-[(9R)-4,5,9-triacetyloxy-2-(acetyloxymethyl)-10-oxoanthracen-9-yl]oxan-2-yl]methyl acetate	(10R)-1,8,10alpha-Triacetoxy-3-acetoxymethyl-10-(2-O,3-O,4-O,6-O-tetraacetyl-beta-D-glucopyranosyl)anthrone	14889739
9	1-hydroxy-10-[4-hydroxy-2-(hydroxymethyl)-10-oxo-5-[(2S,3R,4S,5S,6R)-3,4,5-trihydroxy-6-(hydroxymethyl)oxan-2-yl]oxy-9H-anthracen-9-yl]-3-(hydroxymethyl)-8-[(2S,3R,4S,5S,6R)-3,4,5-trihydroxy-6-(hydroxymethyl)oxan-2-yl]oxy-10H-anthracen-9-one	Aloe-emodin dianthrone diglucoside	127355
10	(9R)-9-[(9S)-2-carboxy-5-[(2S,3R,4S,5S,6R)-4,5-dihydroxy-6-(hydroxymethyl)-3-oxalooxyoxan-2-yl]oxy-4-hydroxy-10-oxo-9H-anthracen-9-yl]-4-hydroxy-10-oxo-5-[(2S,3R,4S,5S,6R)-3,4,5-trihydroxy-6-(hydroxymethyl)oxan-2-yl]oxy-9H-anthracene-2-carboxylic acid	-	131751545
11	1,6-dihydroxy-8-[4-hydroxy-5-[5-hydroxy-4-[5-[5-hydroxy-4-(5-hydroxy-6-methyloxan-2-yl)oxy-6-methyloxan-2-yl]oxy-6-methyloxan-2-yl]oxy-6-methyloxan-2-yl]oxy-3-methyl-5,6-dihydrobenzo[a]anthracene-7,12-dione	Landomycin X	156580396
12	1,6-dihydroxy-3-methyl-8-[(2S,3R,4S,5S,6R)-3,4,5-trihydroxy-6-[(2R,3R,4S,5S,6R)-3,4,5-trihydroxy-6-(hydroxymethyl)oxan-2-yl]oxymethyl]oxan-2-yl]oxyanthracene-9,10-dione	Emodin-8-o-beta-gentiobioside	71587230
13	1,6-dihydroxy-3-methyl-8-	Emodin-8-o-beta-	71587230

	[(2S,3R,4S,5S,6R)-3,4,5-trihydroxy-6-[(2R,3R,4S,5S,6R)-3,4,5-trihydroxy-6-(hydroxymethyl)oxan-2-yl]oxymethyl]oxan-2-yl]oxyanthracene-9,10-dione	gentiobioside	
14	(6R)-1,6,11-trihydroxy-8-[(2S,4R,5S,6R)-4-hydroxy-5-[(2S,4R,5R,6R)-5-hydroxy-4-[(2S,5S,6S)-5-[(2S,4R,5S,6R)-4-hydroxy-5-[(2S,4R,5R,6R)-5-hydroxy-4-[(2S,5S,6S)-5-hydroxy-6-methyloxan-2-yl]oxy-6-methyloxan-2-yl]oxy-6-methyloxan-2-yl]oxy-6-methyloxan-2-yl]oxy-3-methyl-5,6-dihydrobenzo[a]anthracene-7,12-dione	Landomycin A	9988748
15	1,6-dihydroxy-3-methyl-8-[(2S,3R,4S,5S,6R)-3,4,5-trihydroxy-6-[(2R,3R,4S,5S,6R)-3,4,5-trihydroxy-6-(hydroxymethyl)oxan-2-yl]oxymethyl]oxan-2-yl]oxyanthracene-9,10-dione	Emodin-8-o-beta-gentiobioside	71587230
16	1,6-dihydroxy-3-methyl-8-[(2S,3R,4S,5S,6R)-3,4,5-trihydroxy-6-[(2R,3R,4S,5S,6R)-3,4,5-trihydroxy-6-(hydroxymethyl)oxan-2-yl]oxymethyl]oxan-2-yl]oxyanthracene-9,10-dione	Emodin-8-o-beta-gentiobioside	71587230
17	1,6-dihydroxy-3-methyl-8-[(2S,3R,4S,5S,6R)-3,4,5-trihydroxy-6-[(2R,3R,4S,5S,6R)-3,4,5-trihydroxy-6-(hydroxymethyl)oxan-2-yl]oxymethyl]oxan-2-yl]oxyanthracene-9,10-dione	Emodin-8-o-beta-gentiobioside	71587230
18	1,6-dihydroxy-3-methyl-8-[(2S,3R,4S,5S,6R)-3,4,5-trihydroxy-6-[(2R,3R,4S,5S,6R)-3,4,5-trihydroxy-6-(hydroxymethyl)oxan-2-yl]oxymethyl]oxan-2-yl]oxyanthracene-9,10-dione	Emodin-8-o-beta-gentiobioside	71587230
19	1,6-dihydroxy-3-methyl-8-[(2S,3R,4S,5S,6R)-3,4,5-trihydroxy-6-[(2R,3R,4S,5S,6R)-3,4,5-trihydroxy-6-	Emodin-8-o-beta-gentiobioside	71587230

	(hydroxymethyl)oxan-2-yl]oxymethyl]oxan-2-yl]oxyanthracene-9,10-dione		
20	1-hydroxy-10-[4-hydroxy-2-(hydroxymethyl)-10-oxo-5-[(2S,3R,4S,5S,6R)-3,4,5-trihydroxy-6-(hydroxymethyl)oxan-2-yl]oxy-9H-anthracen-9-yl]-3-(hydroxymethyl)-8-[(2S,3R,4S,5S,6R)-3,4,5-trihydroxy-6-(hydroxymethyl)oxan-2-yl]oxy-10H-anthracen-9-one	Aloe-emodin dianthrone diglucoside	127355
21	(10S)-10-[(9S)-3-carboxy-5-hydroxy-4,6,9-trimethyl-10-oxo-2-[(2R,3R,4S,5R,6R)-3,4,5-trihydroxy-6-(hydroxymethyl)oxan-2-yl]oxyanthracen-9-yl]peroxy-3,8-dihydroxy-1,7,10-trimethyl-9-oxoanthracene-2-carboxylic acid	Adxanthromycin A	70678713
22	(10S)-10-[(9S)-3-carboxy-5-hydroxy-4,6,9-trimethyl-10-oxo-2-[(2R,3R,4S,5R,6R)-3,4,5-trihydroxy-6-(hydroxymethyl)oxan-2-yl]oxyanthracen-9-yl]peroxy-3,8-dihydroxy-1,7,10-trimethyl-9-oxoanthracene-2-carboxylic acid	Adxanthromycin A	70678713
23	(10S)-10-[(9S)-3-carboxy-5-hydroxy-4,6,9-trimethyl-10-oxo-2-[(2R,3R,4S,5R,6R)-3,4,5-trihydroxy-6-(hydroxymethyl)oxan-2-yl]oxyanthracen-9-yl]peroxy-3,8-dihydroxy-1,7,10-trimethyl-9-oxoanthracene-2-carboxylic acid	Adxanthromycin A	70678713
24	1-hydroxy-10-[4-hydroxy-2-(hydroxymethyl)-10-oxo-5-[(2S,3R,4S,5S,6R)-3,4,5-trihydroxy-6-(hydroxymethyl)oxan-2-yl]oxy-9H-anthracen-9-yl]-3-(hydroxymethyl)-8-[(2S,3R,4S,5S,6R)-3,4,5-trihydroxy-6-(hydroxymethyl)oxan-2-yl]oxy-10H-anthracen-9-one	Aloe-emodin dianthrone diglucoside	127355

Table Supplementary 3. Biological activity prediction via PASS online

	Metabolite	Antiviral	COX	LOX	Antioxidant
		Antiviral		12-Lipoxygenase inhibitor	Antioxidant
		Antiviral (Influenza)			
1	Triacetyl-bromo-emodin	Antiviral (Adenovirus)			
		Antiviral (Herpes)			
		Antiviral (CMV)			
		Antiviral		12-Lipoxygenase inhibitor	Antioxidant
		Antiviral (Influenza)			
2	6-O-(alpha-L-rhamnopyranosyl)-(1->6)-Beta-D-glucopyranosyl)emodin	Antiviral (Herpes)		Lipoxygenase inhibitor	
		Antiviral (Hepatitis B)		5-Lipoxygenase inhibitor	
		Antiviral (Trachoma)			
		Antiviral (Herpes)			Antioxidant
3	8-Demethyl-8-(alpha-L-rhamnosyl)tetracenomycin C	Antiviral (Hepatitis B)			
		Antiviral (Influenza)			

		Antiviral (Trachoma)		
		Antiviral	Cyclooxygenase 3 inhibitor	12-Lipoxygenase inhibitor
		Antiviral (Herpes)		Antioxidant
		Antiviral (Rhinovirus)		5-Lipoxygenase inhibitor
4	(10R)-1,8,10alpha-Triacetoxy-3-acetoxymethyl-10-(2-O,3-O,4-O,6-O-tetraacetyl-beta-D-glucopyranosyl)anthrone	Antiviral (Picornavirus)		
		Antiviral (Trachoma)		
		Antiviral (Hepatitis B)		
		Antiviral	12-Lipoxygenase inhibitor	Antioxidant
		Antiviral (Influenza)		
		Antiviral (Herpes)		
		Antiviral (Hepatitis B)		
5	Aloe-emodin dianthrone diglucoside	Antiviral (Trachoma)		
		Antiviral (Influenza A)		
		Antiviral (Poxvirus)		
		Antiviral (Hepatitis)		
		Antiviral (HIV)		
		Antiviral (Hepatitis C)	12-Lipoxygenase inhibitor	Antioxidant
		Antiviral		
		Antiviral (Influenza)		
		Antiviral (Herpes)		
		Antiviral (Hepatitis B)		
6	(9R)-9-[(9S)-2-carboxy-5-[(2S,3R,4S,5S,6R)-4,5-dihydroxy-6-(hydroxymethyl)-3-oxalooxyoxan-2-yl]oxy-4-hydroxy-10-oxo-9H-anthracen-9-yl]-4-hydroxy-10-oxo-5-[(2S,3R,4S,5S,6R)-3,4,5-trihydroxy-6-(hydroxymethyl)oxan-2-yl]oxy-9H-anthracene-2-carboxylic acid	Antiviral (Trachoma)		
		Antiviral (Hepatitis)		
		Antiviral (Influenza A)		
		Antiviral (Hepatitis C)		
		Antiviral (Rhinovirus)		
		Antiviral (Picornavirus)	12-Lipoxygenase inhibitor	Antioxidant
		Antiviral		
7	Emodin-8-o-beta-gentiobioside	Antiviral (Influenza)		

		Antiviral (Herpes)		
		Antiviral (Hepatitis B)		
		Antiviral (Trachoma)		
		Antiviral (Hepatitis)		
		Antiviral (HIV)		
		Antiviral	12-Lipoxygenase inhibitor	Antioxidant
8	L-Rhodinose-2-deoxy-L-fucose-2-deoxy-L-fucose-10-decarbomethoxy-epsilon-rhodomycinone	Antiviral (Herpes)		
		Antiviral (Trachoma)		
		Antiviral (Trachoma)		
		Antiviral	12-Lipoxygenase inhibitor	Antioxidant
		Antiviral (Influenza)		
		Antiviral (Herpes)		
9	Adxanthromycin A	Antiviral (Hepatitis B)		
		Antiviral (Trachoma)		
		Antiviral (HIV)		
		Antiviral (Influenza A)	12-Lipoxygenase inhibitor	Antioxidant
		Antiviral		
		Antiviral (Herpes)		
10	Landomycin B	Antiviral (Trachoma)		
		Antiviral (Hepatitis B)	12-Lipoxygenase inhibitor	Antioxidant
		Antiviral		
		Antiviral (Herpes)		
11	Landomycin W	Antiviral (Trachoma)		
		Antiviral (Influenza)		
		Antiviral (Hepatitis B)	12-Lipoxygenase inhibitor	Antioxidant
		Antiviral		
		Antiviral (Influenza)		
12	Aloin 8-O-alpha-D-glucopyranoside	Antiviral (Herpes)		
		Antiviral (Hepatitis B)		
		Antiviral (Poxvirus)		

	Antiviral (Trachoma)			
	Antiviral (Picornavirus)			
	Antiviral (Hepatitis)			
	Antiviral (Influenza A)			
	Antiviral	Cyclooxygenase substrate	Lipoxygenase inhibitor	Antioxidant
	Antiviral (Influenza)			
	Antiviral (Adenovirus)	Cyclooxygenase 1 inhibitor	5-Lipoxygenase inhibitor	
	Antiviral (Picornavirus)		12-Lipoxygenase inhibitor	
	Antiviral (CMV)	Cyclooxygenase inhibitor	Lipoxygenase substrate	
	Antiviral (Poxvirus)			
	Antiviral (Hepatitis B)	Cyclooxygenase 2 inhibitor	15-Lipoxygenase inhibitor	
	Antiviral (HIV)			
	Antiviral (Influenza A)			
	Antiviral (Trachoma)			
	Antiviral (Herpesvirus 3, Human)			
	Viral entry inhibitor	Cyclooxygenase substrate	Lipoxygenase inhibitor	Antioxidant
	Antiviral (Adenovirus)			
	Antiviral (Picornavirus)	Cyclooxygenase 1 inhibitor	5-Lipoxygenase inhibitor	
	Antiviral (Herpes)		12-Lipoxygenase inhibitor	
	Antiviral (Influenza)	Cyclooxygenase inhibitor	Lipoxygenase substrate	
	Antiviral (Poxvirus)			
	Antiviral (CMV)	Cyclooxygenase 2 inhibitor	15-Lipoxygenase inhibitor	
	Antiviral (Hepatitis B)			
	Antiviral (Trachoma)			
	Antiviral (Influenza A)			
	Antiviral (Rhinovirus)			
	Baculoviral IAP repeat-containing protein inhibitor			
	Antiviral (Herpes)			Antioxidant
13 Aloe-emodin-d5				
14 1-Hydroxyanthrone				
15 12-demethyl-elloramycin				

	Antiviral (Trachoma)	
	Antiviral (Hepatitis B)	
	Antiviral	12-Lipoxygenase Antioxidant inhibitor
	Antiviral (Herpes)	
16 Landomycin X	Antiviral (Trachoma)	
	Antiviral (Hepatitis B)	
	Antiviral	12-Lipoxygenase Antioxidant inhibitor
	Antiviral (Herpes)	
17 Landomycin A	Antiviral (Trachoma)	
	Antiviral (Hepatitis B)	
