Claims

1. An immortalized stem cell isolating a stem cell selected from the group consisting of mammal somatic cell except mammal early-developed embryo and mesenchymal stem cell; performing a primary culture of said stem cell; transfecting 4 genes selected from the group consisting of hTERT, bmi-1, E6, E7, Oct3/4, Sox2, Klf4, c-Myc, and p16INK4a into said primarily cultured stem cell to create gene transfection to choose immortalized stem cell among them by using STRO 1 expression as an index, having abilities for telomere repairing and dividing at least 200 times.

2. (Deleted) ~~The immortalized stem cell according to the claim 1, wherein said mesenchymal stem cell is selected from the group consisting of dental pulp stem cell, bone marrow stem cell, umbilical stem cell, and adipose stem cell.~~

3. The immortalized stem cell according to the claim 1 or 2, wherein said stem cell is selected from the group consisting of exfoliated dens deciduous, exfoliated dens permanence, removed deciduous teeth, and removed dens permanence.

4. The immortalized stem cell according to the claim 1, wherein said early-developed embryo is an embryo of blastoderm.

5. The immortalized stem cell according to any one of the claims 1 to 4, wherein said mammal is selected from the group consisting of human, swine, equine and monkey.

6. (Deleted) ~~The immortalized stem cell according to any one of the claims 1 to 5, wherein said 4 genes are selected from the group consisting of hTERT gene, bmi-1 gene, E6 gene, E7 gene, Oct3/4 gene, Sox2 gene, Klf4 gene, c-Myc gene and p16INK4a gene~~.

7. (Deleted) ~~The immortalized stem cell according to any one of the claims 1 to 6, wherein said immortalized stem cell has an ability to divide at least 200 times.~~

8. The immortalized stem cell according to any one of claims 1 and 3 to 5, at least 40 % of cell number is STRO-1 expression cell at population doubling times of 20, and it has neonatal bone quantity production ability equal to those of a primary cultured cell.

9. The immortalized stem cell according to the any one of claims 1, 3 to 5, said immortalized stem cell secretes at least IGF-1, VEGF, TGF-β1 and HGF into said culture sup.

10. A pharmaceutical composition comprising said culture sup of said immortalized stem cell according to any one of the claim 1, 3 to 5, and 9.

11. A pharmaceutical preparation for restoring damaged tissue comprising said pharmaceutical composition according to the claim 10.

12. The pharmaceutical preparation for restoring damaged tissue according to the claim 11 having any of dosage forms selected from the group consisting of powder, liquid, gel, spray and percutaneous system.

13. The pharmaceutical preparation for restoring damaged tissue according to the claim 11 or 12, said damaged tissue is any one of tissue selected from the group consisting of a damaged tissue with ulcer or bedsore, a damaged brain issue by cell degeneration, a brain tissue partially lost it tissue by a surgical operation. brain tissue damaged by traumatic brain disease, a damaged brain tissue with inflammatory brain disease, a damaged bone tissue, a damaged periodontal tissue, ~~a damaged tissue by a central neuro system disease,~~ and a damaged tissue by refractory skin disease.

14. The pharmaceutical preparation for restoring damaged tissue according to the claim 13, said cell degeneration is caused by the disease selected from the group consisting of Alzheimer disease, Parkinson's disease, cognitive impairment, schizophrenia, depression disease, cerebral hypoxia, amyotrophic lateral sclerosis, cerebral infarction, cerebellar degeneration, diabetes, and hepatitis.

15. The pharmaceutical preparation for restoring damaged tissue according to the claim 13, said traumatic brain disease is caused by a traffic accident or fall accident.

16. The pharmaceutical preparation for restoring damaged tissue according to the claim 13, said inflammatory encephalopathy is a disease selected from the group consisting of encephalitis encephalopathy, epileptic, Jakob disease, and polio.

17. (Deleted) The pharmaceutical preparation for restoring damaged tissue according to the claim 13, said central nervous system disease is selected from the group consisting of spinal cord injury and myelopathy.

18. The pharmaceutical preparation for restoring damaged tissue according to the claim 13, said dermatitis is atopic dermatitis.

19. The pharmaceutical preparation for restoring damaged tissue according to any one of the claims 11 to 16, the content of the culture sup of the reparation is 50 to 500 % (w/v) when the sup produced by the immortalized stem cell of any one of the claims 1 to 9 is 100 %.

20. A method for producing an immortalized stem cell comprising the steps of:

separating a stem cell from cell population selected from the group consisting of

dental pulp stem cell, bone marrow stem cell, umbilical stem cell, and adipose stem cell, early-developed embryo, and a somatic cell other than said mesenchymal cell;

culturing said stem cell as primary culture to obtain a primarily cultured cell;

transfecting 4 genes selected from the group consisting of hTERT gene, bmi-1 gene, E6 gene, E7 gene, Oct3/4 gene, Sox2 gene, Klf4 gene, c-Myc gene and p16INK4a gene. into said primarily cultured cell to produce a gene-transduced cell; and

selecting the dental pulp stem cell having an ability to repair telomere and to divide at least 200 times as indexes STRO-1 expression amount at a cell doubling time of 20, and bone regeneration ability.

21. (Deleted) ~~The method for producing an immortalized stem cell according to the claim 19, wherein the mesenchymal cell is selected from the group consisting of the dental pulp cell, the bone marrow cell, umbilical cell and the adipose cell.~~

22. The method for producing an immortalized stem cell according to the claim 20, wherein the dental pulp cell is any one of the teeth selected from the group consisting of exfoliated dens deciduous, exfoliated dens permanence, removed dens deciduous, and removed dens permanence.

23. The method for producing an immortalized stem cell according to the claim 19, the primary embryo is an embryo of blastodisc stage.

24. The method for producing an immortalized stem cell according to any one of the claims 19 to 21, wherein the mammary is any one of the animal selected from the group consisting of human, swine, equine, and monkey.

25. (Deleted) ~~The method for producing an immortalized stem cell according to any one of the claims 19 to 22, wherein the four genes are selected from the group consisting of~~

~~hTERT, bmi-1, E6, E7, Oct3/4, Sox2, Klf4, c-Myc, and p16INK4a.~~

26. (Deleted) ~~A method for percutaneous absorption for restoring the damaged tissue comprising the steps of:~~

~~formulating a sheet formed dosage form by resorbing said pharmaceutical preparation for restoring said damaged tissue according to any one of the claims 11 to 18 to a sheet formed moisture-retaining member;~~

~~covering said damaged site with said sheet formed dosage form; and~~

~~contacting a positively-charged electrode to a desirable site.~~