

Supplementary Materials

Table S1. Secondary metabolites of the genus *Litophyton* from 1975 to July, 2023.

No.	Name	Class	Species	Locality	Bioassays	Ref.
1	(-)-bicyclogermacrene	bicyclogermacrene sesquiterpene	<i>Litophyton arboreum</i>	near Bali, Indonesia	antiproliferative activities against the L-929 and K-562 cell lines (GI ₅₀ 186±6 and 200±8 µM, respectively), cytotoxic effect against the HeLa cell line (CC ₅₀ 182±8 µM)	[37]
2	(2E,6E)-3-isopropyl-6-methyl-10-oxoundeca-2,6-dienal	sec-germacrane sesquiterpene	<i>L. arboreum</i>	Neweba, Egypt (Red Sea)	anti-malarial activity against chloroquine-sensitive <i>Plasmodium falciparum</i> D6 and chloroquine-resistant <i>Plasmodium falciparum</i> W2 (IC ₅₀ 3.7 and 2.2 mg/mL, respectively), non-toxic to the Vero cell line at the concentration of 4.76 mg/mL	[19]
3	alismol	guaiane sesquiterpene	<i>L. arboreum</i>	Sharm El-Sheikh, Egypt (Red Sea)	inhibitory activity against HIV-1 protease receptor (IC ₅₀ 7.20±0.7 µM), cytotoxic activities against the HeLa and Vero cell lines (IC ₅₀ 30 and 49 µM, respectively)	[38]
			<i>L. arboreum</i>	Sharm El-Sheikh, Egypt (Red Sea)	cytotoxic effects against the HepG2, MDA and A549 cancer cell lines (IC ₅₀ 4.52, 7.02 and 9.23 µg/mL, respectively)	[39]
			<i>L. arboreum</i>	Jeddah, Saudi Arabia (Red Sea)	antibacterial activities against <i>Escherichia coli</i> ATCC 10536, <i>Pseudomonas aeruginosa</i> NTCC 6750, <i>Bacillus cereus</i> ATCC 9634, <i>Bacillus subtilis</i> ATCC6633, <i>Staphylococcus aureus</i> ATCC5141 (MIC 9.2, 10.4, 4.3, 5.0, and 9.2 µg/mL, respectively), antifungal activities against <i>Candida albicans</i> and <i>Aspergillus niger</i> (MIC 10.1 and 7.2 µg/mL, respectively), cytotoxic effects against the MCF-7, HCT-116 and HepG2 cell lines (IC ₅₀ 44.52±0.5, 31.45±1.19, and 10.71±1.18 µM, respectively)	[40]
			<i>L. arboreum</i>	Neweba, Egypt (Red Sea)	a —	[19]
4	10-O-methyl alismoxide	guaiane sesquiterpene	<i>L. arboreum</i>	Sharm El-Sheikh, Egypt (Red Sea)	cytotoxic activities against the HeLa, Vero and U937 cell lines (IC ₅₀ 38±0.7, 49.8±0.5 and 50±0.23 µM, respectively)	[38]

No.	Name	Class	Species	Locality	Bioassays	Ref.
			<i>Nephtea</i> sp.	Hurghada, Egypt (Red Sea)	cytotoxicity against the MCF-7 cell line (IC ₅₀ 85.5 µg/mL)	[42]
5	alismoxide	guaiane sesquiterpene	<i>L. arboreum</i>	Sharm El-Sheikh, Egypt (Red Sea)	inactive against the HeLa, Vero and U937 cell lines (all IC ₅₀ >100 µM)	[38]
			<i>L. arboreum</i>	Hurghada, Egypt (Red Sea)	inactive against the A549, MCF-7 and HepG2 cell lines (all IC ₅₀ >100 µmol/mL)	[41]
			<i>L. arboreum</i>	Neweba, Egypt (Red Sea)	a –	[19]
			<i>Nephtea</i> sp.	Hurghada, Egypt (Red Sea)	cytotoxicity against the MCF-7 cell line (IC ₅₀ 151.9 µg/mL)	[42]
6	alismorientol B	guaiane sesquiterpene	<i>L. arboreum</i>	Jeddah, Saudi Arabia (Red Sea)	antibacterial activities against <i>E. coli</i> ATCC 10536, <i>P. aeruginosa</i> NTCC 6750, <i>B. cereus</i> ATCC 9634, <i>B. subtilis</i> ATCC6633, <i>S. aureus</i> ATCC5141 (MIC 3.4, 7.7, 1.3, 6.8, and 8.3 µg/mL, respectively), antifungal activities against <i>C. albicans</i> and <i>A. niger</i> (MIC 6.0 and 8.4 µg/mL, respectively), cytotoxic effects against the MCF-7, HCT-116 and HepG2 cell lines (IC ₅₀ 4.32±0.13, 27.86±1.28 and 12.27±1.09 µM, respectively)	[40]
7	litoarbolide A	guaiane sesquiterpene	<i>L. arboreum</i>	Neweba, Egypt (Red Sea)	no anti-malarial activity against chloroquine-sensitive <i>P. falciparum</i> D6 and chloroquine-resistant <i>P. falciparum</i> W2 at the concentration of 4.76 mg/mL, non-toxic to the Vero cell line at the concentration of 4.76 mg/mL	[19]
8	4α,7β,10α-trihydroxyguai-5-ene	guaiane sesquiterpene	<i>L. arboreum</i>	Neweba, Egypt (Red Sea)	no anti-malarial activity against chloroquine-sensitive <i>P. falciparum</i> D6 and chloroquine-resistant <i>P. falciparum</i> W2 at the concentration of 4.76 mg/mL, non-toxic to the Vero cell line at the concentration of 4.76 mg/mL	[19]
9	leptocladol B	guaiane sesquiterpene	<i>L. arboreum</i>	Neweba, Egypt (Red Sea)	anti-malarial activity against chloroquine-resistant <i>P. falciparum</i> W2 (IC ₅₀ 4.3 mg/mL), no anti-malarial effect against chloroquine-sensitive <i>P. falciparum</i> D6 at the concentration of 4.76 mg/mL, non-toxic to the Vero cell line	[19]

No.	Name	Class	Species	Locality	Bioassays	Ref.
					at the concentration of 4.76 mg/mL	
10	nephthetetraol	guaiane sesquiterpene	<i>L. arboreum</i>	Neweba, Egypt (Red Sea)	anti-malarial activity against chloroquine-resistant <i>P. falciparum</i> W2 (IC ₅₀ 3.2 mg/mL), no anti-malarial effect against chloroquine-sensitive <i>P. falciparum</i> D6 at the concentration of 4.76 mg/mL, non-toxic to the Vero cell line at the concentration of 4.76 mg/mL	[19]
11	litopharbol	pseudoguaiane sesquiterpene	<i>L. arboreum</i>	Jeddah, Saudi Arabia (Red Sea)	antibacterial activities against <i>E. coli</i> ATCC 10536, <i>P. aeruginosa</i> NTCC 6750, <i>B. cereus</i> ATCC 9634, <i>B. subtilis</i> ATCC6633, <i>S. aureus</i> ATCC5141 (MIC 9.0, 3.6, 1.8, 5.8, and 9.6 µg/mL, respectively), antifungal activities against <i>C. albicans</i> and <i>A. niger</i> (MIC 12.5 and 12.9 µg/mL, respectively), cytotoxic effects against the MCF-7, HCT-116 and HepG2 cell lines (IC ₅₀ 9.42±0.17, 26.21±2.249 and 38.92±1.12 µM, respectively)	[40]
12	litopharbdiol	pseudoguaiane sesquiterpene	<i>L. arboreum</i>	Jeddah, Saudi Arabia (Red Sea)	^a –	[20]
13	3α,6α-epidioxyhimachal-1-ene	himachalene sesquiterpene	<i>L. arboreum</i>	Jeddah, Saudi Arabia (Red Sea)	^b antiproliferative effects toward MCF-7, HCT116 and HepG2 cell lines	[43]
14	5β,8β-epidioxy-11-hydroxy-6-eudesmene	eudesmane sesquiterpene	<i>L. arboreum</i>	Hurghada, Egypt (Red Sea)	cytotoxic effect against A549 (IC ₅₀ 67.3±9.9 µmol/mL), inactive against the MCF-7 and HepG2 cell lines (both IC ₅₀ >100 µmol/mL)	[41]
15	chabrolidione B	seco-eudesmane sesquiterpene	<i>L. arboreum</i>	Hurghada, Egypt (Red Sea)	inactive against the A549, MCF-7 and HepG2 cell lines (all IC ₅₀ >100 µmol/mL)	[41]
16	teuhetenone A	tri-nor-eudesmane sesquiterpene	<i>L. arboreum</i>	Jeddah, Saudi Arabia (Red Sea)	antibacterial activities against <i>E. coli</i> ATCC 10536, <i>P. aeruginosa</i> NTCC 6750, <i>B. cereus</i> ATCC 9634, <i>B. subtilis</i> ATCC6633, <i>S. aureus</i> ATCC5141 (MIC 1.9, 2.8, 5.4, 4.3, and 10.9 µg/mL, respectively), antifungal activities against <i>C. albicans</i> and <i>A. niger</i> (MIC 4.1 and 7.4 µg/mL, respectively), cytotoxic effect against the HepG2 cell line (IC ₅₀ 39.23±3.21 µM), non-toxic to the MCF-7 and HCT-116 cell lines (both	[40]

No.	Name	Class	Species	Locality	Bioassays	Ref.
					IC ₅₀ >100 µM)	
17	calamusin I	tri-nor-eudesmane sesquiterpene	<i>L. arboreum</i>	Jeddah, Saudi Arabia (Red Sea)	antibacterial activities against <i>E. coli</i> ATCC 10536, <i>P. aeruginosa</i> NTCC 6750, <i>B. cereus</i> ATCC 9634, <i>B. subtilis</i> ATCC6633, <i>S. aureus</i> ATCC5141 (MIC 3.2, 1.2, 6.1, 7.8, and 7.4 µg/mL, respectively), antifungal activities against <i>C. albicans</i> and <i>A. niger</i> (MIC 3.2 and 5.6 µg/mL, respectively), cytotoxic effects against the MCF-7 and HepG2 cell lines (IC ₅₀ 6.43±0.23 and 13.46±1.16 µM, respectively), non-toxic to the HCT-116 cell line (IC ₅₀ >100 µM)	[40]
18	7-oxo-tri-nor-eudesm-5-en-4β-ol	tri-nor-eudesmane sesquiterpene	<i>L. arboreum</i>	Hurghada, Egypt (Red Sea)	inactive against the A549, MCF-7 and HepG2 cell lines (all IC ₅₀ >100 µmol/mL)	[41]
19	11,12-dihydroxy-6,10-eremophiladiene	eremophilane sesquiterpene	<i>Litophyton nigrum</i>	Xisha Islands, Hainan, China (South China Sea)	a –	[36]
20	linardosinene B	nardosinane sesquiterpenes	<i>L. nigrum</i>	Xisha Islands, Hainan, China (South China Sea)	cytotoxic effect against the THP-1 cell line (IC ₅₀ 59.49 µM)	[15]
21	linardosinene C	nardosinane sesquiterpenes	<i>L. nigrum</i>	Xisha Islands, Hainan, China (South China Sea)	cytotoxic activities against the SNU-398 and HT-29 cell lines (IC ₅₀ 24.3 and 44.7 µM, respectively), inactive against the Capan-1 and A549 cell lines (both IC ₅₀ >50 µM)	[15]
22	linardosinene D	nardosinane sesquiterpenes	<i>L. nigrum</i>	Xisha Islands, Hainan, China (South China Sea)	inhibitory effect against BRD4 at a concentration of 10 µM with inhibitory rate 16.3%	[44]
23	linardosinene E	nardosinane sesquiterpenes	<i>L. nigrum</i>	Xisha Islands, Hainan, China (South China Sea)	inhibitory effect against BRD4 at a concentration of 10 µM with inhibitory rate 15.8%	[44]
24	linardosinene F	nardosinane sesquiterpenes	<i>L. nigrum</i>	Xisha Islands, Hainan, China (South China Sea)	inhibitory effect against BRD4 at a concentration of 10 µM with inhibitory rate 17.6%	[44]
25	linardosinene G	nardosinane	<i>L. nigrum</i>	Xisha Islands, Hainan,	inhibitory effect against BRD4 at a concentration of 10 µM	[44]

No.	Name	Class	Species	Locality	Bioassays	Ref.
		sesquiterpenes		China (South China Sea)	with inhibitory rate 18.1%	
26	linardosinene I	nardosinane sesquiterpenes	<i>L. nigrum</i>	Xisha Islands, Hainan, China (South China Sea)	inhibitory activity against PTP1B (IC_{50} 10.67 ± 1.81 $\mu\text{g/mL}$), cytotoxic activities against the HT-29, Capan-1 and SNU-398 cell lines (IC_{50} 35.48 ± 11.22 , 42.55 ± 2.51 , and 25.17 ± 11.13 μM , respectively)	[36]
27	emnal-l(10)-ene-7 β ,12 α -diol	nardosinane sesquiterpenes	<i>L. nigrum</i>	Xisha Islands, Hainan, China (South China Sea)	inactive against PTP1B (IC_{50} >20 $\mu\text{g/mL}$) and the HT-29, Capan-1 and SNU-398 cell lines (all IC_{50} >50 μM)	[36]
28	paralemnolin J	nardosinane sesquiterpenes	<i>Litophyton setoensis</i>	Singaraja, Bali Island, Indonesia	weak cytotoxic activities against the HT-29, Capan-1, A549, and SNU-398 cell lines (all IC_{50} >20 μM)	[17]
29	(1S,8S,8aS)-l-[(E)-2'-acetoxy-l'-meth ylethenyl]-8,8a-dimethyl-3,4,6,7,8,8 a-hexahydronaphthalen-2(1H)-one	nardosinane sesquiterpenes	<i>L. setoensis</i>	Singaraja, Bali Island, Indonesia	weak cytotoxic activities against the HT-29, Capan-1, A549, and SNU-398 cell lines (all IC_{50} >20 μM)	[17]
30	linardosinene A	nornardosinane sesquiterpenes	<i>L. nigrum</i>	Xisha Islands, Hainan, China (South China Sea)	inactive against the THP-1 cell line and the PTP1B, BRD4, HDAC1 and HDAC6 protein kinases	[15]
31	lineolemnene A	neolemnane sesquiterpene	<i>L. nigrum</i>	Xisha Islands, Hainan, China (South China Sea)	cytotoxic activity against the SNU-398 cell line (IC_{50} 44.4 μM), inactive against the HT-29, Capan-1 and A549 cell lines (all IC_{50} >50 μM)	[15]
32	lineolemnene B	neolemnane sesquiterpene	<i>L. nigrum</i>	Xisha Islands, Hainan, China (South China Sea)	cytotoxic activity against the SNU-398 cell line (IC_{50} 27.6 μM), inactive against the HT-29, Capan-1 and A549 cell lines (all IC_{50} >50 μM)	[15]
33	lineolemnene C	neolemnane sesquiterpene	<i>L. nigrum</i>	Xisha Islands, Hainan, China (South China Sea)	inactive against the HT-29, Capan-1, A549, and SNU-398 cell lines (all IC_{50} >50 μM)	[15]
34	4-acetoxy-2,8-neolemnadien-5-one	neolemnane sesquiterpene	<i>L. nigrum</i>	Xisha Islands, Hainan, China (South China Sea)	a —	[15]
			<i>L. setoensis</i>	Singaraja, Bali Island,	weak cytotoxic activities against the HT-29, Capan-1, A549,	[17]

No.	Name	Class	Species	Locality	Bioassays	Ref.
				Indonesia	and SNU-398 cell lines (all IC ₅₀ >20 µM)	
35	paralemnolin E	neolemnane sesquiterpene	<i>L. setoensis</i>	Singaraja, Bali Island, Indonesia	weak cytotoxic activities against the HT-29, Capan-1, A549, and SNU-398 cell lines (all IC ₅₀ >20 µM)	[17]
36	parathyrsoidin E	neolemnane sesquiterpene	<i>Nephthea</i> sp.	Sharm El-Sheikh, Egypt (Red Sea)	potential SARS-CoV-2 main protease inhibitor <i>in silica</i>	[45]
37	lineolemnene D	seconeolemnane sesquiterpene	<i>L. nigrum</i>	Xisha Islands, Hainan, China (South China Sea)	inactive against the THP-1 cell line and the PTP1B, BRD4, HDAC1 and HDAC6 protein kinases	[15]
38	kelsoenethiol	kelsoane sesquiterpene	<i>Nephthea erecta</i>	Green Island, Taiwan	cytotoxic activities against the P-388 and HT-29 cell lines (ED ₅₀ 1.3 and 1.8 µg/mL, respectively)	[22]
39	dikelsoenyl ether	<i>bis</i> -kelsoane <i>bis</i> -sesquiterpene	<i>N. erecta</i>	Green Island, Taiwan	inactive against the A-459, P-388 and HT-29 cell lines	[22]
40	linardosinene H	eremophilane-nar dosinane <i>bis</i> -sesquiterpene	<i>L. nigrum</i>	Xisha Islands, Hainan, China (South China Sea)	inactive against PTP1B (IC ₅₀ >20 µg/mL) and the HT-29, Capan-1 and SNU-398 cell lines (all IC ₅₀ >50 µM)	[36]
41	nephtenol	cembrane diterpene	<i>Litophyton viridis</i>	Serwaru, Leti Island, Indonesia	^a –	[21]
			<i>L. arboreum</i>	Hurghada, Egypt (Red Sea)	^a –	[47]
			<i>L. arboreum</i>	Jeddah, Saudi Arabia (Red Sea)	^a –	[20]
			<i>Nephthea</i> sp.	Mantanani Island, Sabah, Malaysia	no repellent activity against the maize weevil <i>Sitophilus zeamais</i> at 250 µg/cm ²	[46]
42	2-hydroxynephtenol	cembrane diterpene	<i>L. viridis</i>	Serwaru, Leti Island, Indonesia	^a –	[21]
			<i>Nephthea</i> sp.	Mantanani Island, Sabah, Malaysia	no repellent activity against the maize weevil <i>S. zeamais</i> at 250 µg/cm ²	[46]
			<i>Nephthea</i> sp.	Sepanggar Bay, Sabah, North Borneo, Malaysia	antifungal activities against <i>Exophiala</i> sp. NJM 1551, <i>Fusarium moniliforme</i> NJM 8995, <i>Fusarium oxysporum</i> NJM 0179, <i>Fusarium solani</i> NJM 8996, <i>Haliphthoros sabahensis</i>	[25]

No.	Name	Class	Species	Locality	Bioassays	Ref.
					IPMB 1402, <i>Haliphthoros milfordensis</i> IPMB 1603, and <i>Lagenidium thermophilum</i> IPMB 1401 (MIC 25, 50, 50, 50, 25, 25, and 12.5 µg/mL, respectively)	
43	(3 <i>E</i> ,11 <i>E</i>)-cembra-3,8(19),11,15-tetraene-7α-ol	cembrane diterpene	<i>L. arboreum</i>	Hurghada, Egypt (Red Sea)	a –	[47]
44	sarcophytol M	cembrane diterpene	<i>L. arboreum</i>	Sharm El-Sheikh, Egypt (Red Sea)	inhibitory activity against HIV-1 protease receptor (IC ₅₀ 15.7±0.10 µM), cytotoxic activities against the HeLa, Vero and U937 cell lines (IC ₅₀ 27.5±0.2, 22±0.2 and 31.7±3.2 µM, respectively)	[38]
45	11-acetoxy-15,17-dihydroxy-2,12-epoxy-(3 <i>E</i> ,7 <i>E</i>)-1-cembra-3,7-diene	cembrane diterpene	<i>L. arboreum</i>	Jeddah, Saudi Arabia (Red Sea)	antiproliferative effects toward the MCF-7, HCT116 and HepG2 cell lines (IC ₅₀ 19.1±0.032, 22.0±0.092, 24.0±0.032 µM, respectively)	[43]
46	11β,12β-epoxypukalide	cembrane diterpene	<i>L. arboreum</i>	near Bali, Indonesia	antiproliferative activities against the L-929 and K-5629 cell lines (both GI ₅₀ >129 µM, respectively), cytotoxic effect against the HeLa cell line (CC ₅₀ 115±6 µM)	[37]
47	columnariol A	cembrane diterpene	<i>Nephthea columnaris</i>	Southern Taiwan	significantly inhibit the accumulation of the pro-inflammatory iNOS and COX-2 protein of the lipopolysaccharide (LPS)-stimulated RAW264.7 macrophage cells; moderate cytotoxicity against the LNCaP cell line (IC ₅₀ 9.80 µg/mL), inactive against the MOLT-4, SUP-T1, U-937, DLD-1, and MCF7 cell lines at 20 µg/mL	[23]
48	columnariol B	cembrane diterpene	<i>N. columnaris</i>	Southern Taiwan	significantly inhibit the accumulation of the pro-inflammatory iNOS and COX-2 protein of the lipopolysaccharide (LPS)-stimulated RAW264.7 macrophage cells; inactive against the MOLT-4, SUP-T1, U-937, DLD-1, LNCaP, and MCF7 cell lines at 20 µg/mL	[23]
49	2β-hydroxy-7β,8α-epoxynephthenol	cembrane diterpene	<i>N. columnaris</i>	Southern Taiwan	inactive against the MOLT-4, SUP-T1, U-937, DLD-1, LNCaP, and MCF7 cell lines at 20 µg/mL	[48]
50	2β-hydroxy-11α,12β-epoxynephthe	cembrane	<i>N. columnaris</i>	Southern Taiwan	inactive against the MOLT-4, SUP-T1, U-937, DLD-1,	[48]

No.	Name	Class	Species	Locality	Bioassays	Ref.
	nol	diterpene			LNCaP, and MCF7 cell lines at 20 µg/mL	
51	epoxynephthenol	cembrane diterpene	<i>N. columnaris</i>	Southern Taiwan	inactive against the MOLT-4, SUP-T1, U-937, DLD-1, LNCaP, and MCF7 cell lines at 20 µg/mL	[48]
52	10-hydroxy-nephthenol acetate	cembrane diterpene	<i>Nephthea</i> sp.	Layangan, Sabah, Malaysia	antibacterial activity against <i>S. aureus</i> and <i>E. coli</i> with a MBC/MIC ratio of 2.4 and 3.0, respectively; cytotoxic activities against the HeLa and MCF-7 cell lines (IC ₅₀ 40.0 and 25.0 µg/mL, respectively)	[24]
53	7,8-epoxy-10-hydroxy-nephthenol acetate	cembrane diterpene	<i>Nephthea</i> sp.	Layangan, Sabah, Malaysia	antibacterial activity against <i>S. aureus</i> and <i>E. coli</i> with a MBC/MIC ratio of 6.0 and 6.0, respectively; cytotoxic activities against the HeLa and MCF-7 cell lines (IC ₅₀ 125.0 and 75.0 µg/mL, respectively)	[24]
54	6-acetoxy-7,8-epoxy-10-hydroxy-nephthenol acetate	cembrane diterpene	<i>Nephthea</i> sp.	Layangan, Sabah, Malaysia	inactive against the bacterial strains <i>S. aureus</i> ATCC 6538, <i>Listeria monocytogenes</i> ATCC 19113, <i>E. coli</i> ATCC 35210, and <i>Salmonella typhimurium</i> ATCC 13311, and the HeLa, MCF-7 and HT-29 cell lines	[24]
55	6-acetoxy-7,8-epoxy-nephthenol acetate	cembrane diterpene	<i>Nephthea</i> sp.	Layangan, Sabah, Malaysia	inactive against the bacterial strains <i>S. aureus</i> ATCC 6538, <i>L. monocytogenes</i> ATCC 19113, <i>E. coli</i> ATCC 35210, and <i>S. typhimurium</i> ATCC 13311, and the HeLa, MCF-7 and HT-29 cell lines	[24]
			<i>Nephthea</i> sp.	Sepanggar Bay, Sabah, North Borneo, Malaysia	antifungal activities against <i>Exophiala</i> sp. NJM 1551, <i>H. sabahensis</i> IPMB 1402, <i>H. milfordensis</i> IPMB 1603, and <i>L. thermophilum</i> IPMB 1401 (MIC 50, 25, 50, and 25 µg/mL, respectively), inactive against <i>F. moniliforme</i> NJM 8995, <i>F. oxysporum</i> NJM 0179 and <i>F. solani</i> NJM 8996 (all MIC >100 µg/mL)	[25]
56	nephthecrassocolide A	cembrane diterpene	<i>Nephthea</i> sp.	Sepanggar Bay, Sabah, North Borneo, Malaysia	antifungal activities against <i>Exophiala</i> sp. NJM 1551, <i>F. oxysporum</i> NJM 0179, <i>F. solani</i> NJM 8996, <i>H. sabahensis</i> IPMB 1402, <i>H. milfordensis</i> IPMB 1603, and <i>L. thermophilum</i> IPMB 1401 (MIC 25, 50, 50, 25, 25, and 25 µg/mL, respectively), inactive against <i>F. moniliforme</i> NJM 8995	[25]

No.	Name	Class	Species	Locality	Bioassays	Ref.
					(MIC >100 µg/mL)	
57	nephthecrassocolide B	cembrane diterpene	<i>Nephthea</i> sp.	Sepanggar Bay, Sabah, North Borneo, Malaysia	antifungal activities against <i>Exophiala</i> sp. NJM 1551, <i>H. sabahensis</i> IPMB 1402, <i>H. milfordensis</i> IPMB 1603, and <i>L. thermophilum</i> IPMB 1401 (MIC 50, 50, 50, and 25 µg/mL, respectively), inactive against <i>F. moniliforme</i> NJM 8995, <i>F. oxysporum</i> NJM 0179 and <i>F. solani</i> NJM 8996 (all MIC >100 µg/mL)	[25]
58	6-acetoxy nephthenol acetate	cembrane diterpene	<i>Nephthea</i> sp.	Sepanggar Bay, Sabah, North Borneo, Malaysia	antifungal activities against <i>Exophiala</i> sp. NJM 1551, <i>H. sabahensis</i> IPMB 1402, <i>H. milfordensis</i> IPMB 1603, and <i>L. thermophilum</i> IPMB 1401 (MIC 50, 25, 25, and 25 µg/mL, respectively), inactive against <i>F. moniliforme</i> NJM 8995, <i>F. oxysporum</i> NJM 0179 and <i>F. solani</i> NJM 8996 (all MIC >100 µg/mL)	[25]
59	epoxy nephthenol acetate	cembrane diterpene	<i>Nephthea</i> sp.	Sepanggar Bay, Sabah, North Borneo, Malaysia	antifungal activities against <i>Exophiala</i> sp. NJM 1551, <i>F. moniliforme</i> NJM 8995, <i>F. oxysporum</i> NJM 0179, <i>F. solani</i> NJM 8996, <i>H. sabahensis</i> IPMB 1402, <i>H. milfordensis</i> IPMB 1603, and <i>L. thermophilum</i> IPMB 1401 (MIC 25, 50, 50, 50, 25, 25, and 25 µg/mL, respectively)	[25]
60	litophynin A	eunicellane diterpene	<i>Litophyton</i> sp.	Sukumo Bay, Kochi Prefecture, Japan	insect growth inhibitory against the silkworm <i>Bombyx mori</i> L. (ED ₅₀ 12 ppm)	[49]
61	litophynin B	eunicellane diterpene	<i>Litophyton</i> sp.	Sukumo Bay, Kochi Prefecture, Japan	insect growth inhibitory against the silkworm <i>B. mori</i> L. (ED ₅₀ 2.7 ppm)	[49]
62	litophynin C	eunicellane diterpene	<i>Litophyton</i> sp.	Sukumo Bay, Kochi Prefecture, Japan	insect growth inhibitory against the second instar larvae of the silkworm <i>B. mori</i> L. (ED ₅₀ 25 ppm)	[50]
			<i>Nephthea</i> sp.	Sharm El-Sheikh, Egypt (Red Sea)	potential SARS-CoV-2 main protease inhibitor <i>in silica</i>	[45]
63	litophynin D	eunicellane diterpene	<i>Litophyton</i> sp.	Sukumo Bay, Kochi Prefecture, Japan	significant brine shrimp lethality (LD ₅₀ 0.9 ppm)	[51]
64	litophynin E	eunicellane diterpene	<i>Litophyton</i> sp.	Sukumo Bay, Kochi Prefecture, Japan	^a –	[51]

No.	Name	Class	Species	Locality	Bioassays	Ref.
			<i>Litophyton</i> sp.	Nango-cho, Miyazaki Prefecture, Japan	^b positive in a hemolytic reaction test	[54]
65	litophynin F	eunicellane diterpene	<i>Litophyton</i> sp.	Sukumo Bay, Kochi Prefecture, Japan	inactive against the second instar larvae of the silkworm <i>B. mori</i> L. at 100 ppm)	[52]
			<i>Litophyton viscidium</i>	Otsuki Town, Kochi Prefecture, Japan	cytotoxic activity against the HL-60 cell line (IC ₅₀ 18 µM)	[18]
66	litophynin G	eunicellane diterpene	<i>Litophyton</i> sp.	Sukumo Bay, Kochi Prefecture, Japan	insect growth inhibitory against the second instar larvae of the silkworm <i>B. mori</i> L. (ED ₅₀ 42 ppm)	[52]
67	litophynin H	eunicellane diterpene	<i>Litophyton</i> sp.	Sukumo Bay, Kochi Prefecture, Japan	inactive against the second instar larvae of the silkworm <i>B. mori</i> L. at 100 ppm	[52]
			<i>Litophyton</i> sp.	Nango-cho, Miyazaki Prefecture, Japan	^b positive in a hemolytic reaction test	[54]
68	litophynin I	eunicellane diterpene	<i>Litophyton</i> sp.	Sukumo Bay, Kochi Prefecture, Japan	significant molluscicidal activity against the muricid gastropod <i>Drupella fragum</i> with 100% mortality within 24 hours at 30 ppm, repellent activity against the gastropod when impregnated on filterpaper by 45 µg/cm ² .	[53]
69	litophynin J	eunicellane diterpene	<i>Litophyton</i> sp.	Sukumo Bay, Kochi Prefecture, Japan	significant molluscicidal activity against the muricid gastropod <i>D. fragum</i> with 100% mortality within 24 hours at 30 ppm, repellent activity against the gastropod when impregnated on filterpaper by 45 µg/cm ² .	[53]
70	litophynol A	eunicellane diterpene	<i>Litophyton</i> sp.	Nango-cho, Miyazaki Prefecture, Japan	^b positive in a hemolytic reaction test	[54]
71	litophynol B	eunicellane diterpene	<i>Litophyton</i> sp.	Nango-cho, Miyazaki Prefecture, Japan	^b positive in a hemolytic reaction test	[54]
72	litophynin I monoacetate	eunicellane diterpene	<i>Litophyton</i> sp.	Nango-cho, Miyazaki Prefecture, Japan	^b positive in a hemolytic reaction test	[54]
73	^c 6-oxo litophynin H	eunicellane diterpene	<i>L. viscidium</i>	Otsuki Town, Kochi Prefecture, Japan	cytotoxic activity against the HL-60 cell line (IC ₅₀ 20 µM)	[18]
74	^c 6-oxo litophynin H 12-acetate	eunicellane diterpene	<i>L. viscidium</i>	Otsuki Town, Kochi Prefecture, Japan	cytotoxic activity against the HL-60 cell line (IC ₅₀ 20 µM)	[18]

No.	Name	Class	Species	Locality	Bioassays	Ref.
75	^c 6-oxo litophynol A	eunicellane diterpene	<i>L. viscidium</i>	Otsuki Town, Kochi Prefecture, Japan	cytotoxic activity against the HL-60 cell line (IC ₅₀ 5.7 μM)	[18]
76	^c 6- <i>epi</i> litophynol A	eunicellane diterpene	<i>L. viscidium</i>	Otsuki Town, Kochi Prefecture, Japan	cytotoxic activity against the HL-60 cell line (IC ₅₀ 4.2 μM)	[18]
77	^c 6-methyl litophynin E	eunicellane diterpene	<i>L. viscidium</i>	Otsuki Town, Kochi Prefecture, Japan	cytotoxic activity against the HL-60 cell line (IC ₅₀ 50 μM)	[18]
78	lemnabourside	serrulatane diterpene	<i>L. setoensis</i>	Singaraja, Bali Island, Indonesia	weak cytotoxic activities against the HT-29, Capan-1, A549, and SNU-398 cell lines (all IC ₅₀ >20 μM)	[17]
79	biflora-4,9,15-triene	serrulatane diterpene	<i>L. setoensis</i>	Singaraja, Bali Island, Indonesia	weak cytotoxic activities against the HT-29, Capan-1, A549, and SNU-398 cell lines (all IC ₅₀ >20 μM)	[17]
80	litosetoenin A	5,9-cyclized serrulatane diterpene	<i>L. setoensis</i>	Singaraja, Bali Island, Indonesia	weak cytotoxic activities against the HT-29, Capan-1, A549, and SNU-398 cell lines (all IC ₅₀ >20 μM)	[17]
81	litosetoenin B	5,9-cyclized serrulatane diterpene	<i>L. setoensis</i>	Singaraja, Bali Island, Indonesia	weak cytotoxic activities against the HT-29, Capan-1, A549, and SNU-398 cell lines (all IC ₅₀ >20 μM)	[17]
82	litosetoenin C	5,9-cyclized serrulatane diterpene	<i>L. setoensis</i>	Singaraja, Bali Island, Indonesia	weak cytotoxic activities against the HT-29, Capan-1, A549, and SNU-398 cell lines (all IC ₅₀ >20 μM)	[17]
83	litosetoenin D	5,9-cyclized serrulatane diterpene	<i>L. setoensis</i>	Singaraja, Bali Island, Indonesia	weak cytotoxic activities against the HT-29, Capan-1, A549, and SNU-398 cell lines (all IC ₅₀ >20 μM)	[17]
84	litosetoenin E	5,9-cyclized serrulatane diterpene	<i>L. setoensis</i>	Singaraja, Bali Island, Indonesia	weak cytotoxic activities against the HT-29, Capan-1, A549, and SNU-398 cell lines (all IC ₅₀ >20 μM)	[17]
85	chabrolin A	chabrolane diterpene	<i>Nephthea chabrolii</i>	Green Islang, Taitong County, Taiwan	cytotoxicity against the P-388 cell line (ED ₅₀ 3.18 μg/mL), inactive against the A549 and HT-29 cell lines and HCMV	[56]
86	pacificin H	prenylbicyclogermacrane diterpene	<i>Nephthea</i> sp.	Sharm El-Sheikh, Egypt (Red Sea)	potential SARS-CoV-2 main protease inhibitor <i>in silico</i>	[45]
87	chabrolene	norditerpene	<i>Nephthea</i> sp.	Mantanani Island,	repellent activity against the maize weevil <i>S. zeamais</i> at 25	[46]

No.	Name	Class	Species	Locality	Bioassays	Ref.
				Sabah, Malaysia	$\mu\text{g}/\text{cm}^2$	
88	all- <i>trans</i> -peridinin	tetraterpene	<i>L. arboreum</i>	Hurghada, Egypt (Red Sea)	antiproliferative activities against the HUVEC and K-562 cell lines (GI_{50} 48.4 ± 1.2 and 53.8 ± 3.9 μM , respectively), cytotoxicity against the HeLa cell line (IC_{50} 51.9 ± 0.7 μM)	[47]
89	O-methylisogrifolin	meroterpene	<i>Nephthea</i> sp.	Sharm El-Sheikh, Egypt (Red Sea)	potential SARS-CoV-2 main protease inhibitor <i>in silico</i>	[45]
90	chabrolbenzoquinone E	meroterpene	<i>Nephthea</i> sp.	Sharm El-Sheikh, Egypt (Red Sea)	potential SARS-CoV-2 main protease inhibitor <i>in silico</i>	[45]
91	chabrolhydroxybenzoquinone E	meroterpene	<i>Nephthea</i> sp.	Sharm El-Sheikh, Egypt (Red Sea)	potential SARS-CoV-2 main protease inhibitor <i>in silico</i>	[45]
92	chabrolonaphthoquinone A	meroterpene	<i>Nephthea</i> sp.	Sharm El-Sheikh, Egypt (Red Sea)	potential SARS-CoV-2 main protease inhibitor <i>in silico</i>	[45]
93	nephthoside monoacetate	meroterpene	<i>Nephthea</i> sp.	Sharm El-Sheikh, Egypt (Red Sea)	potential SARS-CoV-2 main protease inhibitor <i>in silico</i>	[45]
94	4 α -methyl-3 β ,8 β -dihydroxy-5 α -ergost-24(28)-en-23-one	4 α -methylated steroid	<i>L. viridis</i>	Lesser Sunda Islands, Indonesia	a –	[58]
			<i>Nephthea</i> sp.	Hurghada, Egypt (Red Sea)	cytotoxicity against the MCF-7 cell line (IC_{50} 124.3 $\mu\text{g}/\text{mL}$)	[42]
			<i>Nephthea</i> sp.	Mantanani Island, Sabah, Malaysia	no repellent activity against the maize weevil <i>S. zeamais</i> at 250 $\mu\text{g}/\text{cm}^2$	[46]
95	4 α ,24-dimethyl-5 α -cholest-24(28)-en-3 β ,8 β ,18-triol	4 α -methylated steroid	<i>Litophyton mollis</i>	Hurghada, Egypt (Red Sea)	cytotoxic activities against the K562 and A549 cell lines (IC_{50} 8.9 ± 0.9 and 25.7 ± 1.5 μM , respectively)	[59]
96	(22 <i>E</i> ,24 <i>R</i>)-4 α ,24-dimethyl-5 α -cholest-22-en-3 β ,8 β ,18-triol	4 α -methylated steroid	<i>L. mollis</i>	Hurghada, Egypt (Red Sea)	inactive against the K562 and A549 cell lines (both IC_{50} >50 μM)	[59]
			<i>Nephthea</i> sp.	Hurghada, Egypt (Red Sea)	cytotoxicity against the MCF-7 cell line (IC_{50} 113.6 $\mu\text{g}/\text{mL}$)	[42]
97	(22 <i>E</i>)-4 α ,24-dimethyl-5 α -cholesta-2,24(28)-dien-3 β ,8 β ,18-triol	4 α -methylated steroid	<i>L. mollis</i>	Hurghada, Egypt (Red Sea)	inactive against the K562 and A549 cell lines (both IC_{50} >50 μM)	[59]
98	nebrosteroid M	4 α -methylated	<i>L. mollis</i>	Hurghada, Egypt	cytotoxic activity against the A549 cell line (IC_{50} 20.4 ± 1.1)	[59]

No.	Name	Class	Species	Locality	Bioassays	Ref.
		steroid		(Red Sea)	μM), inactive against the K562 cell line ($\text{IC}_{50} > 50 \mu\text{M}$)	
			<i>L. arboreum</i>	Hurghada, Egypt (Red Sea)	cytotoxic activity against the A549 and MCF-7 cell lines ($\text{IC}_{50} 36.9 \pm 2.9$ and $55.3 \pm 4.9 \mu\text{mol/mL}$, respectively), inactive against the HepG2 cell line ($\text{IC}_{50} > 100 \mu\text{mol/mL}$)	[41]
			<i>L. arboreum</i>	Neweba, Egypt (Red Sea)	no anti-malarial activity against chloroquine-sensitive <i>P. falciparum</i> D6 and chloroquine-resistant <i>P. falciparum</i> W2 at the concentration of 4.76 mg/mL, non-toxic to the Vero cell line at the concentration of 4.76 mg/mL	[19]
99	(22E,24R)-4 α ,24-dimethyl-5 α -cholest-22-en-3 β ,8 β ,11 β -triol	4 α -methylated steroid	<i>L. mollis</i>	Hurghada, Egypt (Red Sea)	cytotoxic activities against the K562 and A549 cell lines ($\text{IC}_{50} 7.7 \pm 0.8$ and $20.8 \pm 1.2 \mu\text{M}$, respectively)	[59]
			<i>L. arboreum</i>	Neweba, Egypt (Red Sea)	no anti-malarial activity against chloroquine-sensitive <i>P. falciparum</i> D6 and chloroquine-resistant <i>P. falciparum</i> W2 at the concentration of 4.76 mg/mL, non-toxic to the Vero cell line at the concentration of 4.76 mg/mL	[19]
100	nebrosteroid D	4 α -methylated steroid	<i>L. mollis</i>	Hurghada, Egypt (Red Sea)	cytotoxic activities against the K562 and A549 cell lines ($\text{IC}_{50} 6.0 \pm 0.5$ and $22.1 \pm 1.4 \mu\text{M}$, respectively)	[59]
101	nebrosteroid A	4 α -methylated steroid	<i>L. mollis</i>	Hurghada, Egypt (Red Sea)	cytotoxic activity against the K562 cell line ($\text{IC}_{50} 5.8 \pm 0.8 \mu\text{M}$)	[59]
102	23 ξ -acetoxy-4 α ,24-dimethyl-5 α -cholest-24(28)-en-3 β ,8 β ,11 β -triol	4 α -methylated steroid	<i>L. mollis</i>	Hurghada, Egypt (Red Sea)	cytotoxic activity against the K562 cell line ($\text{IC}_{50} 5.6 \pm 1.2 \mu\text{M}$)	[59]
103	(22E,24R)-4 α ,23,24-trimethyl-5 α -cholest-22-en-3 β ,8 β ,11 β -triol	4 α -methylated steroid	<i>L. mollis</i>	Hurghada, Egypt (Red Sea)	inactive against the K562 and A549 cell lines (both $\text{IC}_{50} > 50 \mu\text{M}$)	[59]
			<i>L. arboreum</i>	Neweba, Egypt (Red Sea)	no anti-malarial activity against chloroquine-sensitive <i>P. falciparum</i> D6 and chloroquine-resistant <i>P. falciparum</i> W2 at the concentration of 4.76 mg/mL, non-toxic to the Vero cell line at the concentration of 4.76 mg/mL	[19]
104	(22Z)-4 α ,24 ξ -dimethyl-5 α -cholest-22-en-3 β ,8 β ,11 β -triol	4 α -methylated steroid	<i>L. mollis</i>	Hurghada, Egypt (Red Sea)	a —	[59]
105	4 α ,24R-dimethyl-5 α -cholest-22-en-3 β -ol	4 α -methylated steroid	<i>Nephthea</i> sp.	Hurghada, Egypt (Red Sea)	cytotoxicity against the MCF-7 cell line ($\text{IC}_{50} 201.7 \mu\text{g/mL}$)	[42]

No.	Name	Class	Species	Locality	Bioassays	Ref.
106	4 α ,24-dimethyl-cholest-22Z-en-3 β -ol	4 α -methylated steroid	<i>L. arboreum</i>	Hurghada, Egypt (Red Sea)	a —	[64]
107	4 α -methylergosta-22(E),24(28)-dien-3 β -ol	4 α -methylated steroid	<i>N. columnaris</i>	Southern Taiwan	a —	[65]
108	4 α -methyl-ergosta-6,8(14),22E-triene-3 β -ol	4 α -methylated steroid	<i>Nephtea</i> sp.	Sharm El-Sheikh, Egypt (Red Sea)	potential SARS-CoV-2 main protease inhibitor <i>in silico</i>	[45]
109	24-methylenecholest-5-en-3 β ,7 β ,19-triol	ergostane-type and related steroid	<i>L. viridis</i>	Serwaru, Leti Island, Indonesia	a —	[57]
			<i>L. arboreum</i>	Xisha Islands, Hainan, China (South China Sea)	a —	[68]
			<i>L. arboreum</i>	Sharm El-Sheikh, Egypt (Red Sea)	cytotoxic activities against the HeLa, Vero and U937 cell lines (IC ₅₀ 8 \pm 0.5, 11.4 \pm 0.04 and 16.4 \pm 1.25 μ M, respectively)	[38]
			<i>L. arboreum</i>	Hurghada, Egypt (Red Sea)	a —	[64]
			<i>L. arboreum</i>	Sharm El-Sheikh, Egypt (Red Sea)	cytotoxic effects against the HepG2, MDA and A549 cancer cell lines (IC ₅₀ 8.5, 5.5 and 9.3 μ g/mL, respectively)	[39]
			<i>L. arboreum</i>	Jeddah, Saudi Arabia (Red Sea)	a —	[20]
			<i>Nephtea</i> sp.	Hurghada, Egypt (Red Sea)	cytotoxicity against the MCF-7 cell line (IC ₅₀ 56.6 μ g/mL)	[42]
110	7-acetoxy-24-methylenecholest-5-en-3 β ,7 β ,19-triol	ergostane-type and related steroid	<i>L. viridis</i>	Serwaru, Leti Island, Indonesia	a —	[57]
			<i>L. arboreum</i>	Sharm El-Sheikh, Egypt (Red Sea)	inhibitory activity against HIV-1 protease receptor (IC ₅₀ 4.85 \pm 0.18 μ M), cytotoxic activities against the HeLa, Vero and U937 cell lines (IC ₅₀ 5.3 \pm 0.60, 31.3 \pm 14.03 and 10.6 \pm 0.12 μ M, respectively)	[38]
			<i>L. arboreum</i>	Sharm El-Sheikh, Egypt (Red Sea)	cytotoxic effects against the HepG2, MDA and A549 cancer cell lines (IC ₅₀ 6.07, 6.3 and 6.2 μ g/mL, respectively)	[39]
			<i>L. arboreum</i>	Neweba, Egypt	a —	[19]

No.	Name	Class	Species	Locality	Bioassays	Ref.
				(Red Sea)		
			<i>L. arboreum</i>	Jeddah, Saudi Arabia (Red Sea)	^b antiproliferative effects toward MCF-7, HCT116 and HepG2 cell lines	[43]
			<i>Nephthea</i> sp.	Hurghada, Egypt (Red Sea)	cytotoxicity against the MCF-7 cell line (IC ₅₀ 37.0 µg/mL)	[42]
111	litosterol	ergostane-type and related steroid	<i>L. viridis</i>	Ishiqaki Island, Okinawa, Japan	^a —	[67]
			<i>L. arboreum</i>	Hurghada, Egypt (Red Sea)	^a —	[64]
			<i>L. arboreum</i>	Neweba, Egypt (Red Sea)	^a —	[19]
			<i>N. columnaris</i>	Southern Taiwan	no inhibitory effects on the generation of superoxide anions and the release of elastase (IC ₅₀ >10 µM)	[74]
112	5,6-epoxylitosterol	ergostane-type and related steroid	<i>L. viridis</i>	Ishiqaki Island, Okinawa, Japan	antileukemic activity against the P388 cell line (IC ₅₀ 0.5 µg/mL)	[67]
			<i>N. columnaris</i>	Southern Taiwan	inhibitory effects on the generation of superoxide anions and the release of elastase (IC ₅₀ 4.60±0.85 and 3.90±0.88 µM, respectively)	[74]
113	(24E)-24-ethyl-5α-cholesta-8,24(28)-diene-3β,12β,19-triol	ergostane-type and related steroid	<i>L. arboreum</i>	Xisha Islands, Hainan, China (South China Sea)	^a —	[68]
114	24-methylcholesta-5,24(28)-diene-3β-ol	ergostane-type and related steroid	<i>L. arboreum</i>	Sharm El-Sheikh, Egypt (Red Sea)	cytotoxic activities against the HeLa and Vero cell lines (IC ₅₀ 48±8.7 and 100±1.2 µM, respectively), inactive against the U937 cell line (IC ₅₀ >100 µM)	[38]
			<i>L. arboreum</i>	Hurghada, Egypt (Red Sea)	^a —	[64]
			<i>L. arboreum</i>	Jeddah, Saudi Arabia (Red Sea)	^a —	[20]
			<i>L. arboreum</i>	Hurghada, Egypt (Red Sea)	cytotoxic activities against the A549, MCF-7 and HepG2 cell lines (IC ₅₀ 28.5±4.4, 70.0±2.3 and 77.6±3.3 µmol/mL,	[41]

No.	Name	Class	Species	Locality	Bioassays	Ref.
					respectively)	
			<i>Nephthea</i> sp.	Hurghada, Egypt (Red Sea)	cytotoxicity against the MCF-7 cell line (IC ₅₀ 339.2 µg/mL)	[42]
			<i>N. erecta</i>	Pingtung, Taiwan	inactive against the K-562, MOLT-4, SUP-T1, and U-937 cell lines (all IC ₅₀ >20 µM)	[75]
115	3β,7β-dihydroxy-24-methylenecholesterol	ergostane-type and related steroid	<i>L. arboreum</i>	Neweba, Egypt (Red Sea)	anti-malarial activity against chloroquine-resistant <i>P. falciparum</i> W2 (IC ₅₀ 4.0 mg/mL), no anti-malarial effect against chloroquine-sensitive <i>P. falciparum</i> D6 at the concentration of 4.76 mg/mL	[19]
116	chabrolsteroid I	ergostane-type and related steroid	<i>L. arboreum</i>	Neweba, Egypt (Red Sea)	no anti-malarial effect against chloroquine-resistant <i>P. falciparum</i> W2 and chloroquine-sensitive <i>P. falciparum</i> D6 at the concentration of 4.76 mg/mL	[19]
117	13,14-seco-22-norergosta-4,24(28)-dien-19-hydroperoxide-3-one	ergostane-type and related steroid	<i>L. arboreum</i>	Jeddah, Saudi Arabia (Red Sea)	^b antiproliferative effects toward MCF-7, HCT116 and HepG2 cell lines	[43]
118	sarcsteroid F	ergostane-type and related steroid	<i>Litophyton</i> sp.	Egyptian Red Sea	^a —	[27]
119	24-methylenecholestane-1α,3β,5α,6β,11α-pentol-11-monoacetate	ergostane-type and related steroid	<i>Litophyton</i> sp.	Egyptian Red Sea	^a —	[27]
120	nebrosteroid O	ergostane-type and related steroid	<i>N. chabrolii</i>	San-Hsian-Tai, Taitong County, Taiwan	cytotoxic activities against the A549, HT-29 and P-388 cell lines (ED ₅₀ 5.9, 5.9 and 1.2 µg/mL, respectively); inactive against HCMV (ED ₅₀ >100 µg/mL)	[69]
			<i>Nephthea</i> sp.	Sharm El-Sheikh, Egypt (Red Sea)	potential SARS-CoV-2 main protease inhibitor <i>in silico</i>	[45]
121	nebrosteroid P	ergostane-type and related steroid	<i>N. chabrolii</i>	San-Hsian-Tai, Taitong County, Taiwan	cytotoxic activities against the A549, HT-29 and P-388 cell lines (ED ₅₀ 7.2, 9.5 and 1.7 µg/mL, respectively); inactive against HCMV (ED ₅₀ >100 µg/mL)	[69]
122	nebrosteroid Q	ergostane-type and related steroid	<i>N. chabrolii</i>	San-Hsian-Tai, Taitong County, Taiwan	cytotoxic activities against the A549, HT-29 and P-388 cell lines (ED ₅₀ 6.1, 8.0 and 1.1 µg/mL, respectively); inactive against HCMV (ED ₅₀ >100 µg/mL)	[70]
123	nebrosteroid R	ergostane-type	<i>N. chabrolii</i>	San-Hsian-Tai, Taitong	cytotoxic activities against the A549, HT-29 and P-388 cell	[70]

No.	Name	Class	Species	Locality	Bioassays	Ref.
		and related steroid		County, Taiwan	lines (ED ₅₀ 11.4, 20.9 and 1.2 µg/mL, respectively); inactive against HCMV (ED ₅₀ >100 µg/mL)	
124	nebrosteroid S	ergostane-type and related steroid	<i>N. chabrolii</i>	San-Hsian-Tai, Taitong County, Taiwan	cytotoxic activities against the A549, HT-29 and P-388 cell lines (ED ₅₀ 8.7, 15.3 and 1.0 µg/mL, respectively); inactive against HCMV (ED ₅₀ >100 µg/mL)	[70]
125	nephasterol A	ergostane-type and related steroid	<i>N. columnaris</i>	Southern Taiwan	cytotoxicities against the MOLT-4, SUP-T1, U-937, DLD-1, LNCaP, and MCF7 cell lines (IC ₅₀ 22.5, 32.4, 38.6, 44.2, 11.6, and 9.8 µM, respectively)	[48]
126	columnaristerol A	ergostane-type and related steroid	<i>N. columnaris</i>	Southern Taiwan	moderate cytotoxic effects against the MOLT-4 and SUP-T1 cell lines (IC ₅₀ 18.3 and 25.5 µM, respectively), inactive against the K-562 and U-937 cell lines at 20 µg/mL	[73]
127	columnaristerol B	ergostane-type and related steroid	<i>N. columnaris</i>	Southern Taiwan	no inhibitory effects on the generation of superoxide anions and the release of elastase (IC ₅₀ >10 µM)	[74]
128	columnaristerol C	ergostane-type and related steroid	<i>N. columnaris</i>	Southern Taiwan	no inhibitory effects on the generation of superoxide anions and the release of elastase (IC ₅₀ >10 µM)	[74]
129	nephtheasteroid A	ergostane-type and related steroid	<i>N. erecta</i>	Pingtung, Taiwan	inactive against the K-562, MOLT-4, SUP-T1, and U-937 cell lines (all IC ₅₀ >20 µM)	[75]
130	nephtheasteroid B	ergostane-type and related steroid	<i>N. erecta</i>	Pingtung, Taiwan	inactive against the K-562, MOLT-4, SUP-T1, and U-937 cell lines (IC ₅₀ >20 µM)	[75]
131	erectasteroid F	ergostane-type and related steroid	<i>N. erecta</i>	Pingtung, Taiwan	cytotoxic activities against the K-562, MOLT-4, SUP-T1, and U-937 cell lines (IC ₅₀ 6.5, 8.0, 8.0, and 12.9 µM, respectively)	[75]
132	(3β,7β)-ergost-5,24(28)-diene-3β,7β, 19-triol-7,19-diacetate	ergostane-type and related steroid	<i>N. erecta</i>	Pingtung, Taiwan	cytotoxic activities against the K-562, MOLT-4, SUP-T1, and U-937 cell lines (IC ₅₀ 14.0, 7.9, 7.3, and 6.8 µM, respectively)	[75]
133	24-methyl-cholesta-5,24(28)-diene-3β,19-diol-7β-monoacetate	ergostane-type and related steroid	<i>N. erecta</i>	Pingtung, Taiwan	cytotoxic activities against the K-562, MOLT-4 and SUP-T1 cell lines (IC ₅₀ 11.2, 19.9 and 16.3 µM), inactive against the U-937 cell line (IC ₅₀ >20 µM)	[75]
			<i>N. erecta</i>	Pingtung, Taiwan	inhibited human small cell lung cancer growth via apoptosis induction	[76]

No.	Name	Class	Species	Locality	Bioassays	Ref.
134	armatinol B	ergostane-type and related steroid	<i>N. erecta</i>	Pingtung, Taiwan	inactive against the K-562, MOLT-4, SUP-T1, and U-937 cell lines (all IC ₅₀ >20 µM)	[75]
135	chabrolosteroid C	ergostane-type and related steroid	<i>Nephthea</i> sp.	Sharm El-Sheikh, Egypt (Red Sea)	potential SARS-CoV-2 main protease inhibitor <i>in silico</i>	[45]
136	ergost-5,25-diene-3β,24S,28-triol	ergostane-type and related steroid	<i>Nephthea</i> sp.	Sharm El-Sheikh, Egypt (Red Sea)	potential SARS-CoV-2 main protease inhibitor <i>in silico</i>	[45]
137	nebrosteroid N	cholestane-type and related steroid	<i>Nephthea chabroliei</i>	San-Hsian-Tai, Taitong County, Taiwan	cytotoxic activities against the A549, HT-29 and P-388 cell lines (ED ₅₀ 6.7, 9.5 and 0.9 µg/mL, respectively); inactive against HCMV (ED ₅₀ >100 µg/mL)	[69]
138	(20S,22R)-progesterone-1,4-diene-2-acetyl-3-one	cholestane-type and related steroid	<i>Nephthea</i> sp.	Naozhou Island, South China Sea	^b weak cytotoxic activities against A549 and Hepg2 cell lines	[77]
139	(12β,22R)-12-acetoxy-22-hydroxy-cholesta-1,4-dien-3-one	cholestane-type and related steroid	<i>Nephthea</i> sp.	Naozhou Island, South China Sea	cytotoxic activity against the HeLa cell line (IC ₅₀ 7.51±0.22 µg/mL)	[78]
140	(12β,22R)-12-hydroxy-22-acetoxy-cholesta-1,4-dien-3-one	cholestane-type and related steroid	<i>Nephthea</i> sp.	Naozhou Island, South China Sea	cytotoxic activity against the HeLa cell line (IC ₅₀ 7.50±0.31 µg/mL)	[78]
141	(12β,22R)-12,22-diacetoxy-cholesta-1,4-dien-3-one	cholestane-type and related steroid	<i>Nephthea</i> sp.	Naozhou Island, South China Sea	cytotoxic activity against the HeLa cell line (IC ₅₀ 18.48±0.56 µg/mL)	[78]
142	(22R)-18,22-diacetoxy-cholesta-1,4-dien-3-one	cholestane-type and related steroid	<i>Nephthea</i> sp.	Naozhou Island, South China Sea	cytotoxic activity against the HeLa cell line (IC ₅₀ 8.29±0.42 µg/mL)	[78]
143	(20R,22R)-20-hydroxy-22-acetoxy-cholesta-1,4-dien-3-one	cholestane-type and related steroid	<i>Nephthea</i> sp.	Naozhou Island, South China Sea	cytotoxic activity against the HeLa cell line (IC ₅₀ 17.25±0.61 µg/mL)	[78]
144	astrogorgol N	cholestane-type and related steroid	<i>Nephthea</i> sp.	Naozhou Island, South China Sea	cytotoxic activity against the HeLa cell line (IC ₅₀ 18.72±0.78 µg/mL)	[78]
145	nephthoacetal	cholestane-type and related steroid	<i>Nephthea</i> sp.	Naozhou Island, South China Sea	strong antifouling activity against the settlement of <i>Bugula neritina</i> larvae (EC ₅₀ 2.5 µg/mL), moderate cytotoxicity against the HeLa cell line (EC ₅₀ 12.3 µg/mL)	[79]
146	dendronesterone C	cholestane-type and related steroid	<i>Nephthea</i> sp.	Sharm El-Sheikh, Egypt (Red Sea)	potential SARS-CoV-2 main protease inhibitor <i>in silico</i>	[45]
147	(17α)-pregnan-4-ene-3,20-dione	pregnane-type and related steroid	<i>Nephthea</i> sp.	Naozhou Island, South China Sea	^a –	[80]

No.	Name	Class	Species	Locality	Bioassays	Ref.
148	(20S)-pregnan-1,4-diene-3-oxo-20-carboxylic acid methyl ester	pregnane-type and related steroid	<i>Nephthea</i> sp.	Naozhou Island, South China Sea	^a —	[80]
149	pregnan-4-ene-3,6,20-trione	pregnane-type and related steroid	<i>Nephthea</i> sp.	Naozhou Island, South China Sea	^a —	[80]
150	(20R)-pregnan-4,16-dien-20-hydroxy-3-one	pregnane-type and related steroid	<i>Nephthea</i> sp.	Naozhou Island, South China Sea	^a —	[80]
151	pregnan-15 β -hydroxy-4,6-diene-3,20-dione	pregnane-type and related steroid	<i>Nephthea</i> sp.	Naozhou Island, South China Sea	^a —	[80]
152	pregnan-4,6-diene-3,20-dione	pregnane-type and related steroid	<i>Nephthea</i> sp.	Naozhou Island, South China Sea	^a —	[80]
153	erythro- <i>N</i> -dodecanoyl-docosasphingina-(4 <i>E</i> ,8 <i>E</i>)-dienine	ceramide	<i>L. arboreum</i>	Sharm El-Sheikh, Egypt (Red Sea)	cytotoxic activity against the HeLa cell line (IC ₅₀ 38.17 \pm 0.7 μ M), inactive against the Vero and U937 cell lines (both IC ₅₀ >100 μ M)	[38]
			<i>L. arboreum</i>	Jeddah, Saudi Arabia (Red Sea)	^b antiproliferative effects toward MCF-7, HCT116 and HepG2 cell lines	[43]
			<i>L. arboreum</i>	Jeddah, Saudi Arabia (Red Sea)	^a —	[40]
			<i>L. arboreum</i>	Neweba, Egypt (Red Sea)	^a —	[19]
			<i>Nephthea</i> sp.	Hurghada, Egypt (Red Sea)	cytotoxicity against the MCF-7 cell line (IC ₅₀ 238.5 μ g/mL)	[42]
154	erythro- <i>N</i> -palmityl-octadecasphingina-4(<i>E</i>),8(<i>E</i>)-dienine	ceramide	<i>L. arboreum</i>	Hurghada, Egypt (Red Sea)	^a —	[64]
			<i>Nephthea</i> sp.	Sharm El-Sheikh, Egypt (Red Sea)	potential SARS-CoV-2 main protease inhibitor <i>in silico</i>	[45]
155	thymine	pyrimidine	<i>L. arboreum</i>	Jeddah, Saudi Arabia (Red Sea)	^a —	[40]
			<i>L. arboreum</i>	Hurghada, Egypt (Red Sea)	inactive against the A549, MCF-7 and HepG2 cell lines (all IC ₅₀ >100 μ g/mL), inactive against <i>Leishmania major</i> (IC ₅₀ >100 μ g/mL)	[81]

No.	Name	Class	Species	Locality	Bioassays	Ref.
156	thymidine	pyrimidine	<i>L. arboreum</i>	Jeddah, Saudi Arabia (Red Sea)	^a –	[40]
157	uracil	pyrimidine	<i>L. arboreum</i>	Hurghada, Egypt (Red Sea)	inactive against the A549, MCF-7 and HepG2 cell lines (all IC ₅₀ >100 µg/mL), inactive against against <i>L. major</i> (IC ₅₀ >100 µg/mL)	[81]
158	uridine	pyrimidine	<i>L. arboreum</i>	Hurghada, Egypt (Red Sea)	inactive against the A549, MCF-7 and HepG2 cell lines (all IC ₅₀ >100 µg/mL), inactive against against <i>L. major</i> (IC ₅₀ >100 µg/mL)	[81]
159	1,3-dimethyl uracil	pyrimidine	<i>Nephtea</i> sp.	Naozhou Island, South China Sea	^a –	[82]
160	caffeine	pyrimidine	<i>Nephtea</i> sp.	Naozhou Island, South China Sea	^a –	[82]
161	theophylline	pyrimidine	<i>Nephtea</i> sp.	Naozhou Island, South China Sea	^a –	[82]
162	cyclo-(Pro-Gly)	peptide	<i>Nephtea</i> sp.	Naozhou Island, South China Sea	^a –	[82]
163	leucyl- <i>N</i> -methyl-leucyl-leucyl- <i>N</i> -methyl-leucine	peptide	<i>Nephtea</i> sp.	Naozhou Island, South China Sea	^b weak cytotoxic activities against A549 and Hepg2 cell lines	[77]
164	PGB ₂ methyl ester	prostaglandin	<i>L. arboreum</i>	gulf of Aqaba, Eilat, Israel (Red Sea)	^a –	[83]
165	litophytolide A	γ -lactone	<i>Litophyton</i> sp.	Sukumo Bay, Kochi Prefecture, Japan	^a –	[84]
166	litophytolide B	γ -lactone	<i>Litophyton</i> sp.	Sukumo Bay, Kochi Prefecture, Japan	^a –	[84]
167	^c (<i>R</i>)-5-((<i>S</i> ,2 <i>Z</i> ,4 <i>E</i>)-1-hydroxydeca-2,4-dien-1-yl)dihydrofuran-2(3 <i>H</i>)-one	γ -lactone	<i>L. arboreum</i>	gulf of Aqaba, Eilat, Israel (Red Sea)	toxic to brine shrimp <i>Artemia salina</i> (CC ₅₀ 15.3 µg/mL), antibacterial activities against <i>S. aureus</i> (diameters of inhibition zone 7.8 mm) and <i>B. subtilis</i> (diameters of inhibition zone 5.6 mm), inactive against <i>E. coli</i> and <i>Saccharomyces cerevisiae</i>	[83]
168	^c	γ -lactone	<i>L. arboreum</i>	gulf of Aqaba, Eilat,	toxic to brine shrimp <i>A. salina</i> (CC ₅₀ 21.4 µg/mL),	[83]

No.	Name	Class	Species	Locality	Bioassays	Ref.
	(R)-5-((S,4E,8E)-1-hydroxy-4,8-dimethyltrideca-4,8-dien-1-yl)-5-methylidihydrofuran-2(3H)-one			Israel (Red Sea)	antibacterial activities against <i>S. aureus</i> (diameters of inhibition zone 18.6 mm) and <i>B. subtilis</i> (diameters of inhibition zone 14.7 mm), inactive against <i>E. coli</i> and <i>S. cerevisiae</i>	
169	methyl (5Z,8Z,11Z,14Z,17Z)-5,8,11,14,17-icosapentaenoate	fatty acid	<i>Litophyton</i> sp.	Sukumo Bay, Kochi Prefecture, Japan	^a –	[84]
170	arachidonic acid	fatty acid	<i>L. arboreum</i>	gulf of Aqaba, Eilat, Israel (Red Sea)	^a –	[83]
171	eicosapentaenoic acid	fatty acid	<i>L. arboreum</i>	gulf of Aqaba, Eilat, Israel (Red Sea)	^a –	[83]
172	docosahexaenoic acid	fatty acid	<i>L. arboreum</i>	gulf of Aqaba, Eilat, Israel (Red Sea)	^a –	[83]
173	chimyl alcohol	glycerol ether	<i>L. arboreum</i>	Sharm El-Sheikh, Egypt (Red Sea)	cytotoxic activity against the HeLa and Vero cell lines (IC ₅₀ 23.35±5.8 and 60±1.14 µM, respectively), inactive against the U937 cell line (both IC ₅₀ >100 µM), inhibitory activity against HIV-1 protease receptor (IC ₅₀ 26.6±2.6 µM)	[38]
			<i>L. arboreum</i>	Hurghada, Egypt (Red Sea)	inactive against the A549, MCF-7 and HepG2 cell lines (all IC ₅₀ >100 µmol/mL)	[41]
174	batyl alcohol	glycerol ether	<i>L. arboreum</i>	Hurghada, Egypt (Red Sea)	inactive against the A549, MCF-7 and HepG2 cell lines (all IC ₅₀ >100 µmol/mL)	[41]
175	diphenyl selenide	selenide	<i>Nephtea</i> sp.	Naozhou Island, South China Sea	^a –	[82]

^a The sign '–' indicated no bioassay was recorded in the work.

^b No specific data was provided in the paper.

^c Compound was named based on its structure.