CLAIMS

1. Use of a composition comprising transferrin in the manufacture of a medicament for~~A method of~~ treating a HIF-related pathological condition, wherein the use comprises~~ing~~ that:

a. ~~diagnosing for a HIF-related pathological condition in~~ a patient in need thereof is to be diagnosed for a HIF-related pathological condition, and

b. ~~administering to the patient~~ a composition comprising ~~therapeutically effective amounts of~~ transferrin is to be administered to the patient.

2. The ~~method~~ use of claim 1, wherein the composition comprises therapeutically-effective amounts of transferrin and either an iron chelator or PHD2 enzyme inhibitor.

3. The use ~~method~~ of claim 1, wherein the HIF-related pathological condition is associated with organ transplantation in a transplant recipient.

4. The use ~~method~~ of claim 3, wherein the organ has been treated with a composition comprising transferrin in preparation for transplantation into the recipient.

5. The use ~~method~~ of claim 4, where the organ has been treated with a composition comprising transferrin and iron chelator or PHD2 enzyme inhibitor in preparation for transplantation into the recipient.

6. The use ~~method~~ of claim 1, wherein the condition is associated with ischemia or oxygen deprivation in a patient prior to surgery.

7. The use ~~method~~ of claim 1, wherein the condition is

ischemia due to cardiac arrest, thrombotic clots, or traumatic injury.

8. The use ~~method~~ of claim 1, where interruption of blood flow occurs during a surgical intervention.

9. The use ~~method~~ of claim 1, wherein the condition is due to a neurodegenerative disease selected from the group consisting of Alzheimer's disease, Parkinson's disease, Huntington's disease and Amylotrophic Lateral Sclerosis.

10. The use ~~method~~ of claim 1, wherein said transferrin is recombinant.

11. The use ~~method~~ of claim 1, wherein said transferrin is modified by pegylation, glycosylation, polysialylation, or other physical modifications to extend plasma half-life of the protein, including covalent fusion to domains that extend half-life in blood, such as the Fc domain of immunoglobulin, albumin, glucagon-like peptide-1, exendin-4, XTEN, etc.

12. The use ~~method~~ of claim 1, wherein said transferrin is a protein conjugate between full length transferrin or fragments of transferrin with any other protein, protein fragment, or peptide.

13. The use ~~method~~ of claim 1, wherein said transferrin is modified to increase metal binding affinity.

14. The use ~~method~~ of claim 1, wherein said transferrin are derivatives of transferrin comprising more than 50% similarity.

15. The use ~~method~~ of claim 1, wherein said transferrin is holo-transferrin alone.

16. The use ~~method~~ of claim 1, wherein said transferrin is apo-transferrin alone.

17. The use ~~method~~ of claim 1, wherein said transferrin is a mixture of apotransferrin and holo-transferrin, in a ratio of 99% Apo-Tf:1% Holo-Tf to 30% Apo- Tf:70% Holo-Tf, or the proportion that is most comparable to a fraction obtained or purified from biological fluids.

18. The use ~~method~~ of claim 1, wherein said composition further comprises an iron chelator.

19. The use ~~method~~ of claim 1, wherein said iron chelator is M30, deferoxamine (DFO), Deferasirox, deferiprone, deferitrin, L1NA11, CP363, CP502, or Ethylenediaminetetraacetic acid (EDTA).

20. The use ~~method~~ of claim 1, wherein said PHD2 enzyme inhibitor is IOX2, IOX3, dimethyloxallyl glycine or other 2-oxoglutarate binding site molecules.

21. A pharmaceutical composition comprising transferrin to attain a blood concentration of at least 25uM and up to 250uM, but most preferably 175uM, and 500- 6000mg, but most preferably 1000mg, of deferoxamine (DFO).

CLAIMS

1. Use of a composition comprising transferrin in the manufacture of a medicament for treating a HIF-related pathological condition, wherein the use comprises that:

a. a patient in need thereof is to be diagnosed for a HIF-related pathological condition, and

b. a composition comprising transferrin is to be administered to the patient.

2. The use of claim 1, wherein the composition comprises therapeutically-effective amounts of transferrin and either an iron chelator or PHD2 enzyme inhibitor.

3. The use of claim 1, wherein the HIF-related pathological condition is associated with organ transplantation in a transplant recipient.

4. The use of claim 3, wherein the organ has been treated with a composition comprising transferrin in preparation for transplantation into the recipient.

5. The use of claim 4, where the organ has been treated with a composition comprising transferrin and iron chelator or PHD2 enzyme inhibitor in preparation for transplantation into the recipient.

6. The use of claim 1, wherein the condition is associated with ischemia or oxygen deprivation in a patient prior to surgery.

7. The use of claim 1, wherein the condition is ischemia due to cardiac arrest, thrombotic clots, or traumatic injury.

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9. The use of claim 1, wherein the condition is due to a neurodegenerative disease selected from the group consisting of Alzheimer's disease, Parkinson's disease, Huntington's disease and Amylotrophic Lateral Sclerosis.

10. The use of claim 1, wherein said transferrin is recombinant.

11. The use of claim 1, wherein said transferrin is modified by pegylation, glycosylation, polysialylation, or other physical modifications to extend plasma half-life of the protein, including covalent fusion to domains that extend half-life in blood, such as the Fc domain of immunoglobulin, albumin, glucagon-like peptide-1, exendin-4, XTEN, etc.

12. The use of claim 1, wherein said transferrin is a protein conjugate between full length transferrin or fragments of transferrin with any other protein, protein fragment, or peptide.

13. The use of claim 1, wherein said transferrin is modified to increase metal binding affinity.

14. The use of claim 1, wherein said transferrin are derivatives of transferrin comprising more than 50% similarity.

15. The use of claim 1, wherein said transferrin is holo-transferrin alone.

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is most comparable to a fraction obtained or purified from biological fluids.

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