CLAIMS

1. A monocyte proliferating agent comprising 500 to 2000 IU/ml of GM-CSF, and at least one cytokine selected from the group consisting of (a) IFN-γ in an amount of 1 to 1000 ng/mL, (b) IL-3 in an amount of 500 to 3000 IU/ml, and (c) Flt-3L in an amount of 1000 to 3000 IU/ml.

2. A culture medium comprising a monocyte proliferation agent according to Claim 1 .

3. A culture medium according to Claim 2, further comprising GM-CSF.

4. A method of producing monocytes, the method comprising a proliferation step comprising culturing monocyte material in the presence of a monocyte proliferating agent according to Claim 1 or a culture medium according to Claim 2 or 3, and allowing monocytes to proliferate.

5. A method of producing monocytes according to Claim 4, in which the monocyte material comprises a monocyte and a leukocyte component other than a monocyte.

6. A method of producing monocytes according to Claim 4 or 5, the method further comprising a reduction step of reducing the content of a component other than monocytes in body fluid to obtain the monocyte material, before the proliferation step.

7. A method of producing monocytes according to Claim 6, in which the reduction is performed using a magnetic bead having a higher affinity for at least one of monocytes, leukocyte components other than monocytes, plasma, and erythrocytes in the monocyte material than the others.

8. A method of producing monocytes according to Claim 6 or 7, in which the monocyte material is prepared from 100 ml or less of peripheral blood.

9. A method of producing monocytes according to any of Claims 6 to 8, the method not comprising a cryopreservation step of cryopreserving the monocytes.

10. A method of producing dendritic cells, the method comprising:

producing monocytes by a method according to any of Claims 4 to 9; and

differentiating the monocytes produced into dendritic cells.

11. A method of producing dendritic cells according to Claim 10, in which in the differentiation step, the monocytes are cultured in a culture medium containing at least one of Flt-3L, IL-3, and IFN-γ.

12. A method of producing dendritic cells according to Claim 10 or 11, the method further comprising a pulse step of pulsing the dendritic cells.

13. A method of producing a dendritic cell vaccine, the method comprising:

producing dendritic cells according to any one of Claims 10 to 12; and

preparing a dendritic cell vaccine from the dendritic cells produced.

14. A method of producing a dendritic cell vaccine according to Claim 13, the method not comprising a cryopreservation step of cryopreserving at least one of the monocytes and the dendritic cells.

15. A method of producing a dendritic cell vaccine according to Claim 13 or 14, in which the monocyte material is prepared from body fluid collected from a subject to which the dendritic cell vaccine is administered.

CLAIMS

1. A monocyte proliferating agent comprising 500 to 2000 IU/ml of GM-CSF, and at least one cytokine selected from the group consisting of (a) IFN-γ in an amount of 1 to 1000 ng/mL, (b) IL-3 in an amount of 500 to 3000 IU/ml, and (c) Flt-3L in an amount of 1000 to 3000 IU/ml.

2. A culture medium comprising a monocyte proliferation agent according to Claim 1 .

3. A method of producing monocytes, the method comprising a proliferation step comprising culturing monocyte material in the presence of a monocyte proliferating agent according to Claim 1 or a culture medium according to Claim 2, and allowing monocytes to proliferate.

4. A method of producing monocytes according to Claim 3, in which the monocyte material comprises a monocyte and a leukocyte component other than a monocyte.

5. A method of producing monocytes according to Claim 3 or 4, the method further comprising a reduction step of reducing the content of a component other than monocytes in body fluid to obtain the monocyte material, before the proliferation step.

6. A method of producing monocytes according to Claim 5, in which the reduction is performed using a magnetic bead having a higher affinity for at least one of monocytes, leukocyte components other than monocytes, plasma, and erythrocytes in the monocyte material than the others.

7. A method of producing monocytes according to Claim 5 or 6, in which the monocyte material is prepared from 100 ml or less of peripheral blood.

8. A method of producing monocytes according to any of Claims 5 to 7, the method not comprising a cryopreservation step of cryopreserving the monocytes.

9. A method of producing dendritic cells, the method comprising:

producing monocytes by a method according to any of Claims 3 to 8; and

differentiating the monocytes produced into dendritic cells.

10. A method of producing dendritic cells according to Claim 9, in which in the differentiation step, the monocytes are cultured in a culture medium containing at least one of Flt-3L, IL-3, and IFN-γ.

11. A method of producing dendritic cells according to Claim 9 or 10, the method further comprising a pulse step of pulsing the dendritic cells.

12. A method of producing a dendritic cell vaccine, the method comprising:

producing dendritic cells according to any one of Claims 9 to 11; and

preparing a dendritic cell vaccine from the dendritic cells produced.

13. A method of producing a dendritic cell vaccine according to Claim 12, the method not comprising a cryopreservation step of cryopreserving at least one of the monocytes and the dendritic cells.

14. A method of producing a dendritic cell vaccine according to Claim 12 or 13, in which the monocyte material is prepared from body fluid collected from a subject to which the dendritic cell vaccine is administered.