CLAIMS

[Claim 1] A culture medium for stem cell culture comprising:

60 vol% to 90 vol% of a basal culture medium; and

10 vol% to 40 vol% of physiological saline, and further having, added thereto:

1 ng/mL to 100 ng/mL of EGF;

0.2 ng/mL to 20.0 ng/mL of FGF-2;

0.2 ng/mL to 20.0 ng/mL of PDGF; and

0.5 mM to 8.0 mM of magnesium ascorbyl phosphate.

[Claim 2] A cell producing proteins (CPPs) composition for inducing differentiation of mesenchymal stem cells or osteoblast progenitor cells into osteoblasts, wherein the CPPs composition is obtained by:

culturing mesenchymal stem cells in the culture medium for stem cell culture according to claim 1 for 1 to 10 days;

subsequently causing sedimentation of protein components in an organic solvent; and

separating a sedimented portion and dissolving the sedimented portion in physiological saline or a basal culture medium.

[Claim 3] The CPPs composition according to claim 2, comprising:

type I procollagen; and

hyaluronic acid, wherein

calcium is bonded to the type I procollagen.

[Claim 4] A method of inducing differentiation into osteoblasts comprising:

causing differentiation of mesenchymal stem cells into osteoblast progenitor cells by

1) culturing the mesenchymal stem cells for 2 to 6 days in an osteoblast differentiation-inducing culture medium with the mesenchymal stem cells in a state adhered to a culture vessel and causing proliferation until confluence or beyond, or

2) placing the mesenchymal stem cells at rest and performing 2 to 4 days of refrigerated storage with the mesenchymal stem cells in a

suspended state in a culture vessel; and

subsequently collecting the osteoblast progenitor cells, seeding the osteoblast progenitor cells in a culture vessel, and culturing the osteoblast progenitor cells in a basal culture medium having the CPPs composition according to claim 2 added thereto to cause differentiation of the osteoblast progenitor cells into osteoblasts.

[Claim 5] The method of inducing differentiation into osteoblasts according to claim 4, wherein the mesenchymal stem cells are derived from bone marrow, adipose tissue, peripheral blood, umbilical cord, umbilical cord blood, or dental pulp.

[Claim 6] A method of inducing differentiation into osteoblasts (excluding one performed on human) comprising causing differentiation of mesenchymal stem cells into osteoblast progenitor cells by:

1) culturing the mesenchymal stem cells for 2 to 6 days in an osteoblast differentiation-inducing culture medium with the mesenchymal stem cells in a state adhered to a culture vessel and causing proliferation until confluence or beyond; or

2) placing the mesenchymal stem cells at rest and performing 2 to 4 days of refrigerated storage with the mesenchymal stem cells in a suspended state in a culture vessel, and

a) seeding obtained osteoblast progenitor cells in vitro and simultaneously adding the CPPs composition according to claim 2 to cause differentiation of the osteoblast progenitor cells into osteoblasts; or

b) seeding obtained osteoblast progenitor cells in vitro and subsequently adding the CPPs composition according to claim 2 to initiate differentiation of the osteoblast progenitor cells into osteoblasts.

[Claim 7] The method of inducing differentiation into osteoblasts according to claim 6, wherein the mesenchymal stem cells are derived from bone marrow, adipose tissue, peripheral blood, umbilical cord, umbilical cord blood, or dental pulp.