

Supporting Information

Domestic Pig skin peptides: Targeted starvation therapy for Gram-positive bacteria MRSA through ABC transporters

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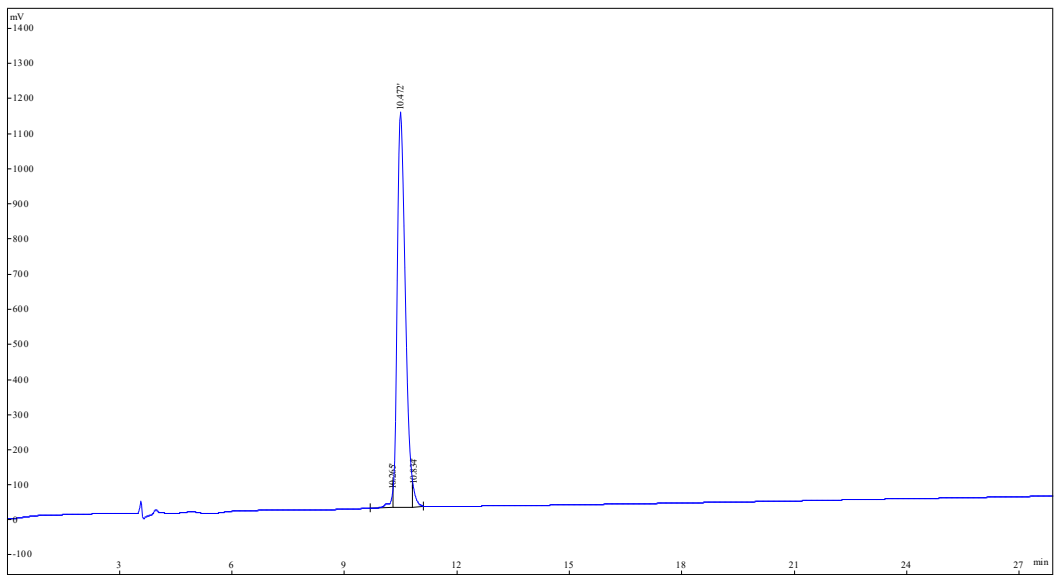
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Fig. S1 Structural Characterization of 12 peptides by HPLC and Mass Spectrometry

P1 of sample information
Chromatogram

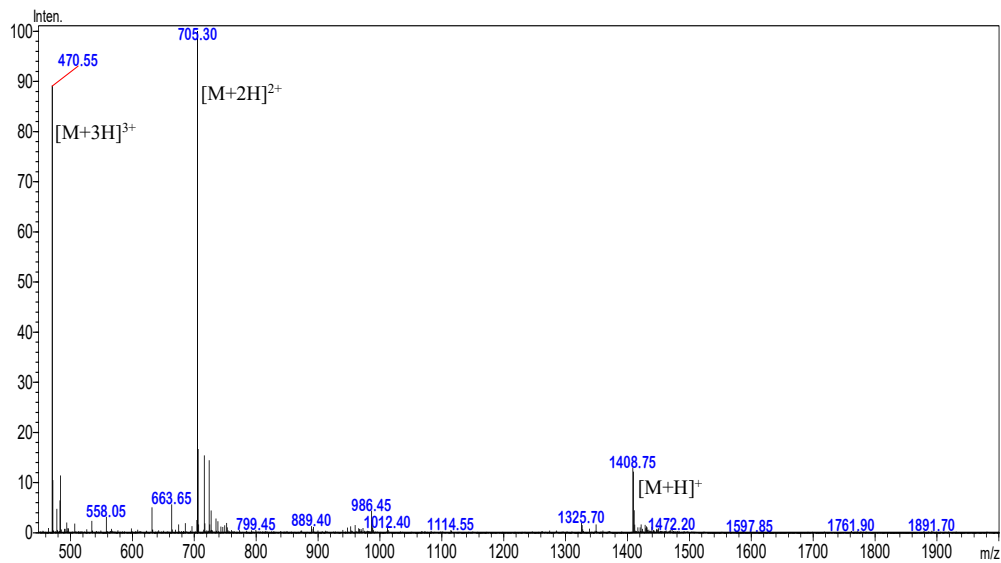


Peak Table

Detector

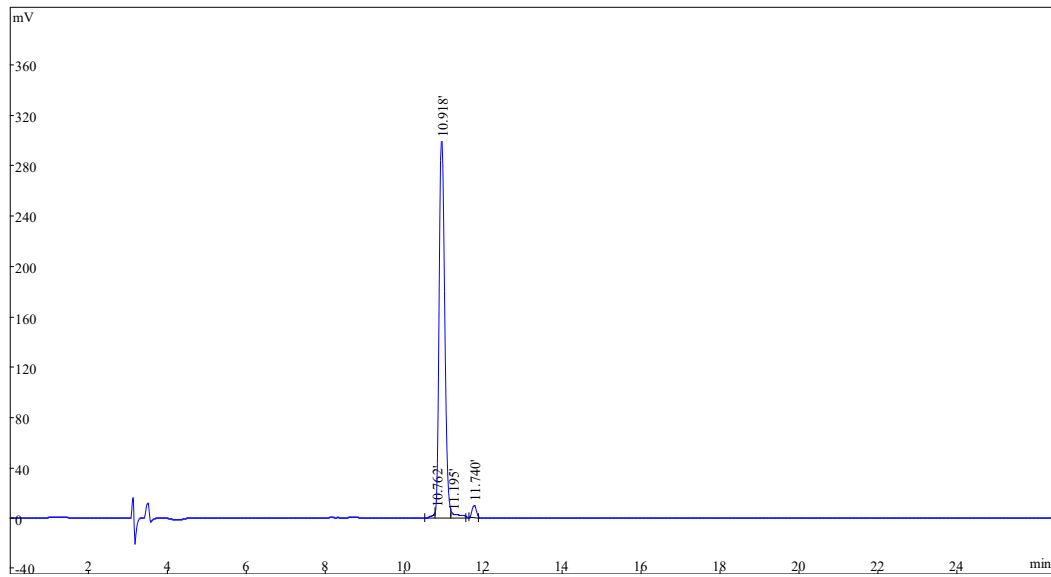
Peak	Ret. Time	Area	Height	Area %
1	10.265	328335	47106	1.889
2	10.472	16759533	1128040	96.43
3	10.834	292490	45823	1.683
Total		17380358	1220969	100.000

MS Spectrum



P2 of Sample Information

Chromatogram

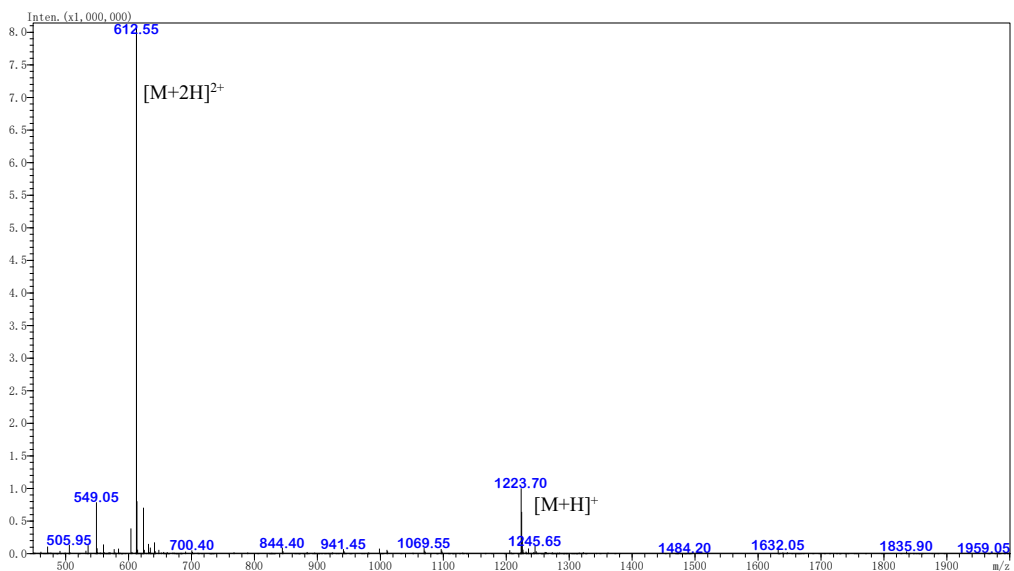


Peak Table

Detector

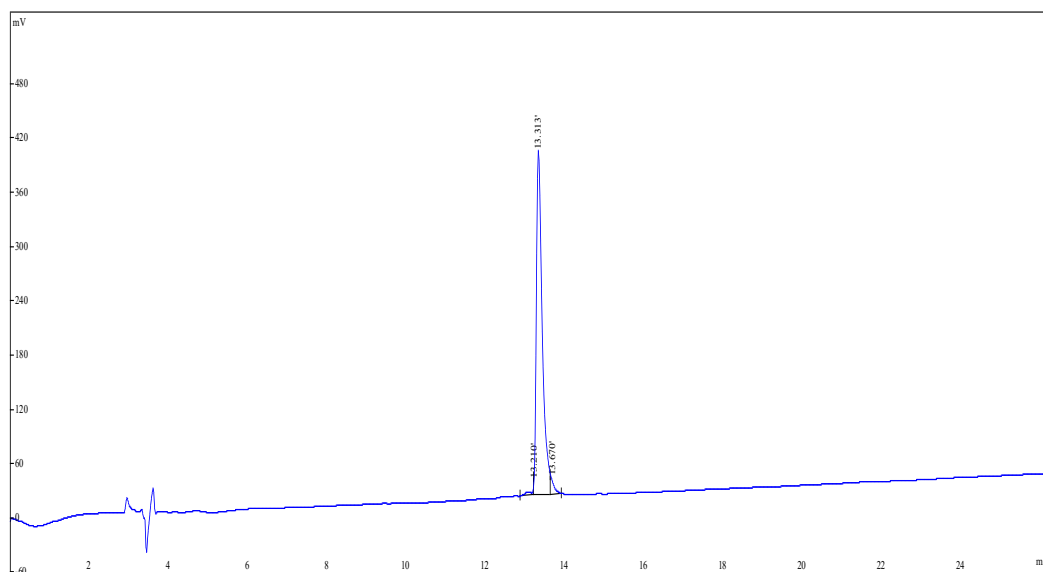
Peak	Ret. Time	Area	Height	Area %
1	10.762	24766	4616	0.8914
3	11.195	47460	2836	1.708
4	11.740	62783	9667	2.26
Total		2778208	315874	100.000

MS Spectrum



P3 of Sample Information

Chromatogram

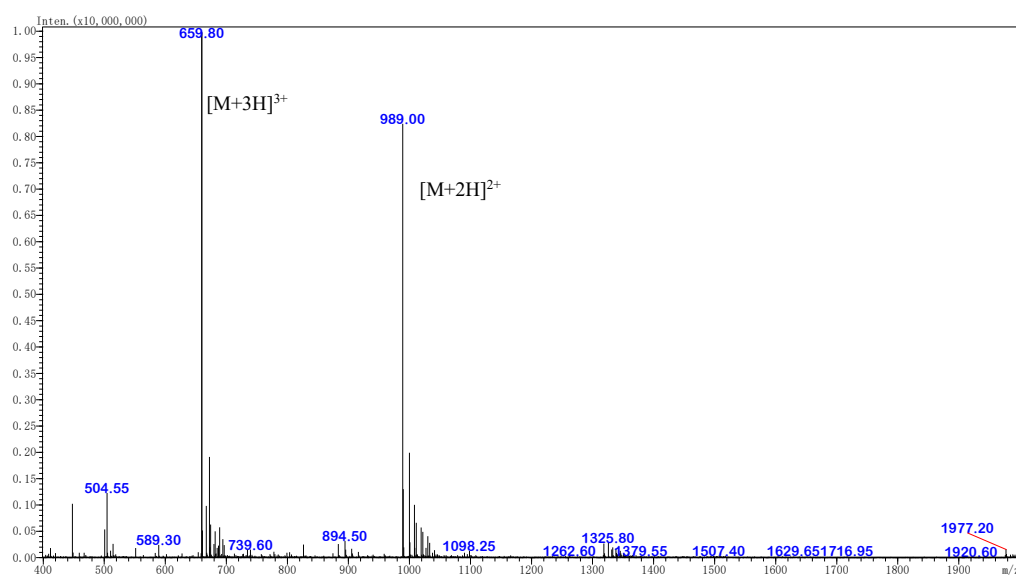


Peak Table

Detector

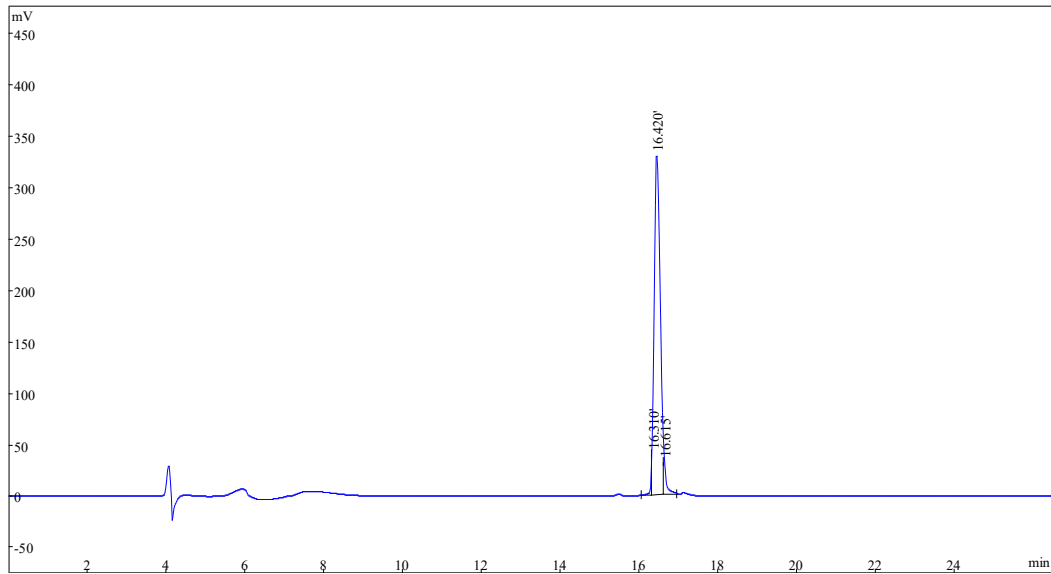
Peak	Ret. Time	Area	Height	Area %
1	13.210	59562	19738	1.465
2	13.313	3904950	382589	96.06
3	13.670	100471	12763	2.472
4		4064983	415090	100
Total				

MS Spectrum



P4 of Sample Information

Chromatogram

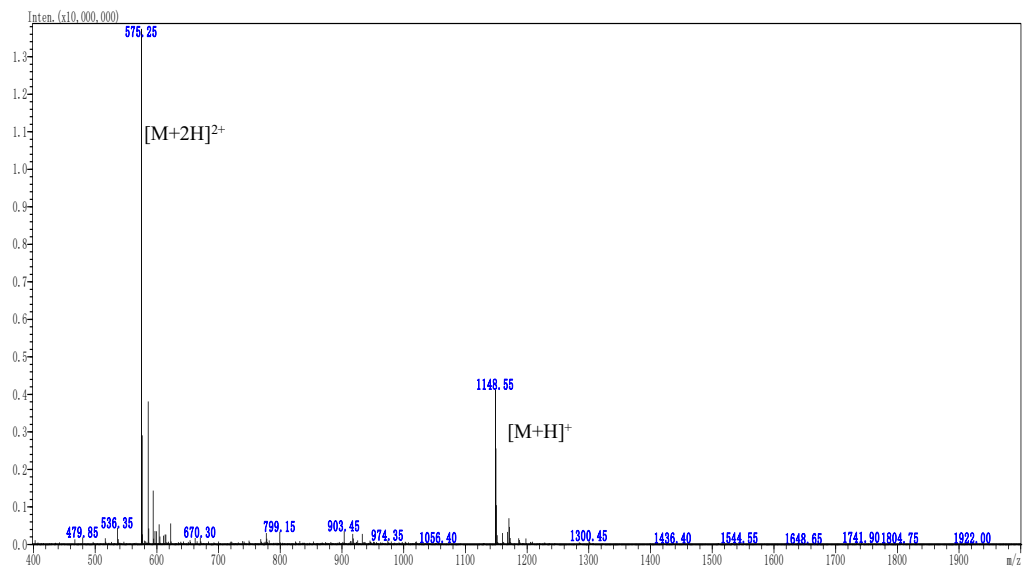


Peak Table

Detector

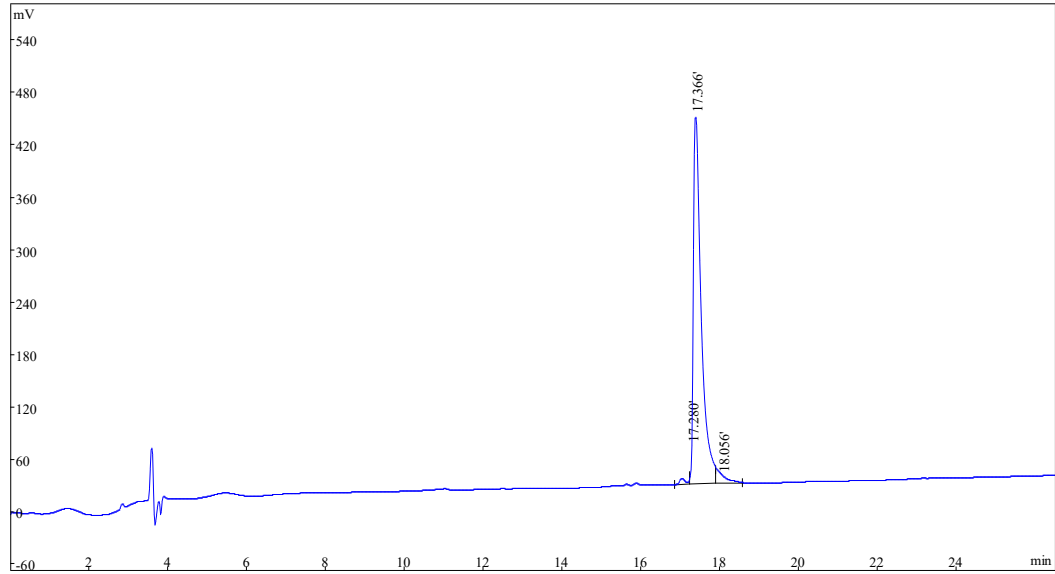
Peak	Ret. Time	Area	Height	Area %
1	16.310	55259	39799	1.659
2	16.420	3170214	328625	95.16
3	16.615	105932	31480	3.18
Total		3331405	399904	100.000

MS Spectrum



P5 of Sample Information

Chromatogram

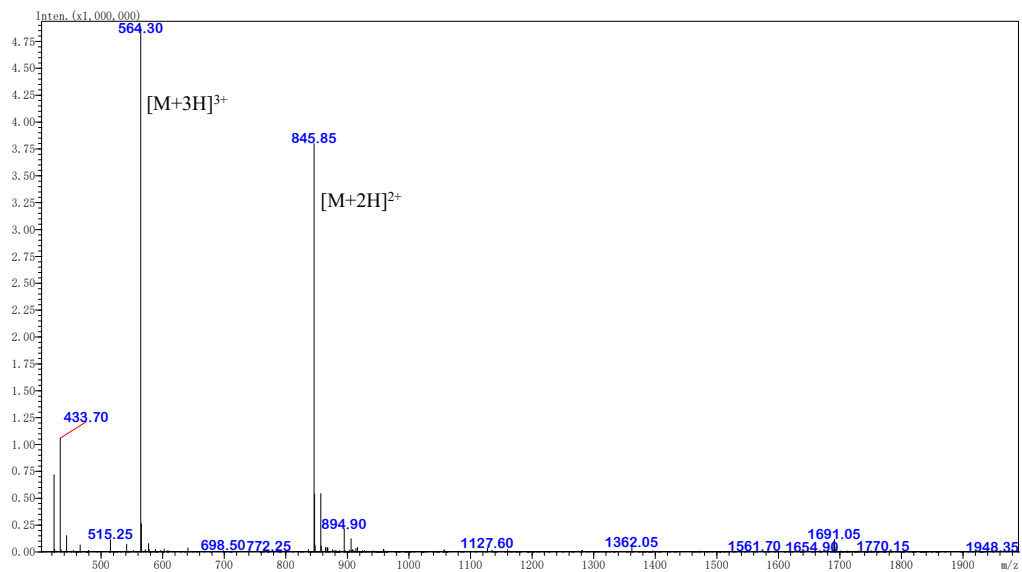


Peak Table

Detector

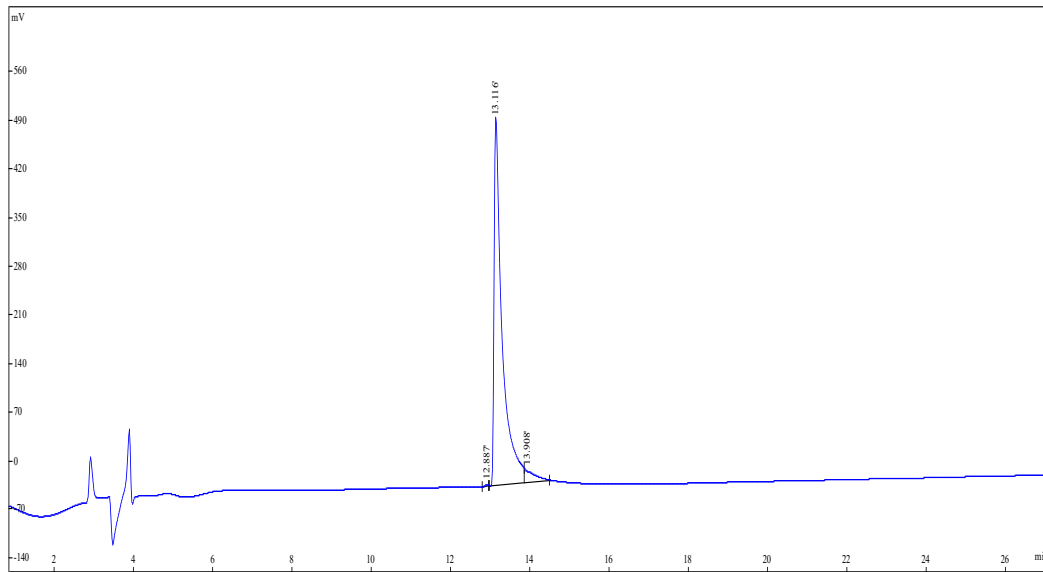
Peak	Ret. Time	Area	Height	Area %
1	17.280	74219	43494	1.319
2	17.366	5354232	419249	95.16
3	18.056	198008	7659	3.519
Total		5626459	470402	100.000

MS Spectrum



P6 of Sample Information

Chromatogram

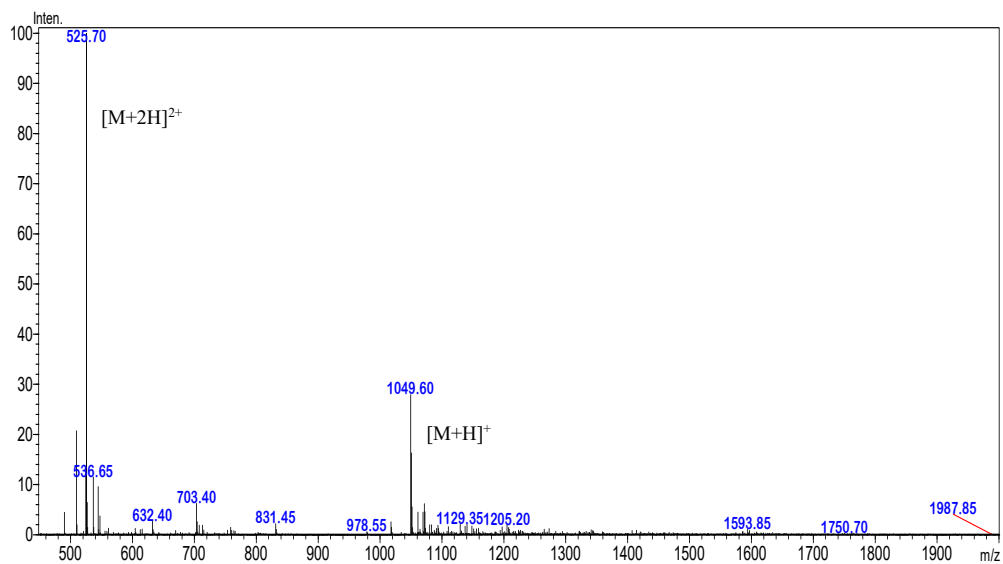


Peak Table

Detector

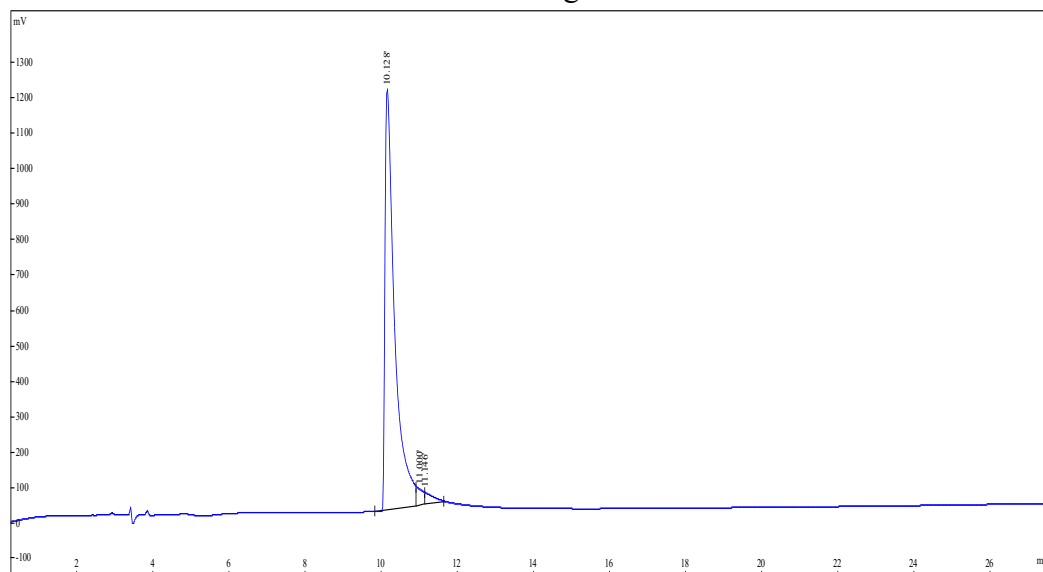
Peak	Ret. Time	Area	Height	Area %
1	12.887	10989	2089	0.1409
2	13.116	7472124	535081	95.83
3	13.908	313829	16826	4.025
Total		7796942	553996	100.000

MS Spectrum



P7 of Sample Information

Chromatogram

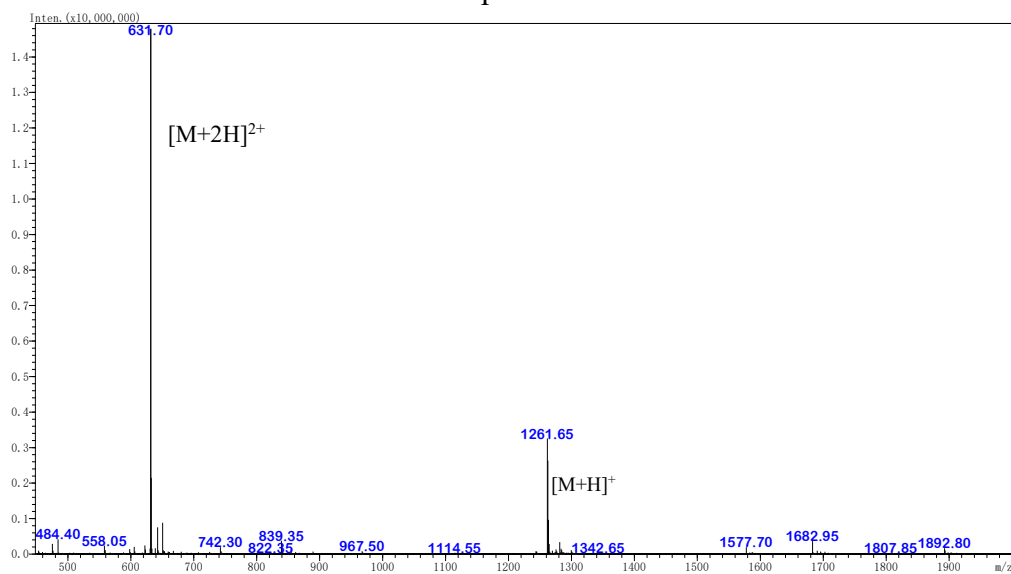


Peak Table

Detector

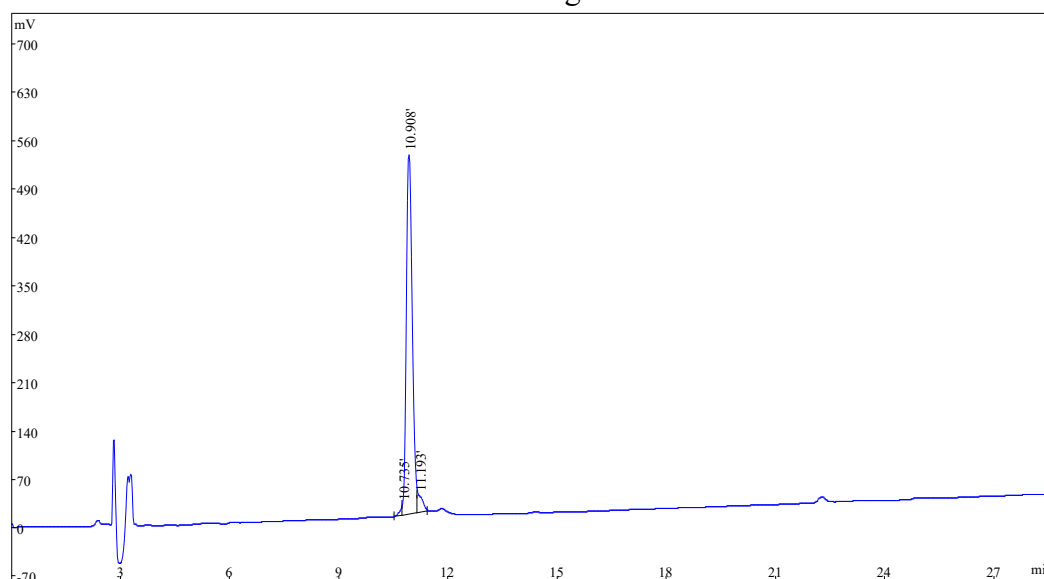
Peak	Ret. Time	Area	Height	Area%
1	10.128	20887258	1192471	95.53
2	11.000	550741	42134	2.519
3	11.146	426568	30883	1.951
Total		21864567	1265488	100.000

MS Spectrum



P8 of Sample Information

Chromatogram

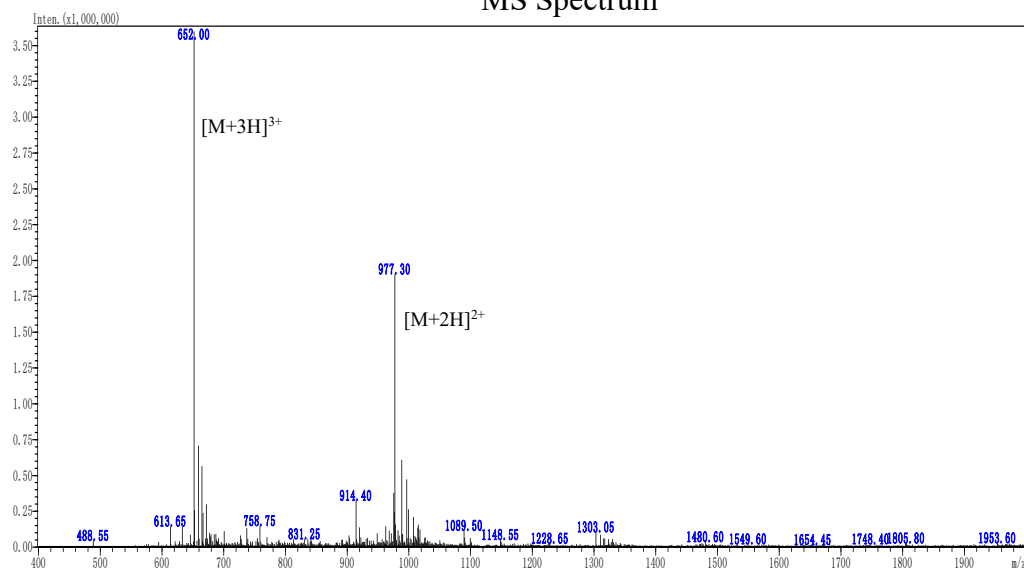


Peak Table

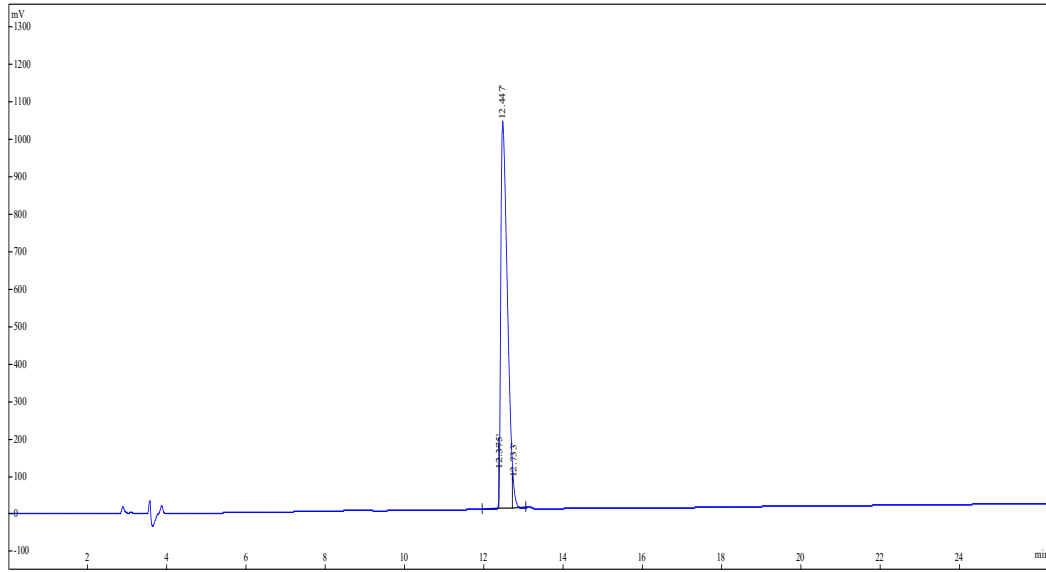
Detector

Peak	Ret.Time	Area	Height	Area %
1	10.735	64484	14802	1.157
2	10.908	5301514	518489	95.15
3	11.193	205924	22762	3.696
Total		5571922	556053	100.000

MS Spectrum



P9 of Sample Information Chromatogram

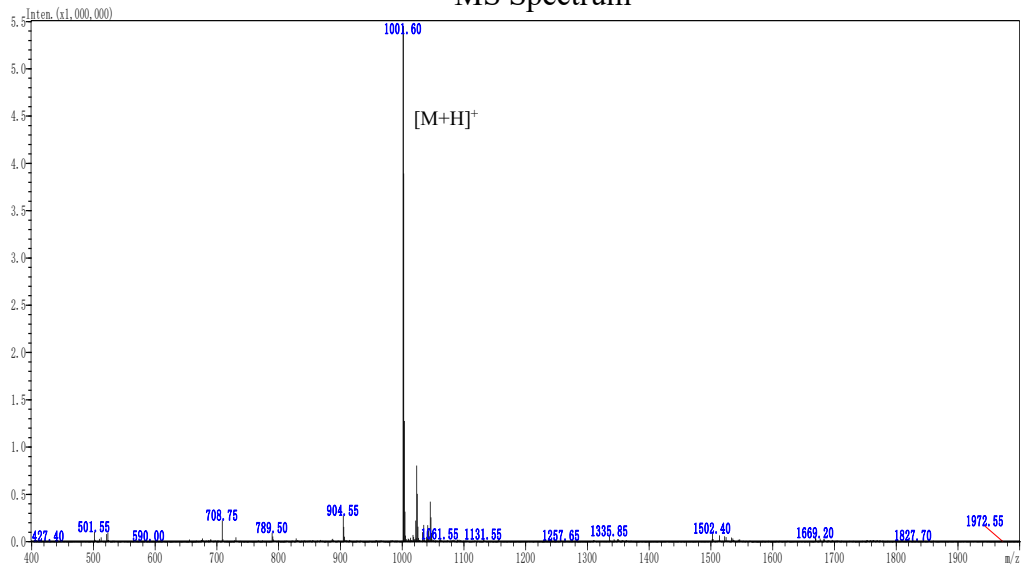


Peak Table

Detector

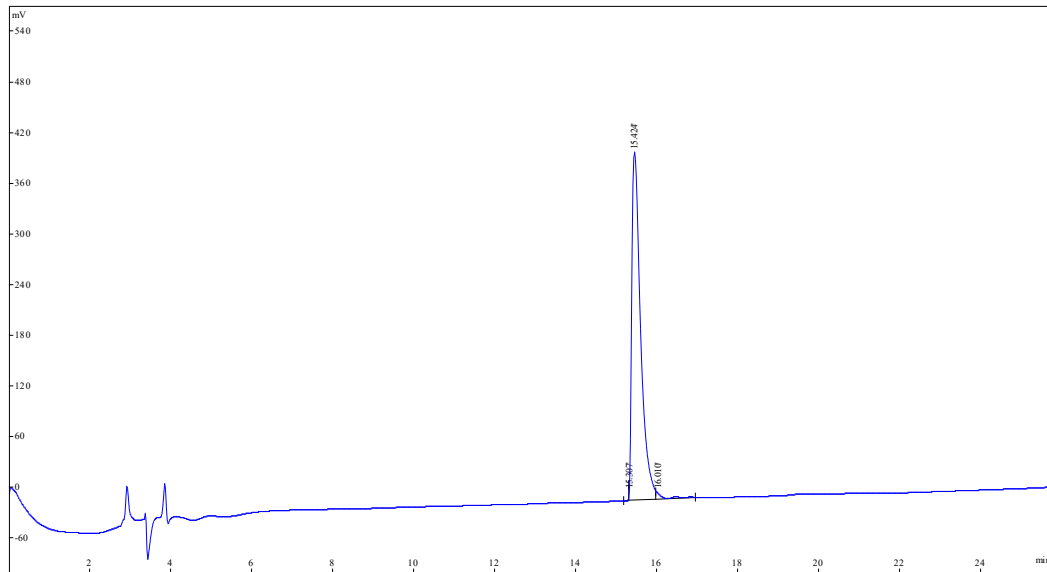
Peak#	Ret. Time	Area	Height	Area %
1	12.37	118060	173707	0.9872
2	12.447	11643290	1036291	97.37
3	12.733	196798	54195	1.646
4		11958148	1264193	100
Total				

MS Spectrum



P10 of Sample Information

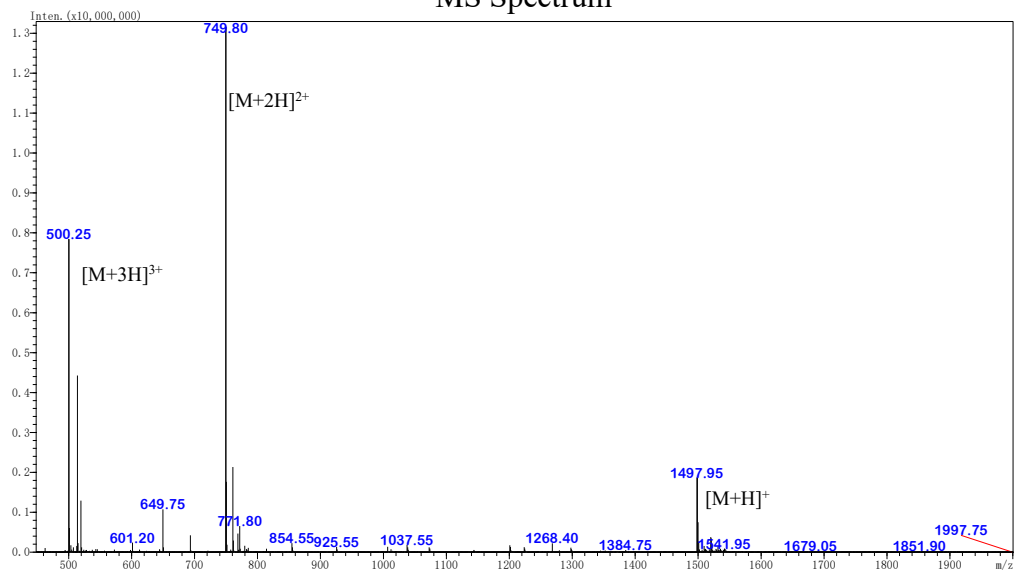
Chromatogram



Peak Table

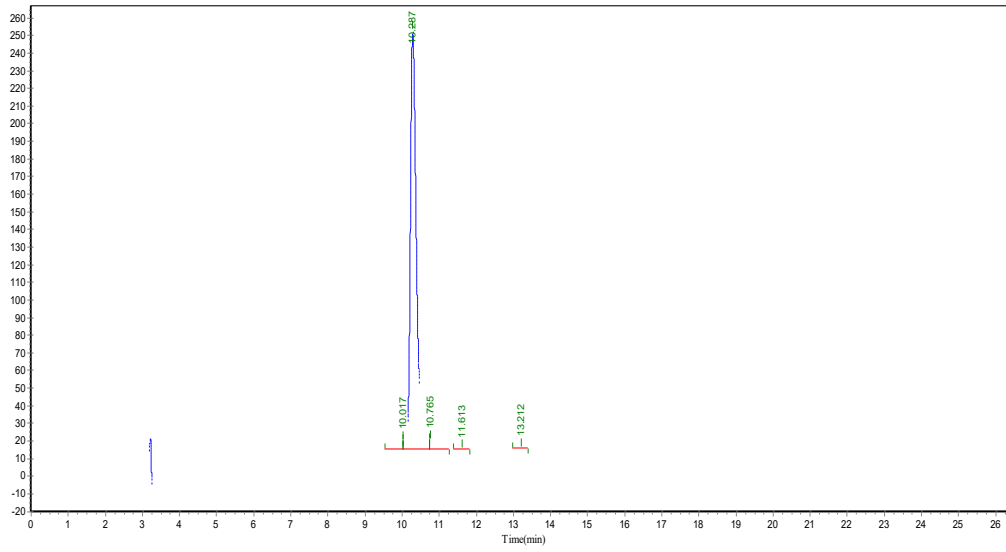
Detector				
Peak	Ret. Time	Area	Height	Area%
1	15.307	10566	19098	0.1663
2	15.424	6253734	413856	98.44
3	16.010	88566	6053	1.394
Total		6352866	439007	100.000

MS Spectrum



P11 of Sample Information

Chromatogram

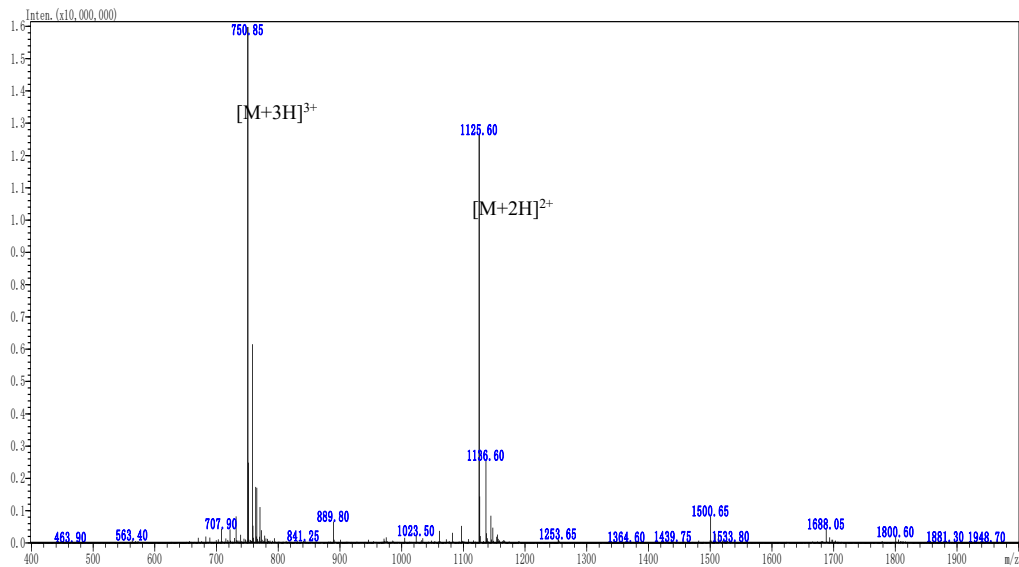


Peak Table

Detector

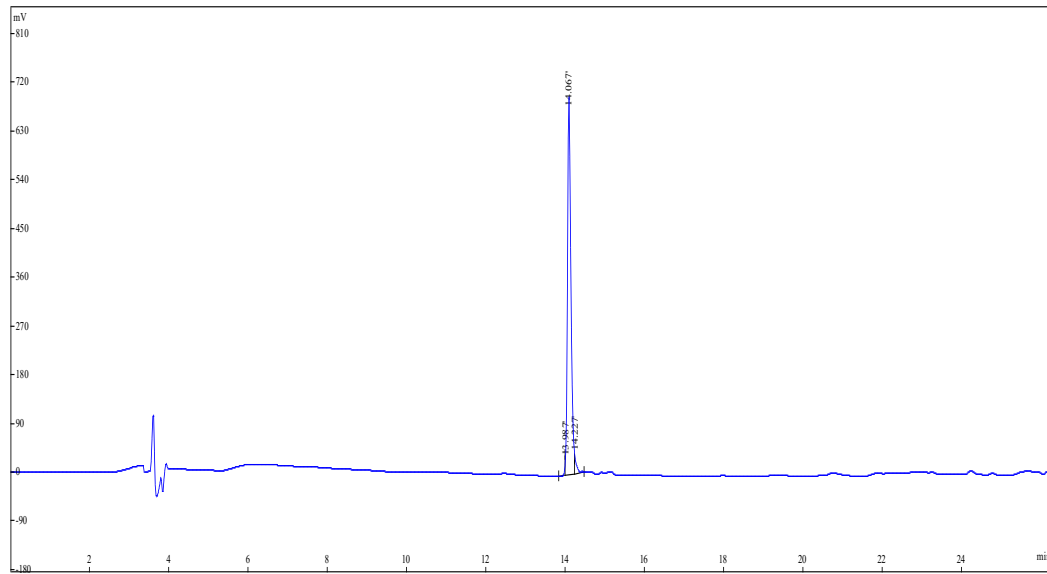
Peak	Ret. Time	Area	Height	Area%
1	10.017	52208.840	5199.967	1.8398
2	10.287	2733608.750	237876.797	96.3308
3	10.765	46513.277	5720.547	1.6391
4	11.613	3116.718	357.420	0.1098
5	13.212	2283.199	162.808	0.0805
Total				100

MS Spectrum



P12 of Sample Information

Chromatogram

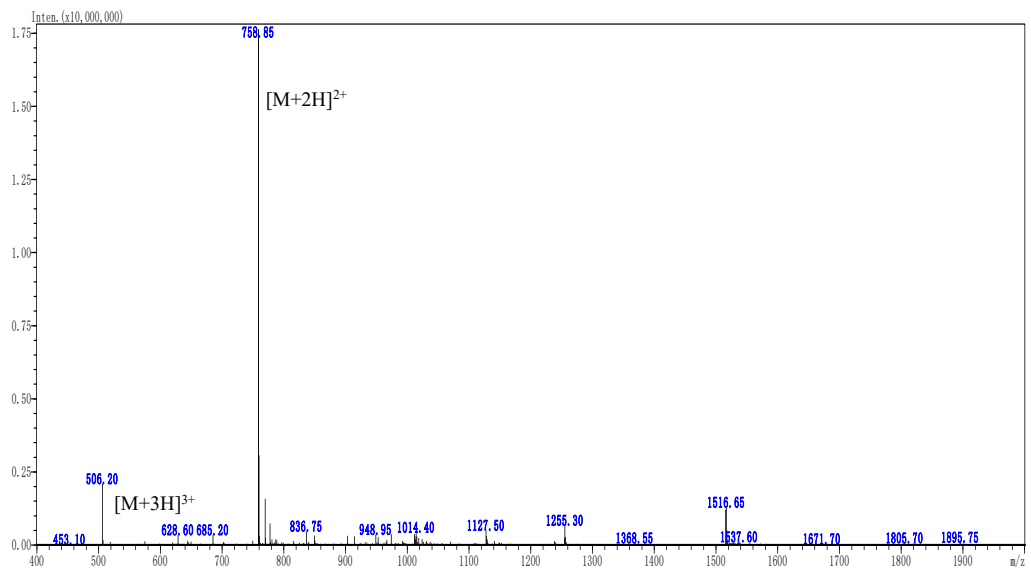


Peak Table

Detector

Peak	Ret. Time	Area	Height	Area%
1	13.987	54133	39719	1.237
2	14.067	4206814	39719	96.12
3	14.227	115790	29075	2.645
Total		4376737	781573	100

MS Spectrum



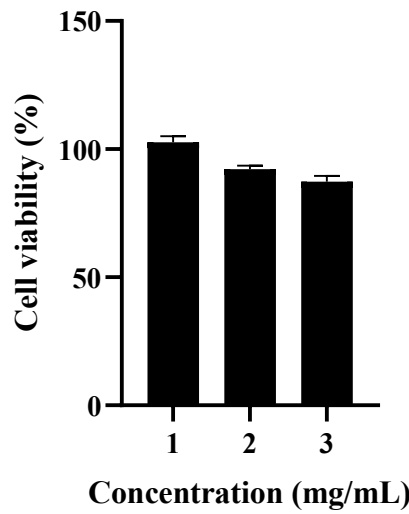
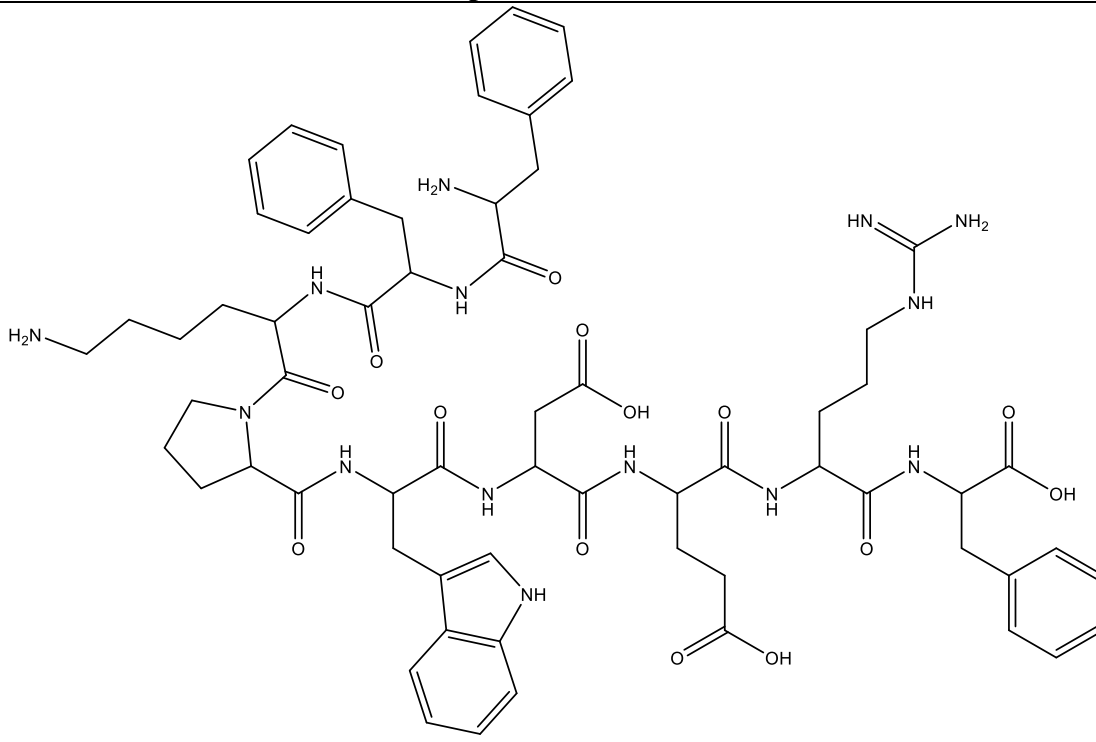
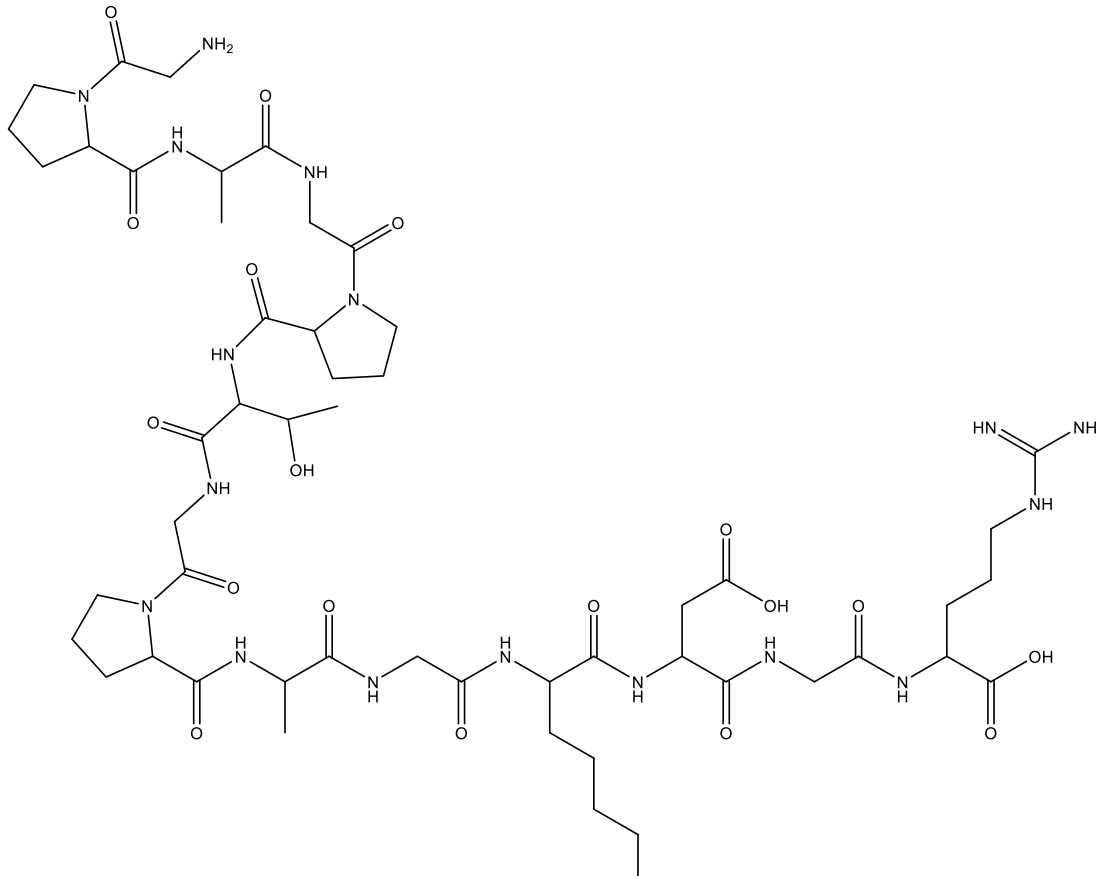


Fig. S2 The toxicity of P5 to MDCK cells

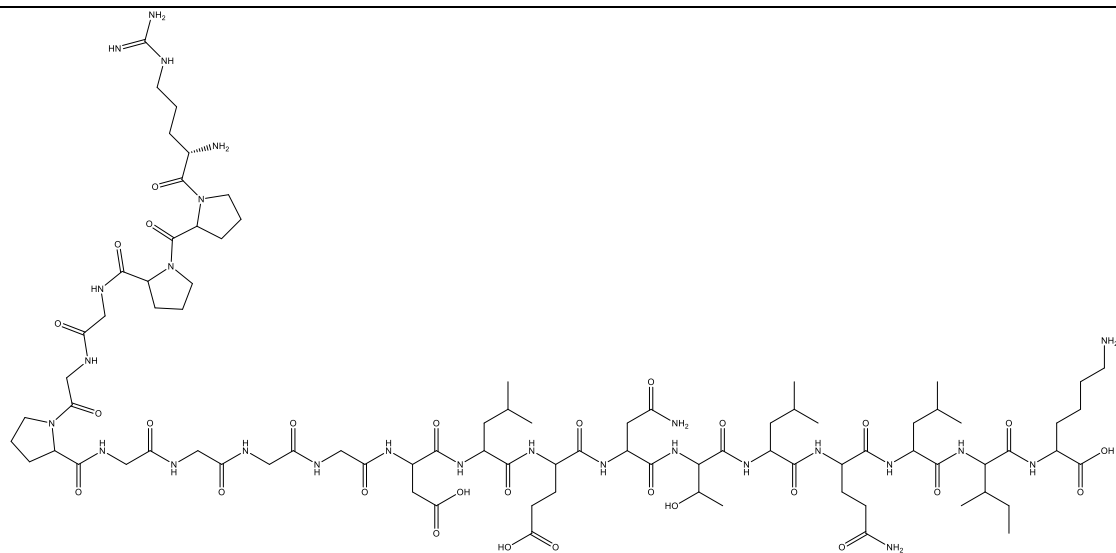
Table S1 Gene expression levels and Pathway definition

KO name	Pathway definition	Expression levels	
		Control	P5
artQ	ABC transporters	80.34	7.4
artR	ABC transporters	162.77	14.07
hutU	Histidine metabolism	87.58	14.93
hutI	Histidine metabolism	93.18	19.04
hutG	Histidine metabolism	112.21	60.53
argG	Arginine biosynthesis;Alanine, aspartate and glutamate metabolism;Fluid shear stress and atherosclerosis	426.89	24.21
argH	Arginine biosynthesis;Alanine, aspartate and glutamate metabolism	322.26	18.87
rocF	Arginine biosynthesis;Arginine and proline metabolism;Amoebiasis;Efferocytosis	292.3	157.81
rot	Quorum sensing	921.83	273.64

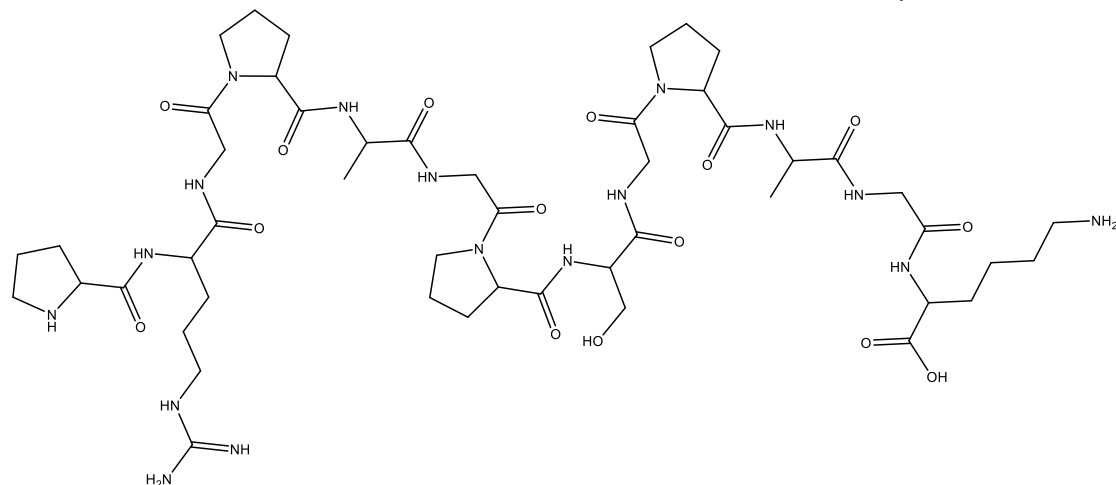
Table S2 Gene expression levels and Pathway definition

Peptide No.	Peptide Structure
P1	 Chemical structure of peptide P1, a complex polypeptide chain. It features a central backbone with various side chains, including a long alkyl chain with a terminal amine (H₂N), a benzyl group, a guanidino group (HN=C(NH₂)NH₂), a carboxylic acid group (COOH), and a benzyl group. The structure also includes a pyrrolidine ring and a benzimidazole moiety.
P2	 Chemical structure of peptide P2, a complex polypeptide chain. It features a central backbone with various side chains, including a long alkyl chain with a terminal amine (H₂N), a guanidino group (HN=C(NH₂)NH₂), a carboxylic acid group (COOH), and a benzyl group. The structure also includes a pyrrolidine ring and a benzimidazole moiety.

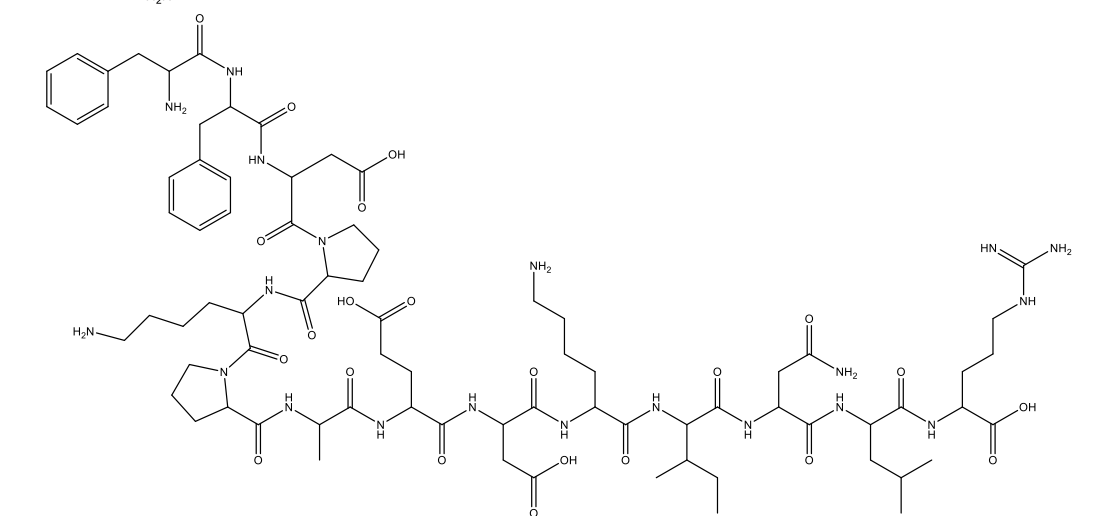
P3



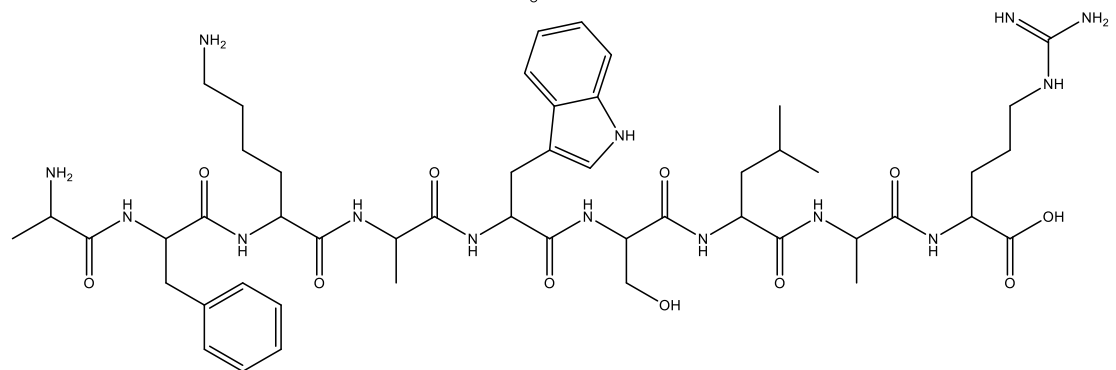
P4



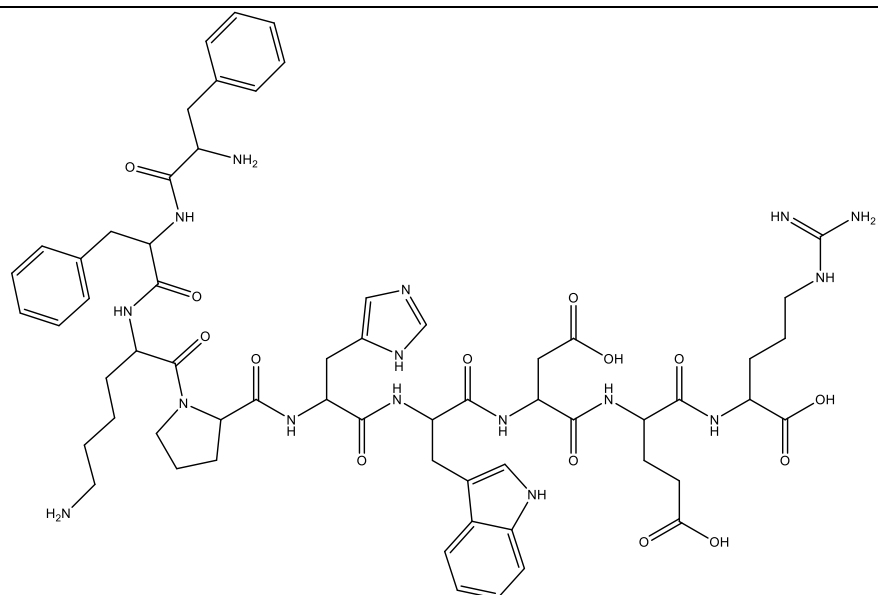
P5



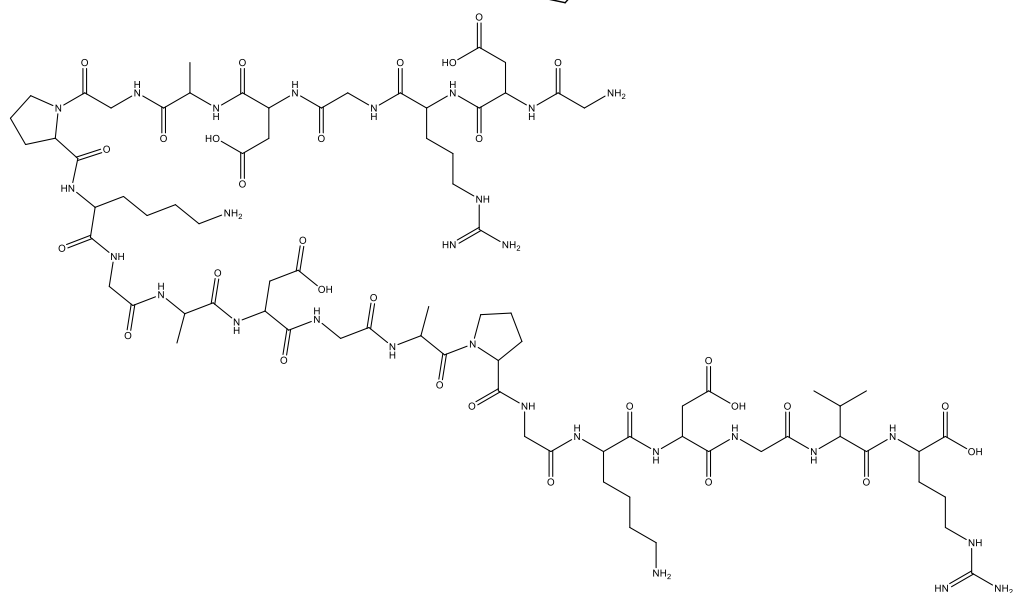
P6



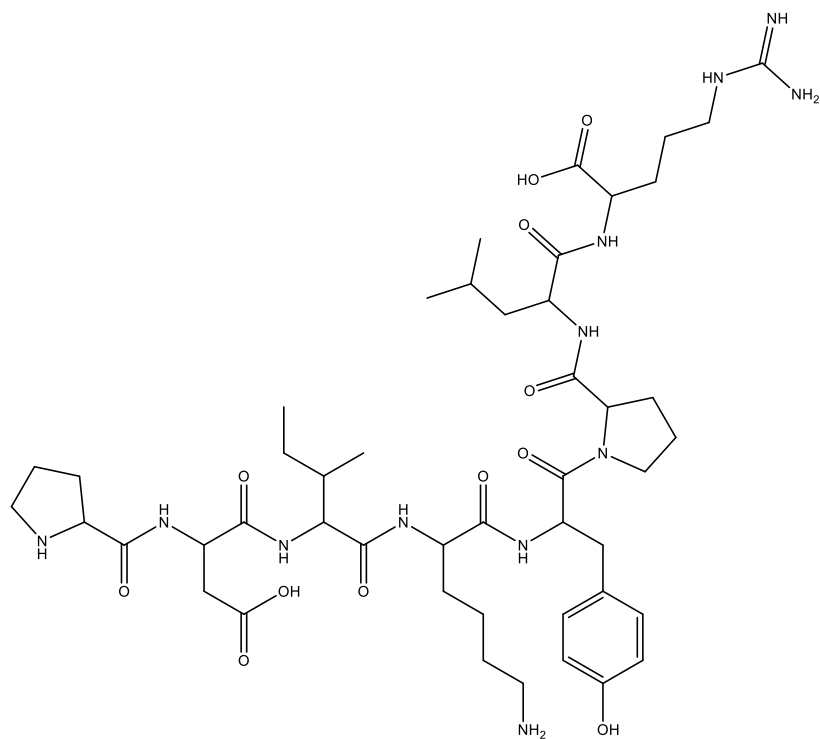
P7



P8



P9



C[C@H](NC(=O)C[C@@H](N)CC(=O)O)[C@@H](C(=O)NCCC(N)=O)C(=O)N(Cc1ccccc1)C(=O)N2CCCC2C(=O)N[C@@H](C)C(=O)NCC(=O)NCC(=O)N3CCCC3C(=O)N[C@@H](CO)C(=O)N[C@@H](Cc4c[nH]cn4)C(=O)ONCC(=C)NC(Cc1ccccc1)C(=O)N2CCCC2C(=O)NCC(=O)NC(C)C(=O)N3CCCC3C(=O)NCC(=O)N4CCCC4C(=O)NCC(=O)N5CCCC5C(=O)NCC(=O)N6CCCC6C(=O)NCC(=O)N7CCCC7C(=O)NCC(=O)N8CCCC8C(=O)NCC(=O)N9CCCC9C(=O)NCC(=O)N10CCCC10C(=O)NCC(=O)N11CCCC11C(=O)NCC(=O)N12CCCC12C(=O)NCC(=O)N13CCCC13C(=O)NCC(=O)N14CCCC14C(=O)NCC(=O)N15CCCC15C(=O)NCC(=O)N16CCCC16C(=O)NCC(=O)N17CCCC17C(=O)NCC(=O)N18CCCC18C(=O)NCC(=O)N19CCCC19C(=O)NCC(=O)N20CCCC20C(=O)NCC(=O)N21CCCC21C(=O)NCC(=O)N22CCCC22C(=O)NCC(=O)N23CCCC23C(=O)NCC(=O)N24CCCC24C(=O)NCC(=O)N25CCCC25C(=O)NCC(=O)N26CCCC26C(=O)NCC(=O)N27CCCC27C(=O)NCC(=O)N28CCCC28C(=O)NCC(=O)N29CCCC29C(=O)NCC(=O)N30CCCC30C(=O)NCC(=O)N31CCCC31C(=O)NCC(=O)N32CCCC32C(=O)NCC(=O)N33CCCC33C(=O)NCC(=O)N34CCCC34C(=O)NCC(=O)N35CCCC35C(=O)NCC(=O)N36CCCC36C(=O)NCC(=O)N37CCCC37C(=O)NCC(=O)N38CCCC38C(=O)NCC(=O)N39CCCC39C(=O)NCC(=O)N40CCCC40C(=O)NCC(=O)N41CCCC41C(=O)NCC(=O)N42CCCC42C(=O)NCC(=O)N43CCCC43C(=O)NCC(=O)N44CCCC44C(=O)NCC(=O)N45CCCC45C(=O)NCC(=O)N46CCCC46C(=O)NCC(=O)N47CCCC47C(=O)NCC(=O)N48CCCC48C(=O)NCC(=O)N49CCCC49C(=O)NCC(=O)N50CCCC50C(=O)NCC(=O)N51CCCC51C(=O)NCC(=O)N52CCCC52C(=O)NCC(=O)N53CCCC53C(=O)NCC(=O)N54CCCC54C(=O)NCC(=O)N55CCCC55C(=O)NCC(=O)N56CCCC56C(=O)NCC(=O)N57CCCC57C(=O)NCC(=O)N58CCCC58C(=O)NCC(=O)N59CCCC59C(=O)NCC(=O)N60CCCC60C(=O)NCC(=O)N61CCCC61C(=O)NCC(=O)N62CCCC62C(=O)NCC(=O)N63CCCC63C(=O)NCC(=O)N64CCCC64C(=O)NCC(=O)N65CCCC65C(=O)NCC(=O)N66CCCC66C(=O)NCC(=O)N67CCCC67C(=O)NCC(=O)N68CCCC68C(=O)NCC(=O)N69CCCC69C(=O)NCC(=O)N70CCCC70C(=O)NCC(=O)N71CCCC71C(=O)NCC(=O)N72CCCC72C(=O)NCC(=O)N73CCCC73C(=O)NCC(=O)N74CCCC74C(=O)NCC(=O)N75CCCC75C(=O)NCC(=O)N76CCCC76C(=O)NCC(=O)N77CCCC77C(=O)NCC(=O)N78CCCC78C(=O)NCC(=O)N79CCCC79C(=O)NCC(=O)N80CCCC80C(=O)NCC(=O)N81CCCC81C(=O)NCC(=O)N82CCCC82C(=O)NCC(=O)N83CCCC83C(=O)NCC(=O)N84CCCC84C(=O)NCC(=O)N85CCCC85C(=O)NCC(=O)N86CCCC86C(=O)NCC(=O)N87CCCC87C(=O)NCC(=O)N88CCCC88C(=O)NCC(=O)N89CCCC89C(=O)NCC(=O)N90CCCC90C(=O)NCC(=O)N91CCCC91C(=O)NCC(=O)N92CCCC92C(=O)NCC(=O)N93CCCC93C(=O)NCC(=O)N94CCCC94C(=O)NCC(=O)N95CCCC95C(=O)NCC(=O)N96CCCC96C(=O)NCC(=O)N97CCCC97C(=O)NCC(=O)N98CCCC98C(=O)NCC(=O)N99CCCC99C(=O)NCC(=O)N100CCCC100C(=O)NCC(=O)N101CCCC101C(=O)NCC(=O)N102CCCC102C(=O)NCC(=O)N103CCCC103C(=O)NCC(=O)N104CCCC104C(=O)NCC(=O)N105CCCC105C(=O)NCC(=O)N106CCCC106C(=O)NCC(=O)N107CCCC107C(=O)NCC(=O)N108CCCC108C(=O)NCC(=O)N109CCCC109C(=O)NCC(=O)N110CCCC110C(=O)NCC(=O)N111CCCC111C(=O)NCC(=O)N112CCCC112C(=O)NCC(=O)N113CCCC113C(=O)NCC(=O)N114CCCC114C(=O)NCC(=O)N115CCCC115C(=O)NCC(=O)N116CCCC116C(=O)NCC(=O)N117CCCC117C(=O)NCC(=O)N118CCCC118C(=O)NCC(=O)N119CCCC119C(=O)NCC(=O)N120CCCC120C(=O)NCC(=O)N121CCCC121C(=O)NCC(=O)N122CCCC122C(=O)NCC(=O)N123CCCC123C(=O)NCC(=O)N124CCCC124C(=O)NCC(=O)N125CCCC125C(=O)NCC(=O)N126CCCC126C(=O)NCC(=O)N127CCCC127C(=O)NCC(=O)N128CCCC128C(=O)NCC(=O)N129CCCC129C(=O)NCC(=O)N130CCCC130C(=O)NCC(=O)N131CCCC131C(=O)NCC(=O)N132CCCC132C(=O)NCC(=O)N133CCCC133C(=O)NCC(=O)N134CCCC134C(=O)NCC(=O)N135CCCC135C(=O)NCC(=O)N136CCCC136C(=O)NCC(=O)N137CCCC137C(=O)NCC(=O)N138CCCC138C(=O)NCC(=O)N139CCCC139C(=O)NCC(=O)N140CCCC140C(=O)NCC(=O)N141CCCC141C(=O)NCC(=O)N142CCCC142C(=O)NCC(=O)N143CCCC143C(=O)NCC(=O)N144CCCC144C(=O)NCC(=O)N145CCCC145C(=O)NCC(=O)N146CCCC146C(=O)NCC(=O)N147CCCC147C(=O)NCC(=O)N148CCCC148C(=O)NCC(=O)N149CCCC149C(=O)NCC(=O)N150CCCC150C(=O)NCC(=O)N151CCCC151C(=O)NCC(=O)N152CCCC152C(=O)NCC(=O)N153CCCC153C(=O)NCC(=O)N154CCCC154C(=O)NCC(=O)N155CCCC155C(=O)NCC(=O)N156CCCC156C(=O)NCC(=O)N157CCCC157C(=O)NCC(=O)N158CCCC158C(=O)NCC(=O)N159CCCC159C(=O)NCC(=O)N160CCCC160C(=O)NCC(=O)N161CCCC161C(=O)NCC(=O)N162CCCC162C(=O)NCC(=O)N163CCCC163C(=O)NCC(=O)N164CCCC164C(=O)NCC(=O)N165CCCC165C(=O)NCC(=O)N166CCCC166C(=O)NCC(=O)N167CCCC167C(=O)NCC(=O)N168CCCC168C(=O)NCC(=O)N169CCCC169C(=O)NCC(=O)N170CCCC170C(=O)NCC(=O)N171CCCC171C(=O)NCC(=O)N172CCCC172C(=O)NCC(=O)N173CCCC173C(=O)NCC(=O)N174CCCC174C(=O)NCC(=O)N175CCCC175C(=O)NCC(=O)N176CCCC176C(=O)NCC(=O)N177CCCC177C(=O)NCC(=O)N178CCCC178C(=O)NCC(=O)N179CCCC179C(=O)NCC(=O)N180CCCC180C(=O)NCC(=O)N181CCCC181C(=O)NCC(=O)N182CCCC182C(=O)NCC(=O)N183CCCC183C(=O)NCC(=O)N184CCCC184C(=O)NCC(=O)N185CCCC185C(=O)NCC(=O)N186CCCC186C(=O)NCC(=O)N187CCCC187C(=O)NCC(=O)N188CCCC188C(=O)NCC(=O)N189CCCC189C(=O)NCC(=O)N190CCCC190C(=O)NCC(=O)N191CCCC191C(=O)NCC(=O)N192CCCC192C(=O)NCC(=O)N193CCCC193C(=O)NCC(=O)N194CCCC194C(=O)NCC(=O)N195CCCC195C(=O)NCC(=O)N196CCCC196C(=O)NCC(=O)N197CCCC197C(=O)NCC(=O)N198CCCC198C(=O)NCC(=O)N199CCCC199C(=O)NCC(=O)N200CCCC200C(=O)NCC(=O)N201CCCC201C(=O)NCC(=O)N202CCCC202C(=O)NCC(=O)N203CCCC203C(=O)NCC(=O)N204CCCC204C(=O)NCC(=O)N205CCCC205C(=O)NCC(=O)N206CCCC206C(=O)NCC(=O)N207CCCC207C(=O)NCC(=O)N208CCCC208C(=O)NCC(=O)N209CCCC209C(=O)NCC(=O)N210CCCC210C(=O)NCC(=O)N211CCCC211C(=O)NCC(=O)N212CCCC212C(=O)NCC(=O)N213CCCC213C(=O)NCC(=O)N214CCCC214C(=O)NCC(=O)N215CCCC215C(=O)NCC(=O)N216CCCC216C(=O)NCC(=O)N217CCCC217C(=O)NCC(=O)N218CCCC218C(=O)NCC(=O)N219CCCC219C(=O)NCC(=O)N220CCCC220C(=O)NCC(=O)N221CCCC221C(=O)NCC(=O)N222CCCC222C(=O)NCC(=O)N223CCCC223C(=O)NCC(=O)N224CCCC224C(=O)NCC(=O)N225CCCC225C(=O)NCC(=O)N226CCCC226C(=O)NCC(=O)N227N#CCNC(CCCCNC(=O)C(N)C(=O)NCCC(O)c1ccc(O)cc1)C(=O)NCCC(O)c1ccc(O)cc1

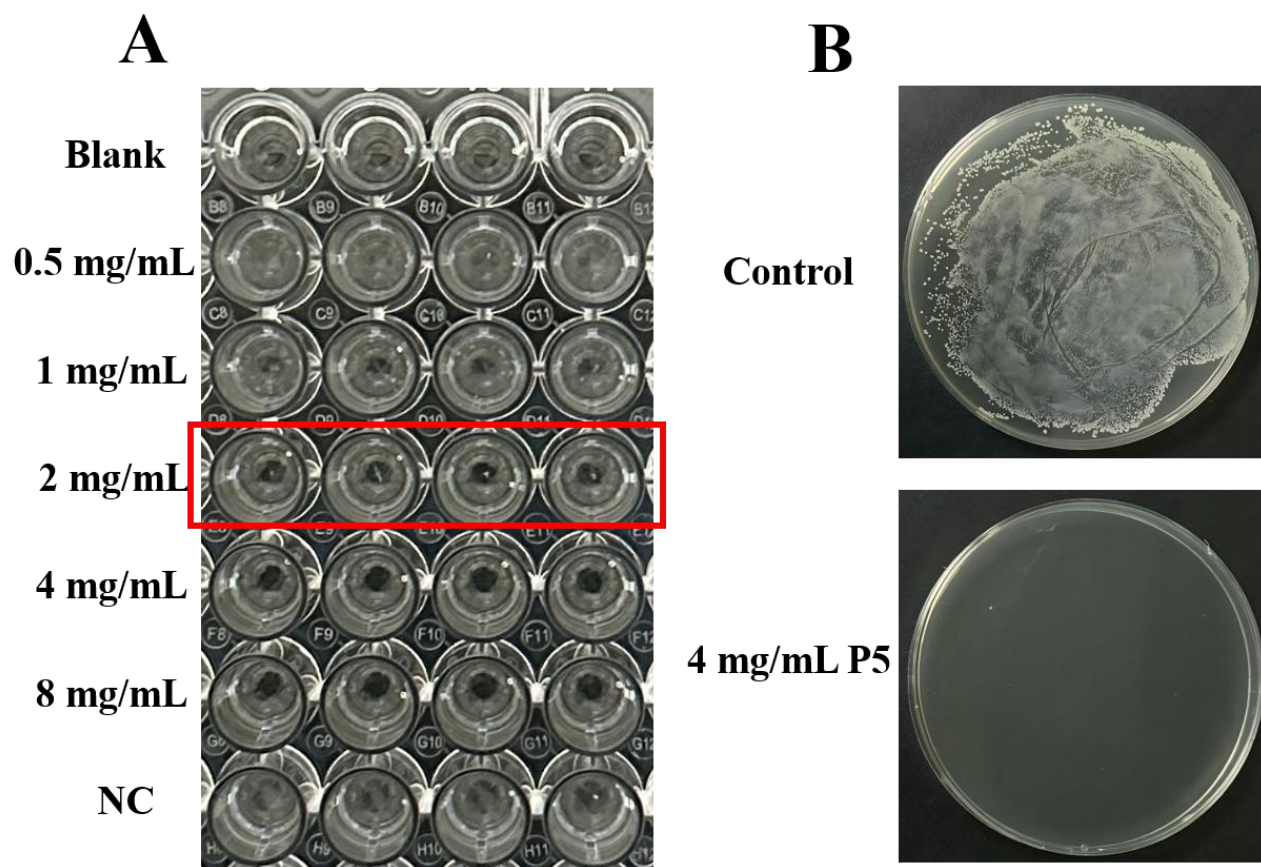


Fig.S3 MIC and MBC determination of peptide P5 against MRSA. (A) MIC assay. (B) MBC assay.

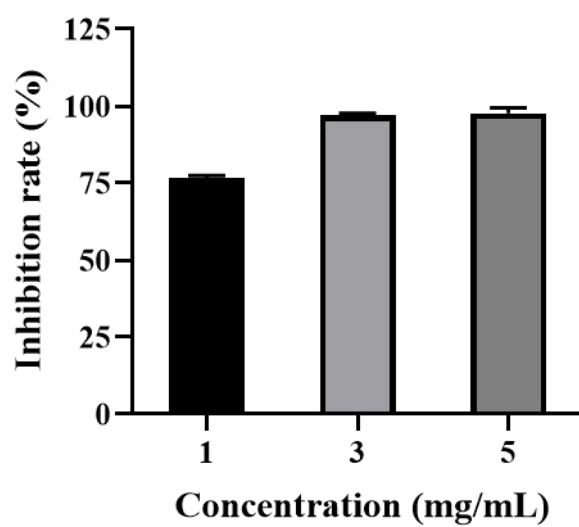


Fig.S4 Antibacterial activity of P5 against SA.