CLAIMS

1. A method of preparing a stem cell-derived epidermal progenitor cell conditioned medium, the method comprising:

differentiating stem cells to stem cell-derived epidermal progenitor cells by culturing the stem cells in a differentiation medium containing ascorbic acid and hydrocortisone, wherein the stem cells are placenta-derived stem cells or umbilical cord-derived stem cells;

producing a culture of stem cell-derived epidermal progenitor cells by culturing the differentiated stem cell-derived epidermal progenitor cells in a medium; and

recovering the stem cell-derived epidermal progenitor cell conditioned medium from the culture of the stem cell-derived epidermal progenitor cells.

2. The method of claim 1, wherein a concentration of ascorbic acid is in a range of 0.03 μM to 3 μM, and a concentration of hydrocortisone is in a range of 0.05 μg/ml to 5 μg/ml.

3. The method of claim 1, wherein the differentiating of the stem cells to the stem cell-derived epidermal progenitor cells is performed by culturing for 120 hours to 600 hours.

~~4. The method of claim 1, wherein the stem cells comprise one or more cells from embryonic stem cells, adult stem cells, and induced pluripotent stem cell.~~

~~5~~4. The method of claim 1, wherein the producing of the culture of the stem cell-derived epidermal progenitor cells is performed by culturing for 10 hours to 350 hours.

~~6~~5. The method of claim 1, wherein the producing of the culture of the stem cell-derived epidermal progenitor cells is performed by culturing the differentiated stem cell-derived epidermal progenitor cells in a serum-free medium.

~~7~~6. The method of claim 1, wherein the method comprises, before the differentiating of the stem cells to the stem cell-derived epidermal progenitor cells, culturing the stem cells in a serum-containing medium for 10 hours to 350 hours.

~~8~~7. The method of claim 1, wherein the stem cell-derived epidermal progenitor cell conditioned medium comprises one or more proteins selected from Thrombospondin (TSP), Tissue Inhibitor of Metalloproteinases 1 (TIMP1), Tissue Inhibitor of Metalloproteinases 2: (TIMP2), Ectodysplasin-A2 (EDA-A2), X-linked Ectodysplasin-A Receptor (XEDAR), Angiopoietin-1, Secreted Protein Acidic and Rch in Cysteine (SPARC), Transmembrane Protein with EGF-like and Two Follistatin-like Domains 1/Tomoregulin-1 (TMEFF1/tomoregulin-1), Nidogen-1, Insulin-like Growth Factor-binding Protein-3 (IGFBP-3), Thrombospondin-2, TNF-Related Activation-Induced Cytokine (TRANCE), and Interleukin-15 receptor alpha (IL-15R alpha).

~~9~~8. The method of claim 1, wherein the stem cell-derived epidermal progenitor cell conditioned medium comprises, at a concentration of 10 pg/ml or more, one or more proteins selected from TSP, Nidogen-1, TRANCE, and IL-15R alpha.

~~10~~9. A stem cell-derived epidermal progenitor cell conditioned medium prepared by the method of claim 1, wherein the stem cell is a mesenchymal stem cell; and in the mesenchymal stem cell-derived epidermal progenitor cell,

expression of keratin 14 is increased as compared to the expression in the mesenchymal stem cell before the culture in the differentiation medium.

~~11~~10. The conditioned medium of claim ~~10~~9, wherein the conditioned medium comprises one or more proteins selected from TSP, TIMP, TIMP2, EDA-A2, XEDAR, Angiopoietin-1, SPARC, TMEFF1/Tomoregulin-1, Nidogen-1, IGFBP-3, TRANCE, and IL-15R alpha.

~~12~~11. The cell culture of claim ~~10~~9, wherein the conditioned medium comprises, at a concentration of 10 pg/ml or more, one or more proteins selected from TSP, Nidogen-1, TRANCE, and IL-15R alpha.

~~13~~12. A method of producing a protein from stem cell-derived epidermal progenitor cells, the method comprising:

differentiating stem cells to stem cell-derived epidermal progenitor cells by culturing the stem cells in a differentiation medium containing ascorbic acid and hydrocortisone, wherein the stem cells are placenta-derived stem cells or umbilical cord-derived stem cells;

producing a culture of stem cell-derived epidermal progenitor cells by culturing the differentiated stem cell-derived epidermal progenitor cells in a medium; ~~and~~

recovering the stem cell-derived epidermal progenitor cell conditioned medium from the culture of the stem cell-derived epidermal progenitor cells; and

obtaining the protein from the stem cell-derived epidermal progenitor cell conditioned medium.

~~14~~13. The method of claim ~~13~~12, wherein a concentration of ascorbic acid is in a range of 0.03 μM to 3 μM, and a concentration of hydrocortisone is in a range of 0.05 μg/ml to 5 μg/ml.

~~15~~14. The method of claim ~~13~~12, wherein the differentiating of the stem cells to the stem cell-derived epidermal progenitor cells is performed by culturing for 120 hours to 600 hours.

~~16. The method of claim 13, wherein the stem cells comprise one or more cells from embryonic stem cells, adult stem cells, and induced pluripotent stem cell.~~

~~17~~15. The method of claim ~~13~~12, wherein the producing of the culture of the stem cell-derived epidermal progenitor cells is performed by culturing for 10 hours to 350 hours.

~~18~~16. The method of claim ~~13~~12, wherein the producing of the culture of the stem cell-derived epidermal progenitor cells is performed by culturing the differentiated stem cell-derived epidermal progenitor cells in a serum-free medium.

~~19~~17. The method of claim ~~13~~12, wherein the method comprises, before the differentiating of the stem cells to the stem cell-derived epidermal progenitor cells, culturing the stem cells in a serum-containing medium for 10 hours to 350 hours.

~~20~~18. The method of claim 12~~13~~, wherein the protein comprises ~~a~~ one or more proteins selected from TSP, TIMP1, TIMP2, EDA-A2, XEDAR, Angiopoietin-1, SPARC, TMEFF1/Tomoregulin-1, Nidogen-1, IGFBP-3, TRANCE, and IL-15R alpha.