Claims

1. A cell culture medium comprising tyrosine at a concentration of at least 5 mM and polyvinylalcohol (PVA).

2. The cell culture medium according to claim 1 wherein the concentration of tyrosine is at least 10 mM.

3. The cell culture medium according to claim 1 wherein the concentration of tyrosine is between 5 and 20mM.

4. The cell culture medium according to any one of claims 1, 2, and 3 wherein the concentration of PVA is at least 0.5g/L.

5. The cell culture medium according to any one of claims 1, 2, and 3 wherein the concentration of PVA is between 0.5 and 5 g/L.

6. The cell culture medium according to any one of claims 1, 2, and 3 wherein the concentration of PVA is 2.5 g/L.

7. The cell culture medium according to any one of claims 1, 2, and 3 wherein said medium is serum free.

8. The cell culture medium according to any one of claims 1, 2, and 3 wherein said medium is protein free.

9. The cell culture medium according to any one of claims 1, 2, and 3 wherein the turbidity is less than 5NTU after two weeks storage at 4°C in the absence of light.

10. The cell culture medium according to any one of claims 1, 2, and 3 wherein no precipitate is observed after two weeks storage at 4°C in the absence of light.

11. The cell culture medium according to any one of claims 1, 2, and 3 wherein the medium comprises 4 to 10mM Ala, 30 to 60mM Arg, 50 to 90mM Asn, 10 to 30mM Asp, 2 to 40mM Glu, 2 to 15mM Gly, 8 to 20mM His, 25 to 32mM Ile, 35 to 60mM Leu, 28 to 60mM Lys, 9 to 25mM Met, 10 to 30mM Phe, 15 to 40mM Pro, 44 to 80mM Ser, 20 to 45mM Thr, 2 to 10mM Trp and 20 to 50mM Val.

12. A method of cell culture comprising contacting mammalian cells with a cell culture medium according to any one of claims 1, 2, and 3.

13. The method of claim 12, wherein the mammalian cells are selected from BALB/c mouse myeloma line, human retinoblasts, PER.C6 cells, monkey kidney cells, human embryonic kidney line, 293 cell line, baby hamster kidney cells (BHK), Chinese hamster ovary cells (CHO), mouse sertoli cells, African green monkey kidney cells, VERO-76 cells, human cervical carcinoma cells, HeLa cells, canine kidney cells, buffalo rat liver cells, human lung cells, human liver cells, mouse mammary tumor cells, TRI cells, MRC 5 cells, FS4 cells, human hepatoma line, or Hep G2 cell line.

14. The method of claim 13, wherein the mammalian cells are CHO cells.

15. The method of claims 14, wherein the mammalian cells are GS-CHO cells.

16. The method of claim 12, wherein the cell culture is a fed batch culture.

17. The method of claim 16, wherein the fed batch culture comprises a base medium supplemented with feed media.

18. The method of claims 17, wherein only the base medium is a cell culture medium comprising tyrosine at a concentration of at least 5 mM and polyvinylalcohol (PVA).

19. The method of claim 17 wherein only the feed medium is a cell culture medium comprising tyrosine at a concentration of at least 5 mM and polyvinylalcohol (PVA).

20. The method of claims 17, wherein the base medium and the feed medium are cell culture medium comprising tyrosine at a concentration of at least 5 mM and polyvinylalcohol (PVA).

21. The method of claim 12 wherein the maximum viable cell density during the cell culture is above 1×10^6 cells/mL.

22. The method of claim 21 wherein the maximum viable cell density is above 5×10^6cells/mL, 1×10^7cells /mL, 5×10^7 cells/mL, 1×10^8 cells/mL or 5×10^8 cells/mL.

23. The method of claim 12 wherein the volume of the cell culture medium is at least 500L.

24. The method of claim 23, wherein the volume of the cell culture medium is at least 5000L.

25. The method of claim 12, wherein the cells express a recombinant protein.

26. The method of claim 25, wherein the recombinant protein is selected from the group consisting of antibodies or fragments thereof, nanobodies, single domain antibodies, Small Modular ImmunoPharmaceuticals™ (SMIPs), VHH antibodies, camelid antibodies, shark single domain polypeptides (IgNAR), single domain scaffolds or fibronectin scaffolds, single chain polypeptides comprising an N-terminal binding domain, an effector domain, and a C-terminal binding domain, growth factors, clotting factors, cytokines, fusion proteins, pharmaceutical drug substances, vaccines, enzymes and combinations thereof.

27. The method of claim 25, further comprising obtaining recombinant protein produced by the cells.

28. The method of claim 27, further comprising purifying the recombinant

protein.