CLAIMS

1. A method for producing activated stem cells for preparing a single type of activated stem cell by activating a single type of dormant stem cell in a dormant state after storing for a predetermined period of time a single type of stem cell prepared by culturing a bone marrow liquid collected from a donor, the method comprising the steps of:

fixing a dormant stem cell for feeding the single type of dormant stem cell, a predetermined culture liquid, and a culture product liquid prepared in the process of culturing the single type of stem cell as an ingredient of the dormant stem cell before storing the dormant stem cell into a first culture container having a predetermined capacity and a bottom surface of a predetermined area, and fixing the dormant stem cell to the bottom of the first culture container; and

culturing a dormant stem cell for discharging a mixed culture liquid of the culture liquid and the culture product liquid from the first culture container after fixing the dormant stem cell to the bottom of the first culture container by the step of fixing a dormant stem cell, feeding a new culture liquid and a new culture product liquid into the first culture container, culturing the dormant stem cell fixed to the bottom of the first culture container using a new mixed culture liquid of a new culture liquid and a new culture product liquid, proliferating and activating the dormant stem cell until the total area of the dormant stem cell reaches a first target ratio of 70 to 80% of the bottom-surface area of the first culture container, and transforming the dormant

stem cell into the single type of activated stem cell, wherein

in the step of fixing a dormant stem cell, the first culture container is allowed to statically stand at approximately the same temperature as the body temperature at a predetermined tilted angle for 12 to 24 hours, the deformation of a dormant stem cell from the initial plane shape in the first culture container is observed at an interval of 1 to 2 hours for the period of 12 to 24 hours, and when the dormant stem cell is deformed from the initial plane shape to a predetermined plane shape, it is determined that the dormant stem cell is fixed to the bottom surface of the first culture container,

wherein in the step of culturing a dormant stem cell, the first culture container is allowed to statically stand at approximately the same temperature as the body temperature at a predetermined tilted angle for 36 to 48 hours, and the total area of the dormant stem cell fixed to the bottom surface of the first culture container in relation to the bottom-surface area of the first culture container is observed at an interval of 1 to 2 hours for the period of 36 to 48 hours,

wherein the initial plane shape of the dormant stem cell is an approximately circular shape, and the plane shape of the dormant stem cell deformed is primarily the approximately circular shape, and a flat shape when the dormant stem cell elongates in amorphous form in one direction, and in the step of fixing a dormant stem cell, when the dormant stem cell is deformed to the amorphous flat shape, it is determined that the dormant stem cell is fixed to the bottom surface of the first culture container,

wherein the culture product liquid, in the process of culturing the single type of stem cell, contains a predetermined metabolite secreted from the single type of stem cell, and

wherein these stem cells are mesenchymal stem cells.

2. The method for producing activated stem cells according to claim 1, the method comprising the steps of:

fixing an activated stem cell for extracting from the first culture container the activated stem cell when the total area of the dormant stem cell reaches the first target ratio of the bottom-surface area of the first culture container, feeding the activated stem cell extracted, a new culture liquid, and a new culture product liquid into a second culture container having a predetermined capacity and a bottom surface of a predetermined area, the capacity being larger than the first culture container, and fixing the activated stem cell to the bottom of the second culture container; and

culturing an activated stem cell for culturing the activated stem cell fixed to the bottom of the second culture container by the step of fixing an activated stem cell, and proliferating the activated stem cell until the total area of the activated stem cell reaches a second target ratio of the bottom-surface area of the second culture container.

3. The method for producing activated stem cells according to claim 2, wherein in the step of culturing an activated stem cell, a mixed culture liquid of the culture liquid and the culture product liquid is discharged from the second

culture container after fixing the activated stem cell to the bottom of the second culture container by the step of fixing an activated stem cell, a new culture liquid and a new culture product liquid are fed into the second culture container, and the activated stem cell fixed to the bottom of the second culture container is cultured, using a new mixed culture liquid of a new culture liquid and a new culture product liquid.

4. The method for producing activated stem cells according to claim 2 or 3, wherein in the step of fixing an activated stem cell, the second culture container is allowed to statically stand at approximately the same temperature as the body temperature at a predetermined tilted angle for 36 to 48 hours, the deformation of the activated stem cell from the initial plane shape in the second culture container is observed at an interval of 1 to 2 hours for the period of 36 to 48 hours, and when the activated stem cell is deformed from the initial plane shape to a predetermined plane shape, it is determined that the activated stem cell is fixed to the bottom surface of the second culture container.

5. The method for producing activated stem cells according to claim 4, wherein the initial plane shape of the activated stem cell is an approximately circular shape, and the plane shape of the activated stem cell deformed is primarily the approximately circular shape, and a flat shape when the activated stem cell elongates in amorphous form in one direction, and in the step of fixing an activated stem cell, when the activated stem cell is deformed to the amorphous

flat shape, it is determined that the activated stem cell is fixed to the bottom surface of the second culture container.

6. The method for producing activated stem cells according to any one of claims 2 to 5, wherein the second target ratio of the total area of the activated stem cell is 88 to 92% of the bottom-surface area of the second culture container, and in the step of culturing an activated stem cell, the second culture container is allowed to statically stand at approximately the same temperature as the body temperature at a predetermined tilted angle for 36 to 48 hours, and the total area of the activated stem cell fixed to the bottom surface of the second culture container in relation to the bottom-surface area of the second culture container is observed at an interval of 1 to 2 hours for the period of 36 to 48 hours.

7. The method for producing activated stem cells according to claim 6, wherein in the step of fixing a dormant stem cell and the step of culturing a dormant stem cell, a tilted angle of the first culture container ranges from 2 to 5°, and in the step of fixing an activated stem cell and the step of culturing an activated stem cell, a tilted angle of the second culture container ranges from 2 to 5°.

8. The method for producing activated stem cells according to any one of claims 1 to 7, wherein the single type of stem cell is prepared by the steps of:

first fixing a stem cell for separating in three layers

a bone marrow liquid collected from the donor, extracting an intermediate-layer bone marrow liquid positioned in an intermediate layer of the bone marrow liquid separated in three layers, feeding the intermediate-layer bone marrow liquid and a predetermined culture liquid into a third culture container having a predetermined capacity and a bottom surface of a predetermined area, and fixing a first stem cell contained in the intermediate-layer bone marrow liquid to the bottom surface of the third culture container;

first culturing a stem cell for discharging the culture liquid in the third culture container after fixing the first stem cell to the bottom surface of the third culture container by the step of first fixing a stem cell, feeding a new culture liquid into the third culture container, culturing the first stem cell, and proliferating the first stem cell until the total area of the first stem cell reaches a third target ratio of the bottom-surface area of the third culture container;

second fixing a stem cell for centrifugally separating in three layers the first stem cell cultured by the step of first culturing a stem cell, extracting a second stem cell positioned in the lowermost layer of the first stem cell separated in three layers, feeding the second stem cell and a new culture liquid into a fourth culture container having a predetermined capacity and a bottom surface of a predetermined area, the capacity being larger than the third culture container, and fixing the second stem cell to the bottom of the fourth culture container; and

second culturing a stem cell for discharging a culture liquid in the fourth culture container after fixing the second stem cell to the bottom of the fourth culture container

by the step of second fixing a stem cell, feeding a new culture liquid into the fourth culture container, culturing the second stem cell, and proliferating the second stem cell until the total area of the second stem cell reaches a fourth target ratio of the bottom-surface area of the fourth culture container.

9. The method for producing activated stem cells according to claim 8, wherein in the step of first fixing a stem cell and the step of first culturing a stem cell, a tilted angle of the third culture container ranges from 2 to 5°, and in the step of second fixing a stem cell and the step of second culturing a stem cell, a tilted angle of the fourth culture container ranges from 2 to 5°.

10. The method for producing activated stem cells according to any one of claims 1 to 6, wherein the culture product liquid is a residual culture liquid obtained by extracting the single second stem cell from the fourth culture container.