Claims

1. Use of fibrin glue and an isolated homogenous population of cells obtained from human umbilical cord tissue in the manufacture of a medicament for enhancing reperfusion in a patient having peripheral ischemia, wherein the fibrin glue comprises from about 16 to about 24 IU/ml of thrombin and from about 39.3 to about 60.7 mg/ml of fibrinogen, wherein the umbilical cord tissue is substantially free of blood, and wherein said isolated homogenous population of the cells is capable of self-renewal and expansion in culture, has the potential to differentiate and does not express CD117 and/or telomerase.

2. The use of claim 1, wherein the isolated population of cells has one or more of the following characteristics:

(a) expresses oxidized low density lipoprotein receptor 1, reticulon, chemokine receptor ligand 3, and/or granulocyte chemotactic protein;

(b) does not express CD31, CD34 or CD45;

(c) expresses, relative to a human fibroblast, mesenchymal stem cell, or iliac crest bone marrow cell, increased levels of interleukin 8 or reticulon 1;

(d) has the potential to differentiate into cells of at least a skeletal muscle, vascular smooth muscle, pericyte or vascular endothelium phenotype; and

(e) expresses CD10, CD13, CD44, CD73, and CD90.

3. The use of claims 1 or 2, wherein the medicament is formulated for administration at the sites of peripheral ischemia.

4. The use of claims 1 or 2, wherein the medicament is formulated for administration by intramuscular injection, intravascular injection or injection into adipose depots in muscle.

5. The use of claims 1 or 2, wherein the medicament is formulated for local administration.

6. The use of claims 1 or 2, wherein the isolated population of cells is induced *in vitro* to differentiate into a skeletal muscle, vascular muscle, pericyte or vascular endothelium lineage prior to administration.

7. The use of any of claims 1 to 5, wherein the population of cells is genetically engineered to produce a gene product that promotes treatment of peripheral vascular disease.

8. The use of any of claims 1 to 7, wherein the medicament further comprises an agent selected from the group consisting of an antithrombogenic agent, an immunosuppressive agent, an immunomodulatory agent, a pro-angiogenic, an antiapoptotic agent and mixtures thereof.

9. The use of any of claims 1 to 8, wherein the medicament further comprises at least one other cell type.

10. The use of claim 9, wherein the other cell type is a skeletal muscle cell, a skeletal muscle progenitor cell, a vascular smooth muscle cell, a vascular smooth muscle progenitor cell, a pericyte, a vascular endothelial cell, a vascular endothelium progenitor cell or other multipotent or pluripotent stem cell.

11. The use of any of claims 1 to 10, wherein the use comprises exertion of a trophic effect.

12. The use of claim 11, wherein the trophic effect is proliferation of vascular endothelial cells.

13. The use of any of claims 1 to 12, wherein the use induces migration of vascular endothelial cells and/or vascular endothelium progenitor cells to the sites of the peripheral disease.

14. The use of any of claims 1 to 13, wherein the use induces migration of vascular smooth muscle cells and/or vascular smooth muscle progenitor cells to the sites of the peripheral disease.

15. The use of any of claims 1 to 14, wherein the use induces migration of pericytes to the sites of the peripheral vascular disease.

16. A kit for enhancing reperfusion in a patient having a peripheral vascular ischemia comprising fibrinogen, thrombin and an isolated homogenous population of cells obtained from human umbilical cord tissue in an amount effective to treat the disease, wherein the kit comprises from about 16 to about 24 IU/ml of thrombin and from about 39.3 to about 60.7 mg/ml of fibrinogen, wherein the umbilical cord tissue is substantially free of blood, and wherein said

isolated homogenous population of the cells is capable of self-renewal and expansion in culture, has the potential to differentiate and do not express CD117 and/or telomerase.

17. The kit of claim 16 further comprising instructions for use.

18. The kit of claims 16 or 17, wherein fibrinogen and the isolated homogenous population of cells are in a composition.

19. The kit of claim 18, wherein thrombin is added to the composition immediately prior to use.

20. The kit of any of claims 16 to 21, wherein the isolated population of cells has one or more of the following characteristics:

(a) expresses oxidized low density lipoprotein receptor 1, reticulon, chemokine receptor ligand 3, and/or granulocyte chemotactic protein;

(b) does not express CD31, CD34 or CD45;

(c) expresses, relative to a human fibroblast, mesenchymal stem cell, or iliac crest bone marrow cell, increased levels of interleukin 8 or reticulon 1;

(d) has the potential to differentiate into cells of at least a skeletal muscle, vascular smooth muscle, pericyte or vascular endothelium phenotype; and

(e) expresses CD10, CD13, CD44, CD73, and CD90.

Claims

1. Use of fibrin glue and an isolated homogenous population of cells obtained from human umbilical cord tissue in the manufacture of a medicament for enhancing reperfusion in a patient having peripheral ischemia, wherein the fibrin glue comprises from about 16 to about 24 IU/ml of thrombin and from about 39.3 to about 60.7 mg/ml of fibrinogen, wherein the umbilical cord tissue is substantially free of blood, and wherein said isolated homogenous population of the cells is capable of self-renewal and expansion in culture, has the potential to differentiate and does not express CD117 and/or telomerase.

2. The use of claim 1, wherein the isolated population of cells has one or more of the following characteristics:

(a) expresses oxidized low density lipoprotein receptor 1, reticulon, chemokine receptor ligand 3, and/or granulocyte chemotactic protein;

(b) does not express CD31, CD34 or CD45;

(c) expresses, relative to a human fibroblast, mesenchymal stem cell, or iliac crest bone marrow cell, increased levels of interleukin 8 or reticulon 1;

(d) has the potential to differentiate into cells of at least a skeletal muscle, vascular smooth muscle, pericyte or vascular endothelium phenotype; and

(e) expresses CD10, CD13, CD44, CD73, and CD90.

3. The use of claims 1 or 2, wherein the medicament is formulated for administration at the sites of peripheral ischemia.

4. The use of claims 1 or 2, wherein the medicament is formulated for administration by intramuscular injection, intravascular injection or injection into adipose depots in muscle.

5. The use of claims 1 or 2, wherein the medicament is formulated for local administration.

6. The use of claims 1 or 2, wherein the isolated population of cells is induced *in vitro* to differentiate into a skeletal muscle, vascular muscle, pericyte or vascular endothelium lineage prior to administration.

7. The use of any of claims 1 to 6, wherein the medicament further comprises an agent selected from the group consisting of an antithrombogenic agent, an immunosuppressive agent, an immunomodulatory agent, a pro-angiogenic, an antiapoptotic agent and mixtures thereof.

8. The use of any of claims 1 to 7, wherein the medicament further comprises at least one other cell type.

9. The use of claim 8, wherein the other cell type is a skeletal muscle cell, a skeletal muscle progenitor cell, a vascular smooth muscle cell, a vascular smooth muscle progenitor cell, a pericyte, a vascular endothelial cell, a vascular endothelium progenitor cell or other multipotent or pluripotent stem cell.

10. The use of any of claims 1 to 9, wherein the use comprises exertion of a trophic effect.

11. The use of claim 10, wherein the trophic effect is proliferation of vascular endothelial cells.

12. The use of any of claims 1 to 11, wherein the use induces migration of vascular endothelial cells and/or vascular endothelium progenitor cells to the sites of the peripheral disease.

13. The use of any of claims 1 to 12, wherein the use induces migration of vascular smooth muscle cells and/or vascular smooth muscle progenitor cells to the sites of the peripheral disease.

14. The use of any of claims 1 to 13, wherein the use induces migration of pericytes to the sites of the peripheral vascular disease.

15. A kit for enhancing reperfusion in a patient having a peripheral vascular ischemia comprising fibrinogen, thrombin and an isolated homogenous population of cells obtained from human umbilical cord tissue in an amount effective to treat the disease, wherein the kit comprises from about 16 to about 24 IU/ml of thrombin and from about 39.3 to about 60.7 mg/ml of fibrinogen, wherein the umbilical cord tissue is substantially free of blood, and wherein said isolated homogenous population of the cells is capable of self-renewal and expansion in culture, has the potential to differentiate and do not express CD117 and/or telomerase.

16. The kit of claim 15 further comprising instructions for use.

17. The kit of claims 15 or 16, wherein fibrinogen and the isolated homogenous population of cells are in a composition.

18. The kit of claim 17, wherein thrombin is added to the composition immediately prior to use.

19. The kit of any of claims 15 to 18, wherein the isolated population of cells has one or more of the following characteristics:

(a) expresses oxidized low density lipoprotein receptor 1, reticulon, chemokine receptor ligand 3, and/or granulocyte chemotactic protein;

(b) does not express CD31, CD34 or CD45;

(c) expresses, relative to a human fibroblast, mesenchymal stem cell, or iliac crest bone marrow cell, increased levels of interleukin 8 or reticulon 1;

(d) has the potential to differentiate into cells of at least a skeletal muscle, vascular smooth muscle, pericyte or vascular endothelium phenotype; and

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