[0119] To validate the effect as a formulation of the composition for tissue repair treatment according to the present disclosure, animal experiments was performed.

[0120] Six week-old SD rats (purchased from Orient Bio) were used as an experimental animal.

[0121] The experiment was performed that the total 10 rats were subdivided into three groups by designating that one side is phosphate buffered saline (PBS) group, and the other is test sample group in eight sites per a six week-old SD rat individual. During experiment, feeding environment was set as a temperature of 24±2℃, a relative humidity of 50±10%, and a lighting time of 12 hours, and animals was allowed to eat feeds freely.

[0122] PBS was injected to the left subcutaneous layer with respect to the center line of a rat in each group, and a colloidal aqueous solution prepared by dissolving a polymer in water, which was prepared in the Preparation Example 3 (which has a concentration of 25%, HLB of 5.7, K factor of 0.8864) is regularly injected at 250 ㎕. Immediately after injection, it was observed whether the samples were leaked, and the results are shown in Fig. 1.

[0123] Immediately after administering the colloidal aqueous solution and PBS (0 hr), the experimental animals were sacrificed after one week, two weeks, four weeks, and six weeks, respectively, the skin tissues in which the samples were injected and the skin tissues in which the samples were not injected were harvested and fixed in 10% neutral buffered formalin solution. Then, the skin tissues were embedded in paraffin and solidified, and 5 ~~㎛~~ μm

WHAT IS CLAIMED IS:

1. A composition for tissue repair treatment, comprising a copolymer in which a hydrophobic biocompatible polymer and a hydrophilic biocompatible polymer are polymerized, the composition having a colloidal phase in which the copolymer is dispersed in water,

wherein a particle size of the colloidal phase cannot be identified with the naked eye and an insoluble foreign substance is not present in the colloidal phase,

wherein the insoluble foreign substance refers to insoluble foreign substance which is easily detected according to Insoluble Particulate Matter Test, General Tests of United States Pharmacopeia (USP), and is then observed with the naked eye in the position of a brightness of about 2750-3000 lx directly below a white light source,

wherein the colloidal solution has no change or an increase in turbidity when water is added.

2. The composition for tissue repair treatment of claim 1,

wherein the composition has a range of K factor represented by the following equation 1 is ~~0.3-1.8~~ 0.4-1.5:

<Equation 1>

$$K=(m_{100}*M_h^2*10)/(M_l*HLB^2)$$

where m_{100} is the number of moles of polymers in 100 g of an aqueous

solution, M_h is the number average molecular weight (Mn) of a hydrophilic part, M_l is the number average molecular weight (Mn) of a hydrophobic part, and HLB (Hydrophile-Lipophile Balance) is represented by the following equation 2,

<Equation 2>

$$HLB=20*M_h/M$$

where M_h is the number average molecular weight (Mn) of the hydrophilic part, and M is the total number average molecular weight (Mn).

3. The composition for tissue repair treatment of claim ~~1~~ 2, wherein the value of HLB is ~~1-14~~ 2.5-10 in the equation 2.

4. The composition for tissue repair treatment of claim 1, wherein the hydrophobic biocompatible polymer is at least any one polymer selected from the group consisting of polyglycolic acid, polycaprolactone, poly lactic acid, polydioxanone, poly(trimethylene carbonate), polyhydroxybutyrate, and a copolymer including the same.

5. The composition for tissue repair treatment of claim 1, wherein the hydrophilic biocompatible polymer ~~comprises a glycol compound.~~

~~6. The composition for tissue repair treatment of claim 5, wherein the glycol compound~~ is at least any one polymer selected from the group consisting of methoxy polyethylene glycol, dihydroxy polyethylene glycol, mono-alkoxy polyethylene glycol, and polyethylene glycol.

~~7~~6. The composition for tissue repair treatment of claim 1, wherein the bonding structure of the copolymer comprises the structure of the following formula 1, formula 2, or formula 3:

[Formula 1]

X-Y

[Formula 2]

Y-X-Y

[Formula 3]

X-Y-X

where X is the hydrophilic biocompatible polymer, and Y is the hydrophobic biocompatible polymer.

~~8~~7. The composition for tissue repair treatment of claim 1, wherein number average molecular weight (Mn) of the hydrophilic biocompatible polymer is 300-20,000 g/mol.

~~9~~8. The composition for tissue repair treatment of claim 1, wherein number average molecular weight (Mn) of the hydrophobic biocompatible polymer is 1,000-30,000 g/mol.

~~10~~9. The composition for tissue repair treatment of claim 1, wherein number average molecular weight (Mn) of the copolymer is 1,300-50,000 g/mol.

~~11~~10. The composition for tissue repair treatment of claim 1, wherein the concentration of the copolymer in a colloidal solution is ~~10-50~~ 15-45 wt%.

~~12. The composition for tissue repair treatment of claim 1, wherein the colloidal solution has no change or an increase in turbidity when water is added.~~

~~13~~11. A method for manufacturing a composition for tissue repair treatment of claim 1, the method comprising:

preparing a polymer by polymerizing a hydrophobic biocompatible polymer and a hydrophilic biocompatible polymer; and

obtaining a colloidal solution by adding the polymer to water.