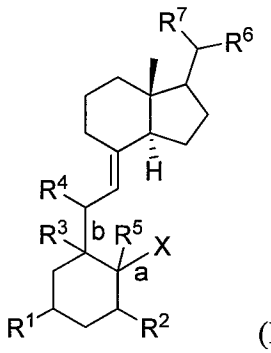
CLAIMS

1. Use of a vitamin D compound or a pharmaceutically acceptable salt thereof in the manufacture of a medicament for preventing or reducing chemotherapy-induced myelosuppression in a subject having cancer, which is to be administered to the subject at least 3 days prior to administration of a chemotherapeutic agent which induces myelosuppression to treat the cancer.

2. The use of claim 1, wherein the vitamin D compound is of Formula (I):



(I)

wherein

a and b are each independently a single or double bond

X is $-CH_2$ when a is a double bond, or X is hydrogen or a hydroxyl substituted alkyl when a is a single bond;

R^1 is hydrogen, hydroxyl, alkoxy, tri-alkyl silyl or a substituted or unsubstituted alkyl, independently substituted with one to three halogen, hydroxyl, cyano or -NR'R" moieties;

R^2 is hydrogen, hydroxyl, -O-trialkyl silyl, or a substituted or unsubstituted alkyl, alkoxyl or alkenyl, independently substituted with one to three halogen, hydroxyl, cyano or -NR'R" moieties;

R^3 is absent when b is a double bond or R^3 is hydrogen, hydroxyl or alkyl, or R^3 and R^1 together with the carbon atoms to which they are attached may be linked to form 5-7 membered carbocyclic ring when b is a single bond;

R^4 is hydrogen, halogen or hydroxyl;

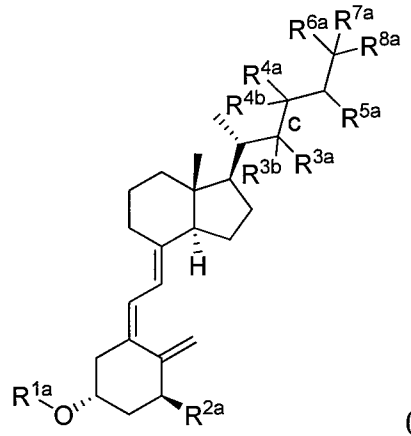
R^5 is absent when a is a double bond or R^5 is hydrogen, halogen or hydroxyl when a is a single bond;

R^6 is a substituted or unsubstituted alkyl, alkenyl, alkynyl, cycloalkyl, heterocyclicyl, alkyl-O-alkyl, alkyl-CO_2-alkyl independently substituted with one to five, hydroxyl, oxo, halogen, alkoxyl, aryl, heteroaryl, cyano, nitro or -NR'R" moieties;

R^7 is a substituted or unsubstituted alkyl independently substituted with one to three hydroxyl, halogen, alkoxyl, aryl, heteroaryl, cyano, nitro or -NR'R" moieties; and,

R' and R" are each, independently, hydrogen, hydroxyl, halogen, -C_{1-7} alkyl or -C_{1-7} alkoxyl such that said chemotherapy-induced myelosuppression (CIM) is prevented or reduced.

3. The use of claim 1, wherein the vitamin D compound is represented by Formula (II):



(II)

wherein

c is a single or double bond;

R^{1a} is hydrogen, tri-alkyl silyl or a substituted or unsubstituted alkyl, independently substituted with one to three halogen, hydroxyl, cyano or -NR'R" moieties;

R^{2a} is hydrogen, hydroxyl, -O-trialkyl silyl, or a substituted or unsubstituted alkyl, alkoxyl or alkenyl, independently substituted with one to three halogen, hydroxyl, cyano or -NR'R" moieties;

R^{3a}, R^{4a} are absent when c is a double bond, or are each independently hydrogen, hydroxyl, halogen, alkoxyl or a substituted or unsubstituted alkyl independently substituted with one to three hydroxyl or halogen moieties when c is a single bond

R^{3b}, R^{4b}, R^{5a}, R^{6a}, R^{7a} and R^{8a} are each, independently, hydrogen, hydroxyl, halogen, alkoxyl or a substituted or unsubstituted alkyl independently substituted with one to three hydroxyl or halogen moieties, or any two of R^{6a}, R^{7a} and R^{8a} may be linked to form a 3-7 membered carbocyclic ring.

4. The use of claim 1, wherein said vitamin D compound comprises 1,25-dihydroxyvitamin D3; 1,25-dihydroxy-16-ene-23-yne-cholecalciferol; 1β-hydroxyvitamin D3; 1β,24-dihydroxyvitamin D3, MC 903, or combinations thereof.

5. The use of claim 1, wherein said vitamin D compound is administered topically or systemically.

6. The use of claim 1, wherein the chemotherapy involves the use of a cell cycle-specific chemotherapeutic agent.

7. The use of claim 1, wherein the chemotherapy involves the use of a cell cycle nonspecific chemotherapeutic agent.

8. The use of claim 1, wherein the chemotherapeutic agent is a cell cycle-specific agent in combination with a cell cycle nonspecific agent.

9. The use of claim 1, wherein said vitamin D compound is administered 3, 3.5 or 4 days prior to the administration of said chemotherapeutic agent.

10. The use of claim 1, wherein the subject is a mammal.

11. The use of claim 1, wherein the vitamin D compound is co-administered with an additional agent that counteracts chemotherapy-induced anemia.

12. The use of claim 11, wherein the agent is a growth factor.

13. The use of claim 12, wherein said growth factor is granulocyte-colony stimulating factor (G-CSF) or erythropoietin (EPO).

14. The use of claim 1, wherein the vitamin D compound is formulated as a sterile solution comprising between 50 μg/mL and 400 μg/mL of the vitamin D compound.

15. The use of claim 14, wherein the formulation further comprises anhydrous undenatured ethanol and polysorbate 20.

16. The use of claim 14, wherein the formulation is diluted 1:10 in 0.9% sodium chloride solution prior to administration to the subject.

17. The use of claim 14, wherein the formulation comprises 75 μg/mL vitamin D compound.

18. The use of claim 14, wherein the formulation comprises 345 μg/mL vitamin D compound.

19. The use of any one of claims 1-14, wherein the vitamin D compound is calcitriol.

20. Use of a vitamin D compound or a pharmaceutically acceptable salt thereof in the manufacture of a medicament for reducing the risk of or preventing a disorder caused by chemotherapy-induced myelosuppression in a subject having cancer,

which is to be administered to the subject at least 3 days prior to administration of a chemotherapeutic agent that induces myelosuppression to treat the cancer.

21. The use of claim 20, wherein said disorder is an infection.

22. Use of a vitamin D compound or a pharmaceutically acceptable salt thereof in the manufacture of a medicament for preventing depletion of neutrophils caused by chemotherapy-induced myelosuppression in a subject having cancer, which is to be administered to the subject at least 3 days prior to administration of a chemotherapeutic agent that induces myelosuppression to treat the cancer.

23. The use of any one of claims 20-22, wherein the vitamin D compound is selected from the group consisting of 1,25-dihydroxyvitamin D3; 1,25-dihydroxy-16-ene-23-yne-cholecalciferol; 1β-hydroxyvitamin D3; 1β,24-dihydroxyvitamin D3, MC 903, or combinations thereof.

24. The use of any one of claims 20-22, wherein the vitamin D compound is calcitriol.