Supporting Information

Phaeosphaeride A, a selective inhibitor of STAT3-dependent signaling isolated from an endophytic fungus.

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FA39 rDNA sequence

GAGHGAAGCGGCAACAGCTCAAATTTGAAATCTGGCTCTTTCAGGGTCCGAGTTGTAATTTGC
AGAGGGCGCTTTGGTGTGGCAGCGGTCCAAGTTCCTTGGAACAGGACGTCACAGAGGGTGA
GAATCCCGTACGTGGTCGCTAGCCTTCGCCGTGTAAAGCCCCCTCGACGAGTCGAGTTGTTTG
GGAATGCAGCTCTAAATGGGAGGTAAATTTCTTCTAAAGCTAAATACTGGCCAGAGACCGAT
AGCGCACAAAGTAGAGTGATCGAAAAGATGAAAAGCACTTTGGAAAAGAGAGTCAAATAGCACGT
GAAATTGTTGAAAGGGAAGCGCTTGCAGCCAGACTTGCCTGTAGTTGCTTATCCGGACTTTTG
TCCGGTGCACCTCTTCTGCGGGCAGGCCAGCATCAGTTTGGGSCGGTTGGATAAAGGTCTCTGT
CATGTACCTCTCTTCGGGGAGAACTTATAGGGGAGACGACATGCAACCAGCCTGGACTGAGG
TCCGCGCATCTGCTAGGATGCTGGCGTAATGGCTGKYAAGCGGCCCGTCTTGAAACACGGACC
AAGGGAGTCTAACATCTATGCGAGTGTTTTGGGTGTCAAGCCCCAGACGCGTAATGAAAGTG
AACGGAGGTGGGAACCCTTTGGGTGCACCATCGACCGATCCTGRTGTCTTCGGATGGATTTGA
GTAAGAGCATGGCTGTTGGGACCCGAAAGATGGTGAACATGCTTGAATAGGGTGAAGCCAG
AGGAAACTCTGGTGGAGGCTCGCAGCGTTCTGACGTGCAAATCGATCGTCAAATTTGGGCAT
AGGGGCGAAAGACTAATCGAACTATCTAGTAGCTGGTTCCTGCCGAAGTTTCCCTCAGGA

ELISA data for Phaeosphaeride A (4)

Whole cell lysate preparations

STAT3	7 ul U266 whole cell lysate + 20 ul complete lysis buffer
STAT3	2 ul Hep G2(IL-6, 100 ng/ml) whole cell lysate + 25 ul complete lysis buffer
STAT1 α	2 ul U937 (INFgamma+TPA) whole cell lysate + 25 ul complete lysis buffer
STAT5 α	2 ul Nb2 (prolactin) whole cell lysate + 25 ul complete lysis buffer

Inhibition of STAT3 made from U266 whole cell lysate

conc ($\mu\text{g/mL}$)	500	250	125	63	31	16	0
phaeosphaeride A (4)	0.16	0.38	0.60	0.79	0.91	0.94	1.03
phaeosphaeride B (5)	0.85	0.91	0.83	0.81	0.81	0.85	0.81

Selectivity of 4 against STAT1, STAT3, and STAT5 with various whole cell lysates

conc ($\mu\text{g/mL}$)	500	250	125	63	31	16	0
U266/STAT3	0.16	0.38	0.60	0.79	0.91	0.94	1.03
U937/STAT1	0.5178	0.5004	0.5748	0.5599	0.5701	0.5668	0.5975
Nb2/STAT5	0.5764	0.4527	0.5593	0.5449	0.6452	0.6286	0.561

4 inhibits STAT3 made from HepG2 whole cell lysate

conc ($\mu\text{g/mL}$)	1000	500	250	125	63	0
HepG2/STAT3	0	0	0.043	0.079	0.081	0.116

Cell growth data for phaeosphaeride A (4) against STAT3-dependent U266 cells

concentration (μg/mL)	250	125	62.5	31.25	15.625	7.8125	3.90625	1.953125	0.976563	0.488281	0.244141	0
preceding fraction	46060	413990	905415	1230335	1276495	1244105	1247325	1267805	1304100	1273820	1292615	1269080
4	1615	2960	4965	6830	13275	39290	118205	790410	1171730	1221655	1241680	1227615
subsequent fraction	2015	4010	287075	766900	1091545	1194660	1238975	1272215	1188550	1232555	1228880	1205285

Cell growth data for phaeosphaeride A (4) against STAT3-independent K562 cells

concentration (μg/mL)	250	125	62.5	31.25	15.625	7.8125	3.90625	1.953125	0.976563	0.488281	0.244141	0
preceding fraction	518910	3133640	3332235	3339590	3541485	3535645	3454390	3514050	3482940	3362580	3376010	3591680
4	4530	8640	14855	43900	93050	190990	1547280	2362080	3492035	3589995	3519895	3457820
subsequent fraction	2755	97875	1624020	2512405	3179625	3476165	3334025	3551325	3439710	3625265	3555665	3602305

^1H NMR spectrum of **4** in $\text{DMSO}-d_6$

phaeosphaeride A (**4**)

HMBC spectrum of **4** in DMSO-*d*₆

phaeosphaeride A (**4**)

^1H NMR spectrum of **5** in $\text{DMSO-}d_6$

phaeosphaeride B (**5**)

gHMBC spectrum of **5** in DMSO-*d*₆

phaeosphaeride B (**5**)

^1H NMR spectrum of **6** in CD_3OD

gHMBC spectrum of **6** in CD₃OD

^1H NMR spectrum of **7** in CD_3OD

gHMBC spectrum of **7** in CD₃OD