

Small lipopeptides possess anti-biofilm capability comparable to daptomycin and vancomycin

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Supporting information:

Table S1;

Table S2

Fig. S1;

Fig. S2.

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Table S1. Minimal inhibitory concentration (MIC) of selected lipopeptides against fungi

Peptide name	MIC (μM)		
	<i>C. albicans</i>	<i>C. glabrata</i>	<i>C. tropicalis</i>
C14-KK	>25	25	6.25
C14-RRR	>25	25	6.25
C14-LK	6.25	1.5	1.56
C14-RW	>25	>25	>25
C14-WR	>25	25-50	12.5-25
C14-WWK	>25	>25	>25
C14-KWI	>25	>25	>25
C14-LKK	>25	6.25	1.56
C14-EE*	>25	>25	>25
C14-LE*	>25	>25	>25
C14-WE*	>25	>25	>25
C14-EW*	>25	>25	>25

*The antifungal assay of these anionic peptides was done in the presence or absence of 2 mM Ca^{2+}

Table S2. Influence of acyl chain length on the antimicrobial activity of lipopeptides against bacteria

Peptide name	Purity	MIC (μM)			
		<i>S. aureus</i> USA300	<i>P. aeruginosa</i> PAO1	<i>E. coli</i> K12	<i>B. subtilis</i>
C14-KK	97.44%	6.25	50	≤ 6.25	≤ 6.25
C12-KK	95.82%	100	> 200	100	100
C10-KK	96.43%	> 200	> 200	> 200	> 200
C8-KK	98.19%	> 200	> 200	> 200	> 200
C6-KK	98.44%	> 200	> 200	> 200	> 200

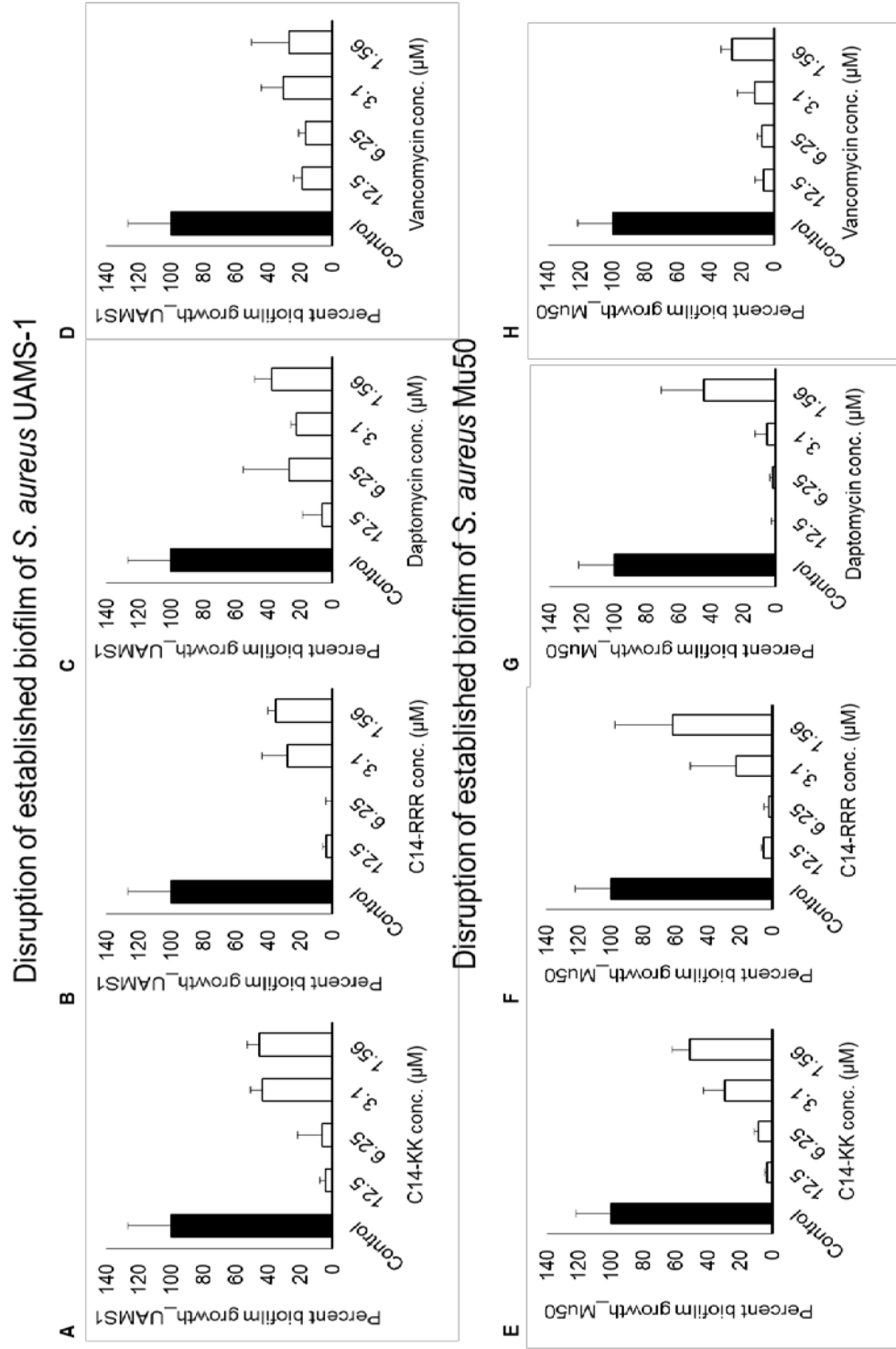


Figure S1. Disruption of the 24 hour established biofilms of UAMS-1 (A, B, C and D) and Mu50 (E, F, G and H) by C14-KK, C14-RRR, Daptomycin and Vancomycin respectively.

Figure S2. HPLC chromatograms and MS of the lipopeptides

Peptide name	Peptide code	Purity (%)*
C14-KK	G701	97.44
C14-RRR	G714	95.77
C14-LK	G702	96.84
C14-RW	G703	97.91
C14-WR	G704	95.26
C14-EE	G705	96.30
C14-LE	G706	96.27
C14-WE	G707	96.81
C14-EW	G708	95.85
C14-WWK	G709	95.72
C14-LWE	G710	98.03
C14-KWI	G711	95.29
C14-LKW	G712	96.58
C14-LKK	G713	95.91
C14-LLK	G715	96.77



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PEPTIDE DATA SHEET

LOT NO: 95868
NAME: G701
SEQUENCE: Myr-KK-amide
S14
EXPECTED MASS: 483.4 ± 1.0
AVERAGE MASS: 483.4
SOLUBILITY: Not tested
AMOUNT DELIVERED: 19mg
PURITY: 97.44%
COMMENTS: white to off-white powder or lumps
DATE: 07/28/2014
VERIFIED BY: Zhang L.Q.

7/11 ordered



R 7/30/14 OK

Customer Peptide HPLC Report

Sample name: 95868

Analyzed: 07/24/14 12:00 Vial Number: 95868

Reported: 07/28/14 09:53 Volume: 20.0ul

Column Type: 250*4.6mm Kromasil C18 5u

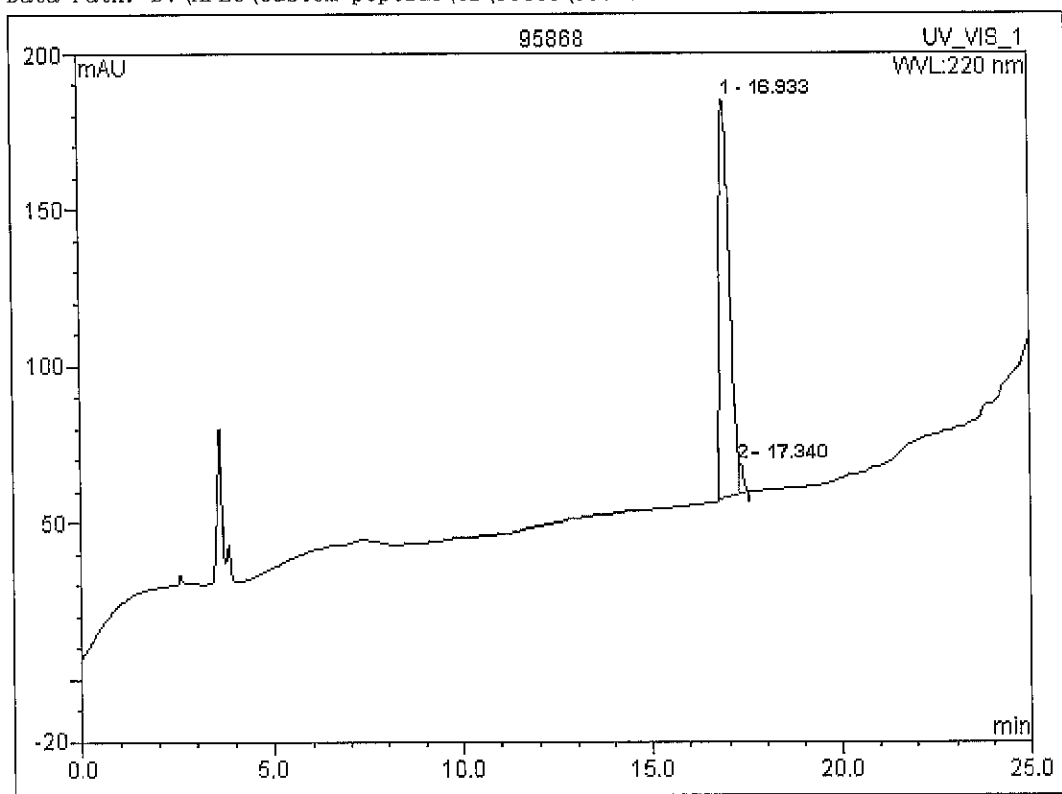
Solvent A: 0.1%TFA acetonitrile

Solvent B: 0.1%TFA Water

Method: Gradient A:B, t=0.0mins 05:95 t=25.0mins 100:0

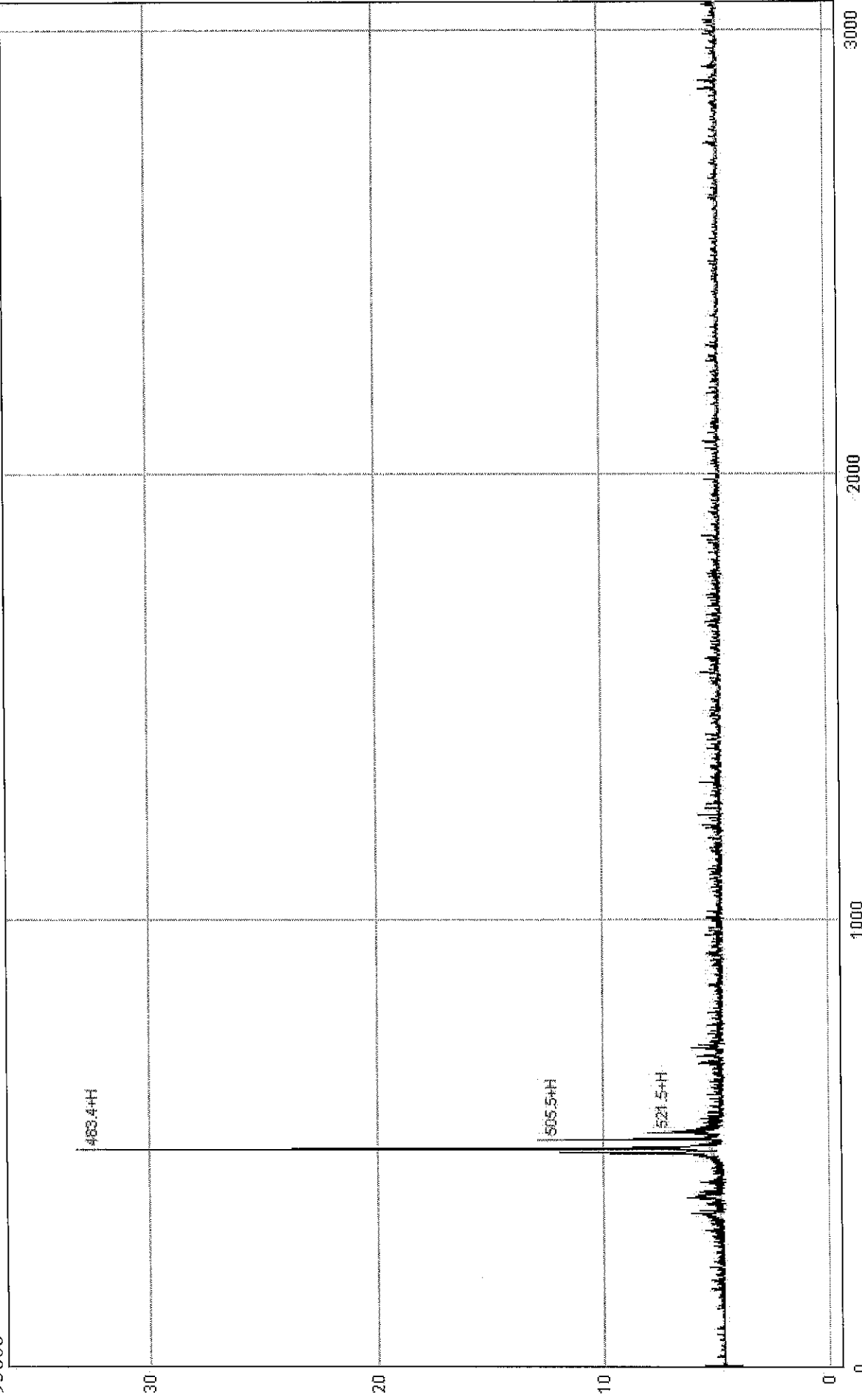
Wavelength: 220nm

Data Path: D:\HPLC\custom peptide\GS\95868\95868.hw



No.	Ret.Time min	Height mAU	Area mAU*min	Rel.Area %
1	16.93	127.381	39.656	97.44
2	17.34	10.003	1.040	2.56
Total:			40.696	100.000

95868





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PEPTIDE DATA SHEET

LOT NO: 95869

NAME: G702

SEQUENCE: Myr-LK-amide

EXPECTED MASS: 468.3 ± 1.0

AVERAGE MASS: 468.6

SOULUBILITY: Not tested

AMOUNT DELIVERED: 19mg

PURITY: 96.84%

COMMENTS: white to off-white powder or lumps

DATE: 07/23/2014

VERIFIED BY: Zhang .z.g

Customer Peptide HPLC Report

Sample name: 95869

Analyzed: 07/17/14 14:18 Vial Number: 95869

Reported: 07/23/14 13:03 Volume: 20.0ul

Column Type: 250*4.6mm Kromasil C18 5u

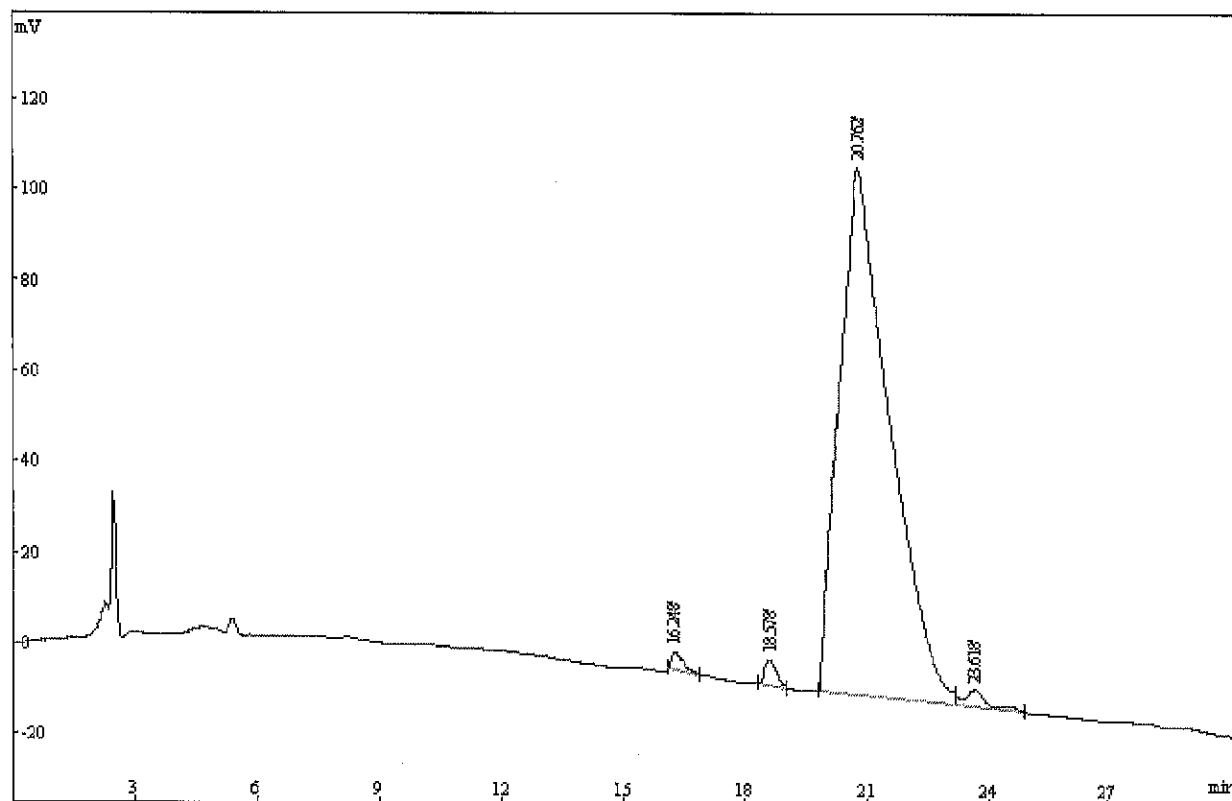
Solvent A: 0.1%TFA acetonitrile

Solvent B: 0.1%TFA Water

Method: Gradient A:B, t=0.0mins 35:65 t=30.0mins 75:25

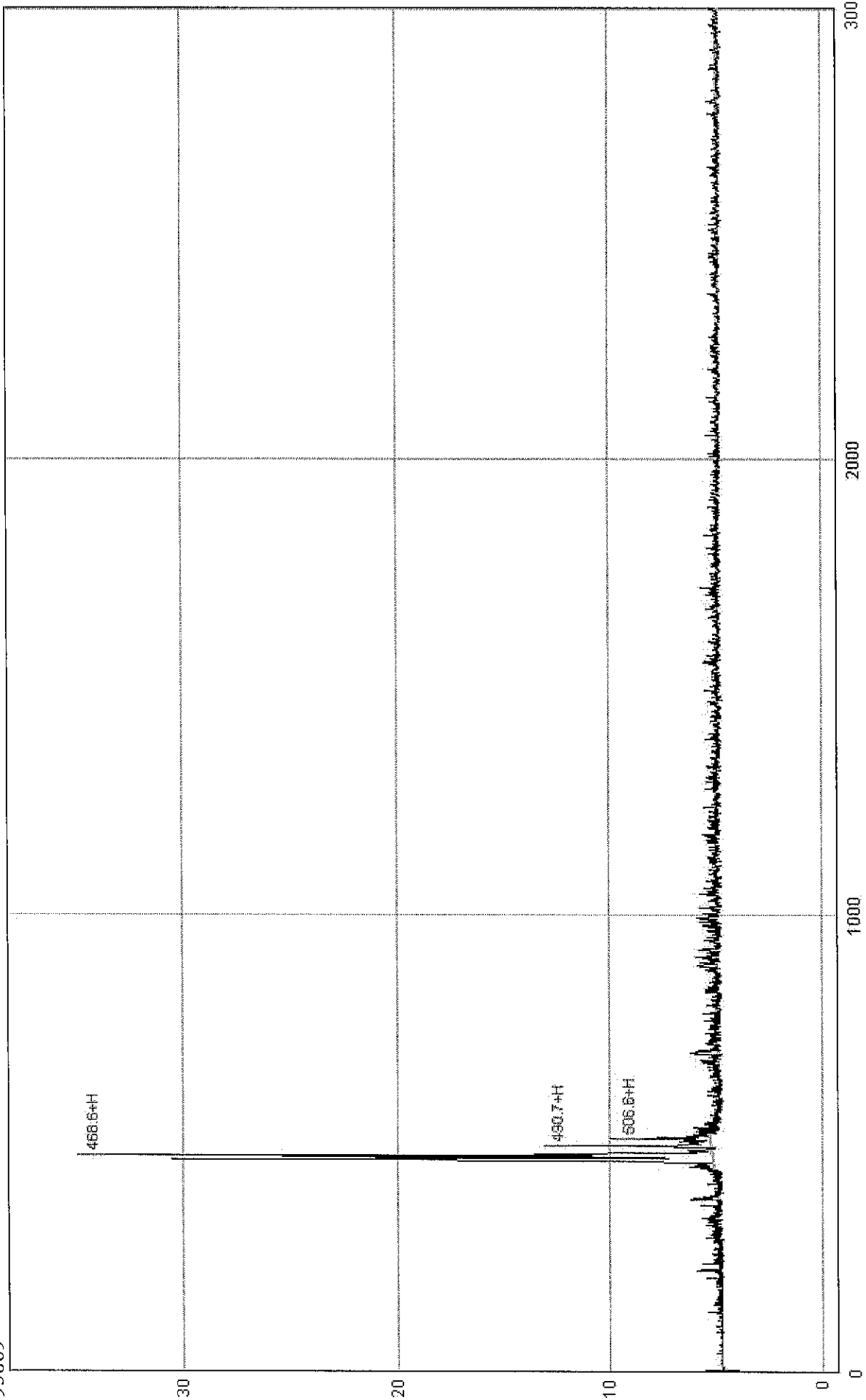
Wavelength: 220nm

Data Path: D:\HPLC\custom peptide\GS\95869\95869.hw:



No.	RT	Area%	Area
1	16.248	0.753	77668
2	18.578	1.072	110591
3	20.762	96.84	9988882
4	23.618	1.341	138302
Total		100	10315443

95869



3000

2000

1000

0

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PEPTIDE DATA SHEET

LOT NO: 95870

NAME: G703

SEQUENCE: Myr-RW-amide

EXPECTED MASS: 569.4 ± 1.0

AVERAGE MASS: 569.7

SOULUBILITY: Not tested

AMOUNT DELIVERED: 19mg

PURITY: 97.91%

COMMENTS: white to off-white powder or lumps

DATE: 07/23/2014

VERIFIED BY: Zhang Z-Q

Customer Peptide HPLC Report

Sample name: 95870

Analyzed: 07/21/14 15:49 Vial Number: 95870

Reported: 07/23/14 10:02 Volume: 20.0ul

Column Type: 250*4.6mm Kromasil C18 5u

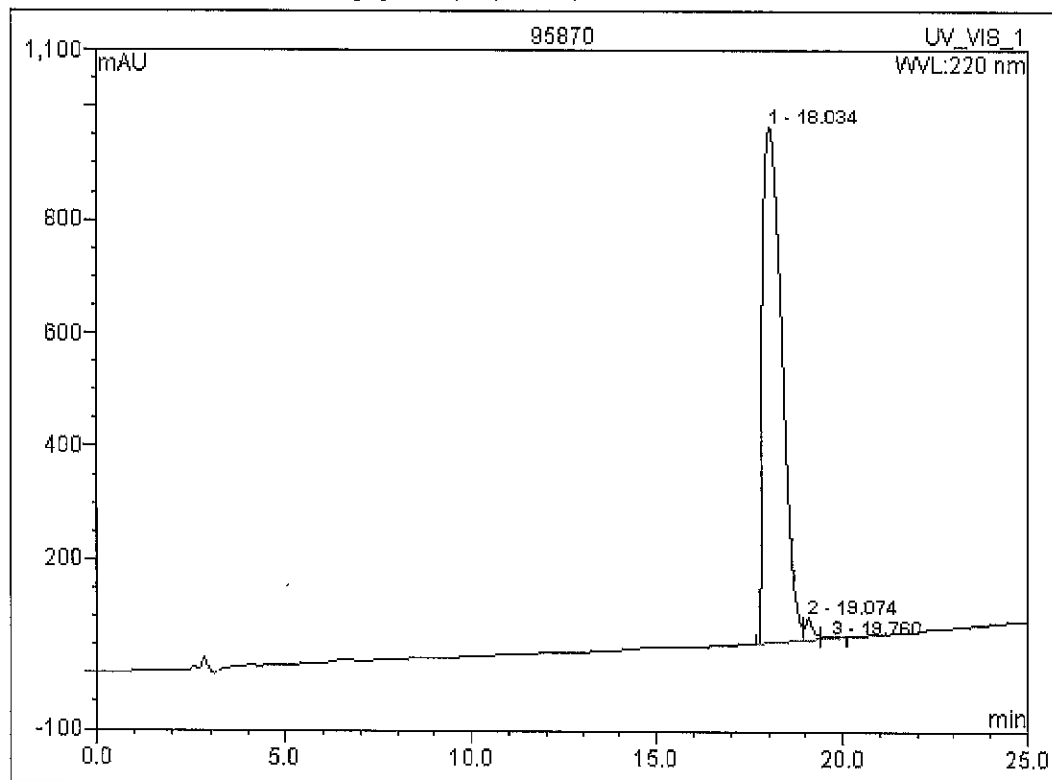
Solvent A: 0.1%TFA acetonitrile

Solvent B: 0.1%TFA Water

Method: Gradient A:B, t=0.0mins 30:70 t=25.0mins 100:0

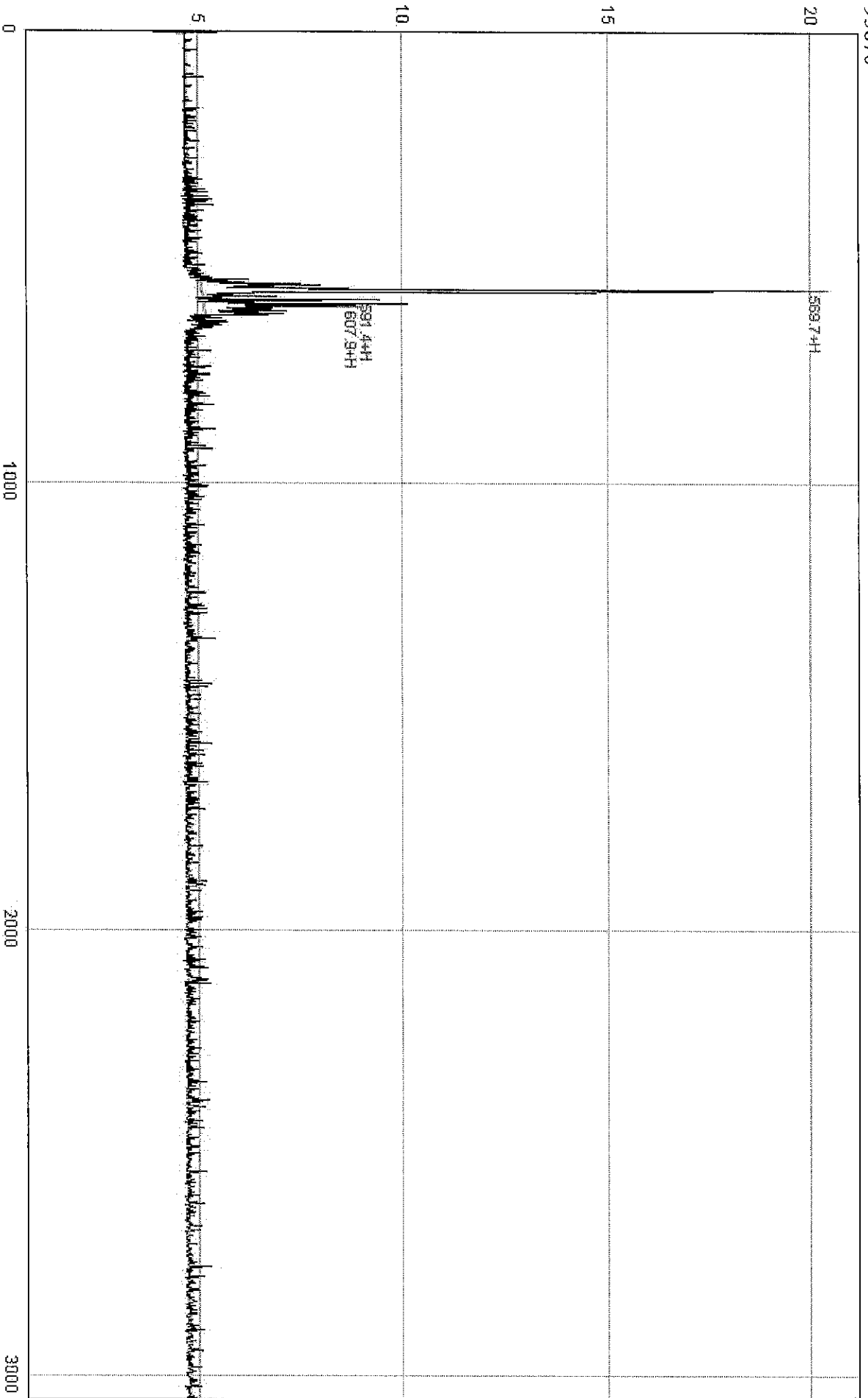
Wavelength: 220nm

Data Path: D:\HPLC\custom peptide\GS\95870\95870.hw



No.	Ret.Time min	Height mAU	Area mAU*min	Rel.Area %
1	18.03	908.087	535.419	97.91
2	19.07	39.443	9.568	1.75
3	19.76	0.732	1.879	0.34
Total:			546.866	100.000

95870





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PEPTIDE DATA SHEET

LOT NO: 95871

NAME: G704

SEQUENCE: Myr-WR-amide

EXPECTED MASS: 569.4 ± 1.0

AVERAGE MASS: 569.8

SOULUBILITY: Not tested

AMOUNT DELIVERED: 19mg

PURITY: 95.26%

COMMENTS: white to off-white powder or lumps

DATE: 07/28/2014

VERIFIED BY: Zhang Z.Q.

hemo
WR less than RW

Customer Peptide HPLC Report

Sample name: 95871

Analyzed: 07/25/14 12:49 Vial Number: 95871

Reported: 07/28/14 13:32 Volume: 20.0ul

Column Type: 250*4.6mm Kromasil C18 5u

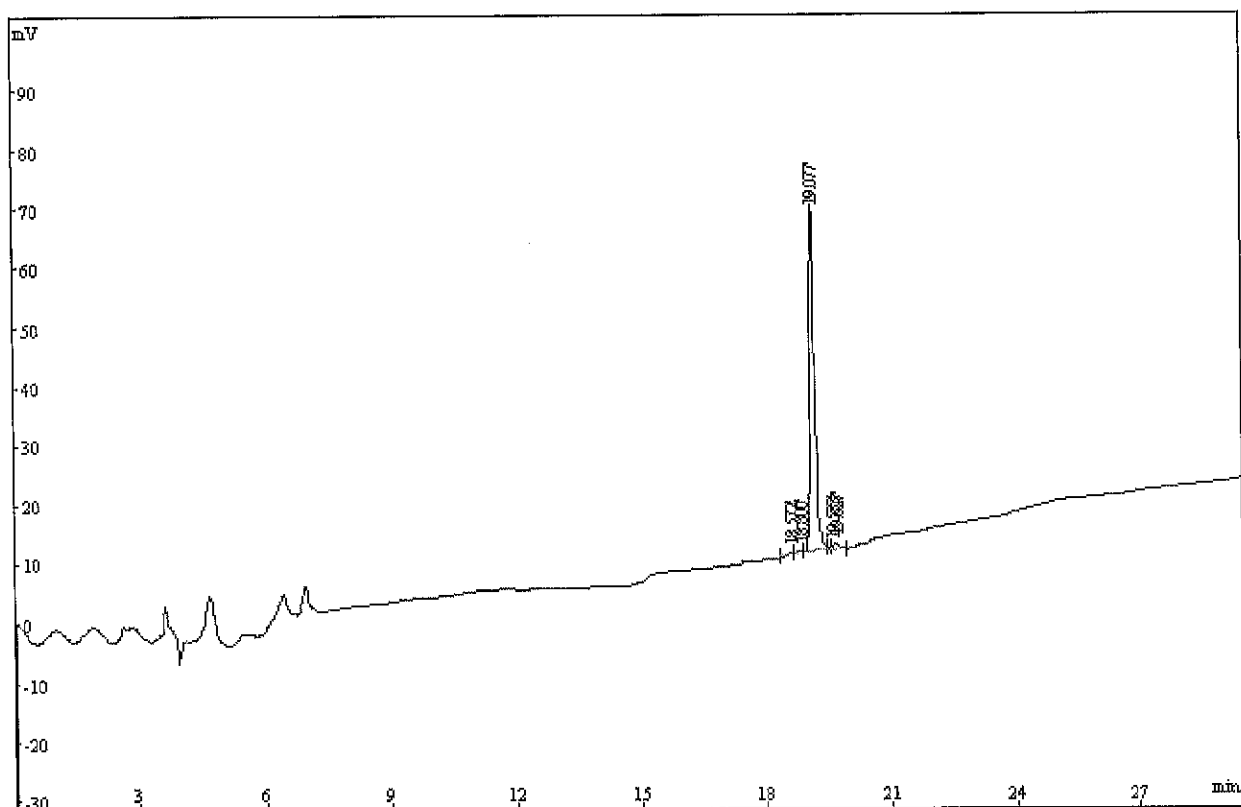
Solvent A: 0.1%TFA acetonitrile

Solvent B: 0.1%TFA Water

Method: Gradient A:B, t=0.0mins 10:90 t=30.0mins 100:0

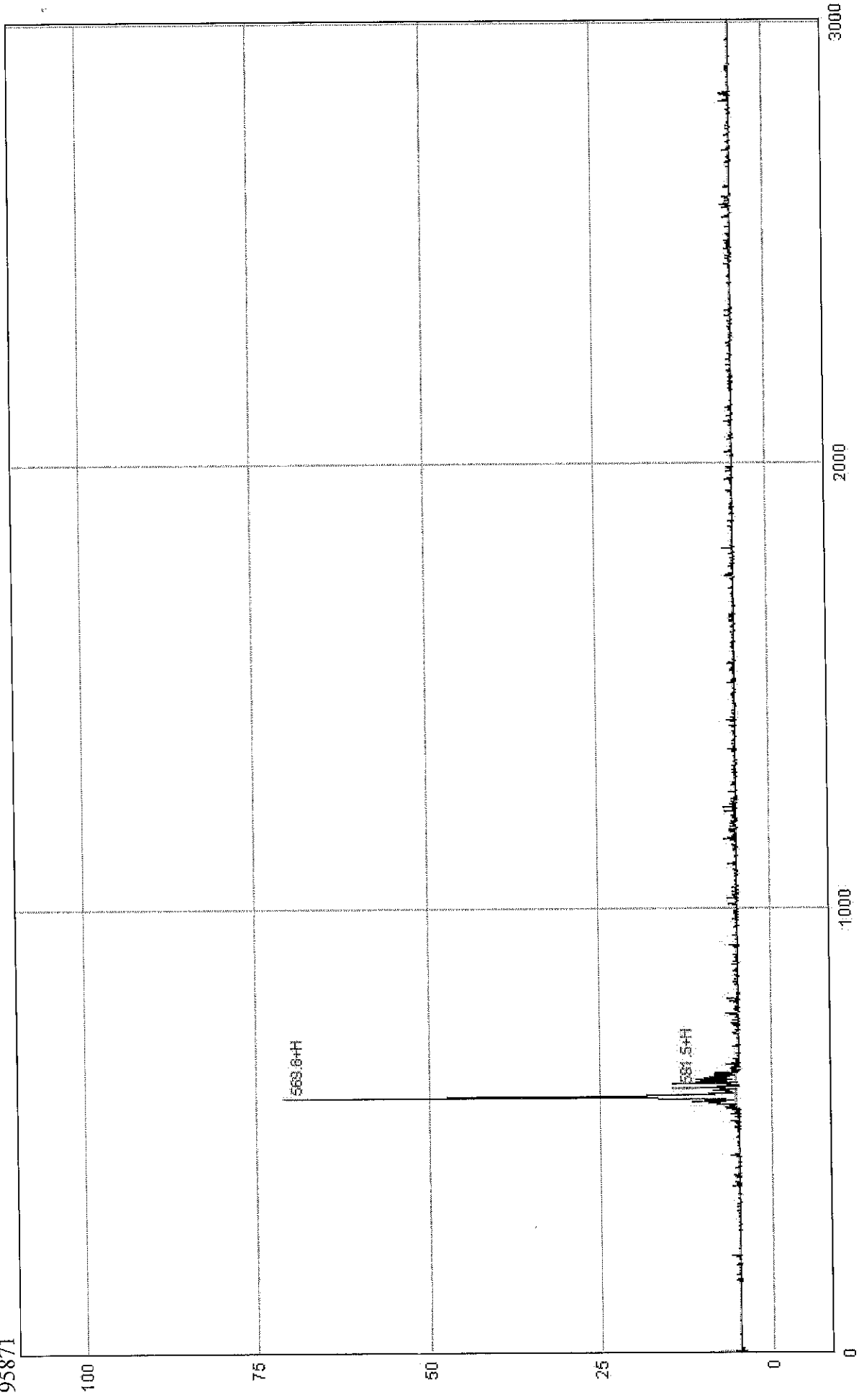
Wavelength: 220nm

Data Path: D:\HPLC\custom peptide\GS\95871\95871.hw:



No.	RT	Area%	Area
1	18.572	0.8366	4428
2	18.800	1.599	8463
3	19.077	95.26	504176
4	19.533	0.4836	2559
5	19.627	1.82	9633
Total		100	529259

95871



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PEPTIDE DATA SHEET

LOT NO: 95876

NAME: G709

SEQUENCE: Myr-WWK-amide

EXPECTED MASS: 727.6 ± 1.0

AVERAGE MASS: 727.9

SOULUBILITY: Not tested

AMOUNT DELIVERED: 19mg

PURITY: 95.72%

COMMENTS: off-white powder or lumps

DATE: 07/23/2014

VERIFIED BY: Zhang Z-q

Customer Peptide HPLC Report

Sample name: 95876

Analyzed: 07/18/14 14:42 Vial Number: 95876

Reported: 07/23/14 13:09 Volume: 20.0ul

Column Type: 250*4.6mm Kromasil C18 5u

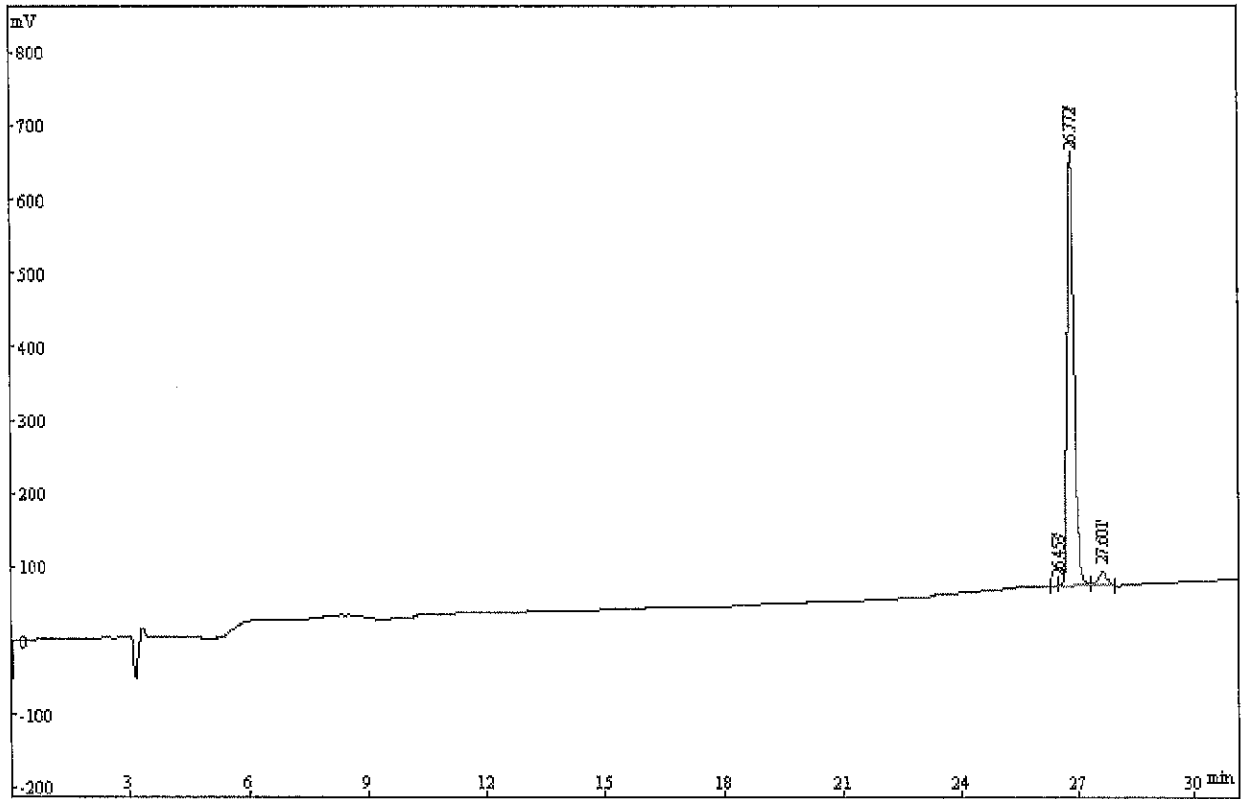
Solvent A: 0.1%TFA acetonitrile

Solvent B: 0.1%TFA Water

Method: Gradient A:B, t=0.0mins 10:90 t=30.0mins 100:0

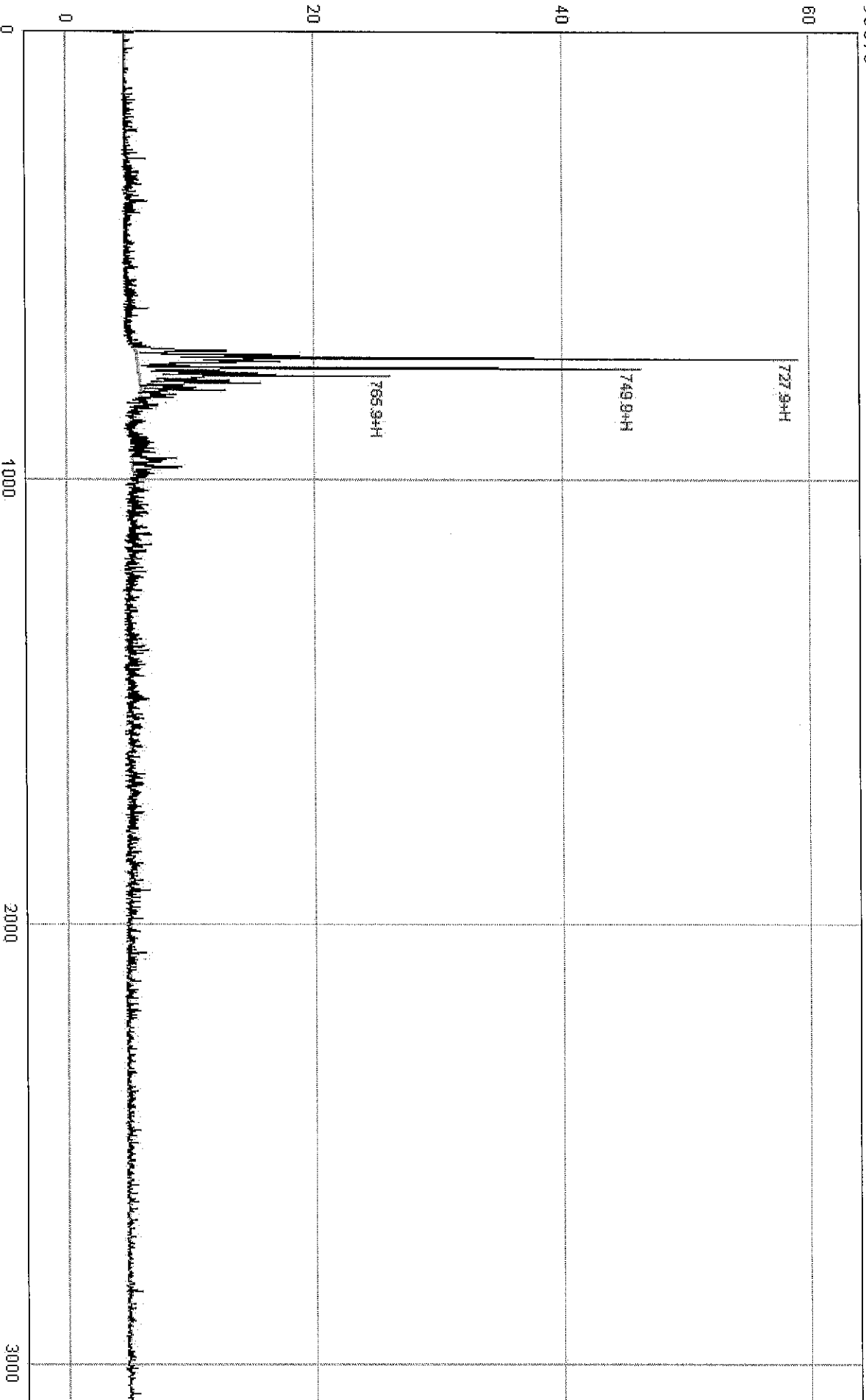
Wavelength: 220nm

Data Path: D:\HPLC\custom peptide\GS\95876\95876.hw



No.	RT	Area%	Area
1	26.453	0.2981	23537
2	26.772	95.72	7558726
3	27.601	3.981	314371
Total		100	7896634

95876





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PEPTIDE DATA SHEET

LOT NO: 95877

NAME: G710

SEQUENCE: Myr-LWE-amide *R 8/22/14 O/C*

EXPECTED MASS: 655.5 ± 1.0

AVERAGE MASS: 655.6

SOULUBILITY: Not tested

AMOUNT DELIVERED: 19mg

PURITY: 98.03%

COMMENTS: white to off-white powder or lumps

DATE: 08/13/2014

VERIFIED BY: *Zhang z-q*

Customer Peptide HPLC Report

Sample name: 95877

Analyzed:08/08/14 15:46 Vail Number: 95877

Reported:08/13/14 10:33 Volume:20.0ul

Column Type: 250*4.6mm Kromasil C18 5u

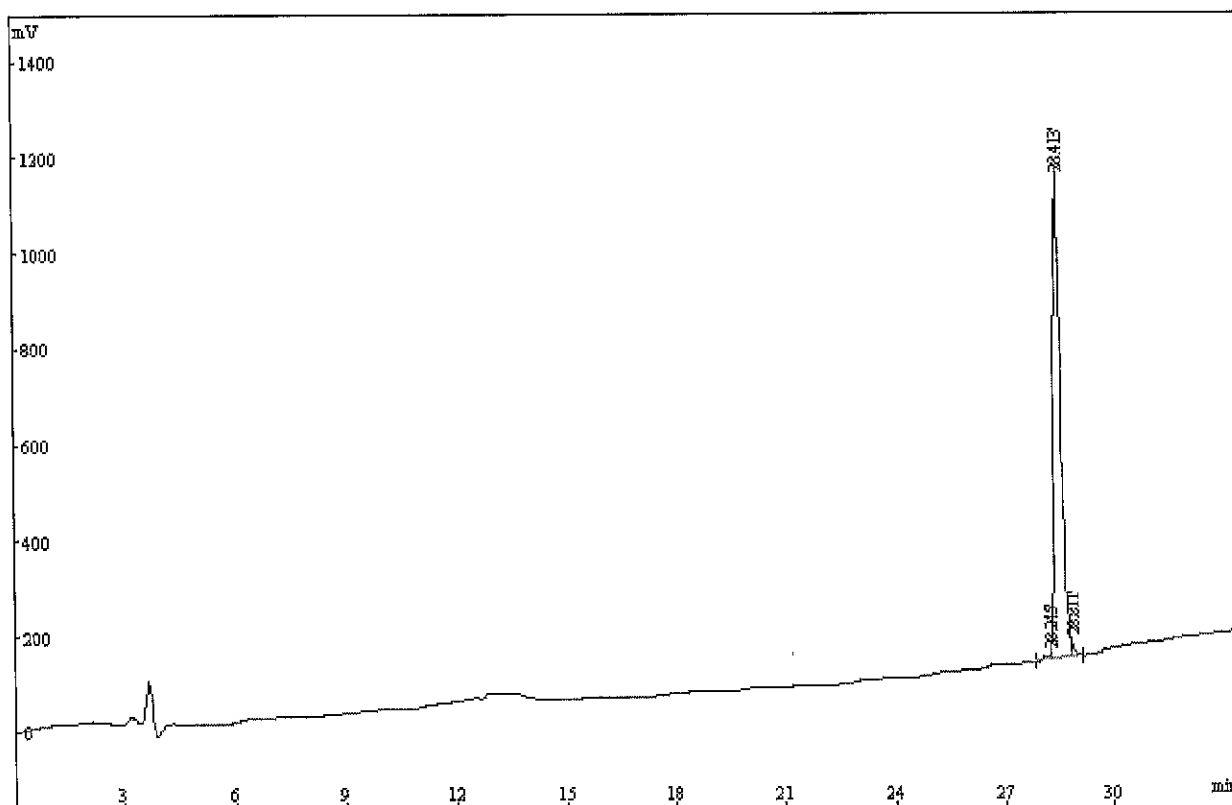
Solvent A:0.1%TFA acetonitrile

Solvent B:0.1%TFA Water

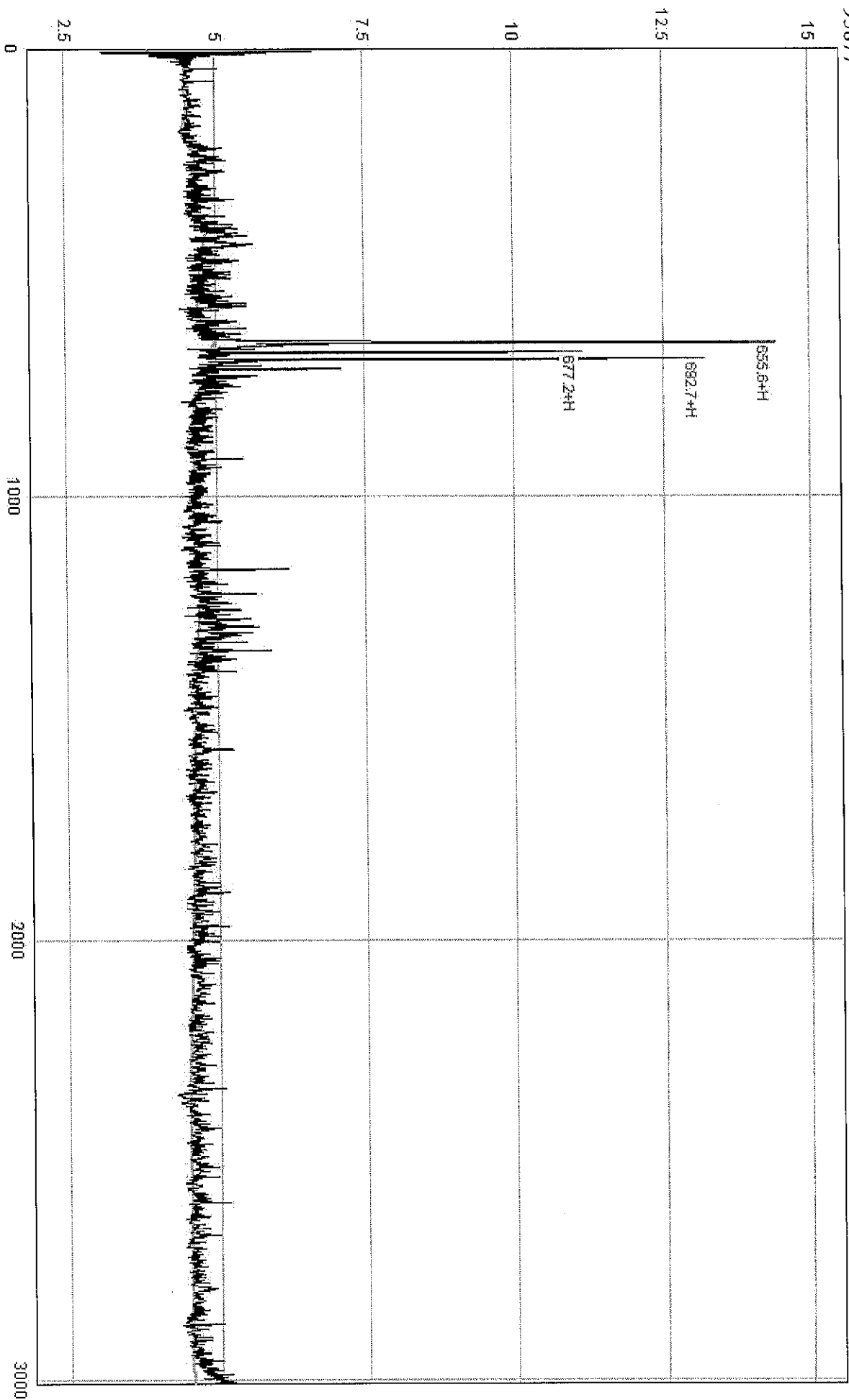
Method: Gradient A:B, t=0.0mins 10:90 t=30.0mins 100:0

Wavelength: 220nm

Data Path: D:\HPLC\custom peptide\GS\95877\95877.hw:



No.	RT	Area%	Area
1	28.245	0.8207	113851
2	28.413	98.03	13597930
3	28.811	1.151	159604
Total		100	13871385



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PEPTIDE DATA SHEET

LOT NO: 95878

NAME: G711

SEQUENCE: Myr-KWI-amide

EXPECTED MASS: 654.4 ± 1.0

AVERAGE MASS: 654.6

SOULUBILITY: Not tested

AMOUNT DELIVERED: 19mg

PURITY: 95.29%

COMMENTS: yellow powder or lumps

DATE: 07/23/2014

VERIFIED BY: Zhang Z.Y

Customer Peptide HPLC Report

Sample name: 95878

Analyzed:07/18/14 15:18 Vail Number: 95878

Reported:07/23/14 13:07 Volume:20.0ul

Column Type: 250*4.6mm Kromasil C18 5u

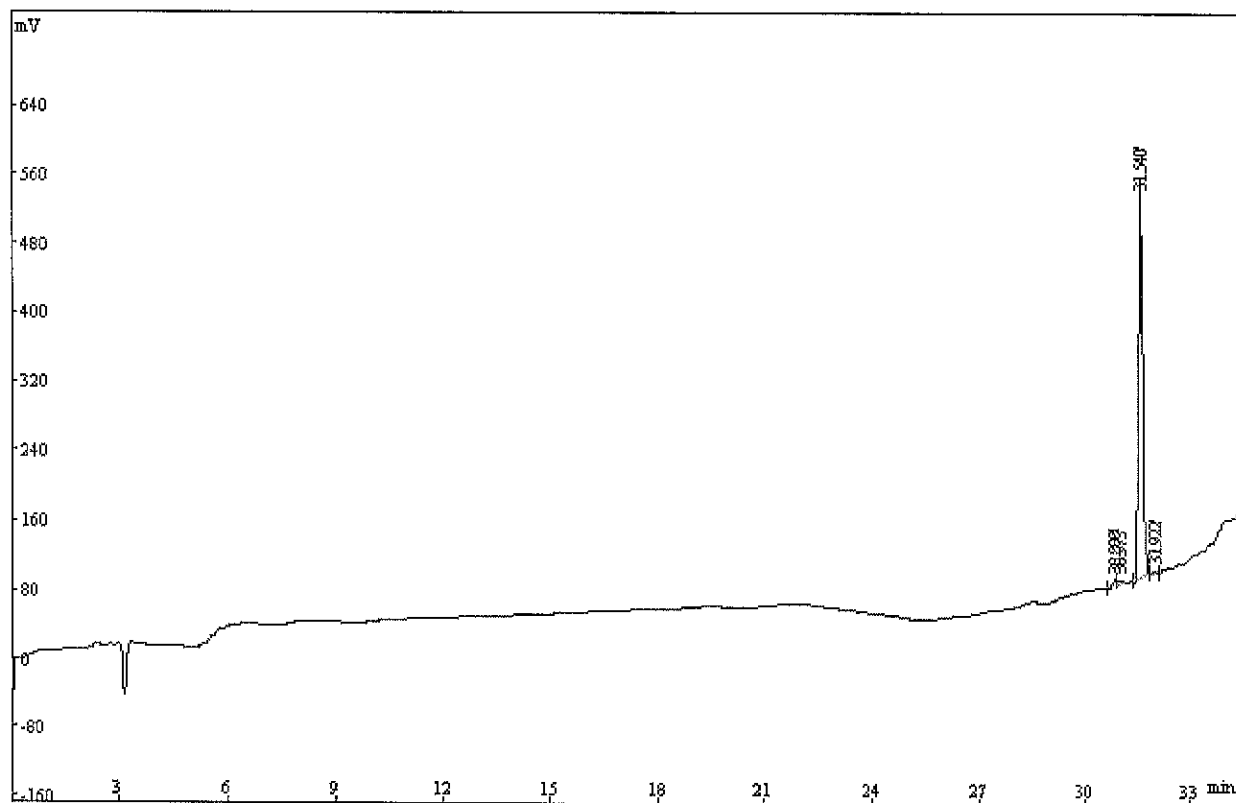
Solvent A:0.1%TFA acetonitrile

Solvent B:0.1%TFA Water

Method: Gradient A:B, t=0.0mins 10:90 t=30.0mins 100:0

Wavelength: 220nm

Data Path: D:\HPLC\custom peptide\GS\95878\95878.hw:



No.	RT	Area%	Area
1	30.808	1.868	70809
2	30.973	1.667	63201
3	31.540	95.29	3612554
4	31.922	1.181	44764
<hr/>			
Total		100	3791328

95878

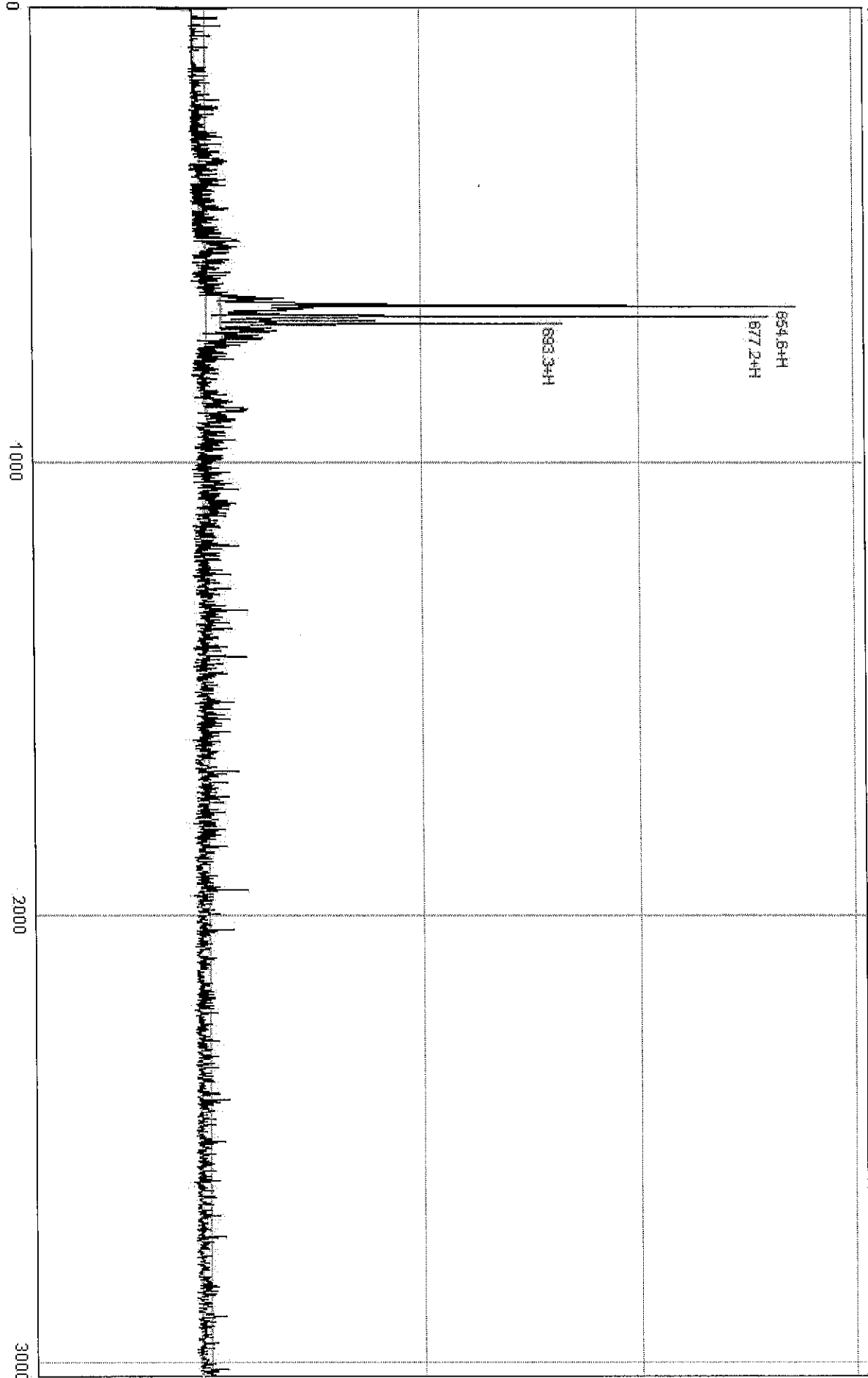
20

15

10

5

0



1000

2000

3000



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PEPTIDE DATA SHEET

LOT NO: 95879

NAME: G712
R 8/22/14

SEQUENCE: Myr-LKW-amide

EXPECTED MASS: 654.5 ± 1.0

AVERAGE MASS: 654.7

SOULUBILITY: Not tested

AMOUNT DELIVERED: 19mg

PURITY: 96.58%

COMMENTS: off-white powder or lumps

DATE: 08/13/2014

VERIFIED BY: Zhang z-q

Customer Peptide HPLC Report

Sample name: 95879

Analyzed:08/08/14 15:09 Vail Number: 95879

Reported:08/13/14 10:31 Volume:20.0ul

Column Type: 250*4.6mm Kromasil C18 5u

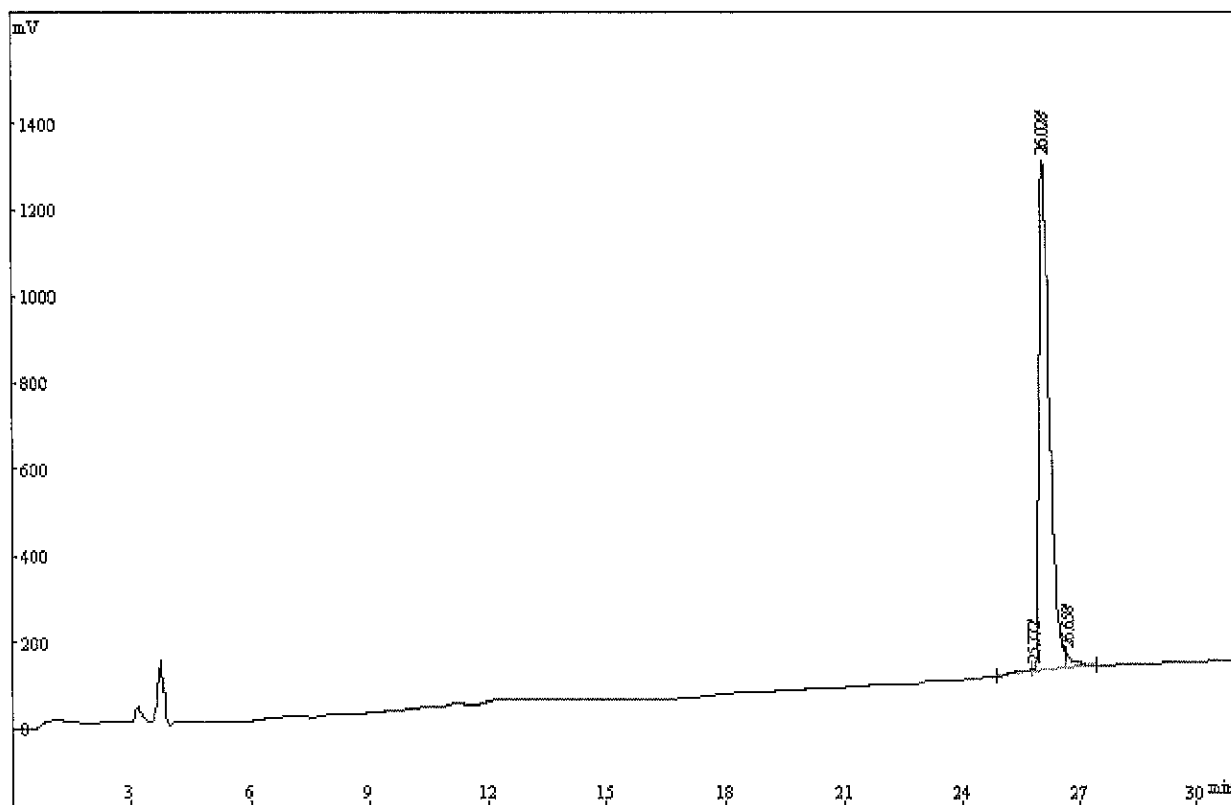
Solvent A:0.1%TFA acetonitrile

Solvent B:0.1%TFA Water

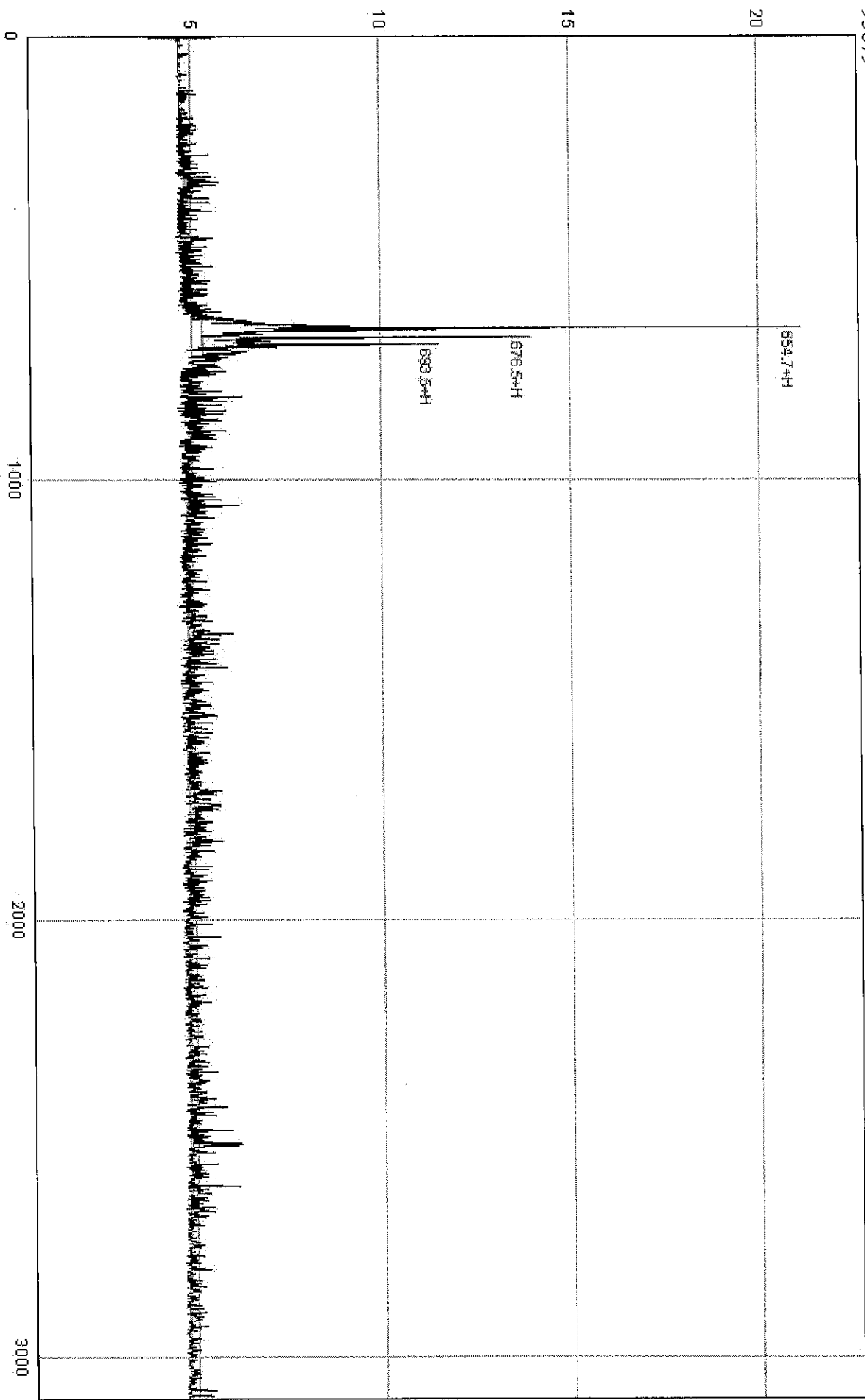
Method: Gradient A:B, t=0.0mins 10:90 t=30.0mins 100:0

Wavelength: 220nm

Data Path: D:\HPLC\custom peptide\GS\95879\95879.hw:



No.	RT	Area%	Area
1	25.772	1.016	227375
2	26.028	96.58	21612608
3	26.658	2.41	539218
Total		100	22379201



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PEPTIDE DATA SHEET

LOT NO: 95880

NAME: G713

SEQUENCE: Myr-LKK-amide

EXPECTED MASS: 596.5 ± 1.0

AVERAGE MASS: 596.7

SOULUBILITY: Not tested

AMOUNT DELIVERED: 19mg

PURITY: 95.91%

COMMENTS: white to off-white powder or lumps

DATE: 07/28/2014

VERIFIED BY: Zhang .z.g

Customer Peptide HPLC Report

Sample name: 95880

Analyzed: 07/25/14 15:17 Vial Number: 95880

Reported: 07/28/14 13:34 Volume: 20.0ul

Column Type: 250*4.6mm Kromasil C4 5u

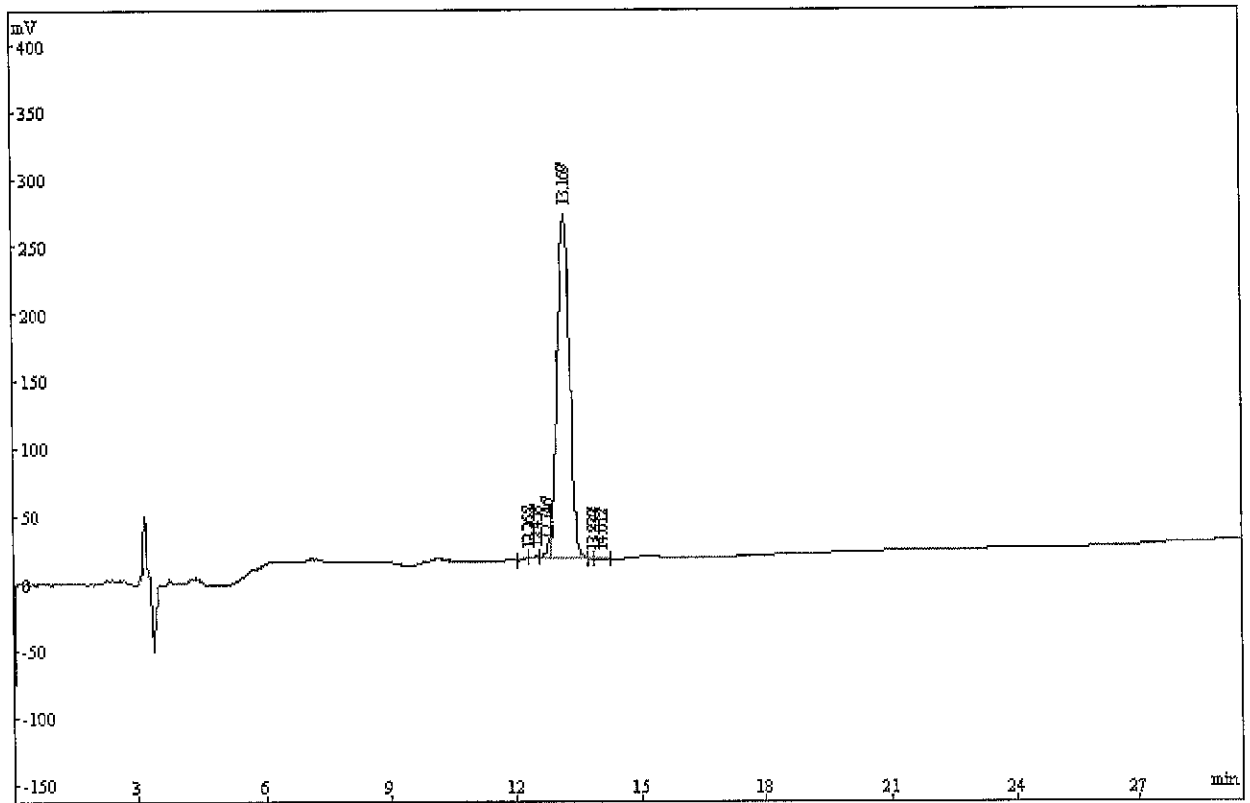
Solvent A: 0.1%TFA acetonitrile

Solvent B: 0.1%TFA Water

Method: Gradient A:B, t=0.0mins 10:90 t=30.0mins 100:0

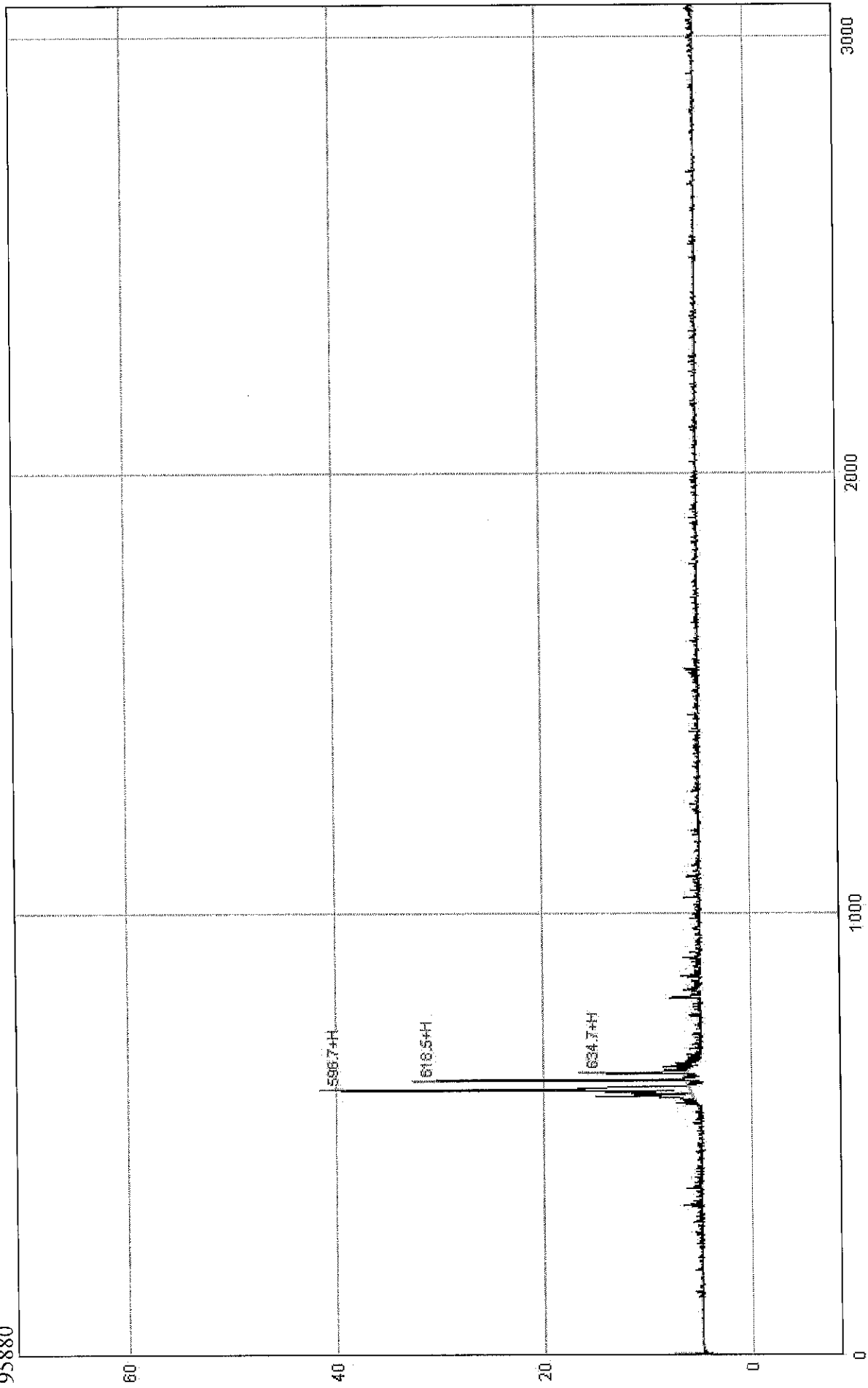
Wavelength: 220nm

Data Path: D:\HPLC\custom peptide\GS\95880\95880.hw:



No.	RT	Area%	Area
1	12.265	0.2164	11853
2	12.458	0.5815	31860
3	12.746	3.104	170051
4	13.169	95.91	5254659
5	13.839	0.05101	2795
6	14.012	0.1306	7156
<hr/>			
Total		100	5478374

95880



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PEPTIDE DATA SHEET

LOT NO: 95881

NAME: G714

SEQUENCE: Myr-RRR-amide

EXPECTED MASS: 695.5 ± 1.0

AVERAGE MASS: 695.5

SOULUBILITY: Not tested

AMOUNT DELIVERED: 19mg

PURITY: 95.77%

COMMENTS: white to off-white powder or lumps

DATE: 07/23/2014

VERIFIED BY: Zhang .z.g

Customer Peptide HPLC Report

Sample name: 95881

Analyzed: 07/19/14 09:55 Vial Number: 95881

Reported: 07/23/14 12:59 Volume: 20.0ul

Column Type: 250*4.6mm Kromasil C18 5u

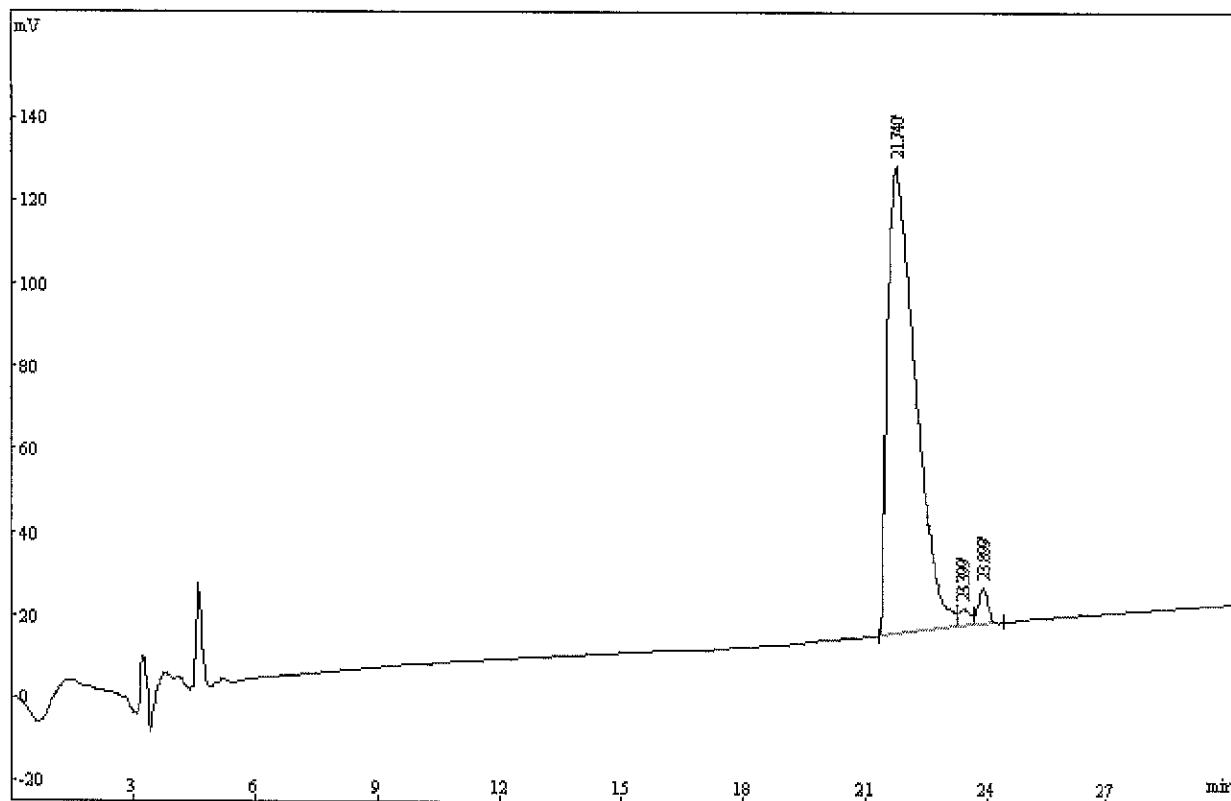
Solvent A: 0.1%TFA acetonitrile

Solvent B: 0.1%TFA Water

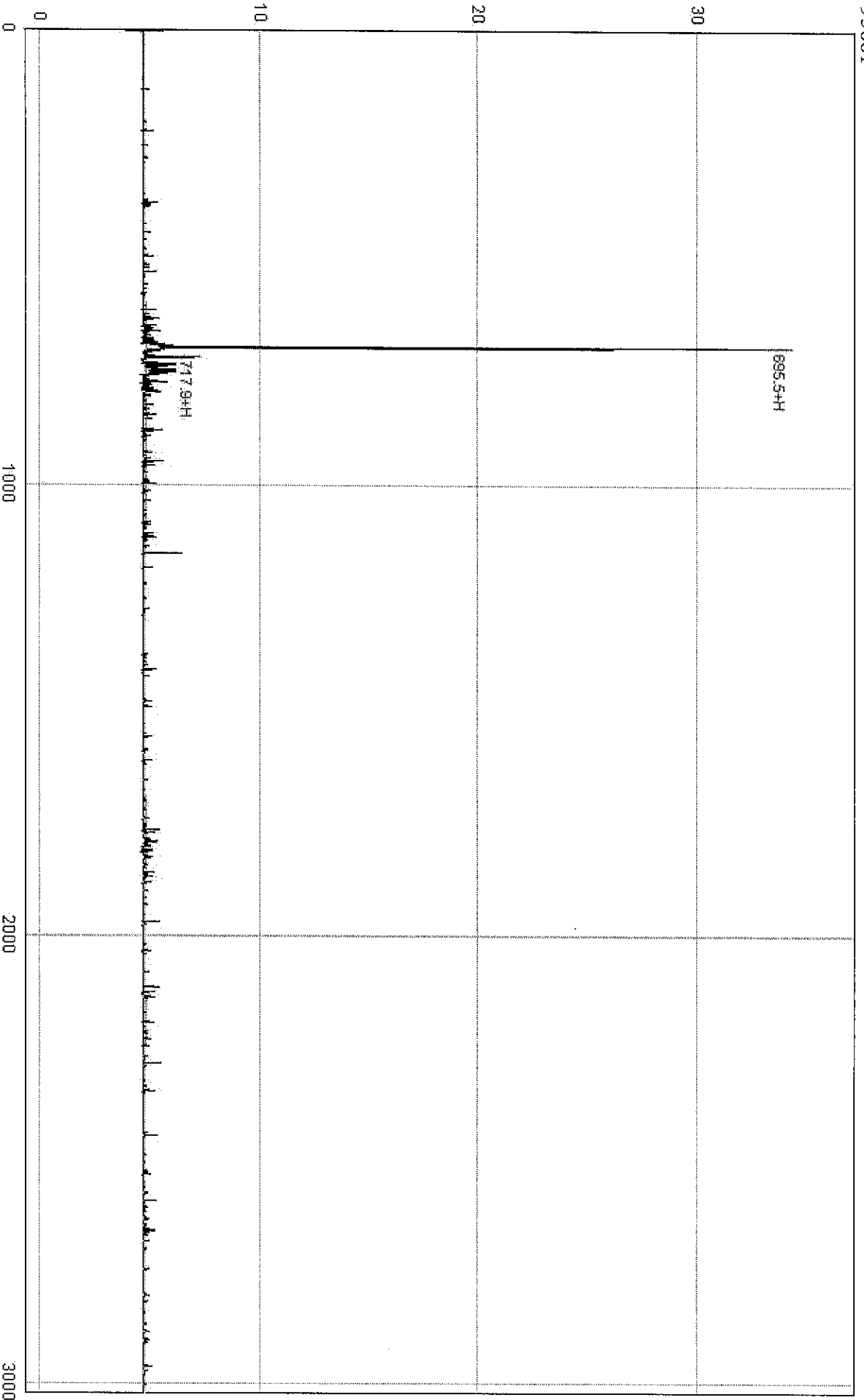
Method: Gradient A:B, t=0.0mins 25:75 t=30.0mins 65:35

Wavelength: 220nm

Data Path: D:\HPLC\custom peptide\GS\95881\95881.hw



No.	RT	Area%	Area
1	21.740	95.77	5412808
2	23.399	1.516	85673
3	23.899	2.712	153262
Total		100	5651743





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PEPTIDE DATA SHEET

LOT NO: 95882

NAME: G715

SEQUENCE: Myr-LLK-amide *not soluble*

EXPECTED MASS: 581.5 ± 1.0

AVERAGE MASS: 581.4

SOULUBILITY: Not tested

AMOUNT DELIVERED: 19mg

PURITY: 96.77%

COMMENTS: white to off-white powder or lumps

DATE: 07/28/2014

VERIFIED BY: Zhang Z.Y.

Customer Peptide HPLC Report

Sample name: 95882

Analyzed: 07/25/14 15:53 Vial Number: 95882

Reported: 07/28/14 13:36 Volume: 20.0ul

Column Type: 250*4.6mm Kromasil C4 5u

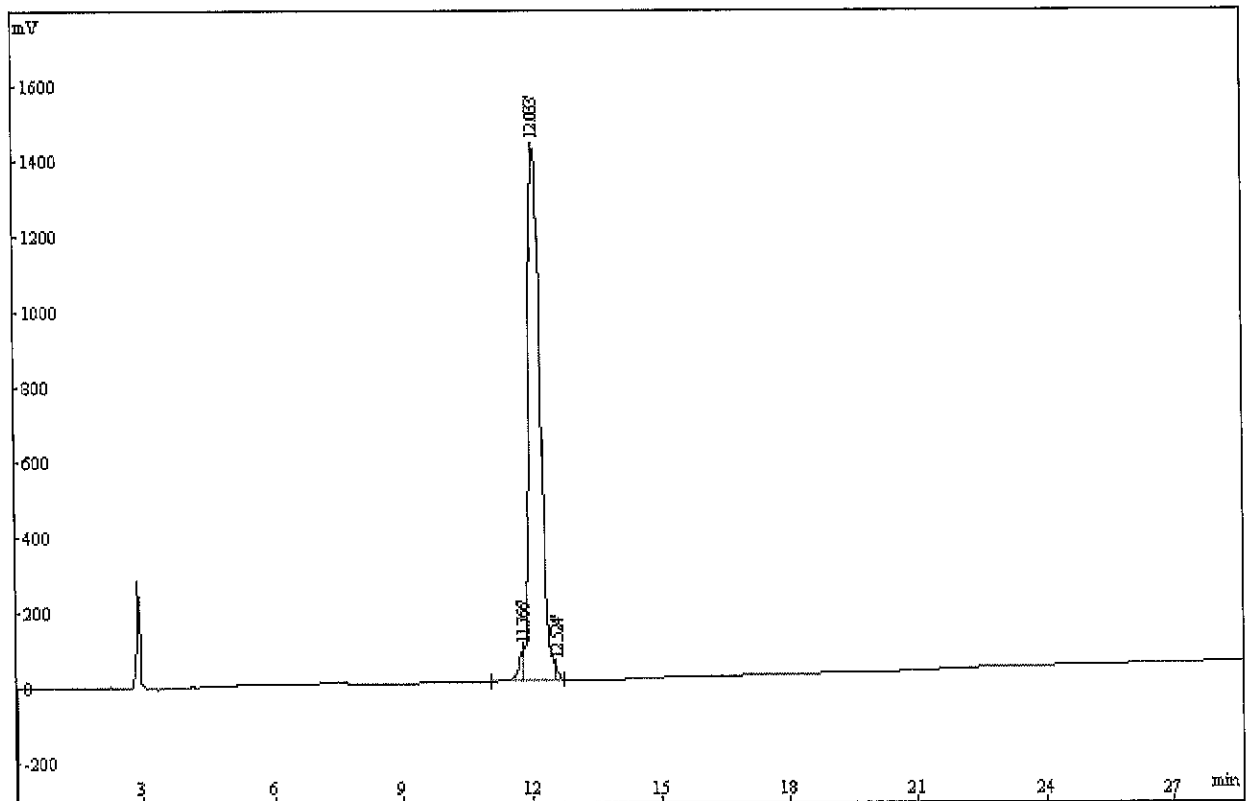
Solvent A: 0.1%TFA acetonitrile

Solvent B: 0.1%TFA Water

Method: Gradient A:B, t=0.0mins 10:90 t=30.0mins 100:0

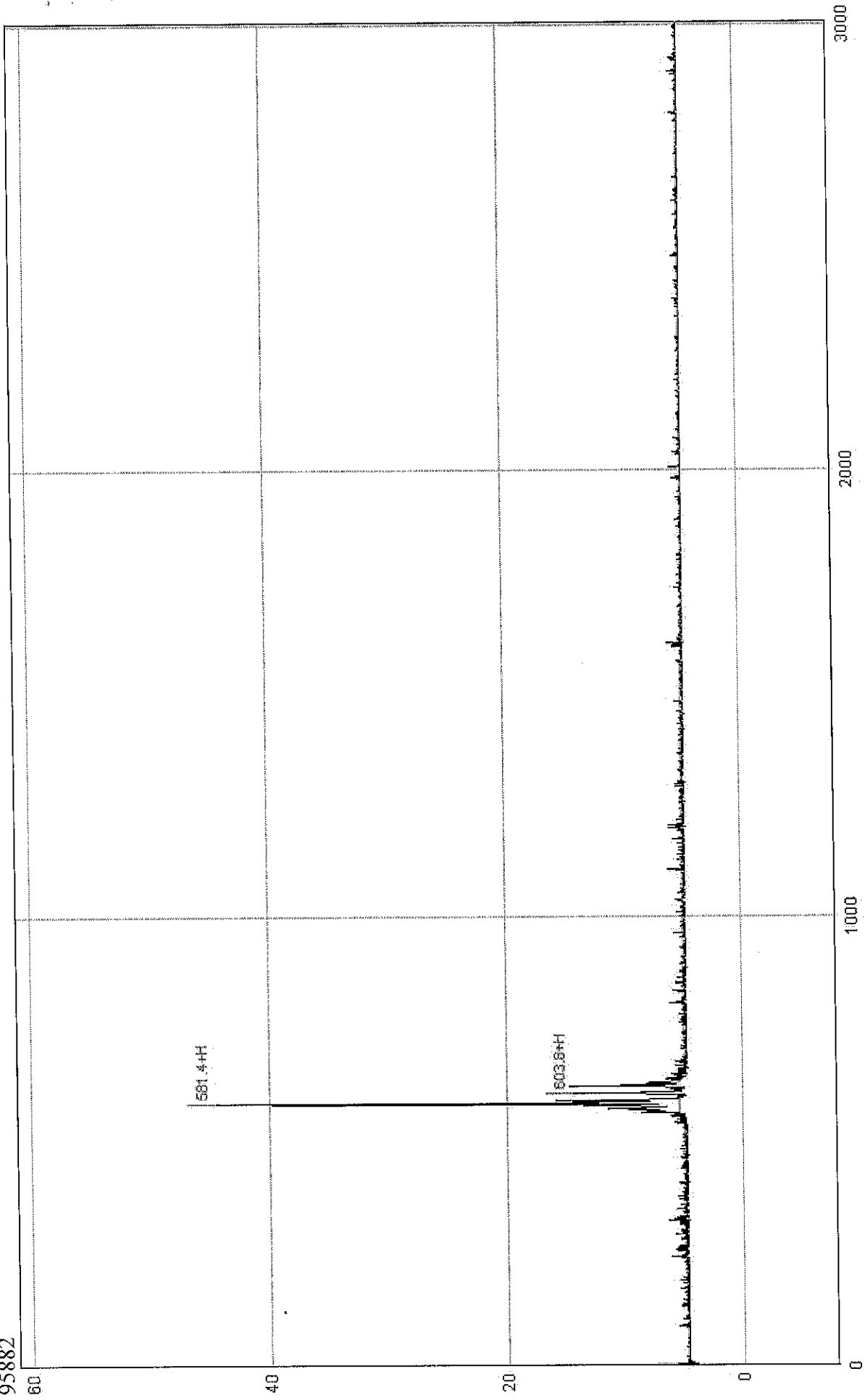
Wavelength: 220nm

Data Path: D:\HPLC\custom peptide\GS\95882\95882.hw



No.	RT	Area%	Area
1	11.766	2.648	735123
2	12.033	96.77	26862848
3	12.524	0.5836	162008
Total		100	27759979

95882





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PEPTIDE DATA SHEET

LOT NO: 95872

NAME: G705

SEQUENCE: Myr-EE-amide

EXPECTED MASS: 485.2 ± 1.0

AVERAGE MASS: 485.5

SOULUBILITY: Not tested

AMOUNT DELIVERED: 19mg

PURITY: 96.30%

COMMENTS: white to off-white powder or lumps

DATE: 07/23/2014

VERIFIED BY: Zhang Z.Q

Customer Peptide HPLC Report

Sample name: 95872

Analyzed:07/21/14 14:24 Vial Number: 95872

Reported:07/23/14 13:11 Volume:20.0ul

Column Type: 250*4.6mm Kromasil C4 5u

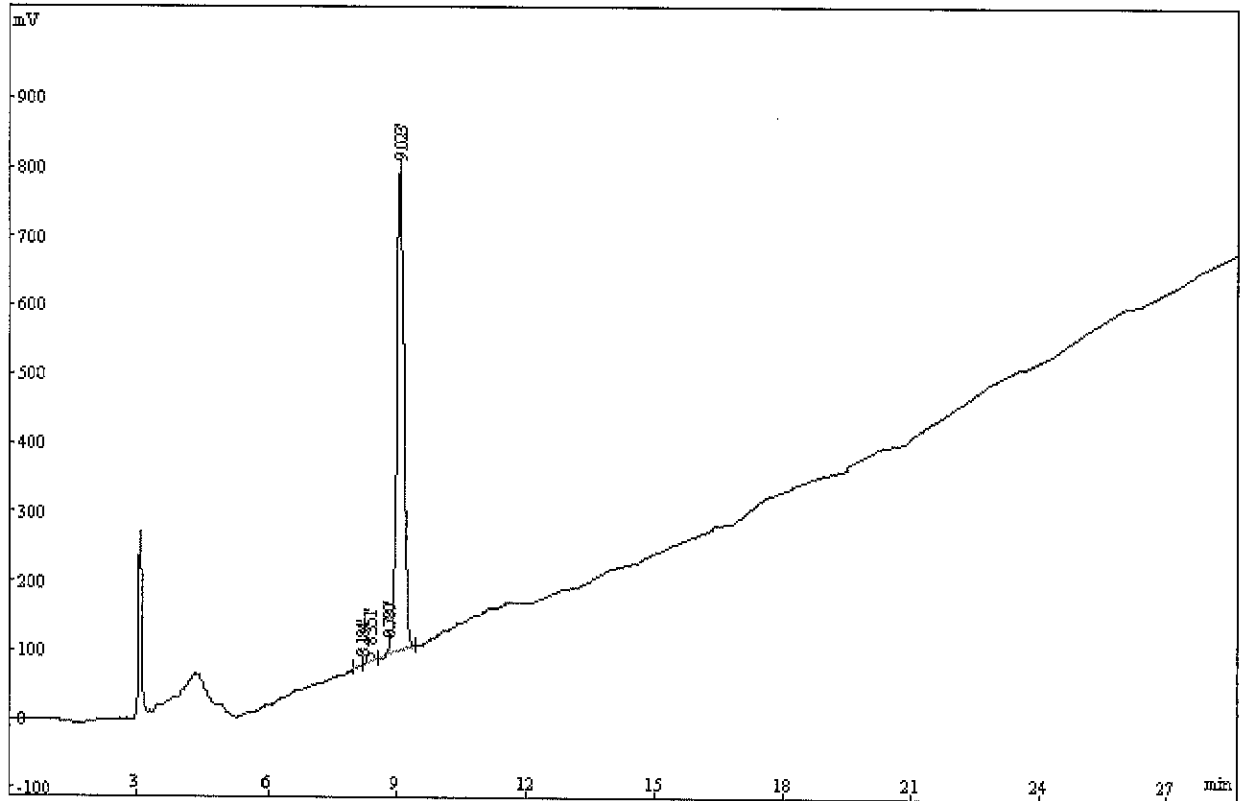
Solvent A:0.1%TFA acetonitrile

Solvent B:0.1%TFA Water

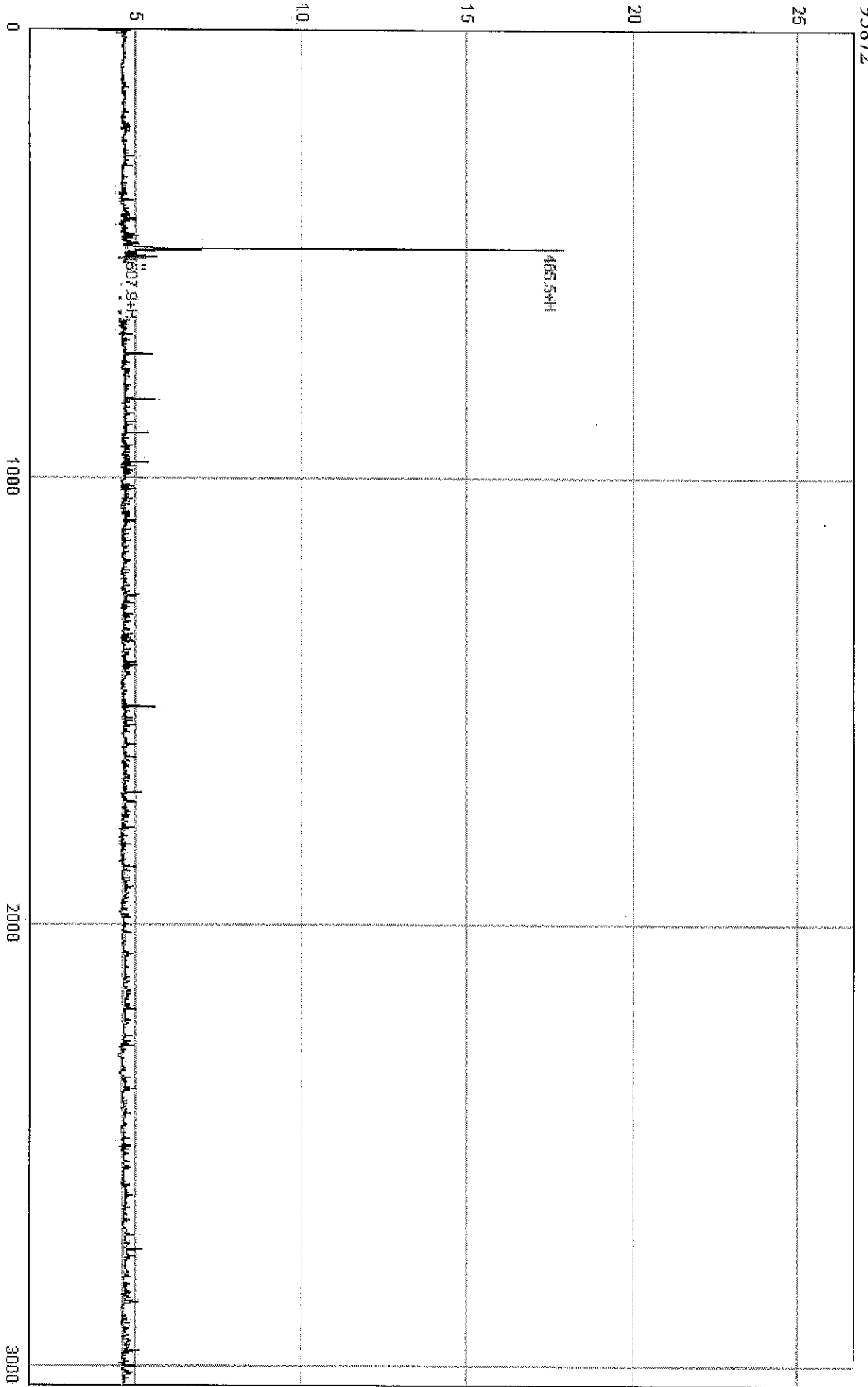
Method: Gradient A:B, t=0.0mins 10:90 t=30.0mins 100:0

Wavelength: 220nm

Data Path: D:\HPLC\custom peptide\GS\95872\95872.hw:



No.	RT	Area%	Area
1	8.184	0.2637	22337
2	8.351	2.156	182625
3	8.780	1.282	108588
4	9.023	96.3	8155470
Total		100	8469020





Genemed Synthesis, Inc.

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Toll free (800) 344-5337; Phone: (210) 745-5988; Fax (210) 745-5992
Email: info@genemedsyn.com, Website: www.genemedsyn.com

PEPTIDE DATA SHEET

LOT NO: 95873

NAME: G706

SEQUENCE: Myr-LE-amide

EXPECTED MASS: 469.3 ± 1.0

AVERAGE MASS: 469.4

SOULUBILITY: Not tested

AMOUNT DELIVERED: 19mg

PURITY: 96.27%

COMMENTS: white to off-white powder or lumps

DATE: 07/23/2014

VERIFIED BY: Zhang Z-Q

Customer Peptide HPLC Report

Sample name: 95873

Analyzed: 07/21/14 17:36 Vail Number: 95873

Reported: 07/23/14 10:04 Volume: 20.0ul

Column Type: 250*4.6mm Kromasil C18 5u

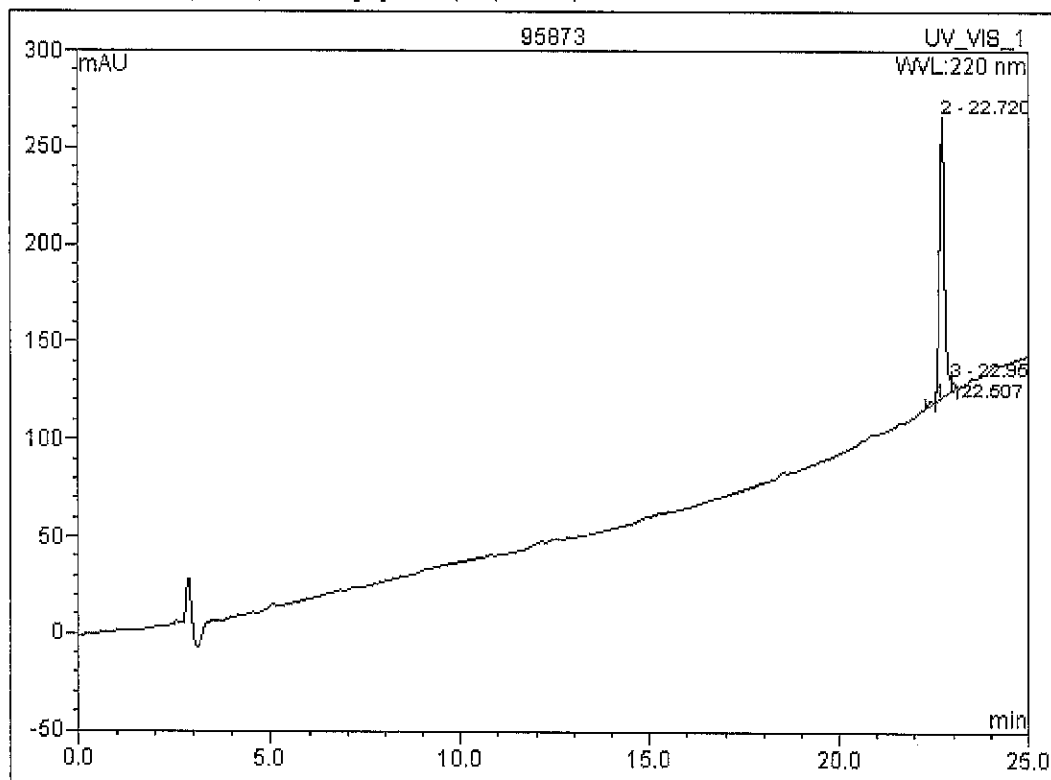
Solvent A: 0.1%TFA acetonitrile

Solvent B: 0.1%TFA Water

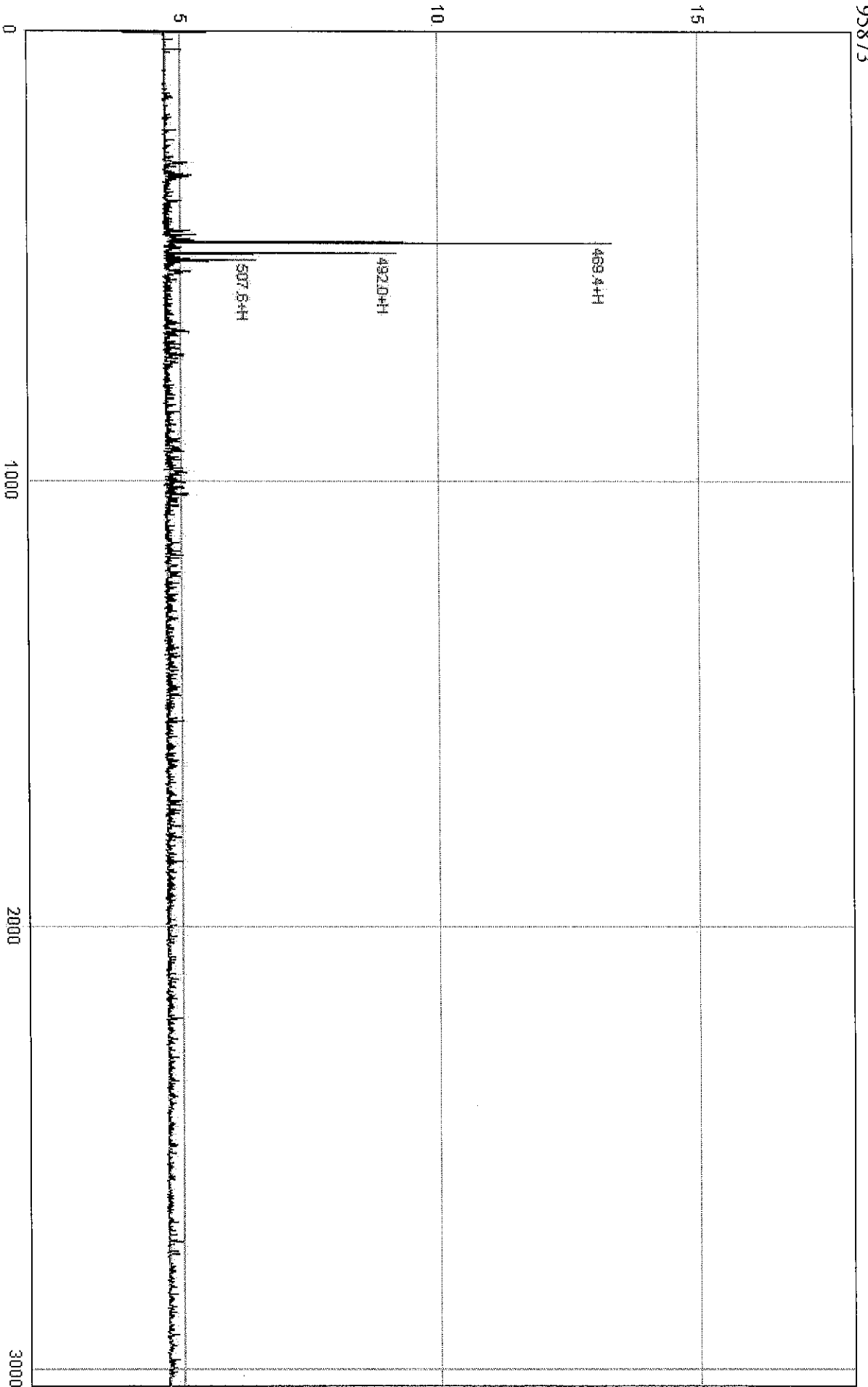
Method: Gradient A:B, t=0.0mins 30:70 t=25.0mins 100:0

Wavelength: 220nm

Data Path: D:\HPLC\custom peptide\GS\95873\95873.hw:



No.	Ret.Time min	Height mAU	Area mAU*min	Rel.Area %
1	22.51	0.707	0.293	1.26
2	22.72	143.953	22.467	96.27
3	22.95	5.777	0.576	2.47
Total:			23.336	100.000



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PEPTIDE DATA SHEET

LOT NO: 95874

NAME: G707

SEQUENCE: Myr-WE-amide

EXPECTED MASS: 542.3 ± 1.0

AVERAGE MASS: 542.3

SOULUBILITY: Not tested

AMOUNT DELIVERED: 19mg

PURITY: 96.81%

COMMENTS: yellow powder or lumps

DATE: 07/23/2014

VERIFIED BY: Zhang Z.G

Customer Peptide HPLC Report

Sample name: 95874

Analyzed:07/21/14 17:30 Vail Number: 95874

Reported:07/23/14 13:13 Volume:20.0ul

Column Type: 250*4.6mm Kromasil C18 5u

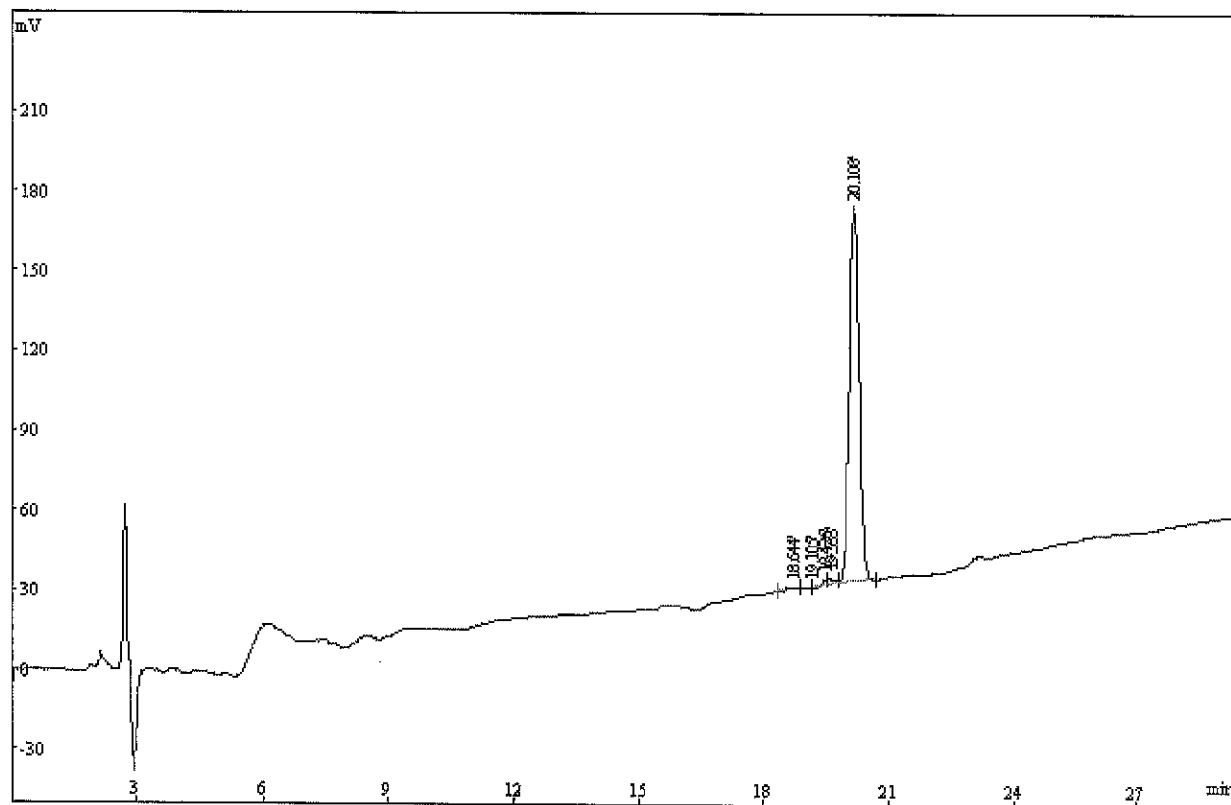
Solvent A:0.1%TFA acetonitrile

Solvent B:0.1%TFA Water

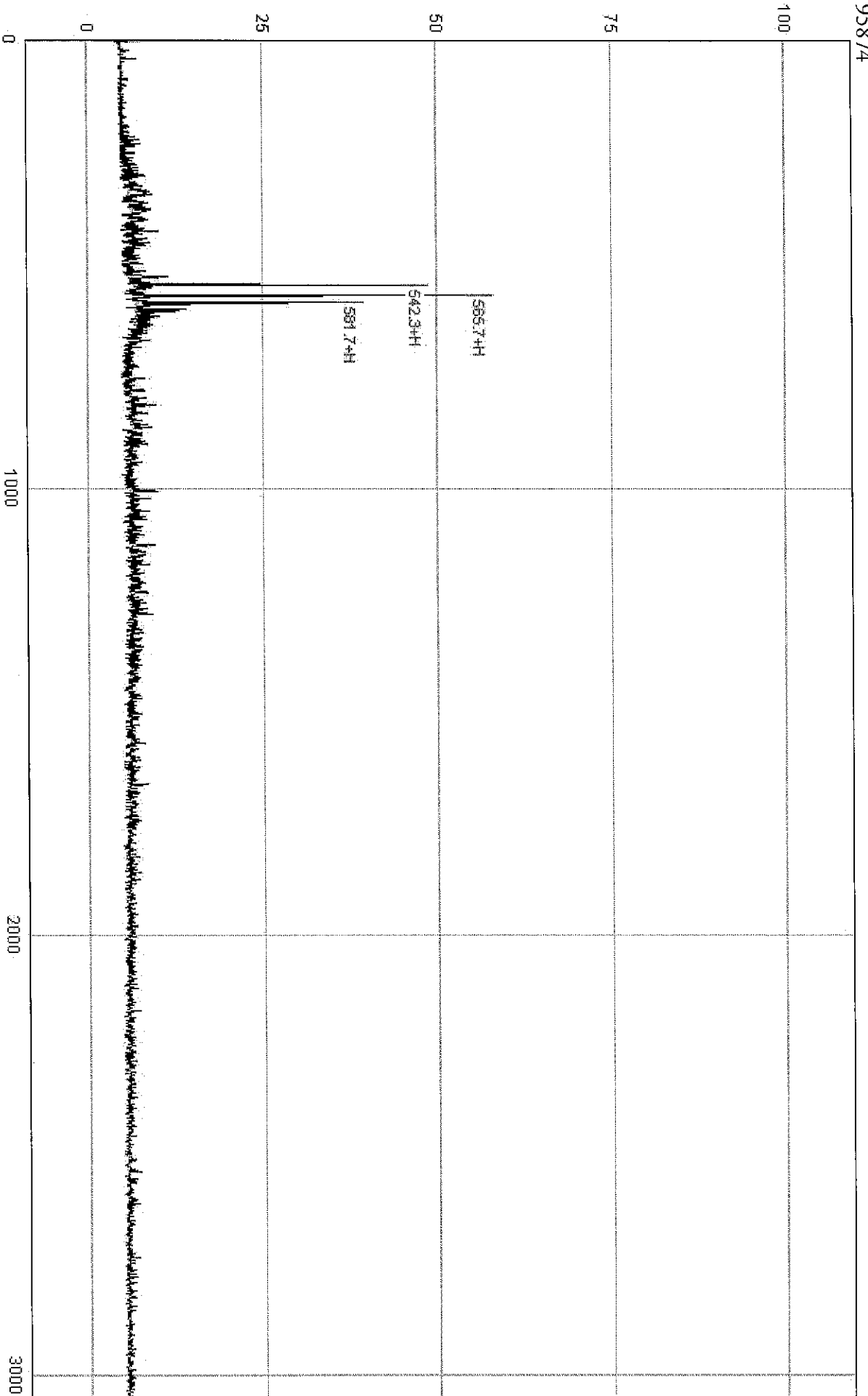
Method: Gradient A:B, t=0.0mins 05:95 t=30.0mins 100:0

Wavelength: 220nm

Data Path: D:\HPLC\custom peptide\GS\95874\95874.hw:



No.	RT	Area%	Area
1	18.644	0.7883	19939
2	19.105	0.05414	1369
3	19.426	0.8967	22680
4	19.533	1.45	36675
5	20.108	96.81	2448707
Total		100	2529370



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PEPTIDE DATA SHEET

LOT NO: 95875

NAME: G708

SEQUENCE: Myr-EW-amide

EXPECTED MASS: 542.3 ± 1.0

AVERAGE MASS: 542.4

SOULUBILITY: Not tested

AMOUNT DELIVERED: 19mg

PURITY: 95.85%

COMMENTS: white to off-white powder or lumps

DATE: 07/23/2014

VERIFIED BY: Zhang .z.g

Customer Peptide HPLC Report

Sample name: 95875

Analyzed: 07/21/14 16:25 Vial Number: 95875

Reported: 07/23/14 10:06 Volume: 20.0ul

Column Type: 250*4.6mm Kromasil C18 5u

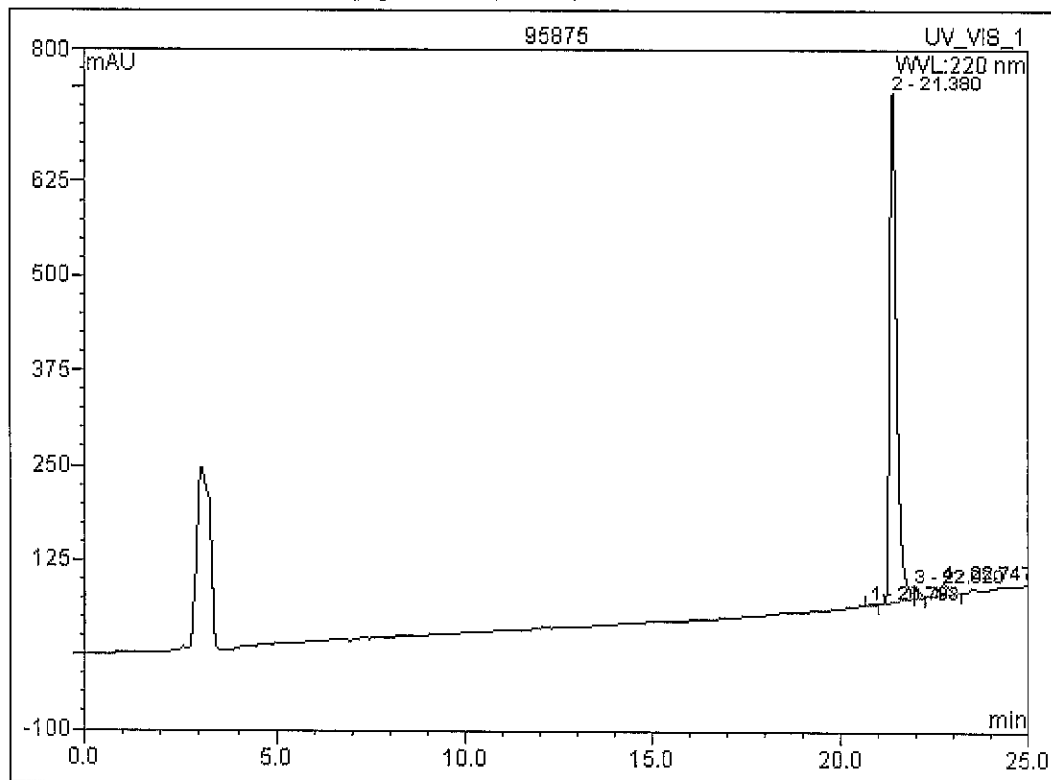
Solvent A: 0.1%TFA acetonitrile

Solvent B: 0.1%TFA Water

Method: Gradient A:B, t=0.0mins 30:70 t=25.0mins 100:0

Wavelength: 220nm

Data Path: D:\HPLC\custom peptide\GS\95875\95875.hw:



No.	Ret.Time min	Height mAU	Area mAU*min	Rel.Area %
1	20.79	1.956	0.314	0.21
2	21.38	671.885	142.897	95.85
3	22.02	13.916	2.058	1.38
4	22.75	15.713	3.810	2.56
Total:			149.078	100.000

