SEQUENCE LISTING

<110> HANMI PHARM. CO., LTD.

<120> USE OF A LONG ACTING GLP-1/GLUCAGON RECEPTOR DUAL AGONIST FOR THE TREATMENT OF NON-ALCOHOLIC FATTY LIVER DISEASE

<130> 106132.000206
<140> 11201701841W
<141> 2015-09-16

<150> PCT/KR2015/009753
<151> 2015-09-16

<150> KR 10-2014-0122862
<151> 2014-09-16

<160> 34

<170> PatentIn version 3.5

<210> 1
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<212> PRT
<213> Homo sapiens

<220>

<223> Oxyntomodulin

<400> 1

His Ser Gln Gly Thr Phe Thr Ser Asp Tyr Ser Lys Tyr Leu Asp Ser
1 5 10 15

Arg Arg Ala Gln Asp Phe Val Gln Trp Leu Met Asn Thr Lys Arg Asn
20 25 30

Arg Asn Asn Ile Ala
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Synthetic oxyntomodulin derivative

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<222> (1)..(1)
<223> 4-imidazoacetyl

<400> 2

His Ser Gln Gly Thr Phe Thr Ser Asp Tyr Ser Lys Tyr Leu Asp Glu
1 5 10 15

Glu Ala Val Arg Leu Phe Ile Glu Trp Leu Met Asn Thr Lys Arg Asn
20 25 30

Arg Asn Asn Ile Ala
35

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oxyntomodulin derivative

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His Ser Gln Gly Thr Phe Thr Ser Asp Tyr Ser Lys Tyr Leu Asp Glu
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20 25 30

Ser Gly Ala Pro Pro Pro Ser
35

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oxyntomodulin derivative

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His Gly Gln Gly Thr Phe Thr Ser Asp Tyr Ser Arg Tyr Leu Glu Glu
1 5 10 15

Glu Ala Val Arg Leu Phe Ile Glu Trp Leu Lys Asn Gly Gly Pro Ser
20 25 30

Ser Gly Ala Pro Pro Pro Ser
35

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oxyntomodulin derivative

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His Gly Gln Gly Thr Phe Thr Ser Asp Tyr Ser Arg Gln Met Glu Glu
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Glu Ala Val Arg Leu Phe Ile Glu Trp Leu Lys Asn Gly Gly Pro Ser
20 25 30

Ser Gly Ala Pro Pro Pro Ser
35

<210> 6
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oxyntomodulin derivative

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His Gly Glu Gly Thr Phe Thr Ser Asp Leu Ser Arg Gln Met Glu Glu
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Glu Ala Val Arg Leu Phe Ile Glu Trp Ala Ala His Ser Gln Gly Thr
            20   25   30

Phe Thr Ser Asp Tyr Ser Lys Tyr Leu Asp
        35   40

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Glu Ala Val Arg Leu Phe Ile Glu Trp Leu Met Asn Thr Lys
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Glu Ala Val Arg Leu Phe Ile Glu Trp Leu Met Asn Lys
            20   25

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<222> (20)..(20)
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1   5   10   15

Glu Ala Val Glu Leu Phe Ile Glu Trp Leu Met Asn Thr Lys Arg Asn
            20   25   30

Arg Asn Asn Ile Ala
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His Ser Gln Gly Thr Phe Thr Ser Asp Tyr Ser Arg Gln Met Glu Glu
1   5   10   15

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            20   25   30

Ser Gly Ala Pro Pro Pro Ser Lys
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Glu Ala Val Arg Leu Phe Ile Glu Trp Ala Ala His Ser Gln Gly Thr
20 25 30

Phe Thr Ser Asp Tyr Ser Arg Tyr Leu Asp Lys
35 40

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His Ser Gln Gly Thr Phe Thr Ser Asp Tyr Ser Arg Tyr Leu Asp Gly
1 5 10 15

Gly Gly His Gly Glu Gly Thr Phe Thr Ser Asp Leu Ser Lys Gln Met
20 25 30

Glu Glu Glu Ala Val Lys
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oxyntomodulin derivative

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<223> Alpha-methyl-Glu

<220>
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<222> (20)..(20)
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1 5 10 15

Glu Ala Val Glu Leu Phe Ile Glu Trp Leu Met Asn Thr Lys
            20 25 30

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<220>
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<222> (24)..(24)
<223> Alpha-methyl-Glu

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1 5 10 15

Glu Ala Val Glu Leu Phe Ile Glu Trp Leu Met Asn Thr Lys Arg Asn
            20 25 30

Arg Asn Asn Ile Ala
        35

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oxyntomodulin derivative
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His Gly Gln Gly Thr Phe Thr Ser Asp Tyr Ser Arg Tyr Leu Asp Glu
1 5 10 15

Glu Ala Val Arg Leu Phe Ile Glu Trp Leu Met Asn Thr Lys Arg Asn
20 25 30

Arg Asn Asn Ile Ala
35

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<400> 16

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Gly Gly His Ser Gln Gly Thr Phe Thr Ser Asp Leu Ser Arg Gln Leu
20 25 30
Glu Lys

<210> 17
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<400> 17

His Ser Gln Gly Thr Phe Thr Ser Asp Tyr Ser Arg Tyr Leu Asp Glu
1 5 10 15

Glu Ala Val Arg Leu Phe Ile Glu Trp Ile Arg Asn Thr Lys Arg Asn
20 25 30

Arg Asn Asn Ile Ala
35

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oxyntomodulin derivative

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<400> 18

His Ser Gln Gly Thr Phe Thr Ser Asp Tyr Ser Arg Tyr Leu Asp Glu
1 5 10 15

Glu Ala Val Arg Leu Phe Ile Glu Trp Ile Arg Asn Gly Gly Pro Ser
20 25 30

Ser Gly Ala Pro Pro Pro Ser Lys
35 40

<210> 19
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<222> (16)..(20)
<223> Ring formation between residues

<220>
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<222> (16), (20)
<223> amino acids at position 16 and position 20 form a
ring

<400> 19

His Ser Gln Gly Thr Phe Thr Ser Asp Tyr Ser Arg Tyr Leu Asp Glu
1   5   10   15

Glu Ala Val Lys Leu Phe Ile Glu Trp Ile Arg Asn Thr Lys Arg Asn
            20   25   30

Arg Asn Asn Ile Ala
        35

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<223> Ring formation between residues

<220>
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<222> (16), (20)
<223> amino acids at position 16 and position 20 form a
ring

<400> 20

His Ser Gln Gly Thr Phe Thr Ser Asp Tyr Ser Arg Tyr Leu Asp Glu
1   5   10   15

Glu Ala Val Lys Leu Phe Ile Glu Trp Ile Arg Asn Gly Gly Pro Ser
            20   25   30

Ser Gly Ala Pro Pro Pro Ser Lys
        35   40

<210> 21
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oxyntomodulin derivative
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<223> 4-imidazoacetyl
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His Ser Gln Gly Thr Phe Thr Ser Asp Tyr Ser Arg Gln Leu Glu Glu
1 5 10 15

Glu Ala Val Arg Leu Phe Ile Glu Trp Val Arg Asn Thr Lys Arg Asn
20 25 30

Arg Asn Asn Ile Ala
35

<210> 22
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oxyntomodulin derivative

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<222> (16), (20)
<223> amino acids at position 16 and position 20 form a
ring

<400> 22

His Ser Gln Gly Thr Phe Thr Ser Asp Tyr Ser Lys Tyr Leu Asp Glu
1 5 10 15

Lys Arg Ala Lys Glu Phe Val Gln Trp Leu Met Asn Thr Lys
20 25 30

<210> 23
<211> 29

<212> PRT
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<223> Description of Artificial Sequence: Synthetic
oxyntomodulin derivative

<220>
<221> MOD_RES
<222> (2)..(2)
<223> Aminoisobutyric acid

<400> 23
His Xaa Gln Gly Thr Phe Thr Ser Asp Tyr Ser Lys Tyr Leu Asp Glu
1 5 10 15

Lys Arg Ala Lys Glu Phe Val Cys Trp Leu Met Asn Thr
20 25
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oxyntomodulin derivative

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<222> (2)..(2)
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His Xaa Gln Gly Thr Phe Thr Ser Asp Tyr Ser Lys Tyr Leu Asp Glu
1 5 10 15

Lys Arg Ala Lys Glu Phe Val Gln Trp Leu Met Asn Thr Cys
20 25 30

<210> 25
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<223> Ring formation between residues

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<222>   (16), (20)
<223>   amino acids at position 16 and position 20 form a
ring

<400> 25

His Xaa Gln Gly Thr Phe Thr Ser Asp Tyr Ser Lys Tyr Leu Asp Glu
1   5   10   15

Lys Arg Ala Lys Glu Phe Val Gln Trp Leu Met Asn Thr Cys
            20   25   30
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<223>   amino acids at position 16 and position 20 form a
ring

<400> 26

His Xaa Gln Gly Thr Phe Thr Ser Asp Tyr Ser Lys Tyr Leu Asp Glu
1   5   10   15

Lys Arg Ala Lys Glu Phe Val Gln Trp Leu Met Asn Thr Cys
            20   25   30

<210> 27
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      oxyntomodulin derivative

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<220>
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<223> amino acids at position 16 and position 20 form a ring

<400> 27

His Xaa Gln Gly Thr Phe Thr Ser Asp Tyr Ser Lys Tyr Leu Asp Glu
1   5   10   15

Gln Ala Ala Lys Glu Phe Ile Cys Trp Leu Met Asn Thr
            20   25
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<213> Artificial Sequence

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<223> Description of Artificial Sequence: Synthetic oxyntomodulin derivative

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<223> Aminoisobutyric acid

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His Xaa Gln Gly Thr Phe Thr Ser Asp Tyr Ser Lys Tyr Leu Asp Glu
1   5   10   15

Lys Arg Ala Lys Glu Phe Val Gln Trp Leu Met Asn Thr
            20   25
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<222> (2)..(2)
<223> D-Ser

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His Xaa Gln Gly Thr Phe Thr Ser Asp Tyr Ser Lys Tyr Leu Asp Ser
1   5   10   15

Arg Arg Ala Gln Asp Phe Val Gln Trp Leu Met Asn Thr Lys Arg Asn
            20   25   30

Arg Asn Asn Ile Ala
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His Ser Gln Gly Thr Phe Thr Ser Asp Tyr Ser Lys Tyr Leu Asp Ser
1   5   10   15

Arg Arg Ala Gln Asp Phe Val Gln Trp Leu Met Asn Thr Lys Arg Asn
            20   25   30

Arg Asn Asn Ile Ala
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<220>
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<222> (2)..(2)
<223> D-Ser

<400> 31

His Ser Gln Gly Thr Phe Thr Ser Asp Tyr Ser Lys Tyr Leu Asp Ser
1   5   10   15

Arg Arg Ala Gln Asp Phe Val Gln Trp Leu Met Asn Thr Lys Arg Asn
            20   25   30

Arg Asn Asn Ile Ala
        35

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<220>
<221>   VARIANT
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<223>   amino acids at position 16 and position 20 form a
ring

<400> 32

His Xaa Gln Gly Thr Phe Thr Ser Asp Tyr Ser Lys Tyr Leu Asp Glu
1   5   10   15

Lys Arg Ala Lys Glu Phe Val Gln Trp Leu Met Asn Thr Cys
            20   25   30

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<223> amino acids at position 16 and position 20 form a ring

<400> 33

His Xaa Gln Gly Thr Phe Thr Ser Asp Tyr Ala Lys Tyr Leu Asp Glu
1 5 10 15

Lys Arg Ala Lys Glu Phe Val Gln Trp Leu Met Asn Thr Cys
20 25 30

<210> 34
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<223> Description of Artificial Sequence: Synthetic oxyntomodulin derivative

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<223> amino acids at position 16 and position 20 form a ring

<400> 34

Tyr Xaa Gln Gly Thr Phe Thr Ser Asp Tyr Ser Lys Tyr Leu Asp Glu
1 5 10 15

Lys Arg Ala Lys Glu Phe Val Gln Trp Leu Met Asn Thr Cys
20 25 30