which raises concerns about safety.

[0004]

The use of cell culture media for cultured meat production has been attempted using various approaches. These include culture media using factors produced by organ cells (PTL 1: Japanese Patent Publication No. 6111510), culture media using algae products (NPL 3: Scientific Reports. Jan 31; 7:41594), culture media using food residue hydrolysates (NPL 4: Food Funct., 2020, 11, 2477-2488), and culture media using other food material components (PTL 2: International Patent Publication No. WO2021/148955).

[CITATION LIST]

[PATENT LITERATURE]

[0005]

[PTL 1] Japanese Patent Publication No. 6111510

[PTL 2] International Patent Publication No. WO2021/148955

[NON PATENT LITERATURE]

[0006]

[NPL 1] Mol Ther. 2004 Mar; 9(3):475-82

[NPL 2] The Canadian Journal of Chem Engineering Vol. 94, (10) October 2016 1855-1862

[NPL 3] Scientific Reports. Jan 31; 7:41594

[NPL 4] Food Funct., 2020, 11, 2477-2488

SUMMARY

[TECHNICAL PROBLEM]

[0007]

It is an object of the present disclosure to provide a culture medium allowing large-scale culturing of cells to be used for production of cultured meat, by addition of food material components as cell proliferation promoting agents.

[SOLUTION TO PROBLEM]

[0007a]

In one aspect, the present disclosure relates to a cell proliferation medium when used in producing cultured meat to proliferate cells, wherein the medium comprises a basal medium and 0.025 mass% to 1.0 mass% of whey, on a dry powder basis as a cell proliferation promoting agent, and wherein the cells comprise at least one type of cell selected from the group consisting of fibroblasts, adipose tissue-derived cells, and muscle tissue-derived cells.

[0007b]

In another aspect, the present disclosure relates to a method for preparing cells, comprising a step of culturing cells in a medium comprising a basal medium and 0.025 mass% to 1.0 mass% of whey, on a dry powder basis, as a cell proliferation promoting agent, wherein the cells comprise at least one type of cell selected from the group consisting of fibroblasts, adipose tissue-derived cells, and muscle tissue-derived cells; wherein the method is to be used in producing cultured meat.

[0007c]

In another aspect, the present disclosure relates to a method for producing a medium for proliferating cells, comprising: a step of mixing a basal medium with 0.025 mass% to 1.0 mass% of whey, on a dry powder basis, as a cell proliferation promoting agent to acquire a cell proliferation medium; and a step of heat sterilizing the medium, wherein the cells comprise at least one type of cell selected from the group consisting of fibroblasts, adipose tissue-derived cells, and muscle tissue-derived cells, wherein the medium is to be used for producing cultured meat.

[0008]

The present inventors have ardently studied culture media usable for production of cultured meat, and have completed this disclsoure upon finding that adding whey as a cell proliferation promoting agent to medium allows high proliferative activity to be achieved for cells serving as the starting material for cultured meat. The present disclosure relates to the following.

[1] A cell proliferation medium containing basal medium and whey as a cell proliferation promoting agent.

CLAIMS

[Claim 1]

A cell proliferation medium when used in producing cultured meat to proliferate cells,

wherein the medium comprises a basal medium and 0.025 mass% to 1.0 mass% of whey, on a dry powder basis as a cell proliferation promoting agent, and

wherein the cells comprise at least one type of cell selected from the group consisting of fibroblasts, adipose tissue-derived cells, and muscle tissue-derived cells.

[Claim 2]

The medium according to claim 1 , wherein the medium does not contain animal-derived serum.

[Claim 3]

The medium according to claim 2, wherein the animal-derived serum is fetal bovine serum (FBS).

[Claim 4]

The medium according to any one of claims 1 to 3, wherein the adipose tissue-derived cells are at least one type of cell selected from the group consisting of adipose stem cells, multilocular adipocytes and unilocular adipocytes.

[Claim 5]

The medium according to any one of claims 1 to 3, wherein the muscle tissue-derived cells are at least one type of cell selected from the group consisting of myoblasts and muscle satellite cells.

[Claim 6]

The medium according to any one of claims 1 to 5, wherein the cells are bovine cells.

[Claim 7]

The medium according to any one of claims 1 to 6, which further comprises a food material component.

[Claim 8]

The medium according to claim 7, wherein the food material component is selected from

the group consisting of egg white, soybean, fish powder and wheat flour.

[Claim 9]

A method for preparing cells, comprising

a step of culturing cells in a medium comprising a basal medium and 0.025 mass% to 1.0 mass% of whey, on a dry powder basis, as a cell proliferation promoting agent,

wherein the cells comprise at least one type of cell selected from the group consisting of fibroblasts, adipose tissue-derived cells, and muscle tissue-derived cells;

wherein the method is to be used in producing cultured meat.

[Claim 10]

The method according to claim 9, wherein the medium does not contain animal-derived serum.

[Claim 11]

The method according to claim 10, wherein the animal-derived serum is fetal bovine serum (FBS).

[Claim 12]

The method according to any one of claims 9 to 11, wherein the medium further comprises a food material component.

[Claim 13]

The method according to claim 12, wherein the food material component is selected from the group consisting of egg white, soybean, fish powder and wheat.

[Claim 14]

The method according to any one of claims 9 to 13, wherein the cells are bovine cells.

[Claim 15]

The method according to any one of claims 9 to 14, wherein the adipose tissue-derived cells are at least one type of cell selected from the group consisting of adipose stem cells, multilocular adipocytes and unilocular adipocytes.

[Claim 16]

The method according to any one of claims 9 to 14, wherein the muscle tissue-derived cells

are at least one type of cell selected from the group consisting of myoblasts and muscle satellite cells.

[Claim 17]

The method according to claim 16, wherein the cells are myoblasts or muscle satellite cells, and wherein the method further comprises a differentiation-inducing step from myoblasts or muscle satellite cells to myotube cells.

[Claim 18]

The method according to any of claim 9 to 17, further comprising a step of accumulating the cells prepared by the culturing step defined in claim 9.

[Claim 19]

The method according to claim 18, wherein the prepared cells are accumulated together with at least one substance selected from the group consisting of other cells, blood, tissue and extracellular matrix.

[Claim 20]

The method according to claim 19, wherein the other cells are cultured cells or cells acquired from an animal.

[Claim 21]

The method according to any one of claims 18 to 20, comprising further culturing after accumulation.

[Claim 22]

A method for producing a medium for proliferating cells, comprising:

a step of mixing a basal medium with 0.025 mass% to 1.0 mass% of whey, on a dry powder basis, as a cell proliferation promoting agent to acquire a cell proliferation medium; and

a step of heat sterilizing the medium,

wherein the cells comprise at least one type of cell selected from the group consisting of fibroblasts, adipose tissue-derived cells, and muscle tissue-derived cells,

wherein the medium is to be used for producing cultured meat.

[Claim 23]

The method according to claim 22, wherein the step of heat sterilizing is carried out by

boiling treatment.

[Claim 24]

The method according to claim 22, wherein the step of heat sterilizing is carried out using a heat plate exchanger or a steam sterilizer.