CLAIMS

1. An insulin analog peptide comprising an A-chain of SEQ ID NO: 3 indicated in the following General Formula 1 and a B-chain of SEQ ID NO: 4 indicated in the following General Formula 2:

(General Formula 1)

Xaa1-Ile-Val-Glu-**Xaa2**-Cys-Cys-Thr-Ser-Ile-Cys-**Xaa3**-Leu-**Xaa4**-Gln-**Xaa5**-Glu-Asn-**Xaa6-**Cys-**Xaa7**(SEQ ID NO: 3)

(General Formula 2)

Phe-Val-Asn-Gln-His-Leu-Cys-Gly-Ser-His-Leu-Val-Glu-Ala-Leu-**Xaa8**-Leu-Val-Cys-Gly-Glu-Arg-Gly-Phe-**Xaa9**-Tyr-**Xaa10**-**Xaa11**-Lys-Thr (SEQ ID NO: 4)

wherein,

(a) in the A-chain of SEQ ID NO: 3, Xaa1 is glycine, Xaa2 is glutamine, Xaa3 is serine, Xaa4 is glutamic acid, Xaa5 is leucine, Xaa6 is tyrosine, and Xaa7 is asparagine, and

in the B-chain of SEQ ID NO: 4, Xaa8 is tyrosine, Xaa9 is absent, Xaa10 is threonine, and Xaa11 is proline;

(b) in the A-chain of SEQ ID NO: 3, Xaa1 is glycine, Xaa2 is glutamine, Xaa3 is serine, Xaa4 is alanine, Xaa5 is leucine, Xaa6 is tyrosine, and Xaa7 is asparagine, and

in the B-chain of SEQ ID NO: 4, Xaa8 is glutamic acid, Xaa9 is absent, Xaa10 is threonine, and Xaa11 is proline; or

(c) in the A-chain of SEQ ID NO: 3, Xaa1 is glycine, Xaa2 is glutamine, Xaa3 is serine, Xaa4 is aspartic acid, Xaa5 is leucine, Xaa6 is tyrosine, and Xaa7 is asparagine, and

in the B-chain of SEQ ID NO: 4, Xaa8 is tyrosine, Xaa9 is phenylalanine, Xaa10 is threonine, and Xaa11 is proline.

2. The insulin analog peptide of claim 1, wherein the (a) peptide comprises an amino acid sequence represented by SEQ ID NO: 20.

3. The insulin analog peptide of claim 1, wherein the (b) peptide comprises an amino acid sequence represented by SEQ ID NO: 22.

4. A nucleic acid encoding the insulin analog peptide according to any of claims 1 to 3.

5. The nucleic acid of claim 4, wherein the nucleic acid comprises a nucleotide sequence selected from the group consisting of SEQ ID NOS: 19, and 21.

6. A recombinant expression vector comprising the nucleic acid according to claim 4.

7. A non-human transformant which comprises the recombinant expression vector according to claim 6.

8. The transformant of claim 7, wherein the transformant is *E. coli*.

9. A method of preparing the insulin analog peptide according to claim 1, comprising:

a) preparing a recombinant expression vector comprising a nucleic acid encoding the insulin analog peptide according to claim 1;

b) transforming the recombinant expression vector into a host cell and obtaining a transformant therefrom;

c) culturing the transformant and expressing the insulin analog peptide; and

d) isolating and purifying the expressed insulin analog peptide.

10. The method of claim 9, wherein the nucleic acid comprises a nucleotide sequence selected from the group consisting of SEQ ID NOS: 19, and 21.

11. The method of claim 9, wherein the transformant is *E. coli*.

12. The method of claim 9, wherein the isolating and purifying comprise:

d-1) obtaining the transformant cells from the culture and pulverizing the same;

d-2) recovering the expressed insulin analog peptide from the pulverized cell lysate followed by refolding the same;

d-3) purifying the refolded insulin analog peptide by cation exchange chromatography;

d-4) treating the purified insulin analog peptide with trypsin and carboxypeptidase B; and

d-5) sequentially purifying the treated insulin analog peptide by cation exchange chromatography and anion exchange chromatography.

13. A pharmaceutical composition for treating diabetes comprising the insulin analog peptide according to any of claims 1 to 3 and a pharmaceutically acceptable carrier.