【DESCRIPTION】

【Invention Title】

BIOINK COMPOSITION FOR DERMIS REGENERATION SHEET, METHOD FOR MANUFACTURING CUSTOMIZED DERMIS REGENERATION SHEET USING SAME, AND CUSTOMIZED DERMIS REGENERATION SHEET MANUFACTURED USING MANUFACTURING METHOD

【Technical Field】

The present specification claims priority to and the benefit of Korean Patent Application No. 10-2018-0012220 filed in the Korean Intellectual Property Office on January 31, 2018, the entire contents of which are incorporated herein by reference.

The present invention relates to a bioink composition for a dermis regeneration sheet, a method for manufacturing a customized dermis regeneration sheet using the same, and a customized dermis regeneration sheet manufactured using said manufacturing method.

【Background Art】

The skin is the largest organ which covers the entire surface of the human body, and functions to prevent the loss of body fluids, prevent the inflow of harmful

【CLAIMS】

【Claim 1】

A two-liquid type bioink composition for a dermis regeneration sheet, the bioink composition comprising:

a first liquid comprising an adipose tissue-derived stromal vascular fraction, an extracellular matrix, and fibrinogen; and

a second liquid comprising thrombin,

wherein a content of the extracellular matrix in the first liquid is 20 wt% to 60 wt%, and

wherein a concentration of thrombin in the second liquid is 40 IU/ml to 250 IU/ml.

【Claim 2】

The two-liquid type bioink composition of claim 1, wherein a concentration of the adipose tissue-derived stromal vascular fraction in the first liquid is 10^5 cells/ml to 10^7 cells/ml.

【Claim 3】

The two-liquid type bioink composition of claim 1, wherein the extracellular matrix is particles having a diameter of 5 μm to 100μm.

【Claim 4】

The two-liquid type bioink composition of claim 1, wherein a concentration of fibrinogen in the first liquid is 4 mg/ml to 50 mg/ml.

【Claim 5】

The two-liquid type bioink composition of claim 1, wherein the adipose tissue-derived stromal vascular fraction and the extracellular matrix are each extracted from an autologous adipose tissue.

【Claim 6】

The two-liquid type bioink composition of claim 1, wherein the first liquid further comprises aprotinin.

【Claim 7】

A method for manufacturing a customized dermis regeneration sheet, the method comprising:

a) obtaining 3D data of a defect dermis site using a 3D scanner;

b) forming a first layer corresponding to a shape of the obtained 3D data using a first liquid comprising an adipose tissue-derived stromal vascular fraction, an extracellular matrix, and fibrinogen;

c) forming a second layer by applying a second liquid comprising thrombin onto the first layer; and

d) forming a dermis regeneration sheet by allowing the first layer and the second layer to react with each other,

wherein a content of the extracellular matrix in the first liquid is 20 wt% to 60 wt%, and

wherein a concentration of thrombin in the second liquid is 40 IU/ml to 250 IU/ml.

【Claim 8】

The method of claim 7, further comprising: step a1) manufacturing a mold corresponding to a shape of the obtained 3D data using a 3D printer, wherein in step b), the first liquid is applied in the mold.

【Claim 9】

The method of claim 7, wherein steps b) and c) are alternately repeated.

【Claim 10】

The method of claim 7, wherein step d) is completed within 10 minutes.

【Claim 11】

The method of claim 7, wherein steps b) and c) are performed using inkjet printing or 3D printing.

【Claim 12】

A customized dermis regeneration sheet manufactured using the method of claim 7.