[CLAIMS]

[Claim 1]

A pharmaceutical composition suitable for the prevention or treatment of graft- versus-host disease, comprising a glucagon-like peptide-2 (GLP-2) derivative in a pharmaceutically effective amount, wherein

the GLP-2 derivative comprises an amino acid sequence represented by the following General Formula 1:

[General Formula 1]

X_1X_2DGSFSDEMNTILDNLAARDFINWLIQTX_{30}ITDX_{34} (SEQ ID NO: 10)

where,

X_1 is histidine, imidazoacetyldeshistidine, desaminohistidine, β-hydroxyimidazopropionyldeshistidine, N-dimethylhistidine, or β-carboxyimidazopropionyldeshistidine;

X_2 is alanine, glycine, or Aib (2-aminoisobutyric acid);

X_{30} is lysine or arginine; and

X_{34} is one or more arbitrary amino acids or one or more arbitrary amino acids that have undergone modification,

however, a sequence identical to SEQ ID NO: 1 among amino acid sequences represented by General Formula 1 is excluded.

[Claim 2]

The pharmaceutical composition according to claim 1, wherein the GLP-2 derivative comprises an amino acid sequence represented by the following General Formula 2:

[General Formula 2]

X_1X_2DGSFSDEMNTILDNLAARDFINWLIQTX_{30}ITDX_{34} (SEQ ID NO: 9)

where,

X_1 is histidine, imidazoacetyldeshistidine, desaminohistidine, β-hydroxyimidazopropionyldeshistidine, N-dimethylhistidine, or β-carboxyimidazopropionyldeshistidine;

X_2 is alanine, glycine, or Aib (2-aminoisobutyric acid);

X_{30} is lysine or arginine; and

X_{34} is absent or lysine, arginine, glutamine, histidine, 6-azidolysine, or cysteine,

however, a sequence identical to SEQ ID NO: 1 among amino acid sequences represented by General Formula 2 is excluded.

[Claim 3]

The pharmaceutical composition according to claim 2, wherein in the GLP-2 derivative,

(1) X_1 is imidazoacetyldeshistidine, X_2 is glycine, X_{30} is lysine, and X_{34} is cysteine,

(2) X_1 is imidazoacetyldeshistidine, X_2 is glycine, X_{30} is lysine, and X_{34} is lysine,

(3) X_1 is imidazoacetyldeshistidine, X_2 is glycine, X_{30} is arginine, and X_{34} is lysine,

(4) X_1 is imidazoacetyldeshistidine, X_2 is glycine, X_{30} is lysine, and X_{34} is 6-azidolysine,

(5) X_1 is imidazoacetyldeshistidine, X_2 is glycine, X_{30} is arginine, and X_{34} is cysteine,

(6) X_1 is imidazoacetyldeshistidine, X_2 is Aib, X_{30} is lysine, and X_{34} is cysteine, or

(7) X_1 is histidine, X_2 is Aib, X_{30} is lysine, and X_{34} is cysteine.

[Claim 4]

The pharmaceutical composition according to claim 1, wherein the GLP-2 derivative comprises an amino acid sequence selected from the group consisting of SEQ ID NOs: 2 to 8.

[Claim 5]

The pharmaceutical composition according to claim 1, wherein a C-terminus of the GLP-2 derivative is unmodified or amidated.

[Claim 6]

The pharmaceutical composition according to claim 1, wherein the composition causes one or more of an increase in survival rate, an increase in small intestine length, and an increase in colon length in a subject administered with the composition.

[Claim 7]

The pharmaceutical composition according to claim 1, wherein the GLP-2 derivative is in a form of a long-acting conjugate to which a biocompatible substance capable of increasing *in vivo* half-life of the GLP-2 derivative is bound.

[Claim 8]

The pharmaceutical composition according to claim 7, wherein the conjugate is represented by the following Chemical Formula 1:

[Chem. 1]

$X - L_a - F$

where,

X is a GLP-2 derivative;

L is a linker containing an ethylene glycol repeating unit;

a is 0 or a natural number, but the respective L's are independent of each other when a is 2 or more;

F is an immunoglobulin Fc region; and

“-” is a covalent bond.

[Claim 9]

The pharmaceutical composition according to claim 8, wherein the GLP-2 derivative comprises an amino acid sequence selected from the group consisting of SEQ ID NOs: 2 to 8.

[Claim 10]

The pharmaceutical composition according to claim 8, wherein a C-terminus of the GLP-2 derivative is unmodified or amidated.

[Claim 11]

The pharmaceutical composition according to claim 8, wherein the immunoglobulin Fc region is an aglycosylated IgG4 Fc region.

[Claim 12]

The pharmaceutical composition according to claim 8, wherein the F is a dimer composed of two polypeptide chains, and one end of L is linked to only one of the two polypeptide chains.

[Claim 13]

The pharmaceutical composition according to claim 8, wherein L is polyethylene glycol.

[Claim 14]

The pharmaceutical composition according to claim 8, wherein a formula weight of an ethylene glycol repeating unit moiety in L is in a range of 1 to 100 kDa.

[Claim 15]

The pharmaceutical composition according to claim 1, wherein the composition further comprises a pharmaceutically acceptable carrier, excipient, or diluent.

[Claim 16]

The pharmaceutical composition according to any one of claims 1 to 15, wherein the composition is administered to a subject together with, before, or after allogeneic transplantation.

[Claim 17]

The pharmaceutical composition according to any one of claims 1 to 15, wherein the graft-versus-host disease is acute graft-versus-host disease or chronic graft-versus-host disease.

[Claim 18]

The pharmaceutical composition according to any one of claims 1 to 15, wherein the graft-versus-host disease is caused by allogeneic transplantation, and the allogeneic transplantation comprises at least one of hematopoietic stem cell transplantation, bone marrow transplantation, peripheral blood stem cell transplantation, umbilical cord blood transplantation, or blood transfusion.

[Claim 19]

The pharmaceutical composition according to any one of claims 1 to 15, wherein the graft-versus-host disease is steroid-refractory graft-versus-host disease.

[Claim 20]

The pharmaceutical composition according to claim 19, wherein the steroid-refractory graft-versus-host disease is steroid-refractory acute graft-versus-host disease or steroid-refractory chronic graft-versus-host disease.

[Claim 21]

The pharmaceutical composition according to any one of claims 1 to 15, wherein the graft-versus-host disease is steroid-refractory graft-versus-host disease, and the pharmaceutical composition is administered in combination with a steroid.

[Claim 22]

The pharmaceutical composition according to claim 21, wherein the steroid-refractory graft-versus-host disease is steroid-refractory acute graft-versus-host disease or steroid-refractory chronic graft-versus-host disease.

[Claim 23]

The pharmaceutical composition according to claim 21, wherein the combined administration is to administer a GLP-2 derivative or a long-acting conjugate thereof; and a steroid in combination simultaneously, sequentially, or in reverse order.