[0005] The present disclosure provides a composition for promoting the proliferation of pluripotent stem cells and a method for promoting the proliferation of pluripotent stem cells.

Summary

[0005a] In one aspect, the present invention refers to a method for promoting proliferation of pluripotent stem cells, comprising: seeding pluripotent stem cells in a single-cell state or a dispersed state; and culturing the pluripotent stem cells in a culture medium to which hemagglutinin ~~or modified hemagglutinin~~ has been added, wherein the hemagglutinin ~~and the modified hemagglutinin~~ has the ability to inhibit cell-cell adhesion, and wherein the hemagglutinin is added to the culture medium before a colony of the pluripotent stem cells is formed. In another aspect, the present invention refers to a method for promoting proliferation of pluripotent stem cells, comprising: adding hemagglutinin ~~or modified hemagglutinin~~ to a culture medium for suspension culture of a cell aggregate of pluripotent stem cells; and culturing the pluripotent stem cells without dividing the cell aggregate into small aggregates, wherein the hemagglutinin ~~and the modified hemagglutinin~~ has the ability to inhibit cell-cell adhesion. In yet another aspect, the present invention refers to a method for culturing pluripotent stem cells; comprising: performing the method as disclosed herein.

Means for Solving Problem

[0006] In one aspect, the present disclosure relates to a composition for promoting the proliferation of pluripotent stem cells. The composition contains hemagglutinin or modified hemagglutinin as an active ingredient.

[0007] In another aspect, the present disclosure relates to a method for promoting the proliferation of pluripotent stem cells. The method includes culturing pluripotent stem cells in a culture medium to which the proliferation promoting composition of the present disclosure has been added.

[0008] In yet another aspect, the present disclosure relates to a method for culturing pluripotent stem cells. The method includes performing the proliferation promoting method of the present disclosure.

Effects of the Invention

[0009] In one or more embodiments, the present disclosure has the effect of being able to promote the proliferation of pluripotent stem cells while maintaining their undifferentiated state.

CLAIMS

[1] A method for promoting proliferation of pluripotent stem cells, comprising:

seeding pluripotent stem cells in a single-cell state or a dispersed state; and

culturing the pluripotent stem cells in a culture medium to which hemagglutinin ~~or modified hemagglutinin~~ has been added,

wherein the hemagglutinin ~~and the modified hemagglutinin~~ has the ability to inhibit cell-cell adhesion, and

wherein the hemagglutinin is added to the culture medium before a colony of the pluripotent stem cells is formed.

~~[2] The method according to claim 1, comprising:~~

~~adding hemagglutinin or modified hemagglutinin to the culture medium before a colony of the pluripotent stem cells is formed.~~

[2~~3~~] A method for promoting proliferation of pluripotent stem cells, comprising:

adding hemagglutinin ~~or modified hemagglutinin~~ to a culture medium for suspension culture of a cell aggregate of pluripotent stem cells; and

culturing the pluripotent stem cells without dividing the cell aggregate into small aggregates,

wherein the hemagglutinin ~~and the modified hemagglutinin~~ has the ability to inhibit cell-cell adhesion.

[3~~4~~] The method according to claim 1 ~~or 2~~, comprising:

preparing the pluripotent stem cells in a single-cell state or a dispersed state by dispersing a cell aggregate of the pluripotent stem cells into at least one of single cell and cell population with a cell dispersion treatment.

[4~~5~~] The method according to claim 1 ~~or 2~~, wherein the culturing is performed by monolayer culture or suspension culture.

[5~~6~~] The method according to claim 2~~3~~, wherein the culturing of pluripotent stem

cells is performed by using a bioreactor.

[67] The method according to any one of claims 1 to 56, wherein the hemagglutinin is hemagglutinin of *Clostridium botulinum*.

[78] The method according to any one of claims 1 to 67, wherein the hemagglutinin is a complex composed of hemagglutinin subcomponents HA2 (HA17) and HA3 (HA70) of the neurotoxin complex of *Clostridium botulinum*, or a complex composed of hemagglutinin subcomponents HA1 (HA33), HA2 (HA17), and HA3 (HA70) of the neurotoxin complex of *Clostridium botulinum*.

[89] The method according to claim 78, wherein the subcomponent HA3 (HA70) is of *Clostridium botulinum* type A or *Clostridium botulinum* type B.

[910] The method according to any one of claims 1 to 89, wherein the concentration of the hemagglutinin ~~or modified hemagglutinin~~ in the culture medium is 5 nM or more and 200 nM or less.

[1011] A method for culturing pluripotent stem cells; comprising:
performing the method according to any one of claims 1 to 910.