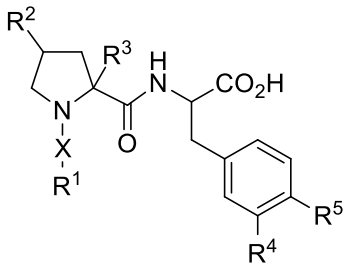
THE CLAIMS DEFINING THE INVENTION ARE AS FOLLOWS:

1. An effective amount of an antagonist of an α_9 integrin and a CXCR4 antagonist,when used for enhancing dislodgement and of haematopoietic stem cells (HSC) and their precursors and progenitors thereof from a bone marrow (BM) stem cell binding ligand to a BM stem cell niche, and/or enhances release of HSC and their precursors and progenitors thereof from the BM stem cell niche, and/or enhances mobilization of the HSC from the BM stem cell niche *in vivo* or *ex vivo*, wherein the antagonist of an α_9 integrin is a compound of Formula (I) or a pharmaceutically acceptable salt thereof having the following formula:



(I)

wherein

X is selected from the group consisting of a bond and $–SO_2–$;

R^1 is selected from the group consisting of optionally substituted phenyl and pyridine, wherein the phenyl is optionally substituted with at least one halogen group;

R^2 is selected from the group consisting of H and a substituent group;

R^3 is selected from the group consisting of H and C_1-C_4 alkyl;

R^4 is selected from the group consisting of H and $–OR^6$;

R^5 is selected from the group consisting of H and $–OR^7$;

provided that when R^4 is H then R^5 is $–OR^7$ and when R^4 is $–OR^6$ then R^5 is H;

R^6 is selected from the group consisting of H, C_1-C_4 alkyl, $–(CH_2)_n$-R^8, $–C(O)R^9$ and $–C(O)NR^{10}R^{11}$;

R^7 is selected from the group consisting of H, C_1-C_4 alkyl, $–(CH_2)_n$-R^{12}, $–C(O)R^{13}$ and $–C(O)NR^{14}R^{15}$;

R^8 is selected from the group consisting of optionally substituted alkyl, optionally substituted aryl, optionally substituted heteroaryl, $–O(C_1$-C_4 alkyl), $–C(O)$-$(C_1$-C_4 alkyl), $–C(O)O$-$(C_1$-C_4 alkyl) and –CN;

R^9 is selected from the group consisting of optionally substituted cycloalkyl, optionally substituted heterocycloalkyl, optionally substituted aryl and optionally substituted heteroaryl;

R^{10} and R^{11}, together with the nitrogen to which they are attached, form an optionally substituted heterocycloalkyl ring;

R^{12} is selected from the group consisting of optionally substituted alkyl, optionally substituted aryl, optionally substituted heteroaryl, –O(C_1-C_4 alkyl), –C(O)-(C_1-C_4 alkyl), –C(O)O-(C_1-C_4 alkyl) and –CN;

R^{13} is selected from the group consisting of optionally substituted cycloalkyl, optionally substituted aryl and optionally substituted heteroaryl;

R^{14} and R^{15} are each independently selected from the group consisting of C_1-C_4 alkyl and optionally substituted aryl; or

R^{14} and R^{15}, together with the nitrogen to which they are attached, form an optionally substituted heterocycloalkyl ring; and

n at each occurrence is an integer in the range of from 1 to 3.

2. An effective amount of an antagonist of an α9 integrin and a CXCR4 antagonist according to claim 1 wherein:

R^4 is H; and

R^5 is –OR^7.

3. An effective amount of an antagonist of an α9 integrin and a CXCR4 antagonist according to claim 1 or claim 2 wherein:

R^7 is selected from the group consisting of C_1-C_4 alkyl, –$(CH_2)_n$-R^{12}, –C(O)R^{13} and –C(O)$NR^{14}R^{15}$;

R^{12} is selected from the group consisting of C_1-C_4 alkyl, –CN, –O(C_1-C_4 alkyl) and optionally substituted heteroaryl;

R^{13} is selected from the group consisting of optionally substituted cycloalkyl, optionally substituted aryl and optionally substituted heteroaryl;

R^{14} and R^{15} are each independently selected from the group consisting of C_1-C_4 alkyl, optionally substituted aryl or

R^{14} and R^{15}, together with the nitrogen to which they are attached, form an optionally substituted heterocycloalkyl ring; and

n is 1 or 2.

4. An effective amount of an antagonist of an α9 integrin and a CXCR4 antagonist according to any one of claims 1 to 3 wherein:

R^7 is selected from the group consisting of C_1-C_4 alkyl, $–(CH_2)_n$-R^{12}, $–C(O)R^{13}$ and $–C(O)NR^{14}R^{15}$;

R^{12} is selected from the group consisting of C_1-C_4 alkyl, –CN, $–O(C_1$-C_4 alkyl) and 5-tetrazolyl;

R^{13} is 2-pyrrolyl;

R^{14} and R^{15} are each independently C_1-C_4 alkyl or

R^{14} and R^{15}, together with the nitrogen to which they are attached, form an optionally substituted pyrrolidinyl or morpholinyl ring; and

n is 1 or 2.

5. An effective amount of an antagonist of an α9 integrin and a CXCR4 antagonist according to any one of claims 1 to 4 wherein the antagonist of an α9 integrin is an α9β1 antagonist.

6. An effective amount of an antagonist of an α9 integrin and a CXCR4 antagonist according to any one of claims 1 to 5 in combination with an antagonist of α4 integrin.

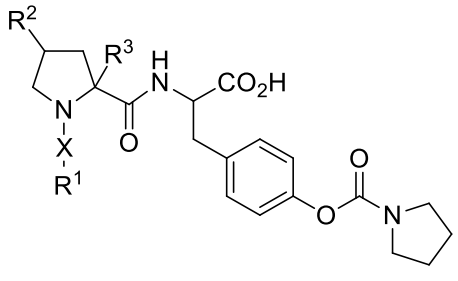
7. An effective amount of an antagonist of an α9 integrin and a CXCR4 antagonist according to claim 6 wherein the antagonist of α4 integrin is an α4β1 antagonist.

8. An effective amount of an antagonist of an α9 integrin and a CXCR4 antagonist according to any one of claims 1 to 7 when used for release and/or mobilization of haematopoietic stem cell (HSC) and their precursors and progenitors thereof from a bone marrow (BM) stem cell binding ligand to the BM stem cell niche and/or enhances release of HSC and their precursors and progenitors thereof from the BM stem cell niche, and/or enhances mobilization of the HSC from the BM stem cell niche *in vivo* or *ex vivo*.

9. An effective amount of an antagonist of an α9 integrin and a CXCR4 antagonist according to any one of claims 1 to 8 wherein the HSCs are endosteal progenitor cells selected from the group including CD34+cells, CD38+ cells, CD90+ cells, CD133+ cells, CD34+CD38− cells, lineage-committed CD34− cells, or CD34+CD38+ cells and their precursors and progenitors thereof.

10. An effective amount of an antagonist of an α9 integrin and a CXCR4 antagonist according to any one of claims 1 to 9 when used in the absence of G-CSF.

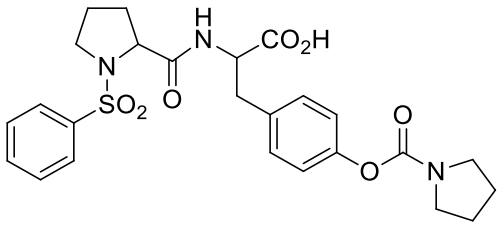
11. An effective amount of an antagonist of an α9 integrin and a CXCR4 antagonist according to any one of claims 1 to 10 wherein the compound of Formula (I) has the following Formula (Ia):



(Ia)

or a pharmaceutically acceptable salt thereof; or

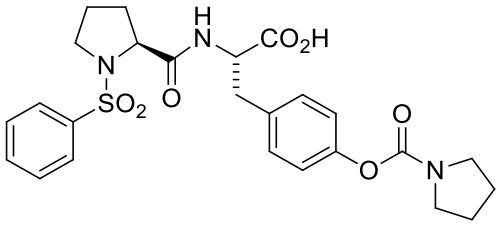
the compound of Formula (I) has the following Formula (Ib):



(Ib)

or a pharmaceutically acceptable salt thereof; or

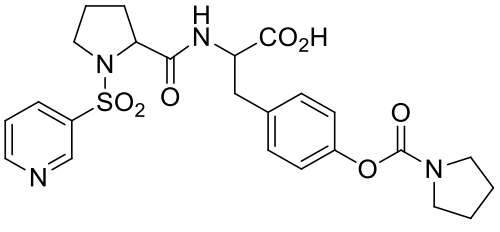
the compound of formula (I) has the following Formula (Ic):



(Ic)

or a pharmaceutically acceptable salt thereof; or

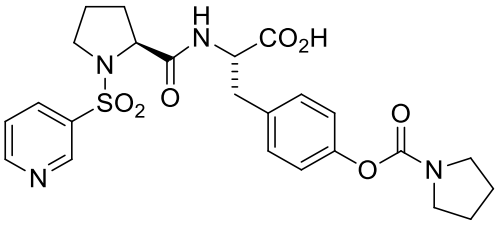
the compound of Formula (I) has the following Formula (Id):



(Id)

or a pharmaceutically acceptable salt thereof; or

the compound of formula (I) has the following Formula (Ie):



(Ie)

or a pharmaceutically acceptable salt thereof.

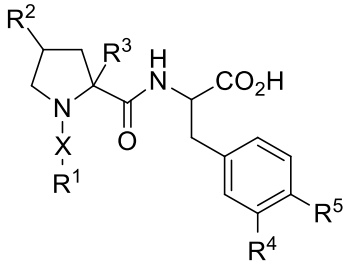
12. An effective amount of an antagonist of an α9 integrin and a CXCR4 antagonist according to any one of claims 1 to 11 wherein the CXCR4 antagonist is selected from the group including bicyclam derivatives, tetrahydroquinoline derivatives, cyclic peptides, para-xylyl-enediamine-based derivatives, isothiourea derivatives and POL6326, POL5551, CCTE-9908 and TG-0054.

13. An effective amount of an antagonist of an α9 integrin and a CXCR4 antagonist according to any one of claims 1 to 12 wherein the CXCR4 antagonist is AMD3100.

14. An effective amount of an antagonist of an α9 integrin and a CXCR4 antagonist according to any one of claims 1 to 13 wherein the antagonist of an α_9 integrin and the CXCR4 antagonist are used in combination, simultaneously or sequentially.

15. An effective amount of an antagonist of an α9 integrin and a CXCR4 antagonist according to any one of claims 1 to 14 wherein the HSC and their precursors and progenitors thereof are further mobilized in the presence of a HSC mobilizing agent selected from the group comprising interleukin-17, cyclophosphamide (Cy), Docetaxel and G-CSF.

16. A composition for enhancing dislodgement of HSC and their precursors and progenitors thereof, from a BM stem cell binding ligand to a BM stem cell niche and/or enhances release of HSC and their precursors and progenitors thereof from the BM stem cell niche, and/or enhances mobilization of the HSC from the BM stem cell niche, , said composition comprising an antagonist of α_9 integrin and a CXCR4 antagonist, wherein the α_9 integrin antagonist is a compound of Formula (I) or a pharmaceutically acceptable salt thereof having the formula:



(I)

wherein

X is selected from the group consisting of a bond and $–SO_2–$;

R^1 is selected from the group consisting of optionally substituted phenyl and pyridine, wherein the phenyl is optionally substituted with at least one halogen group;

R^2 is selected from the group consisting of H and a substituent group;

R^3 is selected from the group consisting of H and C_1-C_4 alkyl;

R^4 is selected from the group consisting of H and $–OR^6$;

R^5 is selected from the group consisting of H and $–OR^7$;

provided that when R^4 is H then R^5 is $–OR^7$ and when R^4 is $–OR^6$ then R^5 is H;

R^6 is selected from the group consisting of H, C_1-C_4 alkyl, $–(CH_2)_n$-R^8, $–C(O)R^9$ and $–C(O)NR^{10}R^{11}$;

R^7 is selected from the group consisting of H, C_1-C_4 alkyl, $–(CH_2)_n$-R^{12}, $–C(O)R^{13}$ and $–C(O)NR^{14}R^{15}$;

R^8 is selected from the group consisting of optionally substituted alkyl, optionally substituted aryl, optionally substituted heteroaryl, $–O(C_1$-C_4 alkyl), $–C(O)$-$(C_1$-C_4 alkyl), $–C(O)O$-$(C_1$-C_4 alkyl) and –CN;

R^9 is selected from the group consisting of optionally substituted cycloalkyl, optionally substituted heterocycloalkyl, optionally substituted aryl and optionally substituted heteroaryl;

R^{10} and R^{11}, together with the nitrogen to which they are attached, form an optionally substituted heterocycloalkyl ring;

R^{12} is selected from the group consisting of optionally substituted alkyl, optionally substituted aryl, optionally substituted heteroaryl, $–O(C_1$-C_4 alkyl), $–C(O)$-$(C_1$-C_4 alkyl), $–C(O)O$-$(C_1$-C_4 alkyl) and –CN;

R^{13} is selected from the group consisting of optionally substituted cycloalkyl, optionally substituted aryl and optionally substituted heteroaryl; preferably 2-pyrrolyl;

R^{14} and R^{15} are each independently selected from the group consisting of C_1-C_4 alkyl and optionally substituted aryl, preferably C_1–C_4 alkyl; or

R^{14} and R^{15}, together with the nitrogen to which they are attached, form an optionally substituted heterocycloalkyl ring; preferably an optionally substituted pyrrolidinyl or morpholinyl ring; and

n at each occurrence is an integer in the range of from 1 to 3.

17. A composition according to claim 16 wherein:

R^4 is H; and

R^5 is $–OR^7$.

18. A composition according to claim 16 or claim 17 wherein:

R^7 is selected from the group consisting of C_1-C_4 alkyl, $–(CH_2)_n$-R^{12}, $–C(O)R^{13}$ and $–C(O)NR^{14}R^{15}$;

R^{12} is selected from the group consisting of C_1-C_4 alkyl, –CN, $–O(C_1$-C_4 alkyl) and optionally substituted heteroaryl;

R^{13} is selected from the group consisting of optionally substituted cycloalkyl, optionally substituted aryl and optionally substituted heteroaryl;

R^{14} and R^{15} are each independently selected from the group consisting of C_1-C_4 alkyl, optionally substituted aryl or

R^{14} and R^{15}, together with the nitrogen to which they are attached, form an optionally substituted heterocycloalkyl ring; and

n is 1 or 2.

19. A composition according to any one of claims 16 to 18 wherein:

R^7 is selected from the group consisting of C_1-C_4 alkyl, $–(CH_2)_n$-R^{12}, $–C(O)R^{13}$ and $–C(O)NR^{14}R^{15}$;

R^{12} is selected from the group consisting of C_1-C_4 alkyl, –CN, $–O(C_1$-C_4 alkyl) and 5-tetrazolyl;

R^{13} is 2-pyrrolyl;

R^{14} and R^{15} are each independently C_1-C_4 alkyl or

R^{14} and R^{15}, together with the nitrogen to which they are attached, form an optionally substituted pyrrolidinyl or morpholinyl ring; and

n is 1 or 2.

20. A composition according to any one of claims 16 to 19 wherein the antagonist of an α9 integrin is an α9β1 antagonist.

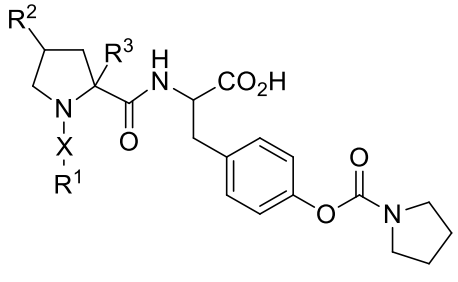
21. A composition according to any one of claims 16 to 20 in combination with an antagonist of α4 integrin.

22. A composition according to claim 21 wherein the antagonist of α4 integrin is an α4β1 antagonist.

23. A composition according to any one of claims 16 to 22 when used for release and/or mobilization of haematopoietic stem cell (HSC) and their precursors and progenitors thereof from a bone marrow (BM) stem cell binding ligand to the BM stem cell niche and/or enhances release of HSC and their precursors and progenitors thereof from the BM stem cell niche, and/or enhances mobilization of the HSC from the BM stem cell niche *in vivo* or *ex vivo*.

24. A composition according to any one of claims 16 to 23 wherein the HSCs are endosteal progenitor cells selected from the group including CD34+cells, CD38+ cells, CD90+ cells, CD133+ cells, CD34+CD38− cells, lineage-committed CD34− cells, or CD34+CD38+ cells and their precursors and progenitors thereof.

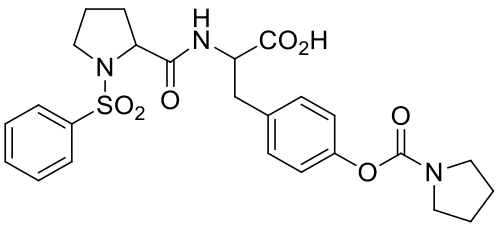
25. A composition according to any one of claims 16 to 24 wherein the compound of Formula (I) has the following Formula (Ia):



(Ia)

or a pharmaceutically acceptable salt thereof; or

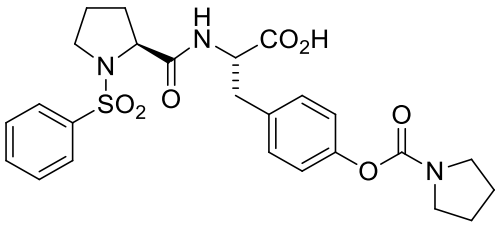
the compound of Formula (I) has the following Formula (Ib):



(Ib)

or a pharmaceutically acceptable salt thereof; or

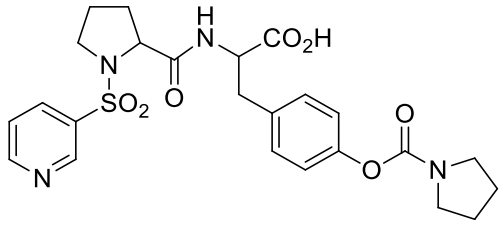
the compound of formula (I) has the following Formula (Ic):



(Ic)

or a pharmaceutically acceptable salt thereof; or

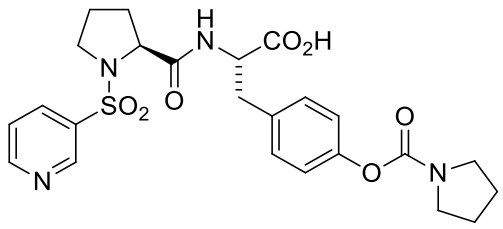
the compound of Formula (I) has the following Formula (Id):



(Id)

or a pharmaceutically acceptable salt thereof; or

the compound of formula (I) has the following Formula (Ie):



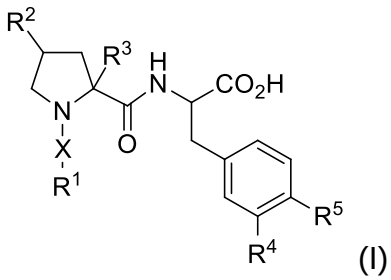
(Ie)

or a pharmaceutically acceptable salt thereof.

26. A composition according to any one of claims 16 to 25 wherein the CXCR4 antagonist is selected from the group including bicyclam derivatives, tetrahydroquinoline derivatives, cyclic peptides, para-xylyl-enediamine-based derivatives, isothiourea derivatives and POL6326, POL5551, CCTE-9908 and TG-0054.

27. A composition according to any one of claims 16 to 26 wherein the CXCR4 antagonist is AMD3100.

28. A use of an effective amount of an antagonist of an α_9 integrin and a CXCR4 antagonist for harvesting HSC from peripheral blood of a subject wherein said effective amount enhances dislodgement of HSC and their precursors and progenitors thereof from a BM stem cell binding ligand in a BM stem cell niche prior to harvesting the HSC wherein the α_9 antagonist is a compound of Formula (I) or a pharmaceutically acceptable salt thereof having the formula:



(I)

wherein

X is selected from the group consisting of a bond and $–SO_2–$;

R^1 is selected from the group consisting of optionally substituted phenyl and pyridine, wherein the phenyl is optionally substituted with at least one halogen;

R^2 is selected from the group consisting of H and a substituent group;

R^3 is selected from the group consisting of H and C_1-C_4 alkyl;

R^4 is selected from the group consisting of H and $–OR^6$;

R^5 is selected from the group consisting of H and $–OR^7$;;

provided that when R^4 is H then R^5 is $–OR^7$ and when R^4 is $–OR^6$ then R^5 is H;

R^6 is selected from the group consisting of H, C_1-C_4 alkyl, $–(CH_2)_n$-R^8, $–C(O)R^9$ and $–C(O)NR^{10}R^{11}$;

R^7 is selected from the group consisting of H, C_1-C_4 alkyl, $–(CH_2)_n$-R^{12}, $–C(O)R^{13}$ and $–C(O)NR^{14}R^{15}$;;

R^8 is selected from the group consisting of optionally substituted alkyl, optionally substituted aryl, optionally substituted heteroaryl, $–O(C_1$-C_4 alkyl), $–C(O)$-$(C_1$-C_4 alkyl), $–C(O)O$-$(C_1$-C_4 alkyl) and –CN;

R^9 is selected from the group consisting of optionally substituted cycloalkyl, optionally substituted heterocycloalkyl, optionally substituted aryl and optionally substituted heteroaryl;

R^{10} and R^{11}, together with the nitrogen to which they are attached, form an optionally substituted heterocycloalkyl ring;

R^{12} is selected from the group consisting of optionally substituted alkyl, optionally substituted aryl, optionally substituted heteroaryl, $–O(C_1$-C_4 alkyl), $–C(O)$-$(C_1$-C_4 alkyl), $–C(O)O$-$(C_1$-C_4 alkyl) and –CN;;

R^{13} is selected from the group consisting of optionally substituted cycloalkyl, optionally substituted aryl and optionally substituted heteroaryl; preferably 2-pyrrolyl;

R^{14} and R^{15} are each independently selected from the group consisting of C_1-C_4 alkyl and optionally substituted aryl; preferably C_1–C_4 alkyl; or

R^{14} and R^{15}, together with the nitrogen to which they are attached, form an optionally substituted heterocycloalkyl ring;; and

n at each occurrence is an integer in the range of from 1 to 3.

29. A use of an effective amount of an antagonist of an α9 integrin and a CXCR4 antagonist according to claim 28 wherein:

R^4 is H; and

R^5 is $–OR^7$.

30. A use of an effective amount of an antagonist of an α9 integrin and a CXCR4 antagonist according to claim 28 or claim 29 wherein:

R^7 is selected from the group consisting of C_1-C_4 alkyl, $–(CH_2)_n$-R^{12}, $–C(O)R^{13}$ and $–C(O)NR^{14}R^{15}$;

R^{12} is selected from the group consisting of C_1-C_4 alkyl, –CN, $–O(C_1$-C_4 alkyl) and optionally substituted heteroaryl;

R^{13} is selected from the group consisting of optionally substituted cycloalkyl, optionally substituted aryl and optionally substituted heteroaryl;

R^{14} and R^{15} are each independently selected from the group consisting of C_1-C_4 alkyl, optionally substituted aryl or

R^{14} and R^{15}, together with the nitrogen to which they are attached, form an optionally substituted heterocycloalkyl ring; and

n is 1 or 2.

31. A use of an effective amount of an antagonist of an α9 integrin and a CXCR4 antagonist according to any one of claims 28 to 30 wherein:

R^7 is selected from the group consisting of C_1-C_4 alkyl, $–(CH_2)_n$-R^{12}, $–C(O)R^{13}$ and $–C(O)NR^{14}R^{15}$;

R^{12} is selected from the group consisting of C_1-C_4 alkyl, –CN, $–O(C_1$-C_4 alkyl) and 5-tetrazolyl;

R^{13} is 2-pyrrolyl;

R^{14} and R^{15} are each independently C_1-C_4 alkyl or

R^{14} and R^{15}, together with the nitrogen to which they are attached, form an optionally substituted pyrrolidinyl or morpholinyl ring; and

n is 1 or 2.

32. A use of an effective amount of an antagonist of an α9 integrin and a CXCR4 antagonist according to any one of claims 28 to 31 wherein the antagonist of an α9 integrin is an α9β1 antagonist.

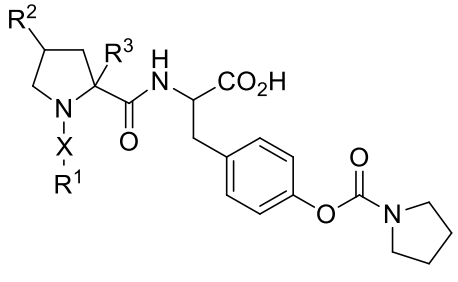
33. A use of an effective amount of an antagonist of an α9 integrin and a CXCR4 antagonist according to any one of claims 28 to 32 in combination with an antagonist of α4 integrin.

34. A use of an effective amount of an antagonist of an α9 integrin and a CXCR4 antagonist according to any one of claims 28 to 33 wherein the antagonist of α4 integrin is an α4β1 antagonist.

35. A use of an effective amount of an antagonist of an α9 integrin and a CXCR4 antagonist according to any one of claims 28 to 34 when used for release and/or mobilization of haematopoietic stem cell (HSC) and their precursors and progenitors thereof from a bone marrow (BM) stem cell binding ligand to the BM stem cell niche and/or enhances release of HSC and their precursors and progenitors thereof from the BM stem cell niche, and/or enhances mobilization of the HSC from the BM stem cell niche *in vivo* or *ex vivo*.

36. A use of an effective amount of an antagonist of an α9 integrin and a CXCR4 antagonist according to any one of claims 28 to 35 wherein the HSCs are endosteal progenitor cells selected from the group including CD34+cells, CD38+ cells, CD90+ cells, CD133+ cells, CD34+CD38− cells, lineage-committed CD34− cells, or CD34+CD38+ cells and their precursors and progenitors thereof.

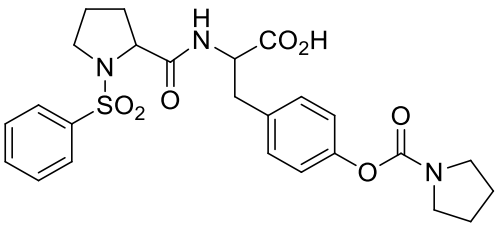
37. A use of an effective amount of an antagonist of an α9 integrin and a CXCR4 antagonist according to any one of claims 28 to 36 wherein the compound of Formula (I) has the following Formula (Ia):



(Ia)

or a pharmaceutically acceptable salt thereof; or

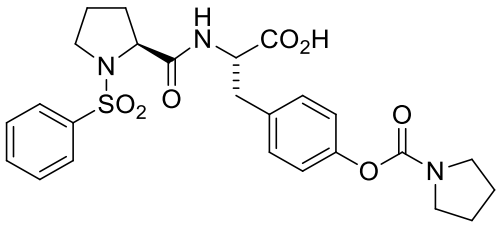
the compound of Formula (I) has the following Formula (Ib):



(Ib)

or a pharmaceutically acceptable salt thereof; or

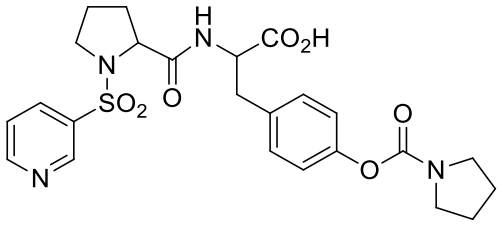
the compound of formula (I) has the following Formula (Ic):



(Ic)

or a pharmaceutically acceptable salt thereof; or

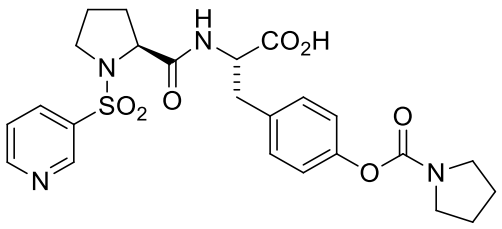
the compound of Formula (I) has the following Formula (Id):



(Id)

or a pharmaceutically acceptable salt thereof; or

the compound of formula (I) has the following Formula (Ie):



(Ie)

or a pharmaceutically acceptable salt thereof.

38. A use according to any one of claims 28 to 37 wherein the CXCR4 antagonist is selected from the group including bicyclam derivatives, tetrahydroquinoline derivatives, cyclic peptides, para-xylyl-enediamine-based derivatives, isothiourea derivatives and POL6326, POL5551, CCTE-9908 and TG-0054 .

39. A use according to any one of claims 28 to 38 wherein the CXCR4 antagonist is AMD3100.

40. A use according to any one of claims 28 to 39 in the absence of G-CSF.

41. An effective amount of an antagonist of an α9 integrin and a CXCR4 antagonist according to any one of claims 1 to 15 or a use according to any one of claims 28 to 40 wherein the HSC and their precursors and progenitors thereof are further mobilized in the presence of interleukin-17, cyclophosphamide (Cy), Docetaxel or G-CSF.

42. A use of an effective amount of an antagonist of an α_9 integrin and a CXCR4 antagonist according to any one of claims 28 to 41 wherein the HSCs can be transplanted by reintroducing the cells into the same subject or transplanting the cells into a second subject with a haematological disorder selected from the group including haematological neoplastic disorders, autoimmune diseases, cancers, and non-malignant disorders.

43. A use according to claim 42 wherein the haematological disorder is selected from poorly differentiated acute leukemias, myeloid disorders, lymphoid malignancies, and malignant lymphomas; and autoimmune diseases are selected from multiple sclerosis (MS), myasthenia gravis, autoimmune neuropathy, scleroderma, aplastic anemia, and systemic lupus erythematosus; and non-malignant disorders are selected from aplastic anemia, a hemoglobinopathy, including sickle cell anemia, or an immune deficiency disorder.

44. A use according to claim 42 or 43 wherein the haematological disorder is an acute leukemia selected from erythroblastic leukemia and acute megakaryoblastic

leukemia; myeloid disorders are selected from acute promyeloid leukemia (APML), chronic myelogenous leukemia (CML); lymphoid malignancies are selected from acute lymphoblastic leukemia (ALL), chronic lymphocytic leukemia (CLL), prolymphocytic leukemia (PLL), hairy cell leukemia (HCL) and Waldenstrom's macroglobulinemia (WM); and malignant lymphomas are selected from Hodgkin's Disease and Medium/High grade (aggressive) Non-Hodgkin's lymphoma and variants thereof, peripheral T cell lymphomas, adult T cell leukemia/lymphoma (ATL), cutaneous T-cell lymphoma (CTCL), large granular lymphocytic leukemia (LGF), Hodgkin's disease and Reed- Sternberg disease.

45. A use according to claim 44 wherein the haematological disorder is an acute lymphoblastic leukemia (ALL) selected from B-lineage ALL and T-lineage ALL.

46. A use of a composition according to any one of claims 16 to 27 in the preparation of a medicament for the treatment of a haematological disorder selected from haematological neoplastic disorders, autoimmune diseases, cancers, and non-malignant disorders.

47. A use according to claim 46 wherein the haematological disorder is selected from poorly differentiated acute leukemias, myeloid disorders, lymphoid malignancies, and malignant lymphomas; and autoimmune diseases are selected from multiple sclerosis (MS), myasthenia gravis, autoimmune neuropathy, scleroderma, aplastic anemia, and systemic lupus erythematosus; and non-malignant disorders are selected from aplastic anemia, a hemoglobinopathy, including sickle cell anemia, or an immune deficiency disorder.

48. A use according to claim 46 or 47 wherein the haematological disorder is an acute leukemia selected from erythroblastic leukemia and acute megakaryoblastic leukemia; myeloid disorders are selected from acute promyeloid leukemia (APML), chronic myelogenous leukemia (CML); lymphoid malignancies are selected from acute lymphoblastic leukemia (ALL), chronic lymphocytic leukemia (CLL), prolymphocytic leukemia (PLL), hairy cell leukemia (HCL) and Waldenstrom's macroglobulinemia (WM); and malignant lymphomas are selected from Hodgkin's

Disease and Medium/High grade (aggressive) Non-Hodgkin's lymphoma and variants thereof, peripheral T cell lymphomas, adult T cell leukemia/lymphoma (ATL), cutaneous T-cell lymphoma (CTCL), large granular lymphocytic leukemia (LGF), Hodgkin's disease and Reed- Sternberg disease.

49. A use according to claim 48 wherein the haematological disorder is an acute lymphoblastic leukemia (ALL) selected from B-lineage ALL and T-lineage ALL.