CLAIMS

[Claim 1]

An aqueous pharmaceutical composition for injection, comprising 1 w/v% of a compound represented by the following formula (1) which has been subjected to an alkali treatment, and an agent which improves a maximum treatment amount (V_{max}) of the aqueous composition,

wherein the maximum treatment amount (V_{max}) of the aqueous composition is 1.0 g/cm^2 or more, provided that the maximum treatment amount (V_{max}) is a value derived by filtering the aqueous composition at a liquid temperature of 70°C under a pressure of 0.6 MPa using a polyvinylidene fluoride filtration membrane with a pore size of 0.22 μm, measuring the total filtration amount per effective filtration area every 30 seconds until the flow rate becomes 1/10 or less of the flow rate at the start of filtration, and substituting the thus obtained measurement value for the following calculation formulae A and B:

[Math. 1]

Calculation Formula A:

$$t/V = at+b$$

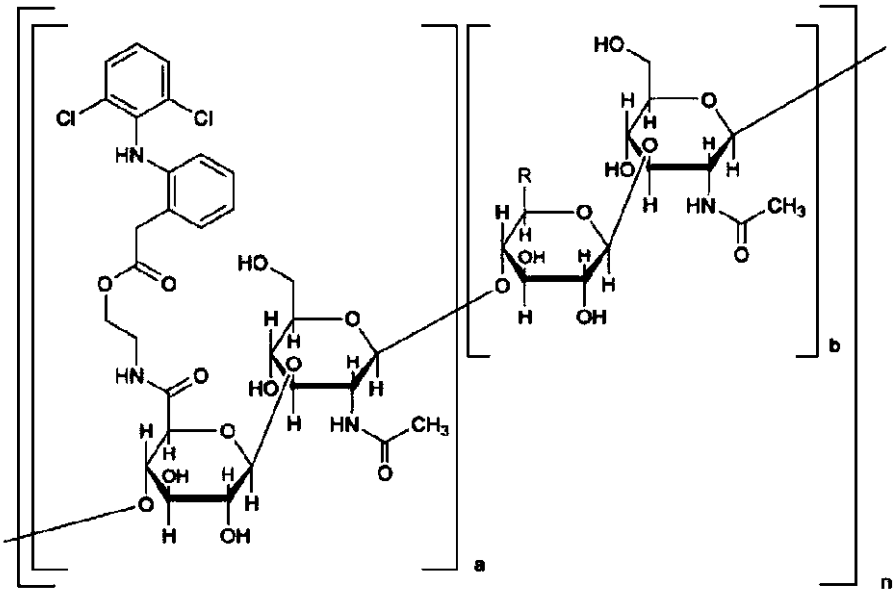
[Math. 2]

Calculation Formula B:

$$V_{max} = 1/a$$

wherein t represents the filtration time (min), V represents the total filtration amount per effective filtration area (g/cm^2), a represents the slope of the calculation formula A, and b represents the intercept of the calculation formula A:

[Chem. 1]



(1)

wherein a is 0.01 or more and 0.7 or less, a+b is 1, n is an integer of 25 or more and 25,000 or less, respective constituent disaccharide unitmay be arranged in a random or block form, and R is each independently a carboxy group or a carboxylate salt group in the respective constituent disaccharide unit.

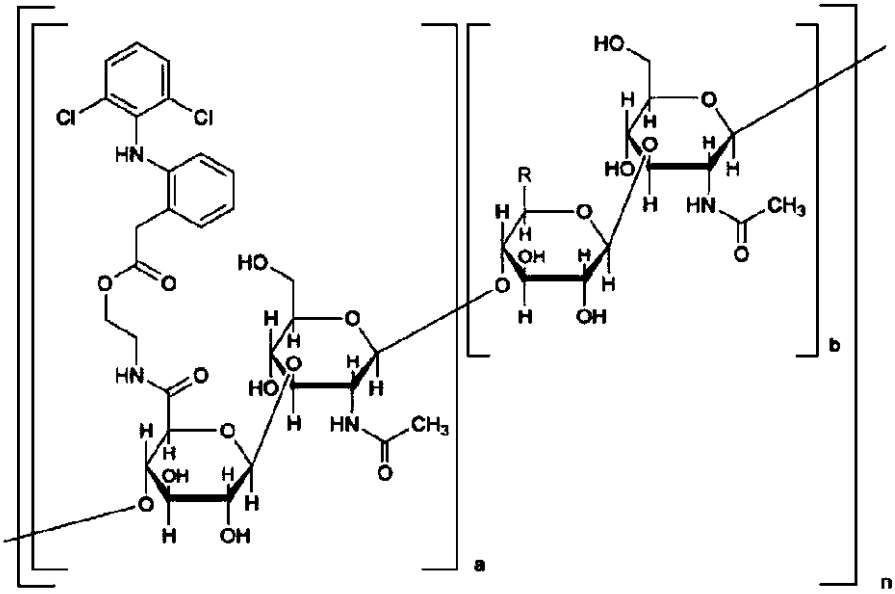
[Claim 2]

A pharmaceutical composition, comprising a compound

represented by the following formula (1) and a component (A):

the component (A): at least one type of compound selected from the group consisting of a nonionic surfactant, a hydroxyalkylated cyclodextrin, a C_1 to C_3 mono-alcohol, a C_2 to C_3 di-alcohol, a C_3 to C_6 tri-alcohol, a polyalkylene glycol, a γ-lactone, polyvinylpyrrolidone, a chlorogenic acid, and an alkyl sulfate ester, and salts thereof:

[Chem. 1]



(1)

wherein a is 0.01 or more and 0.7 or less, a+b is 1, n is an integer of 25 or more and 25,000 or less, respective constituent disaccharide units may be arranged in a random or block form, and R is each independently a carboxy group or a carboxylate salt group in the respective constituent disaccharide unit.

[Claim 3]

The pharmaceutical composition according to claim 2, wherein the component (A) is selected from the group consisting of a nonionic surfactant, a hydroxyalkylated cyclodextrin, a C_1 to C_3 mono-alcohol, and a polyalkylene glycol.

[Claim 4]

The pharmaceutical composition according to claim 2 or 3, wherein the polyalkylene glycol is polyethylene glycol.

[Claim 5]

The pharmaceutical composition according to claim 4, wherein the weight average molecular weight of polyethylene glycol is 200 or more and 6,000 or less.

[Claim 6]

The pharmaceutical composition according to any one of claims 2 to 5, wherein the final concentration of the component (A) is from 0.01 to 30 wt%.

[Claim 7]

The pharmaceutical composition according to any one of claims 2 to 6, further comprising a buffer solution

selected from the group consisting of a phosphate buffer solution, a citrate buffer solution, and an acetate buffer solution.

[Claim 8]

The pharmaceutical composition according to any one of claims 2 to 7, wherein the pH is from 4.5 to 7.0.

[Claim 9]

The pharmaceutical composition according to any one of claims 2 to 8, which is an aqueous composition.

[Claim 10]

The pharmaceutical composition according to any one of claims 2 to 9 for use in the treatment of a joint disease.

[Claim 11]

The pharmaceutical composition according to claim 10, wherein the joint disease is osteoarthritis or rheumatoid arthritis.

[Claim 12]

A kit, comprising an injector in which the pharmaceutical composition according to any one of claims 2 to 11 is filled in a syringe barrel.

[Claim 13]

A kit, comprising a vial containing the pharmaceutical composition according to any one of claims 2 to 11, and an injector.