

SEQUENCE LISTING

<110> Helsingin yliopisto

<120> C-terminal CDFN and MANF fragments, pharmaceutical compositions comprising same and uses thereof

<130> HY18APCT

<150> FI20185304

<151> 2018-03-29

<160> 24

<170> PatentIn version 3.5

<210> 1

<211> 81

<212> PRT

<213> Homo sapiens

<400> 1

Met	Pro	Ala	Met	Lys	Ile	Cys	Glu	Lys	Leu	Lys	Lys	Leu	Asp	Ser	Gln
1				5					10					15	

Ile	Cys	Glu	Leu	Lys	Tyr	Glu	Lys	Thr	Leu	Asp	Leu	Ala	Ser	Val	Asp
			20					25					30		

Leu	Arg	Lys	Met	Arg	Val	Ala	Glu	Leu	Lys	Gln	Ile	Leu	His	Ser	Trp
		35					40					45			

Gly	Glu	Glu	Cys	Arg	Ala	Cys	Ala	Glu	Lys	Thr	Asp	Tyr	Val	Asn	Leu
	50					55					60				

Ile	Gln	Glu	Leu	Ala	Pro	Lys	Tyr	Ala	Ala	Thr	His	Pro	Lys	Thr	Glu
65					70					75					80

Leu

<210> 2

<211> 78

<212> PRT

<213> Homo sapiens

<400> 2

Ile	Cys	Glu	Lys	Leu	Lys	Lys	Lys	Asp	Ser	Gln	Ile	Cys	Glu	Leu	Lys
1				5					10					15	

Tyr	Asp	Lys	Gln	Ile	Asp	Leu	Ser	Thr	Val	Asp	Leu	Lys	Lys	Leu	Arg
			20					25					30		

Val	Lys	Glu	Leu	Lys	Lys	Ile	Leu	Asp	Asp	Trp	Gly	Glu	Thr	Cys	Lys
		35					40					45			

Gly Cys Ala Glu Lys Ser Asp Tyr Ile Arg Lys Ile Asn Glu Leu Met
50 55 60

Pro Lys Tyr Ala Pro Lys Ala Ala Ser Ala Arg Thr Asp Leu
65 70 75

<210> 3
<211> 81
<212> PRT
<213> Homo sapiens

<220>
<221> misc_feature
<222> (53)..(54)
<223> Xaa can be any naturally occurring amino acid

<400> 3

Met Pro Ala Met Lys Ile Cys Glu Lys Leu Lys Lys Leu Asp Ser Gln
1 5 10 15

Ile Cys Glu Leu Lys Tyr Glu Lys Thr Leu Asp Leu Ala Ser Val Asp
20 25 30

Leu Arg Lys Met Arg Val Ala Glu Leu Lys Gln Ile Leu His Ser Trp
35 40 45

Gly Glu Glu Cys Xaa Xaa Cys Ala Glu Lys Thr Asp Tyr Val Asn Leu
50 55 60

Ile Gln Glu Leu Ala Pro Lys Tyr Ala Ala Thr His Pro Lys Thr Glu
65 70 75 80

Leu

<210> 4
<211> 61
<212> PRT
<213> Homo sapiens

<400> 4

Lys Tyr Glu Lys Thr Leu Asp Leu Ala Ser Val Asp Leu Arg Lys Met
1 5 10 15

Arg Val Ala Glu Leu Lys Gln Ile Leu His Ser Trp Gly Glu Glu Cys
20 25 30

Arg Ala Cys Ala Glu Lys Thr Asp Tyr Val Asn Leu Ile Gln Glu Leu
35 40 45

Ala Pro Lys Tyr Ala Ala Thr His Pro Lys Thr Glu Leu
50 55 60

<210> 5
<211> 63
<212> PRT
<213> Homo sapiens

<400> 5

Lys Tyr Asp Lys Gln Ile Asp Leu Ser Thr Val Asp Leu Lys Lys Leu
1 5 10 15

Arg Val Lys Glu Leu Lys Lys Ile Leu Asp Asp Trp Gly Glu Thr Cys
20 25 30

Lys Gly Cys Ala Glu Lys Ser Asp Tyr Ile Arg Lys Ile Asn Glu Leu
35 40 45

Met Pro Lys Tyr Ala Pro Lys Ala Ala Ser Ala Arg Thr Asp Leu
50 55 60

<210> 6
<211> 68
<212> PRT
<213> Homo sapiens

<220>
<221> misc_feature
<222> (38)..(39)
<223> Xaa can be any naturally occurring amino acid

<400> 6

Gln Ile Cys Glu Leu Lys Tyr Asp Lys Gln Ile Asp Leu Ser Thr Val
1 5 10 15

Asp Leu Lys Lys Leu Arg Val Lys Glu Leu Lys Lys Ile Leu Asp Asp
20 25 30

Trp Gly Glu Thr Cys Xaa Xaa Cys Ala Glu Lys Ser Asp Tyr Ile Arg
35 40 45

Lys Ile Asn Glu Leu Met Pro Lys Tyr Ala Pro Lys Ala Ala Ser Ala
50 55 60

Arg Thr Asp Leu
65

<210> 7
<211> 161

<212> PRT
<213> Homno sapiens

<400> 7

Gln Glu Ala Gly Gly Arg Pro Gly Ala Asp Cys Glu Val Cys Lys Glu
1 5 10 15

Phe Leu Asn Arg Phe Tyr Lys Ser Leu Ile Asp Arg Gly Val Asn Phe
20 25 30

Ser Leu Asp Thr Ile Glu Lys Glu Leu Ile Ser Phe Cys Leu Asp Thr
35 40 45

Lys Gly Lys Glu Asn Arg Leu Cys Tyr Tyr Leu Gly Ala Thr Lys Asp
50 55 60

Ala Ala Thr Lys Ile Leu Ser Glu Val Thr Arg Pro Met Ser Val His
65 70 75 80

Met Pro Ala Met Lys Ile Cys Glu Lys Leu Lys Lys Leu Asp Ser Gln
85 90 95

Ile Cys Glu Leu Lys Tyr Glu Lys Thr Leu Asp Leu Ala Ser Val Asp
100 105 110

Leu Arg Lys Met Arg Val Ala Glu Leu Lys Gln Ile Leu His Ser Trp
115 120 125

Gly Glu Glu Cys Arg Ala Cys Ala Glu Lys Thr Asp Tyr Val Asn Leu
130 135 140

Ile Gln Glu Leu Ala Pro Lys Tyr Ala Ala Thr His Pro Lys Thr Glu
145 150 155 160

Leu

<210> 8
<211> 100
<212> PRT
<213> Homo sapiens

<400> 8

Gln Glu Ala Gly Gly Arg Pro Gly Ala Asp Cys Glu Val Cys Lys Glu
1 5 10 15

Phe Leu Asn Arg Phe Tyr Lys Ser Leu Ile Asp Arg Gly Val Asn Phe
20 25 30

Ser Leu Asp Thr Ile Glu Lys Glu Leu Ile Ser Phe Cys Leu Asp Thr
35 40 45

Lys Gly Lys Glu Asn Arg Leu Cys Tyr Tyr Leu Gly Ala Thr Lys Asp
50 55 60

Ala Ala Thr Lys Ile Leu Ser Glu Val Thr Arg Pro Met Ser Val His
65 70 75 80

Met Pro Ala Met Lys Ile Cys Glu Lys Leu Lys Lys Leu Asp Ser Gln
85 90 95

Ile Cys Glu Leu
100

<210> 9
<211> 158
<212> PRT
<213> Homo sapiens

<400> 9

Leu Arg Pro Gly Asp Cys Glu Val Cys Ile Ser Tyr Leu Gly Arg Phe
1 5 10 15

Tyr Gln Asp Leu Lys Asp Arg Asp Val Thr Phe Ser Pro Ala Thr Ile
20 25 30

Glu Asn Glu Leu Ile Lys Phe Cys Arg Glu Ala Arg Gly Lys Glu Asn
35 40 45

Arg Leu Cys Tyr Tyr Ile Gly Ala Thr Asp Asp Ala Ala Thr Lys Ile
50 55 60

Ile Asn Glu Val Ser Lys Pro Leu Ala His His Ile Pro Val Glu Lys
65 70 75 80

Ile Cys Glu Lys Leu Lys Lys Lys Asp Ser Gln Ile Cys Glu Leu Lys
85 90 95

Tyr Asp Lys Gln Ile Asp Leu Ser Thr Val Asp Leu Lys Lys Leu Arg
100 105 110

Val Lys Glu Leu Lys Lys Ile Leu Asp Asp Trp Gly Glu Thr Cys Lys
115 120 125

Gly Cys Ala Glu Lys Ser Asp Tyr Ile Arg Lys Ile Asn Glu Leu Met
130 135 140

Pro Lys Tyr Ala Pro Lys Ala Ala Ser Ala Arg Thr Asp Leu

145

150

155

<210> 10
 <211> 95
 <212> PRT
 <213> Homo sapiens

<400> 10

Leu Arg Pro Gly Asp Cys Glu Val Cys Ile Ser Tyr Leu Gly Arg Phe
 1 5 10 15

Tyr Gln Asp Leu Lys Asp Arg Asp Val Thr Phe Ser Pro Ala Thr Ile
 20 25 30

Glu Asn Glu Leu Ile Lys Phe Cys Arg Glu Ala Arg Gly Lys Glu Asn
 35 40 45

Arg Leu Cys Tyr Tyr Ile Gly Ala Thr Asp Asp Ala Ala Thr Lys Ile
 50 55 60

Ile Asn Glu Val Ser Lys Pro Leu Ala His His Ile Pro Val Glu Lys
 65 70 75 80

Ile Cys Glu Lys Leu Lys Lys Lys Asp Ser Gln Ile Cys Glu Leu
 85 90 95

<210> 11
 <211> 57
 <212> PRT
 <213> Homo sapiens

<400> 11

Thr Leu Asp Leu Ala Ser Val Asp Leu Arg Lys Met Arg Val Ala Glu
 1 5 10 15

Leu Lys Gln Ile Leu His Ser Trp Gly Glu Glu Cys Arg Ala Cys Ala
 20 25 30

Glu Lys Thr Asp Tyr Val Asn Leu Ile Gln Glu Leu Ala Pro Lys Tyr
 35 40 45

Ala Ala Thr His Pro Lys Thr Glu Leu
 50 55

<210> 12
 <211> 53
 <212> PRT
 <213> Homo sapiens

<400> 12

Lys Tyr Glu Lys Thr Leu Asp Leu Ala Ser Val Asp Leu Arg Lys Met
1 5 10 15

Arg Val Ala Glu Leu Lys Gln Ile Leu His Ser Trp Gly Glu Glu Cys
20 25 30

Arg Ala Cys Ala Glu Lys Thr Asp Tyr Val Asn Leu Ile Gln Glu Leu
35 40 45

Ala Pro Lys Tyr Ala
50

<210> 13
<211> 49
<212> PRT
<213> Homo sapiens

<400> 13

Thr Leu Asp Leu Ala Ser Val Asp Leu Arg Lys Met Arg Val Ala Glu
1 5 10 15

Leu Lys Gln Ile Leu His Ser Trp Gly Glu Glu Cys Arg Ala Cys Ala
20 25 30

Glu Lys Thr Asp Tyr Val Asn Leu Ile Gln Glu Leu Ala Pro Lys Tyr
35 40 45

Ala

<210> 14
<211> 51
<212> PRT
<213> Homo sapiens

<400> 14

Val Asp Leu Arg Lys Met Arg Val Ala Glu Leu Lys Gln Ile Leu His
1 5 10 15

Ser Trp Gly Glu Glu Cys Arg Ala Cys Ala Glu Lys Thr Asp Tyr Val
20 25 30

Asn Leu Ile Gln Glu Leu Ala Pro Lys Tyr Ala Ala Thr His Pro Lys
35 40 45

Thr Glu Leu
50

<210> 15
<211> 43

<212> PRT
<213> Homo sapiens

<400> 15

Val Asp Leu Arg Lys Met Arg Val Ala Glu Leu Lys Gln Ile Leu His
1 5 10 15

Ser Trp Gly Glu Glu Cys Arg Ala Cys Ala Glu Lys Thr Asp Tyr Val
20 25 30

Asn Leu Ile Gln Glu Leu Ala Pro Lys Tyr Ala
35 40

<210> 16
<211> 50
<212> PRT
<213> Homo sapiens

<400> 16

Lys Tyr Glu Lys Thr Leu Asp Leu Ala Ser Val Asp Leu Arg Lys Met
1 5 10 15

Arg Val Ala Glu Leu Lys Gln Ile Leu His Ser Trp Gly Glu Glu Cys
20 25 30

Arg Ala Cys Ala Glu Lys Thr Asp Tyr Val Asn Leu Ile Gln Glu Leu
35 40 45

Ala Pro
50

<210> 17
<211> 37
<212> PRT
<213> Homo sapiens

<400> 17

Arg Val Ala Glu Leu Lys Gln Ile Leu His Ser Trp Gly Glu Glu Cys
1 5 10 15

Arg Ala Cys Ala Glu Lys Thr Asp Tyr Val Asn Leu Ile Gln Glu Leu
20 25 30

Ala Pro Lys Tyr Ala
35

<210> 18
<211> 49
<212> PRT
<213> Artificial

<220>

<223> C-CDNF peptide with single amino acid substitution

<400> 18

Thr Leu Asp Leu Ala Ser Val Asp Leu Arg Lys Met Arg Val Ala Glu
1 5 10 15

Leu Lys Gln Ile Leu His Ser Trp Gly Glu Glu Ser Arg Ala Cys Ala
20 25 30

Glu Lys Thr Asp Tyr Val Asn Leu Ile Gln Glu Leu Ala Pro Lys Tyr
35 40 45

Ala

<210> 19

<211> 49

<212> PRT

<213> Artificial

<220>

<223> C-CDNF peptide with single amino acid substitution

<400> 19

Thr Leu Asp Leu Ala Ser Val Asp Leu Arg Lys Met Arg Val Ala Glu
1 5 10 15

Leu Lys Gln Ile Leu His Ser Trp Gly Glu Glu Cys Arg Ala Ser Ala
20 25 30

Glu Lys Thr Asp Tyr Val Asn Leu Ile Gln Glu Leu Ala Pro Lys Tyr
35 40 45

Ala

<210> 20

<211> 51

<212> PRT

<213> Artificial

<220>

<223> Mutated C-CDNF peptide

<400> 20

Thr Leu Asp Leu Ala Ser Val Asp Leu Arg Lys Met Arg Val Ala Glu
1 5 10 15

Leu Lys Gln Ile Leu His Ser Trp Gly Glu Glu Cys Arg Ala Arg Ala
20 25 30

Cys Ala Glu Lys Thr Asp Tyr Val Asn Leu Ile Gln Glu Leu Ala Pro
35 40 45

Lys Tyr Ala
50

<210> 21
<211> 49
<212> PRT
<213> Artificial

<220>
<223> Mutated C-CDNF peptide

<400> 21

Thr Leu Asp Leu Ala Ser Val Asp Leu Arg Lys Met Arg Val Ala Glu
1 5 10 15

Pro Lys Gln Ile Leu His Ser Trp Gly Glu Glu Cys Arg Ala Cys Ala
20 25 30

Glu Lys Thr Asp Tyr Val Asn Leu Ile Gln Glu Leu Ala Pro Lys Tyr
35 40 45

Ala

<210> 22
<211> 49
<212> PRT
<213> Artificial

<220>
<223> Mutated C-CDNF peptide

<400> 22

Thr Leu Asp Leu Ala Ser Val Asp Leu Arg Lys Met Arg Val Ala Glu
1 5 10 15

Leu Lys Gln Ile Leu His Ser Trp Gly Glu Glu Cys Arg Ala Cys Ala
20 25 30

Glu Lys Thr Asp Tyr Val Asn Leu Ile Gln Glu Pro Ala Pro Lys Tyr
35 40 45

Ala

<210> 23
<211> 49
<212> PRT

<213> Artificial

<220>

<223> Mutated C-CDNF peptide

<400> 23

Thr Leu Asp Leu Ala Ser Val Asp Leu Arg Lys Met Arg Val Ala Glu
1 5 10 15

Pro Lys Gln Ile Leu His Ser Trp Gly Glu Glu Cys Arg Ala Cys Ala
20 25 30

Glu Lys Thr Asp Tyr Val Asn Leu Ile Gln Glu Pro Ala Pro Lys Tyr
35 40 45

Ala

<210> 24

<211> 33

<212> PRT

<213> Homo sapiens

<400> 24

Thr Leu Asp Leu Ala Ser Val Asp Leu Arg Lys Met Arg Val Ala Glu
1 5 10 15

Leu Lys Gln Ile Leu His Ser Trp Gly Glu Glu Cys Arg Ala Cys Ala
20 25 30

Glu