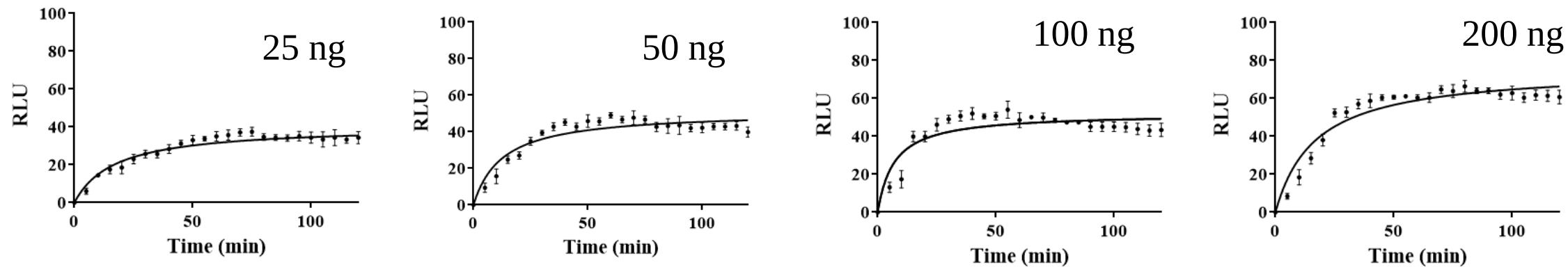
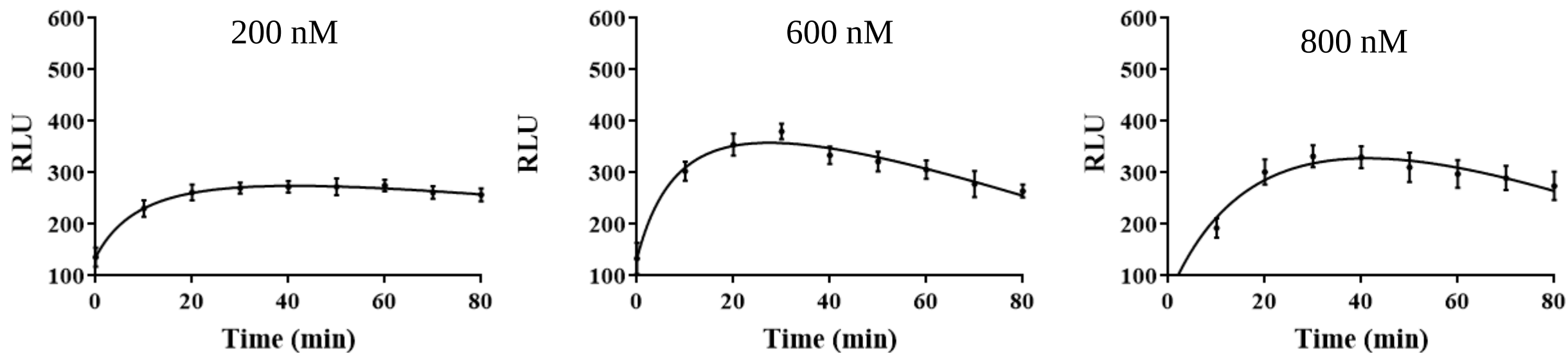


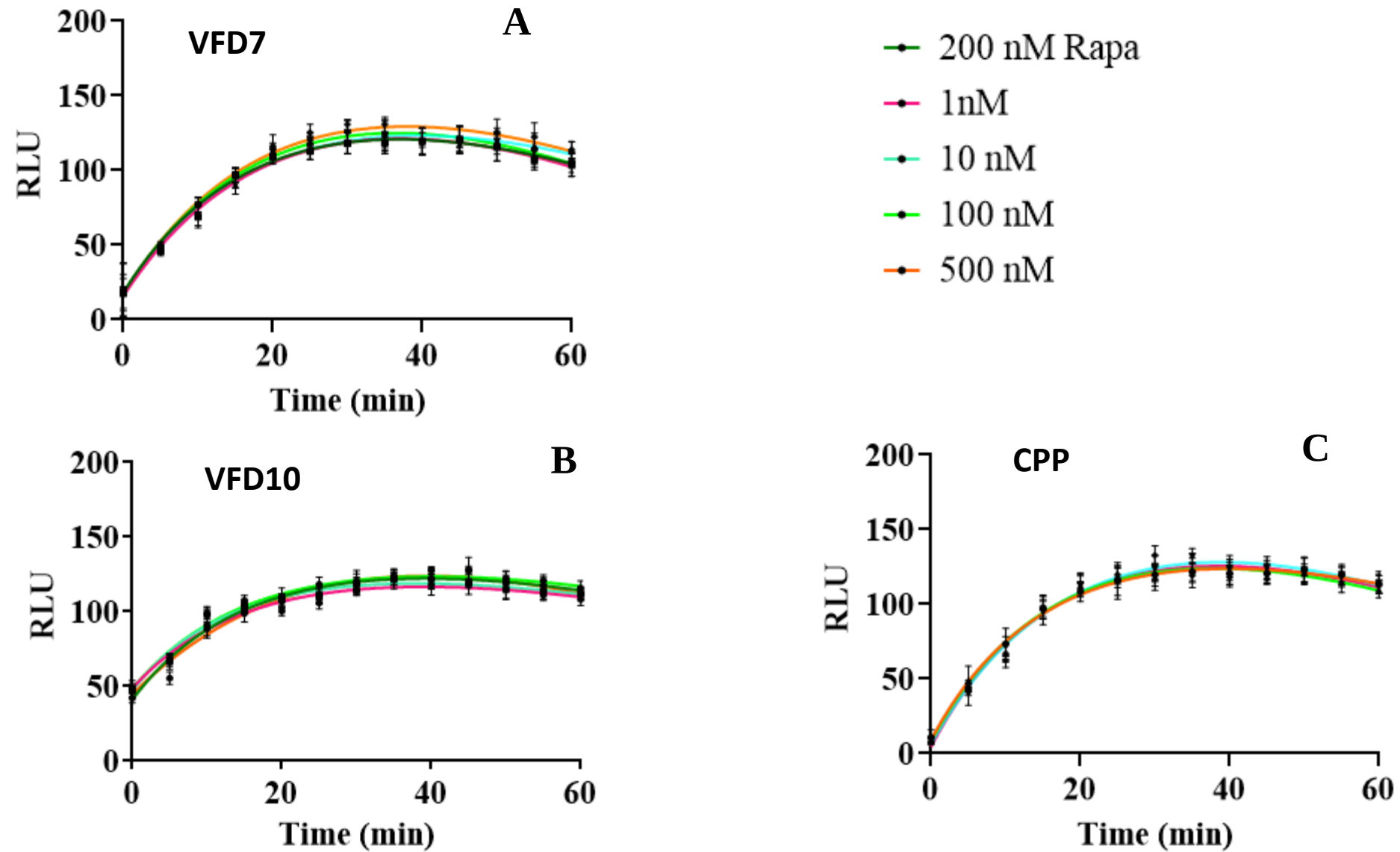
A



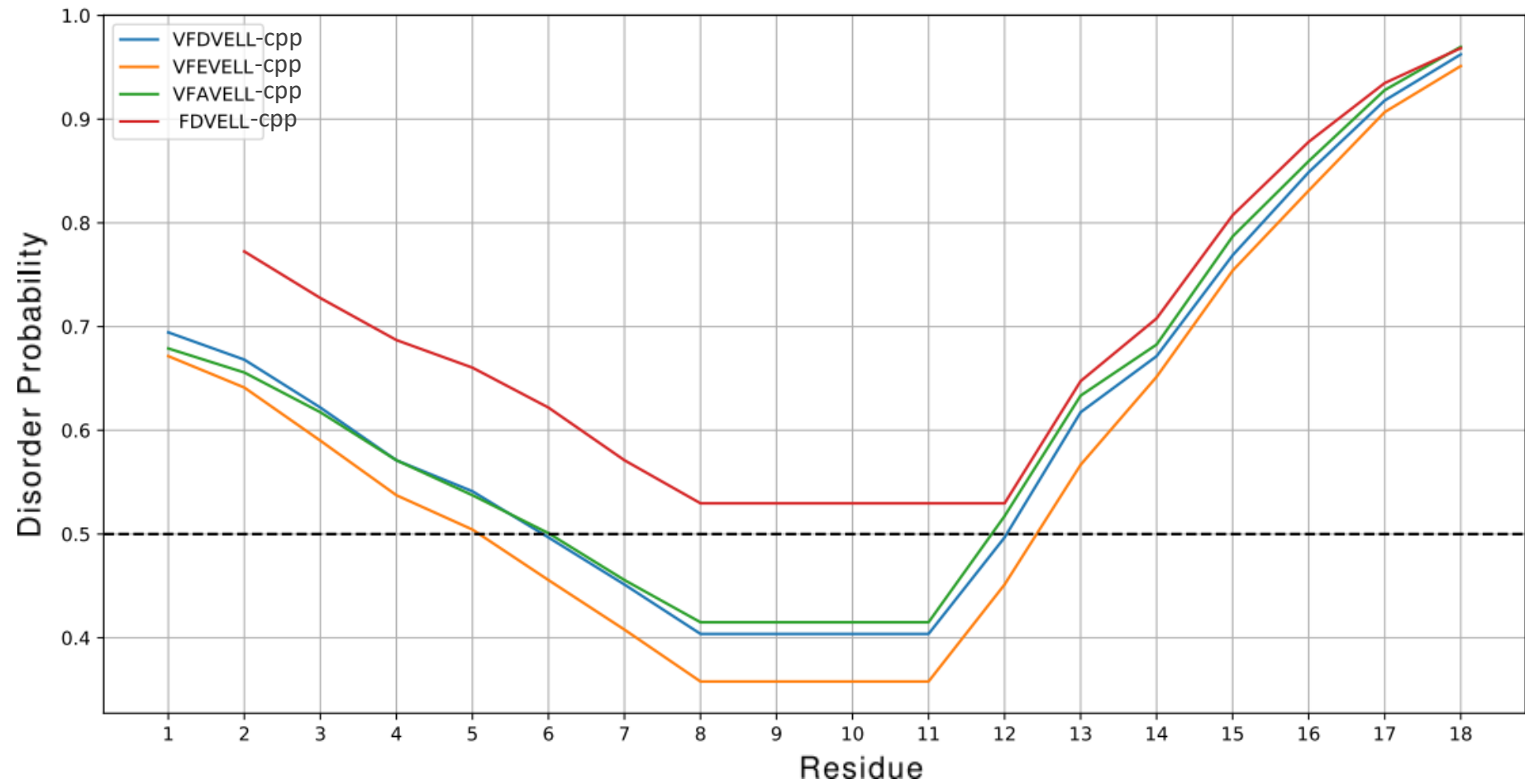
B



Supplemental Figure S1. Graphics shown the relative luminescent units (RLU) obtained with different concentrations of plasmids pair (A) or rapamycin (B). Additional details were shown on Experimental Procedures.

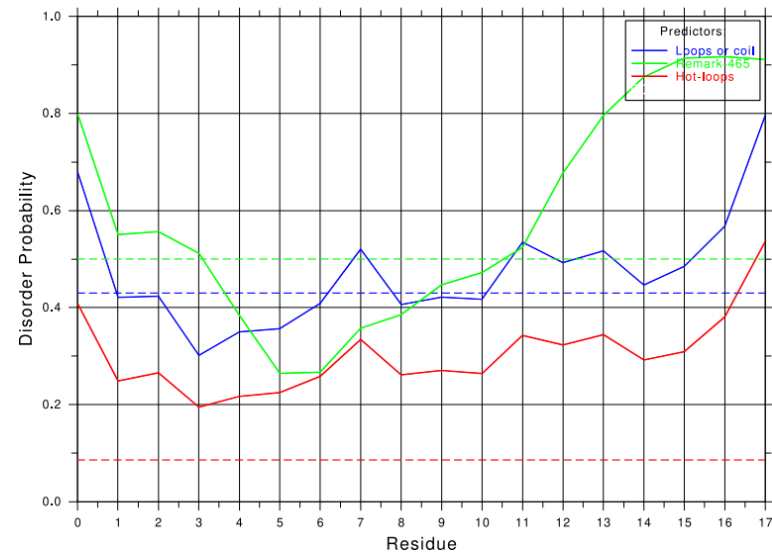


Supplemental Figure S2. Graphics shown the relative luminescent units (RLU) obtained with the indicated concentrations of cpp (a), VFD7 (b) or VFD10 (c). Note that none of the peptides were capable to alter the RLU compared to control rapamycin (Rapa) alone (a-c). Both VFD7 and VFD10 without the cpp covalently bound were also unable to inhibit the RLU induced by Rapa. Peptides VFA7, VFE7, VFD6, VFD5, VFD4, EVE5, or AVE5 have similar lack of activity without the presence of cpp covalently bound (data not shown). Additional details were shown on Experimental Procedures.

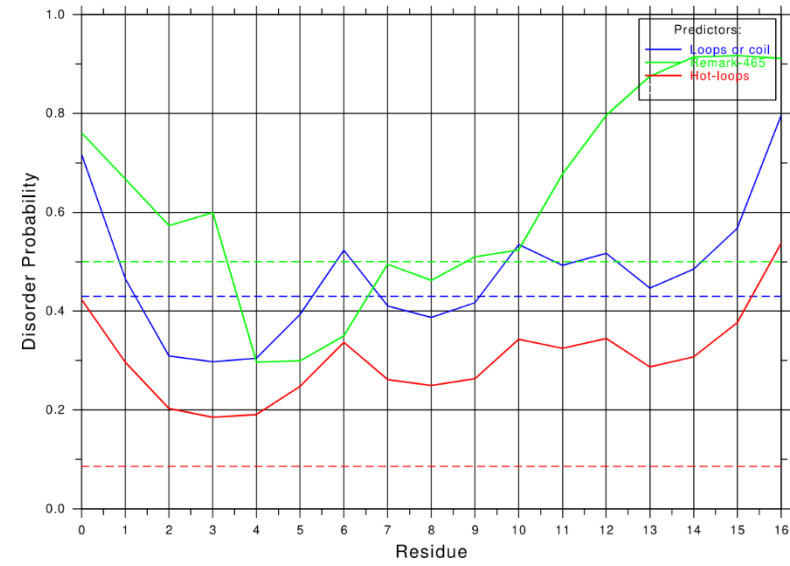


Supplemental Figure S3. Prediction of disordered regions for each peptide, aligned with respect to the last residue, obtained with the IUPred2A server. Relatively long disordered regions are predicted to exist between residues 1 to 5 and 13 to 18, except for the VFD6-TAT peptide, for which the predicted probability of disorder is higher than the decision threshold throughout.

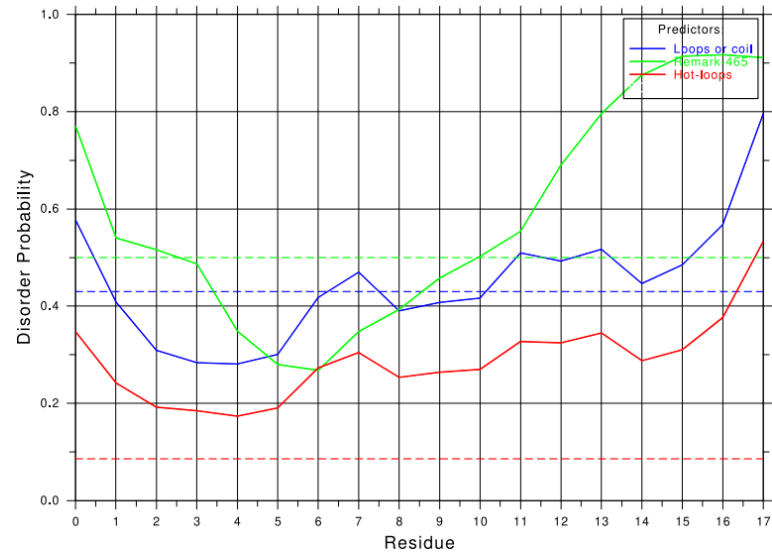
VFDVELLYGRKKRRQRRR



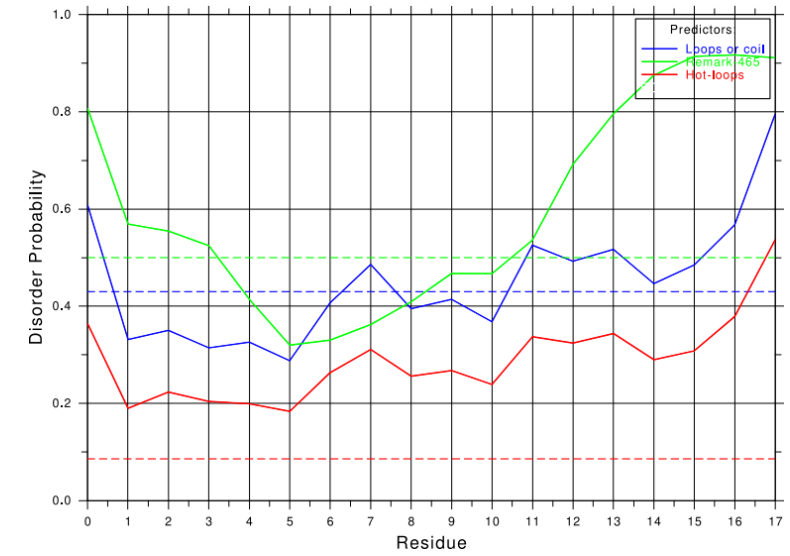
FDVELLYGRKKRRQRRR



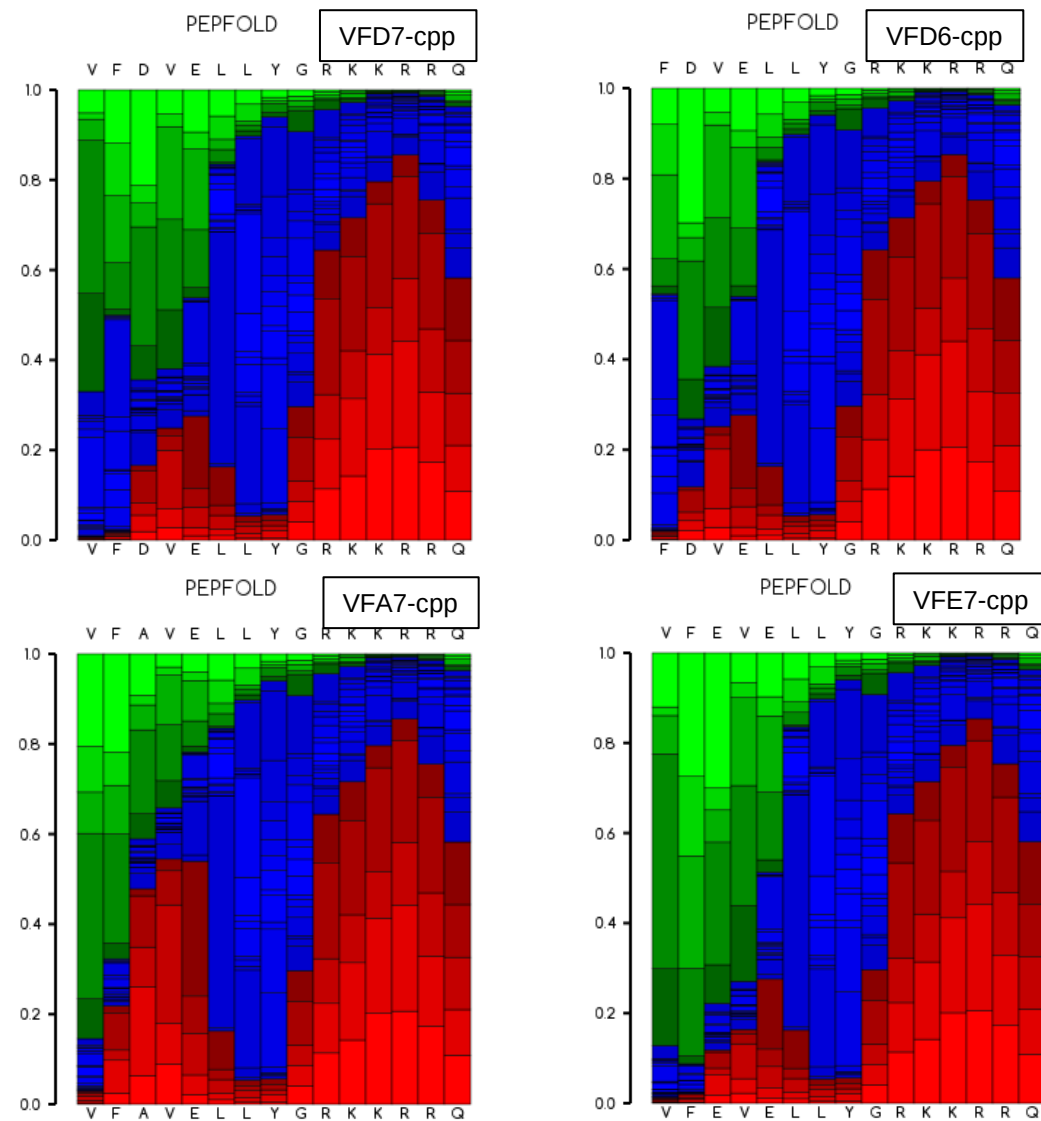
VFAVELLYGRKKRRQRRR



VFEVELLYGRKKRRQRRR

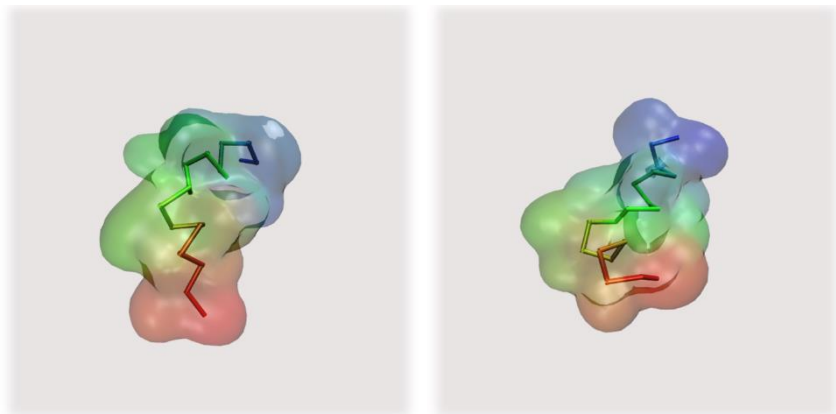


Supplemental Figure S4. Disordered region prediction from the DisEMBL server for indicated peptides. These results were in broad agreement with each other and with the results from the IUPread2A server.

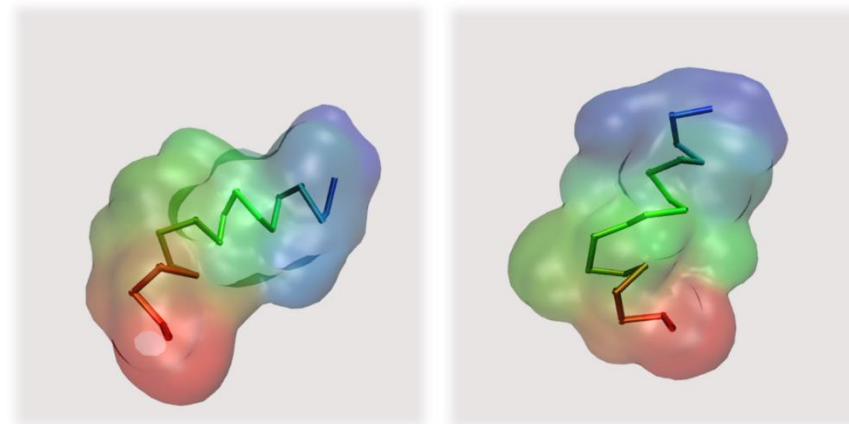


Supplemental Figure S5. Secondary structure prediction results from the PEP-FOLD3 tool for VFD7. The common C-terminal region is predicted to be helical from the first arginine residue onwards with high confidence. The varying N-terminal region shows corresponding greater variability for the first 5 residues, with different degrees of helical or extended propensity, followed by a probable coil conformation for the (L)LYG fragment.

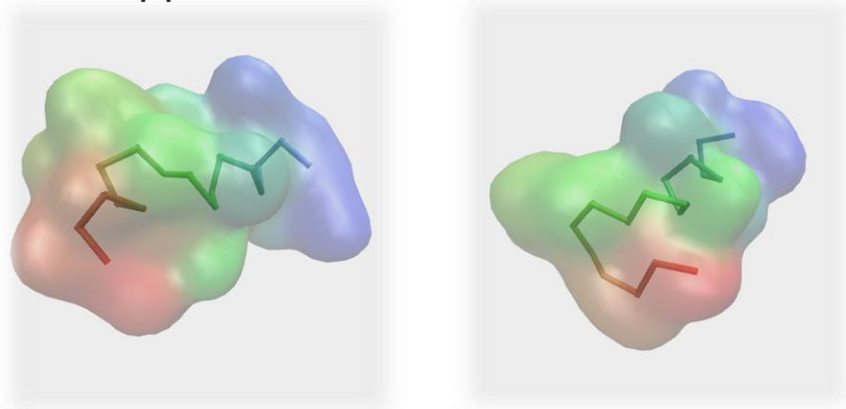
VFD7-cpp



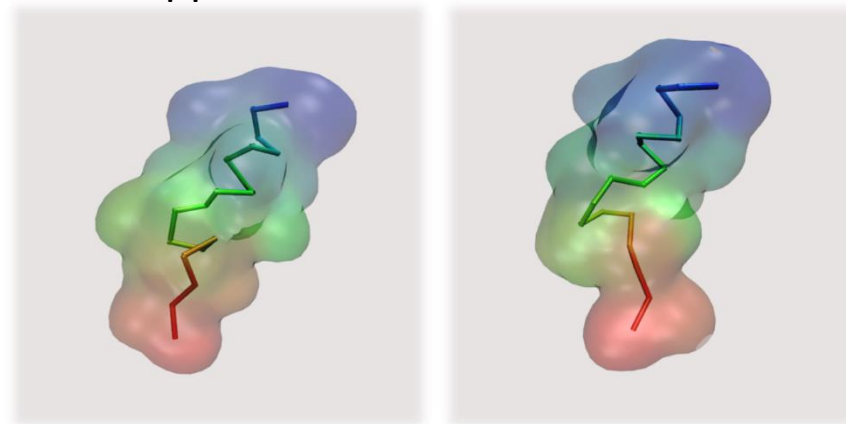
VFA7-cpp



VFD6-cpp



VFE7-cpp



Supplemental Figure S6. Selected models for selected VFD7 derived peptides.

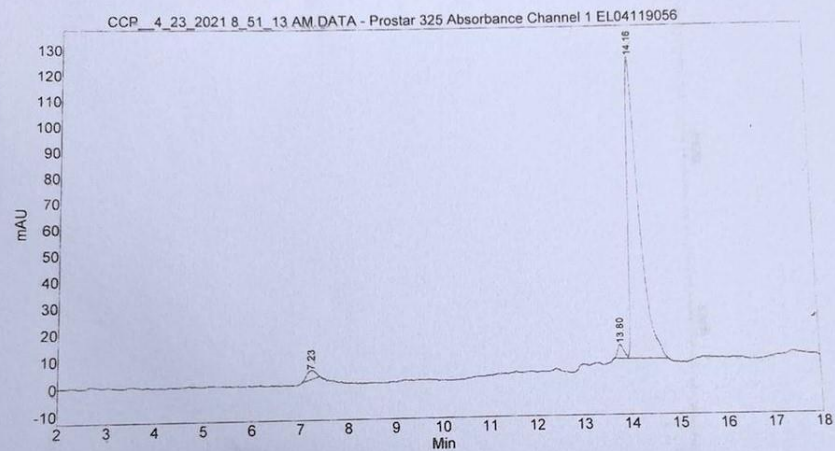
Supplementary chromatograms from peptide synthesis analyses

Quality control chromatograms from peptide synthesis are following below



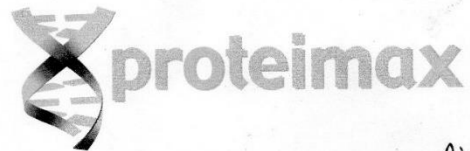
Análise por espectrômetro de massa do peptídeo

Análise por HPLC (YGRKKRRQRRR)



Peak results :

Index	Time [Min]	Area [mAU.Min]	Area % [%]
1	7.23	0.7	2.250
2	13.80	0.8	2.382
3	14.16	30.9	95.367
Total		32.4	100.000



AVE5

Análise por HPLC do peptídeo
(AVELLYGRKKRRQRRR) 16aa

REPORT

Sample Description:

Structure : AVE5 AR-16
Number : 010250011
Lot No : P190306-TL712396
Column : 4.6x250mm, Kromasil 100-5C18
Solvent A : 0.1% trifluoroacetic in 100% acetonitrile
Solvent B : 0.1% trifluoroacetic in 100% water
Gradient :
 A B
0.01min 10% 90%
25min 35% 65%
25.1min 100% 0%
30min STOP

mw = 2085.49

18.50 mg

Add 9 mL

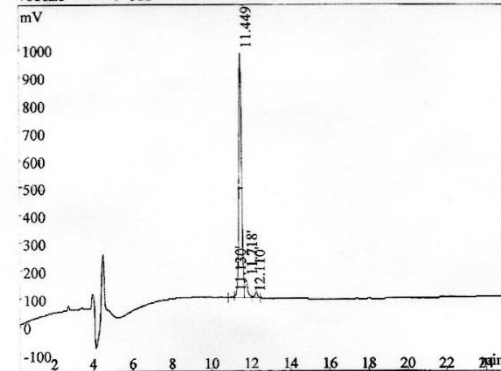
C = 2 mg/mL

1 mL

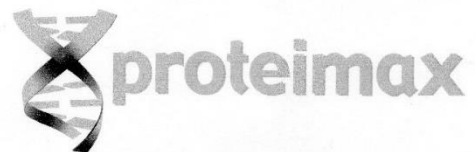
Flow rate : 1.0 mL/min

Wavelength : 220nm

Volume : 5ul



Rank	Time	Conc.	Area	Height
1	11.130	0.2955	24212	5094
2	11.449	90.37	7404638	883068
3	11.718	7.159	586649	62112
4	12.110	2.177	178367	4022
Total		100	8193866	954296



EVE5

Análise por HPLC do peptídeo
(EVELLYGRKKRRQRRR) 16aa

Structure : EVE5 ER-16
Number : 010250011
Lot No : P190306-TL712397
Column : 4.6x250mm, Kromasil 100-5C18
Solvent A : 0.1% trifluoroacetic in 100% acetonitrile
Solvent B : 0.1% trifluoroacetic in 100% water
Gradient :
 A B
 0.01min 15% 85%
 25min 40% 60%
 25.1min 100% 0%
 30min STOP
Flow rate : 1.0 mL/min
Wavelength : 220nm
Volume : 5ul

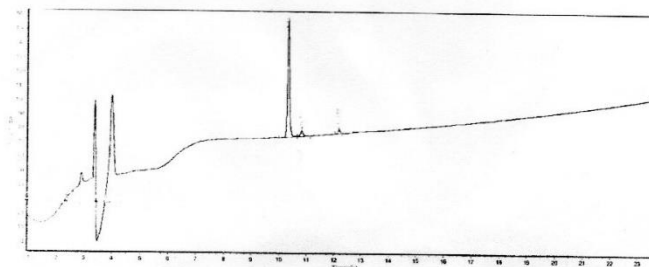
$m_w = 2143.53$

18.9 ms

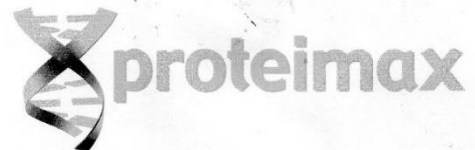
Add 9 mL H₂O

$C_2 = 2 \text{ mg/mL}$

$n_D = 1$



Peak No.	Ret Time	Height	Area	Conc.
1	10.317	81427.609	432595.000	91.4645
2	10.807	3877.303	27491.314	5.8125
3	12.175	2631.559	12878.574	2.7229
Total				100.0000



VFAT7

Análise por HPLC do peptídeo (VFAVELLYGRKKRRQRRR) 189c

Sample Description:

Structure: VFAT VR-18

Number: 0200046

Lot No: P190306-TL712395

Column: 4.6mm*250mm, Inertsil ODS-SP

Solvent A: 0.1% Trifluoroacetic in 100% Acetonitrile

Solvent B: 0.1% Trifluoroacetic in 100% Water

Gradient:	A	B
0.01min	20%	80%
25.00min	45%	55%
25.01min	100%	0%
30.00min	Stop	

Flow rate: 1.0ml/min

Wavelength: 220nm

Volume: 10 µl

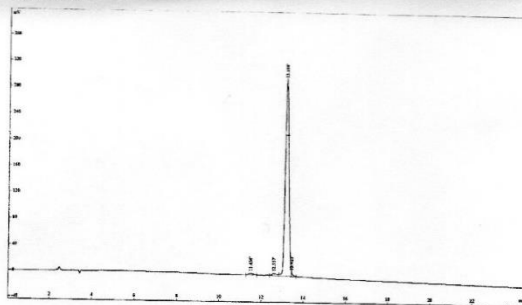
mw = 2331.80

25mg

Add 12ml H₂O

C₂ = 2 mg/ml

1ml



Rank	Time	Conc.	Area	Height
1	11.456	0.9784	37026	2223
2	12.557	1.287	48700	3329
3	13.108	97.29	3681896	303905
4	13.425	0.4395	16632	5323
Total		100	3784254	314380



VFE7

Análise por HPLC do peptídeo
(VFEVELLYGRKKRRQRRR) 18aa

Mu = 2389.84

18.10 mg

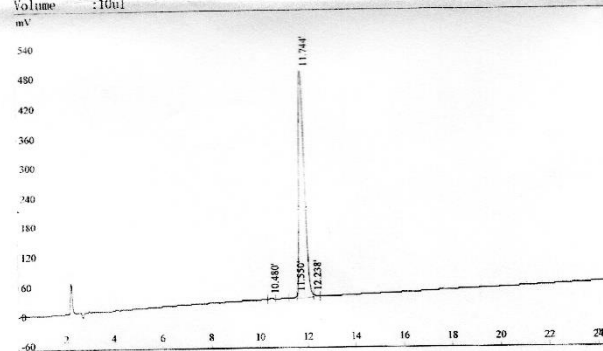
Add 7.5 mL H₂O

CS = ~~2.4~~ 2.4 mg/mL

1 mL

Product Name: VFE7 VR-18
Instrument No: 0200023
Lot No : P190306-TL712394
Column : 4.6*250mm, GS-120-5 C18-B10
Solvent A : 0.1% Trifluoroacetic in 100% Acetonitrile
Solvent B : 0.1% Trifluoroacetic in 100% Water
Gradient :
 : A B
 0.00min 18% 82%
 25min 43% 57%
 25.1min 100% 0%
 30min Stop

Flow rate : 1.0 mL/min
Wavelength : 220nm
Volume : 10 µl

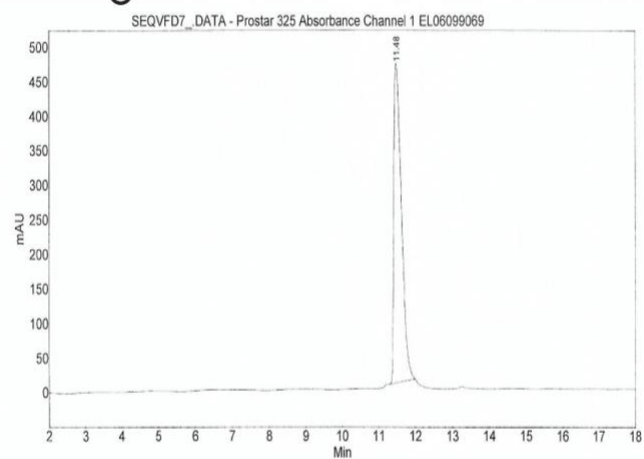


Rank	Time	Conc.	Area	Height
1	10.480	0.2602	18067	2195
2	11.550	0.2008	13940	3371
3	11.744	99.2464	6890442	456113
4	12.238	0.2926	20317	3055
Total		100	6942766	464734



Análise por HPLC do peptídeo VFD7-cpp
VFDVELLYGRKKRRQRRR

○



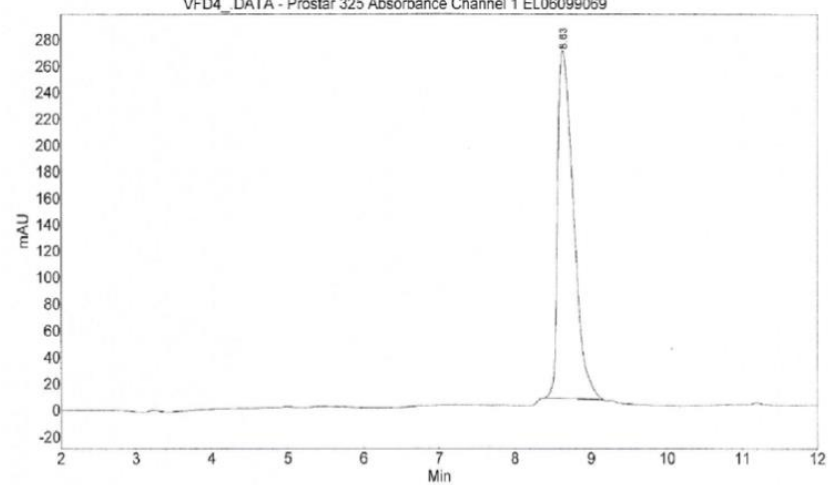
Peak results :

Index	Time (Min)	Area (mAU.Min)	Area % (%)
1	11.48	110.5	100.000
Total		110.5	100.000



Análise por HPLC do peptídeo (VELLYGRKKRRQRRR)

VFD4_DATA - Prostar 325 Absorbance Channel 1 EL06099069

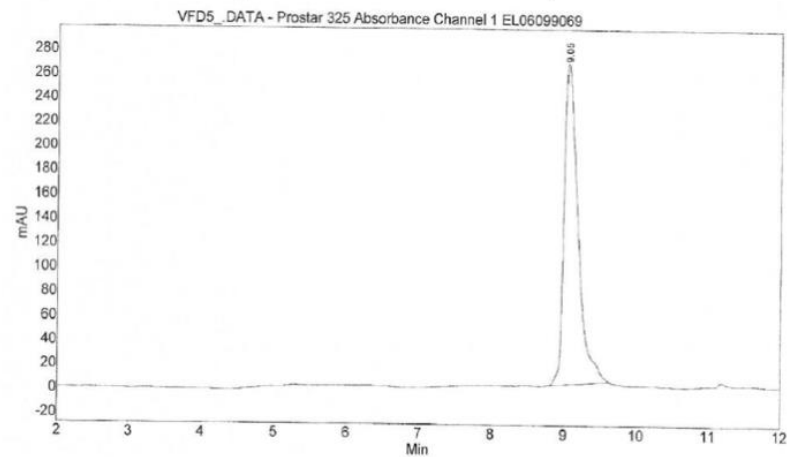


Peak results :

Index	Time (Min)	Area (mAU.Min)	Area % (%)
1	8.63	63.0	100.000
Total		63.0	100.000



Análise por HPLC do peptídeo (DVELLYGRKKRRQRRR)



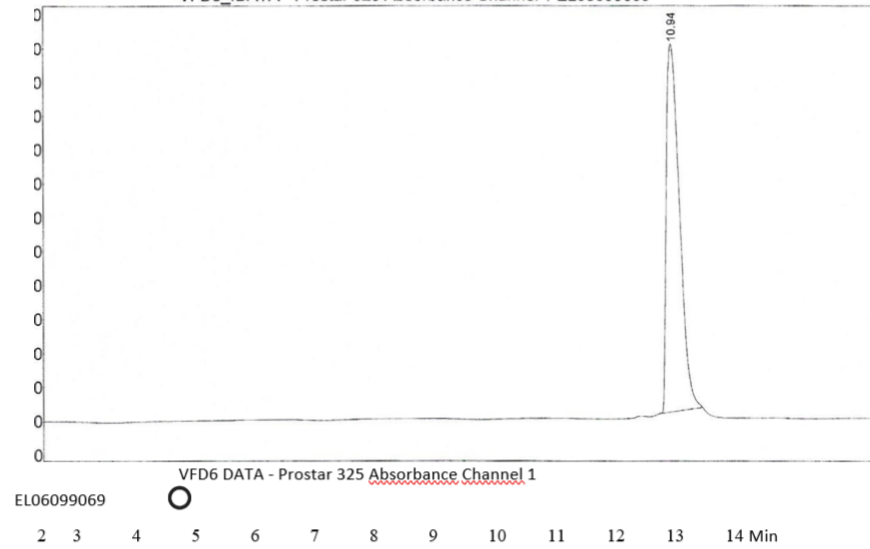
Peak results :

Index	Time (Min)	Area (mAU.Min)	Area % (%)
1	9.05	59.5	100.000
Total		59.5	100.000

Peptide : VFD6
FDVELLYGRKKRRQRRR

System : HPLC 4
Method : Peptide
2.1 Column HPLC 4

Acquired : 8/23/2018 AM

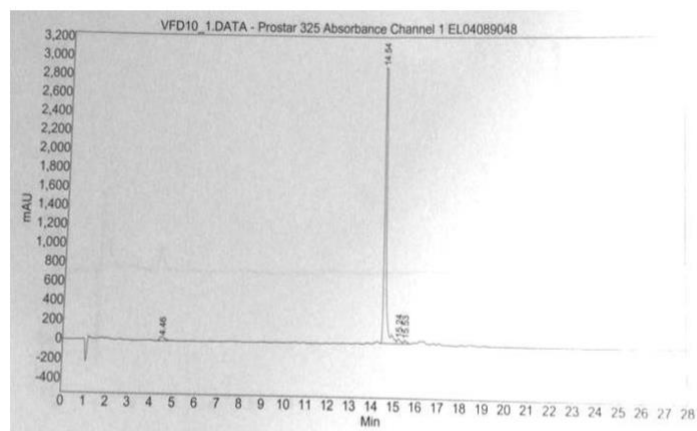


Peak results :

Index	Time Min	Area mAU·min	Area % [%]
1	1.94	116.6	98.896
2	16.03	1.3	1.104
Total		117.9	100.000



**Análise por HPLC do peptídeo
(VFDVELLKLEYGRKKRRQRRR)**



Peak results :

Index	Time [Min]	Area [mAU.Min]	Area % [%]
1	4.46	11.4	2.999
2	14.54	351.5	92.826
3	15.24	9.5	2.501
4	15.53	6.3	1.674
Total		378.7	100.000