

METHOD FOR MANUFACTURING BONE-REGENERATION MATERIAL
COMPRISING BIODEGRADABLE FIBERS BY USING ELECTROSPINNING
METHOD

[Document Name] Abstract

[Abstract]

[Problem to be Solved]

A new method for producing a bone-regeneration material in which a biodegradable fiber including PLGA contains calcium phosphate particles by electrospinning with commercial effectiveness and a new bone-regeneration material produced by the method is demanded.

[Solution]

A biodegradable fiber in which the calcium phosphate fine particles are dispersed substantially uniformly in the biodegradable fiber is produced by heating a PLGA resin in a kneader to soften the PLGA resin to a viscosity of 10^2 to 10^7 Pa·s, mixing powder of calcium phosphate fine particles with the softened PLGA resin by providing the powder to the kneader while rotating the blade of the kneader; rotating the blade of the kneader with continuous force under the heating to knead the mixture so that thermal and mechanical energy is applied to the mixture to crush aggregates of calcium phosphate fine particles, and thereby prepare a composite of the PLGA resin and the calcium phosphate fine particles

dispersed therein; dissolving the composite with a solvent, and stirring for a predetermined time to prepare a spinning solution in which the PLGA resin is completely dissolved in the solvent and the calcium phosphate fine particles are dispersed without aggregation in the solvent in which the PLGA resin is dissolved; and electrospinning the spinning solution.

[Selected Drawing] Figure 4 (1)