

**Supplementary Material for:**

**Title: A naturally inspired antibiotic to target multi-drug-resistant pathogens**

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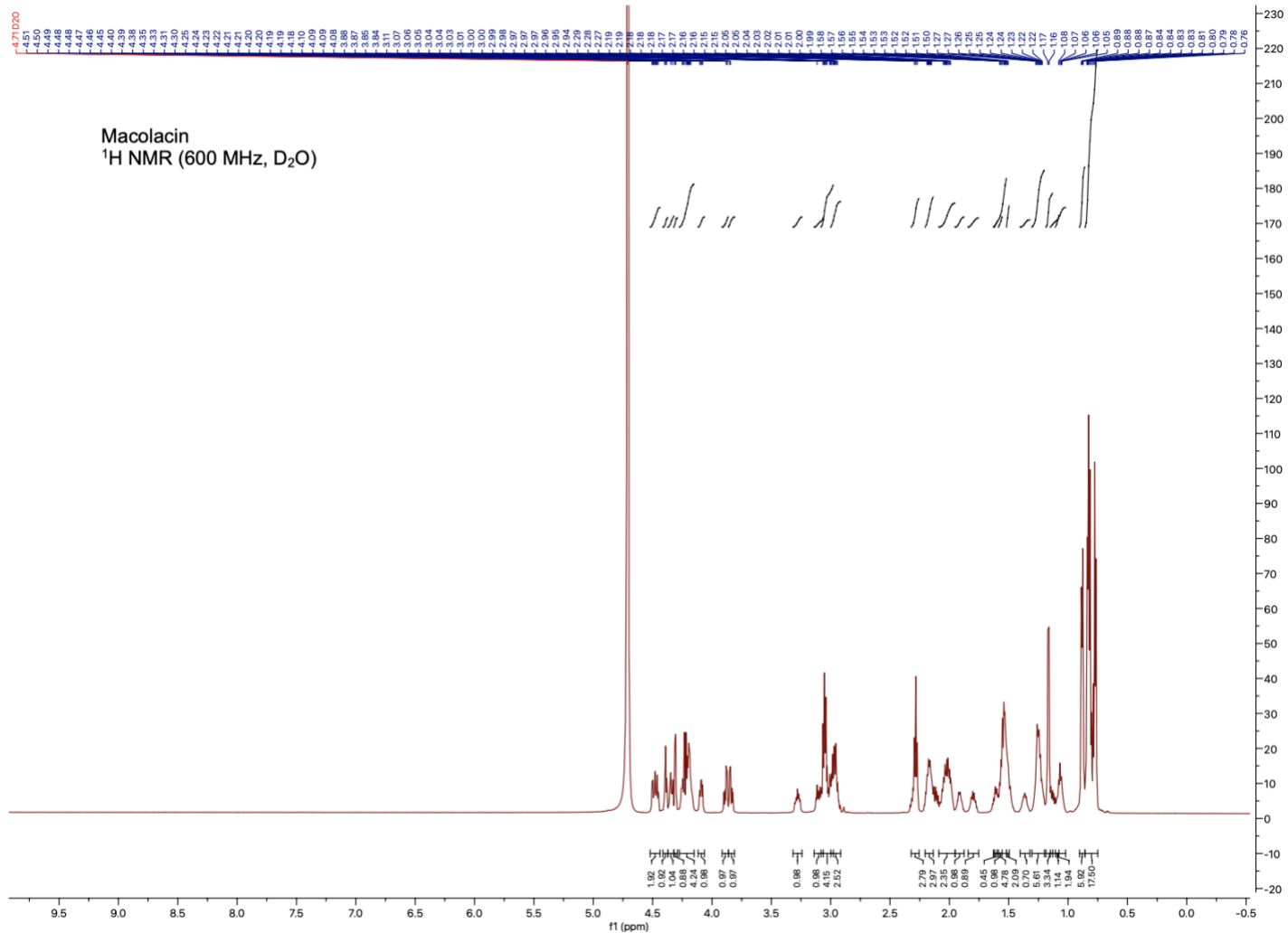
## Supplementary Table S1 | Bacterial strain information

Name of Bacteria	Strain	Resistant gene	Selective Antibiotic
<i>Enterococcus faecium</i>	Com15	N/A	N/A
<i>Staphylococcus aureus</i>	SH1000	N/A	N/A
<i>Klebsiella pneumoniae</i>	10031	N/A	N/A
<i>Klebsiella pneumoniae</i>	0497	N/A	N/A
<i>Klebsiella pneumoniae</i>	ATCC13883	N/A	N/A
<i>Acinetobacter baumannii</i>	ATCC17978	N/A	N/A
<i>Acinetobacter baumannii</i>	SM1536	N/A	N/A
<i>Pseudomonas aeruginosa</i>	PAO1	N/A	N/A
<i>Enterobacter cloacae</i>	0150	N/A	N/A
<i>Salmonella typhimurium</i>	0635	N/A	N/A
<i>Acinetobacter baumannii</i>	CDC 0282-0301	N/A	N/A
<i>Neisseria gonorrhoeae</i>	ATCC 49226	EptA	N/A
<i>Neisseria meningitidis</i>	ATCC 13090	EptA	N/A
<i>Moraxella osloensis</i>	ATCC10973	EptA	N/A
<i>Proteus vulgaris</i>	ATCC 49132	ArnT	N/A
<i>Enterobacter cloacae</i>	ATCC13047	$\Delta$ <i>phoP/Q</i>	N/A
<i>Klebsiella pneumoniae</i>	ATCC13883	pBCSK- <i>mcr-1</i>	30 $\mu$ g/mL Chloramphenicol
<i>Acinetobacter baumannii</i>	ATCC17978	pMQ124xlab1- <i>mcr-1</i>	50 $\mu$ g/mL Gentamicin
<i>Acinetobacter baumannii</i>	SM1536	pMQ124xlab1- <i>mcr-1</i>	50 $\mu$ g/mL Gentamicin
<i>Acinetobacter baumannii</i>	CDC 0282-0301	pMQ124xlab1- <i>mcr-1</i>	50 $\mu$ g/mL Gentamicin
<i>Enterobacter cloacae</i>	ATCC13047	$\Delta$ <i>phoP/Q</i> +pMMBKn- <i>phoP/Q</i> -6xhis	50 $\mu$ g/mL Kanamycin

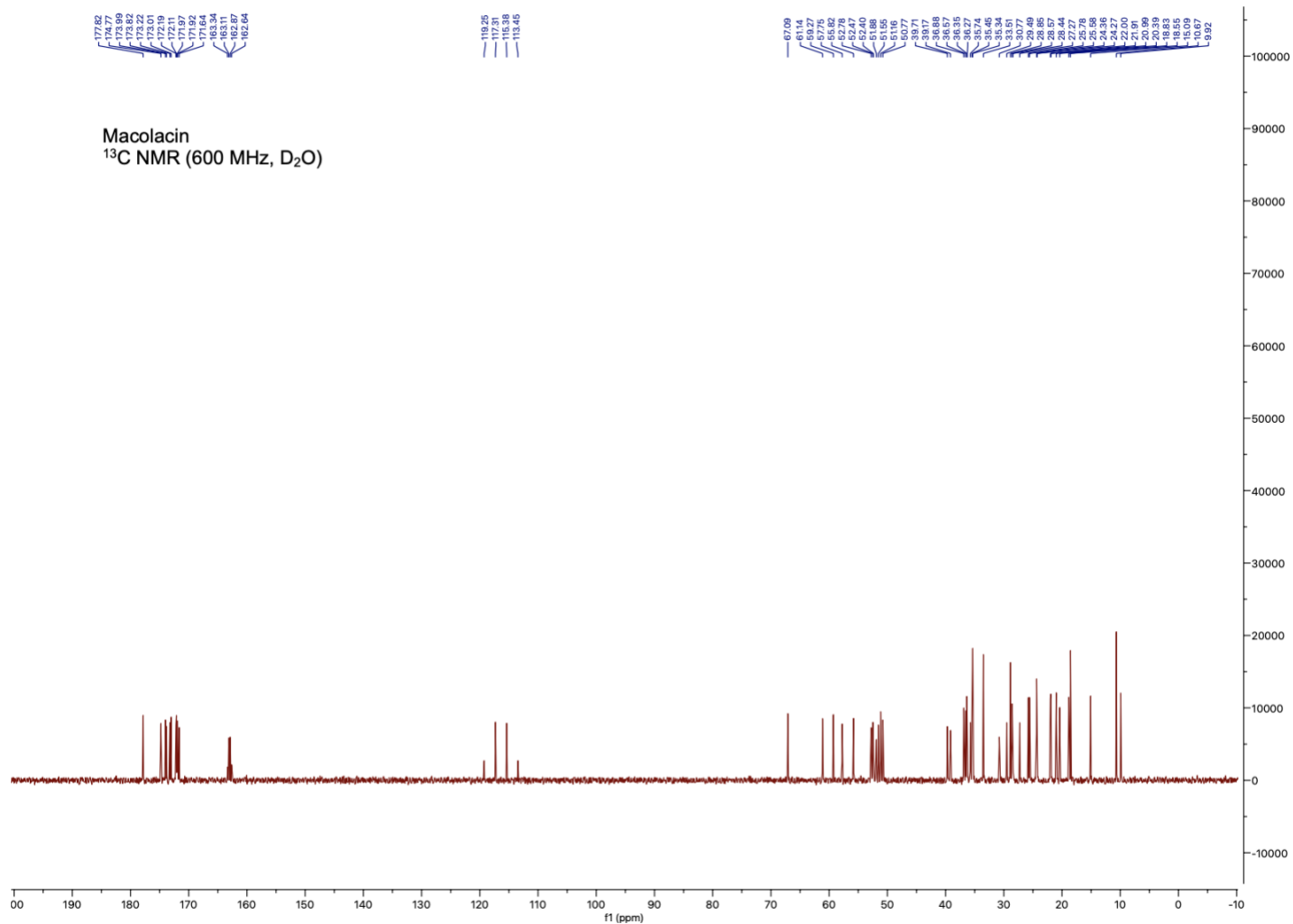
N/A: not applicable.

## Supplementary Table S2 | Accession number of polymyxin-like BGCs.

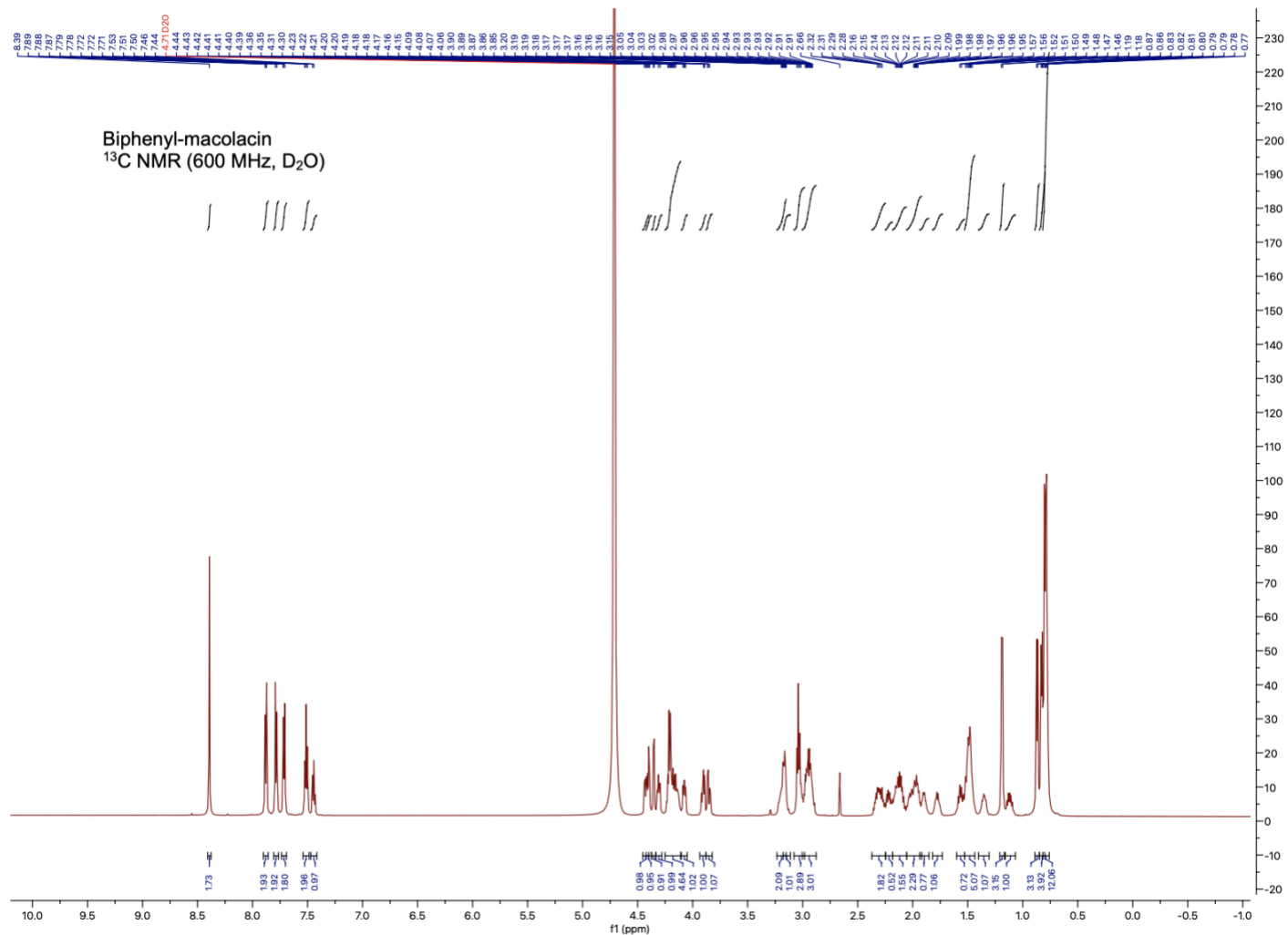
Polymyxin-like BGCs	Organism Name	Accession code
Colistin	<i>Paenibacillus alvei</i>	KP262070.1
Polymyxin A	<i>Paenibacillus polymyxa</i>	EU371992.1
Polymyxin B	<i>Paenibacillus polymyxa</i>	JN660148.1
Macolacin	<i>Paenibacillus_xylanexedens_strain_PAMC_22703</i>	NZ_CP018620.1.cluster015
CAT9-1	<i>Paenibacillus_polymyxa_E681</i>	NC_014483.2.cluster009
CAT9-2	<i>Paenibacillus_polymyxa_SQR-21</i>	NZ_CP006872.1.cluster013
CAT9-3	<i>Paenibacillus_peoriae_strain_HS311</i>	NZ_CP011512.1.cluster012
CAT9-4	<i>Paenibacillus_polymyxa_strain_J</i>	NZ_CP015423.1.cluster003
CAT9-5	<i>Paenibacillus_polymyxa_strain_YC0573_chromosome</i>	NZ_CP017968.3.cluster013
CAT9-6	<i>Paenibacillus_polymyxa_strain_ATCC_15970</i>	NZ_CP011420.1.cluster011
CAT9-7	<i>Paenibacillus_sp._lzh-N1_chromosome</i>	NZ_CP025696.1.cluster005
CAT9-8	<i>Paenibacillus_sp._FSL_R5-0765_NODE_42_length_26692_cov_1.71286_ID_5187</i>	NZ_MRTS01000010.cluster016
CAT9-9	<i>Paenibacillus_assamensis_DSM_18201_H580DRAFT_scaffold00005.5</i>	NZ_KE383837.1.cluster005
CAT9-10	<i>Paenibacillus_alvei_TS-15_PAALTS15_52</i>	NZ_ATMT01000001.cluster004
CAT9-11	<i>Paenibacillus_polysaccharolyticus_strain_BL9</i>	NZ_FMVM01000034.cluster011
CAT9-12	<i>Paenibacillus_amylolyticus_strain_FSL_F4-0260_NODE_28_length_22572_cov_1.32332_ID_3095</i>	NZ_MRTG01000010.cluster006
CAT9-13	<i>Paenibacillus_amylolyticus_strain_FSL_J3-0122_NODE_28_length_25344_cov_1.50965_ID_3188</i>	NZ_MRTO01000010.cluster009
CAT9-14	<i>Paenibacillus_polymyxa_strain_HY96-2_chromosome</i>	NZ_CP025957.1.cluster013
CAT9-15	<i>Paenibacillus_polymyxa_strain_YC0136_chromosome</i>	NZ_CP017967.2.cluster013
CAT9-16	<i>Paenibacillus_sp._CF095</i>	NZ_FMZN01000016.cluster015
CAT9-18	<i>Paenibacillus_polymyxa_ATCC_842_PPt02_scaffold1</i>	NZ_GL905390.1.cluster013
CAT9-19	<i>Paenibacillus_polymyxa_strain_CICC_10580_contig_4</i>	NZ_JNCB01000001.cluster003
CAT9-20	<i>Paenibacillus_polymyxa_A18_scaffold00005</i>	NZ_JWJJ01000001.cluster011
CAT9-21	<i>Paenibacillus_polymyxa_strain_NRRL_B-30509_contig00006</i>	NZ_JTHO01000001.cluster005
CAT9-22	<i>Paenibacillus_polymyxa_strain_EBL06_Scaffold18</i>	NZ_KQ004561.1.cluster015
CAT9-23	<i>Paenibacillus_amylolyticus_strain_FSL_H7-0692_NODE_6_length_355017_cov_1.89367_ID_2749</i>	NZ_MRTI01000010.cluster014
CAT9-24	<i>Paenibacillus_sp._FSL_R5-192_Contig003</i>	NZ_ASPR01000001.cluster002
CAT9-25	<i>Paenibacillus_sp._FSL_H7-689_Contig007</i>	NZ_ASPU01000002.cluster003
CAT9-26	<i>Paenibacillus_sp._VT-400_contig65</i>	NZ_LELF01000001.cluster005
CAT9-27	<i>Paenibacillus_sp._cl6col</i>	NZ_FNAZ01000029.cluster009
CAT9-28	<i>Paenibacillus_sp._UNC217MF_BP95DRAFT_scaffold00014.14_C</i>	NZ_KK366027.1.cluster011
CAT9-29	<i>Paenibacillus_alvei_DSM_29_PAV_1c</i>	NZ_AMBZ01000023.cluster005
CAT9-30	<i>Paenibacillus_sp._PAMC_26794_5104_86</i>	NZ_ANHX01000001.cluster015
CAT9-31	<i>Paenibacillus_alvei_A6-6i-x_PAAL66ix_28</i>	NZ_ATMS01000001.cluster016
CAT9-32	<i>Paenibacillus_polymyxa_M1_main_chromosome</i>	NC_017542.1.cluster012
CAT9-33	<i>Paenibacillus_polymyxa_CR1</i>	NC_023037.2.cluster011
CAT9-34	<i>Paenibacillus_sp._Mc5Re-14</i>	NZ_CVPD01000001.cluster009
CAT9-35	<i>Paenibacillus_jamilae_strain_NS115_contig_45</i>	NZ_LDRX01000001.cluster016



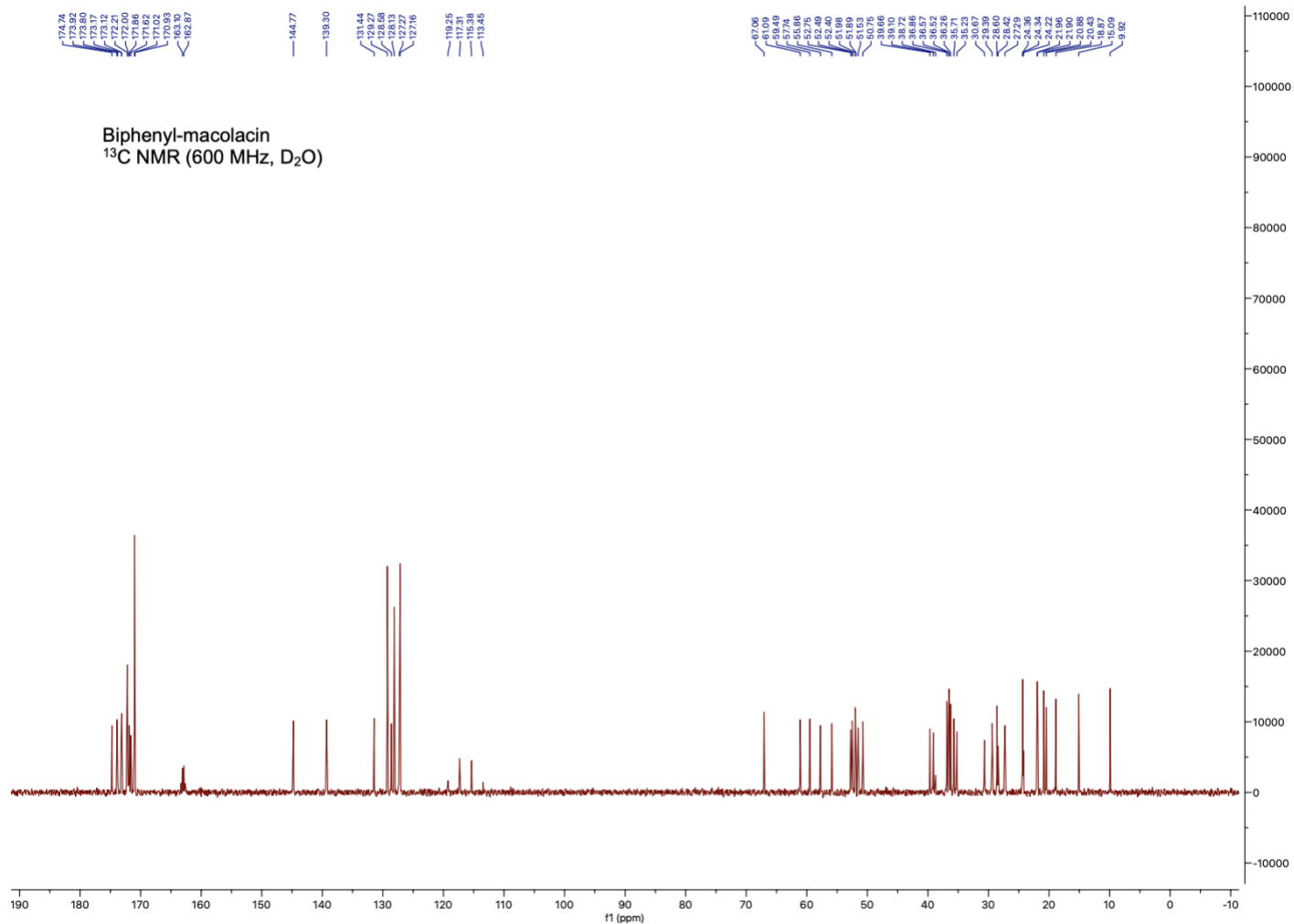
Supplementary Fig. S1 | <sup>1</sup>H NMR (600 MHz, D<sub>2</sub>O) spectrum of macolacin.



Supplementary Fig. S2 | <sup>13</sup>C NMR (600 MHz, D<sub>2</sub>O) spectrum of macolacin.



Supplementary Fig. S3 | <sup>1</sup>H NMR (600 MHz, D<sub>2</sub>O) spectrum of Biphenyl-macolacin.



Supplementary Fig. S4 | <sup>13</sup>C NMR (600 MHz, D<sub>2</sub>O) spectrum of Biphenyl-macolacin.