[Disclosure]

[Summary]

In one aspect, the present disclosure provides use of a pharmaceutical composition in the manufacture of a medicament for the prevention or treatment of liver disease, the pharmaceutical composition comprising: a pharmaceutically acceptable excipient; and a peptide comprising an amino acid sequence of SEQ ID NO: 42 in a pharmaceutically effective amount, wherein the liver disease is at least one disease selected from the group consisting of simple steatosis, non-alcoholic fatty liver (NAFL), liver inflammation, nonalcoholic steatohepatitis (NASH), metabolic liver disease, cholestatic liver disease, liver fibrosis, cirrhosis, liver decompensation, and liver cancer.

[Technical Problem]

An object of the present invention is to provide a pharmaceutical composition for the prevention or treatment of liver disease, which contains a peptide that has activities to a glucagon receptor, a glucagon-like peptide-1 (GLP-1) receptor, and a glucose-dependent insulinotropic polypeptide (GIP) receptor, or a conjugate thereof.

Another object of the present invention is to provide a method for the prevention or treatment of liver disease, which includes administering the peptide or a composition containing the peptide to a subject in need thereof.

Still another object of the present invention is to provide a use of the peptide or a composition containing the peptide in the preparation of a medicament for the prevention or treatment of liver disease.

[Technical Solution]

To achieve the above objects, an aspect of the present invention provides a pharmaceutical composition for the prevention or treatment of liver disease, which contains a peptide that has activities to a glucagon receptor, a glucagon-like peptide-1 (GLP-1) receptor, and a glucose-dependent insulinotropic polypeptide (GIP) receptor, or a conjugate thereof.

In a specific embodiment, the pharmaceutical composition for the prevention or treatment of liver disease contains a pharmaceutically acceptable excipient; and a peptide containing an amino acid sequence of any one of SEQ ID NOS: 1 to 102 in a pharmaceutically

effective amount.

In another specific embodiment, the peptide is characterized in that it is in the form of a long-acting conjugate, and the long-acting conjugate is characterized in that it is represented by the following Formula 1:

[Formula 1]

X – L – F

wherein, in Formula 1 above,

X is a peptide of an amino acid sequence of any one of SEQ ID NOS: 1 to 102;

L is a linker including an ethylene glycol repeat unit;

F is an immunoglobulin Fc fragment or a derivative thereof; and

[CLAIMS]

[Claim 1]

Use of a pharmaceutical composition in the manufacture of a medicament for the prevention or treatment of liver disease, the pharmaceutical composition comprising:

a pharmaceutically acceptable excipient; and

a peptide comprising an amino acid sequence of SEQ ID NO: 42 in a pharmaceutically effective amount,

wherein the liver disease is at least one disease selected from the group consisting of simple steatosis, non-alcoholic fatty liver (NAFL), liver inflammation, non-alcoholic steatohepatitis (NASH), metabolic liver disease, cholestatic liver disease, liver fibrosis, cirrhosis, liver decompensation, and liver cancer.

[Claim 2]

The use of claim 1, wherein the peptide is in the form of a long-acting conjugate and the long-acting conjugate is represented by Formula 1 below:

[Formula 1]

X – L – F

wherein in Formula 1 above,

X is a peptide of an amino acid sequence of SEQ ID NO: 42;

L is a linker comprising an ethylene glycol repeat unit;

F is an immunoglobulin Fc fragment or a derivative thereof; and

'–' represents a covalent bond between X and L and between L and F.

[Claim 3]

The use of claim 1 or 2, wherein the C-terminus of the peptide is amidated.

[Claim 4]

The use of claim 1 or 2, wherein the liver disease is liver inflammation.

[Claim 5]

The use of claim 4, wherein the pharmaceutical composition reduces the expression of at least one of TNF-α, MCP-1, and IL-6 in the liver tissue when administered.

[Claim 6]

The use of claim 1 or 2, wherein the liver disease is a metabolic liver disease.

[Claim 7]

The use of claim 6, wherein the pharmaceutical composition reduces the

amount of triglycerides and/or cholesterol in the liver tissue when administered.

[Claim 8]

The use of claim 1 or 2, wherein the liver disease is at least one disease selected from the group consisting of simple steatosis, non-alcoholic fatty liver (NAFL), liver inflammation, non-alcoholic steatohepatitis (NASH), cholestatic liver disease, liver fibrosis, cirrhosis, liver decompensation, and liver cancer.

[Claim 9]

The use of claim 8, wherein the cholestasis liver disease is any one selected from the group consisting of primary biliary cirrhosis, primary sclerosing cholangitis, and a combination thereof.

[Claim 10]

The use of claim 8, wherein the liver disease is non-alcoholic steatohepatitis (NASH) accompanying fatty liver, liver fibrosis, or cirrhosis.

[Claim 11]

The use of claim 8, wherein the liver disease is liver cancer caused by non-alcoholic steatohepatitis (NASH).

[Claim 12]

The use of claim 1 or 2, wherein the liver disease is at least one disease selected from the group consisting of simple steatosis, non-alcoholic fatty liver (NAFL), and cirrhosis.

[Claim 13]

The use of claim 1 or 2, wherein the liver disease is at least one disease selected from the group consisting of liver inflammation, non-alcoholic steatohepatitis (NASH), and liver fibrosis.

[Claim 14]

The use of claim 13, wherein the liver disease is liver fibrosis and the pharmaceutical composition reduces the blood concentration of TIMP-1 and/or hyaluronic acid in a subject administered with the pharmaceutical composition when administered.

[Claim 15]

The use of claim 2, wherein the formula weight of the ethylene glycol repeat unit portion in the L is in the range of 1 kDa to 100 kDa.