[117]

[118] (Example 3)

[119] Test for verifying water washability of collagen and hyaluronic acid after tranplantation thereof

[120] Purpose: Verification on resistance against a factor that interrupts continuous adhering (fixing) and filling of injected product with respect to defect regions

[121] ~~[121]~~ 1. Collagen having concentrations of 30 and 60 mg/mL (3 and 6%) and hyaluronic acid having concentrations of 10 and 20 mg/mL (1.0 and 2.0%), which are contained in the syringes, are prepared by the same method as in Example 1.

[122] 2. After a pig leg is fixed on a mount, the articular cartilage is damaged by using a surgical tool, and large (about 4 cm^2) and small (about 2 cm^2) defect regions are induced by using a drill.

[123] 3. A product with each concentration filling the syringe is injected into and fills the cartilage defect regions of the pig knee.

[124] 4. Injection water is sprinkled downward at a position of 10 cm above the injection site by using a syringe (25 mL).

[125] 5. The resistance of the product filling the cartilage defect regions against flowing water is observed by the naked eye.

[126] 6. Results: The product filling the cartilage defect regions resisted the flowing water (unwashable), and thus continuously adhered to the defect regions, thereby maintaining a state in which the defect regions were filled with the product (FIG. 9).

[127]

[128] (Example 4)

Claims

~~1. A composition for cartilage tissue repair, the composition being prepared by mixing collagen having a diluted concentration of 5-60 mg/mL excepting water or a physiological phosphate buffer solution; and hyaluronic acid having a diluted concentration of 5-20 mg/mL excepting water or a physiological phosphate buffer solution using a two-way syringe or a mixer.~~

~~2~~ 1. A method for preparing a composition for cartilage tissue repair, the method comprising: preparing collagen having a diluted concentration of 5-60 mg/mL excepting water or a physiological phosphate buffer solution; preparing hyaluronic acid having a diluted concentration of 5-20 mg/mL excepting water or a physiological phosphate buffer solution; mixing the collagen and the hyaluronic acid using a two-way syringe or a mixer; and deaerating the mixed composition for cartilage tissue repair using a centrifuge.

~~3. The method of claim 2, wherein centrifugal separation by the centrifuge is performed at 2,000~5,000 G while the room temperature is maintained at 1-30℃.~~

~~4. A method for using a composition for cartilage tissue repair, the method comprising: fixing a pig leg on a mount, damaging the articular cartilage by using a surgical tool, and then inducing defect regions of 2~4㎠ by using a drill; connecting a syringe needle to a syringe container filled with collagen; and suturing the cut site with a suture thread, and directly injecting the glenoid cavity (a space filled with synovia) of the pig knee with collagen with a~~

~~concentration of 5 ~ 60 mg/mL contained in the syringe, hyaluronic acid with a concentration of 5 ~ 20 mg / mL contained in the syringe, and a composition for cartilage tissue repair in which the collagen and the hyaluronic acid are mixed.~~

~~5. A method for preparing a composition for cartilage tissue repair, the method comprising: preparing collagen having a diluted concentration of 5-60 mg/mL excepting water or a physiological phosphate buffer solution; preparing hyaluronic acid having a diluted concentration of 5-20 mg/mL excepting water or a physiological phosphate buffer solution; and preparing a sample in which 60 mg/mL of collagen and 5 mg/mL of hyaluronic acid are mixed at a ratio of 9:1 to 1:9 or a sample in which 60 mg/mL of collagen and 20 mg/mL of hyaluronic acid are mixed at a ratio of 5:5.~~

~~6. A method for using a composition for cartilage tissue repair, comprising: (1) preparing a collagen solution contained in a syringe container and a fibrin glue product; (2) fixing a pig leg on a mount, damaging the articular cartilage by using a surgical tool, and then inducing defect regions of 2~4㎠ by using a drill; (3) injecting the collagen product contained in the syringe into the cartilage defect region of the pig knee to fill the cartilage defect region with the collagen product, and allowing the fibrin glue to cover the collagen and then be gelled, thereby firmly fixing the collagen; (4), on the contrary to step (3), coating the fibrin glue on the cartilage defect region of the pig to be gelled, and then injecting collagen into the fibrin glue gel to fill the cartilage defect region; and (5) sprinkling sterile injection water downward at a position of 10 cm above the injection site by using a~~

~~syringe (25 mL), to verify the resistance against the flowing water and observe the gel state.~~

~~7. A method for using a composition for cartilage tissue repair, wherein high-viscosity collagen and hyaluronic acid, or a collagen and hyaluronic acid-mixed composition, as a composition for cartilage repair, is injected into a pre-filled syringe, thereby being used in an injectable form.~~

~~8. A method for using a composition for cartilage tissue repair, wherein a syringe needle is connected to an injectable type cartilage injection agent, and the syringe needle is inserted into an application site using the syringe needle without surgical incision, thereby directly injecting the composition for cartilage repair into the glenoid cavity (a space filled with synovia) of the pig knee.~~

~~9. A method for using a composition for cartilage tissue repair, wherein a specimen is prepared by artificially forming a cartilage defect region of 2~4㎠; a composition for cartilage repair is stained in blue and injected into the specimen; and then the transplanted site is opened, thereby verifying morphology of the composition filling the cartilage defect region and verifying the water washability of the composition through the degree of adhesion to the cartilage defect region.~~