

superhydrophilic, hydrophobic, or structured to prevent adhesion) is usually performed.

CITATION LIST

5 PATENT LITERATURE

[0004]

Patent Literature 1: W02020/013345

Patent Literature 2: JP2008-061609A

Patent Literature 3: JP2017-77241A

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SUMMARY

[0004a] In a first aspect of the present disclosure, there is provided a culture material for culturing cells, a tissue, or an organ on a culture surface thereof, the culture material comprising a 4-methyl-1-pentene polymer (X), having a water contact angle of the culture surface of more than 100° and 160° or less, and having an oxygen permeability at a temperature of 23°C and humidity of 0% of 4500 to 90000 cm³/(m²×24h×atm) wherein the culture surface is not processed to form an uneven structure.

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[0004b] In another aspect of the present disclosure, there is provided a culture tool comprising at least a culture surface formed of the culture material as disclosed herein.

[0004c] In a further aspect of the present disclosure, there is provided a method for culturing cells, a tissue, or an organ, the method comprising: a step (A) of contacting the cells, tissue, or organ with the culture surface of the culture material as disclosed herein or the culture tool as disclosed herein; and a step (B) of culturing the cells, tissue, or organ in contact with the culture surface to form a spheroid. [0004d] In a further aspect, the present disclosure provides a spheroid formed by the culture method according to the disclosure.

TECHNICAL PROBLEM

[0005] The present invention was made in consideration of the above circumstances, and addresses the problem of providing a culture material and a culture tool, which allow to culture cells, etc. to form a spheroid. The present invention also addresses the problem of providing a culture material and a culture tool that have excellent shape stability, are capable of achieving an oxygen environment suitable for the culture of cells, tissues, or organs, do not emit autofluorescence and impair the observability of the cells, and is less subject to drug sorption. Furthermore, the present invention addresses the problem of providing a culture material and a

CLAIMS

[Claim 1]

A culture material for culturing cells, a tissue, or an organ on a culture surface thereof, the culture material comprising a 4-methyl-1-pentene polymer (X), having a water contact angle of the culture surface of more than 100° and 160° or less, and having an oxygen permeability at a temperature of 23°C and humidity of 0% of 4500 to 90000 $\text{cm}^3/(\text{m}^2 \times 24\text{h} \times \text{atm})$,

wherein the culture surface is not processed to form an uneven structure.

[Claim 2]

The culture material according to claim 1, wherein the 4-methyl-1-pentene polymer (X) is a copolymer (x1) of 4-methyl-1-pentene and at least one selected from ethylene and α -olefins having 3 to 20 carbon atoms (excluding 4-methyl-1-pentene).

[Claim 3]

The culture material according to claim 2,

wherein the culture surface suppresses adhesion of cells while maintaining contact with a culture medium, and wherein the oxygen permeability maintains an oxygen concentration in the culture medium suitable for cell proliferation, thereby allowing the formation of spheroids.

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[Claim 4]

The culture material according to claim 2,
wherein the culture surface suppresses adhesion of pluripotent stem cells or differentiated cells derived from pluripotent stem cells while maintaining contact with a culture medium, and

wherein the culture material has an oxygen permeability that maintains an oxygen concentration in the culture medium suitable for proliferation of the pluripotent stem cells or differentiated cells derived from pluripotent stem cells.

[Claim 5]

The culture material according to claim 4, wherein the cells, tissue, or organ comprise differentiated cells derived from iPS cells.

[Claim 6]

The culture material according to claim 4, wherein the cells, tissue, or organ comprise cardiomyocytes.

[Claim 7]

The culture material according to claim 1, wherein the shape of the culture material is in the form of a film or a sheet.

[Claim 8]

A culture tool comprising at least a culture surface formed of the culture material according to claim 1.

[Claim 9]

A method for culturing cells, a tissue, or an organ, the method comprising:

a step (A) of contacting the cells, tissue, or organ with the culture surface of the culture material according to claim 1; and

a step (B) of culturing the cells, tissue, or organ in contact with the culture surface to form a spheroid.

[Claim 10]

The method for culturing cells, a tissue, or an organ according to claim 9,

wherein the cells, tissue, or organ are pluripotent stem cells or differentiated cells derived from pluripotent stem cells.

[Claim 11]

The method for culturing cells, a tissue, or an organ according to claim 9, further comprising a step (C) of inducing differentiation of the cells, tissue, or organ, wherein the step (C) is a step of inducing differentiation of iPS cells into

cardiomyocytes by the protein-free cardiac differentiation (PFCD) method.

[Claim 12]

The method for culturing cells, a tissue or an organ according to claim 9 that increases cardiac purity.

[Claim 13]

A spheroid formed by the culture method according to claim 9.