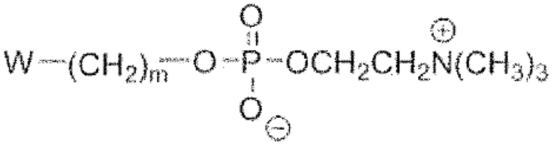
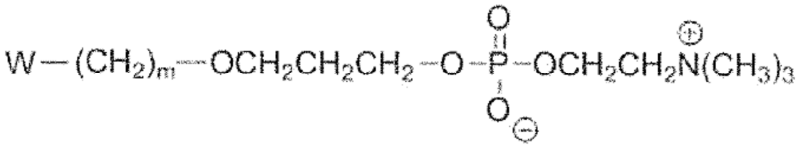
Claims

1. A therapeutic compound comprising the formula A-B-D wherein:

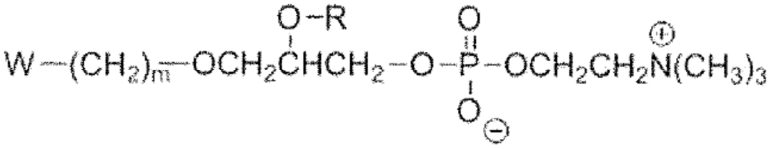
A is at least one compound of formula (I),



(I), at least one compound of formula (II),

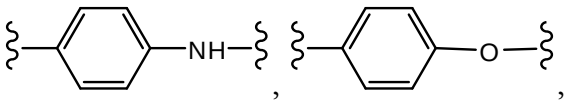
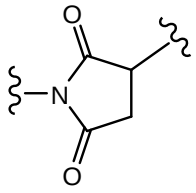


(II), at least one compound of formula (III)



(III), or a combination thereof,

wherein W is selected from the group consisting of an aryl, a $C_1$-$C_6$ alkyl, an alkenyl, an optionally substituted $C_3$-$C_6$ cycloalkyl, an optionally substituted $C_3$-$C_6$ heterocycloalkyl,

, , and , wherein R is H or an alkyl and wherein m is an integer from 12 to 24;

B is a linker compound selected from a bond and a compound of formula (IV), Y-$(CH_2)_n$-Z(IV), wherein:

Y is bound to A;

Z is bound to D;

Y is selected from the group consisting of a bond, O, NH, C=O, $NHSO_2O$, and OC(=O)O;

Z is selected from the group consisting of O, NH, C=O, C(=O)O, C(=O)NH, $SO_2$, $OC(=O)OCH_2$, and –S-S-; and

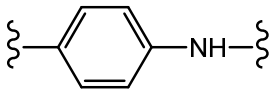
n is an integer from 0 to 6; and

D is an anti-cancer drug.

2. The therapeutic compound of claim 1 wherein:

D is selected from the group consisting of paclitaxel, irinotecan, topotecan, gemcitabine, cisplatin, geldanamycin and mertansine.

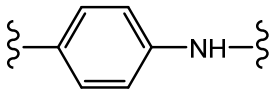
3. The therapeutic compound of claim 1 wherein:

A is a compound of formula (I), wherein W is  and m is 18;

B is a compound of formula (IV), wherein Y is C=O and Z is C=O, C(=O)NH or C(=O)O and n is 3 or 4; and

D is paclitaxel.

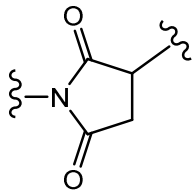
4. The therapeutic compound of claim 1 wherein:

A is a compound of formula (I), wherein W is  and m is 18;

B is a bond or a compound of formula (IV), wherein Y is C=O, Z is NH and n is 1 or 3; and

D is geldanamycin.

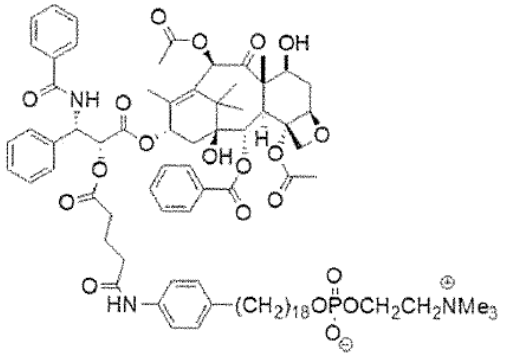
5. The therapeutic compound of claim 1 wherein:

A is a compound of formula (I), wherein W is  and m is 18;

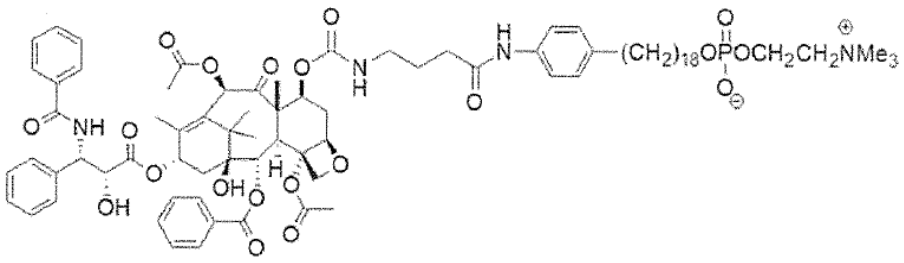
B is a bond; and

D is mertansine.

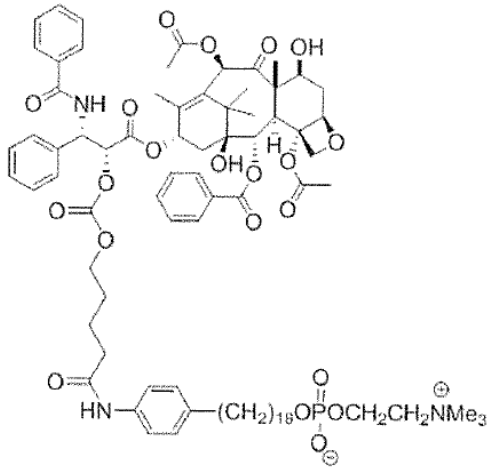
6. A therapeutic compound selected from the group consisting of:



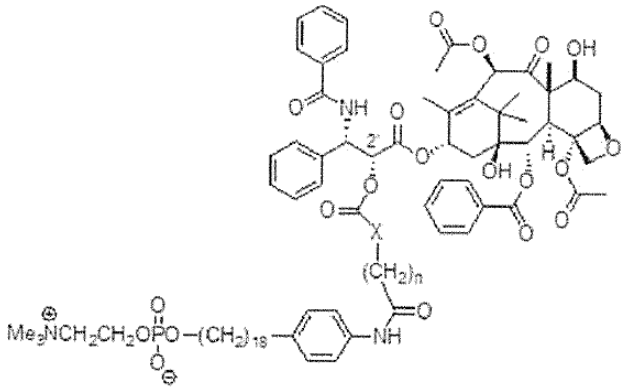
;



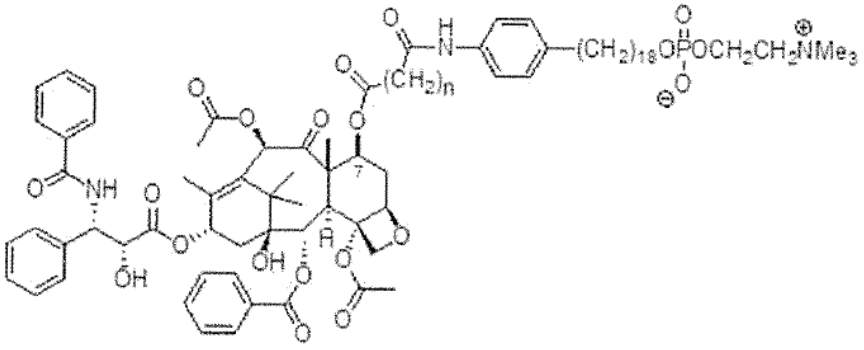
;



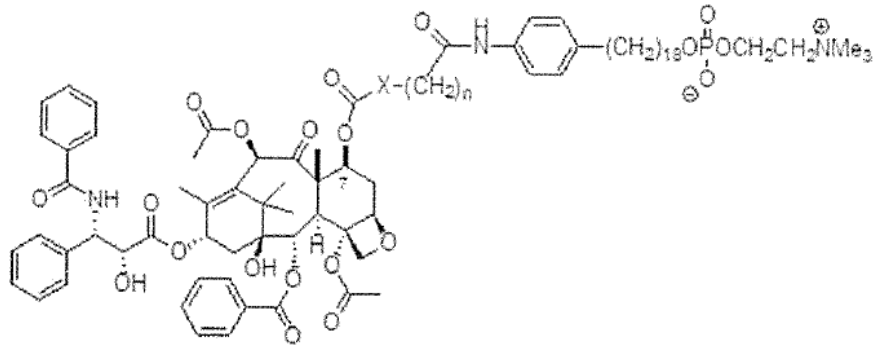
;



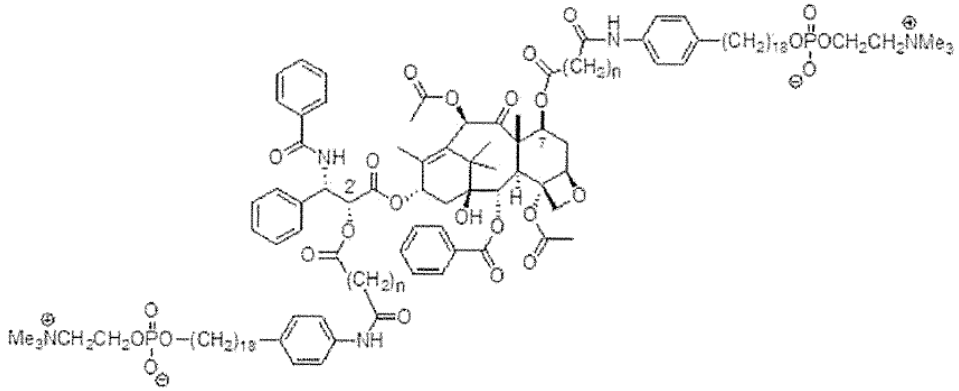
;



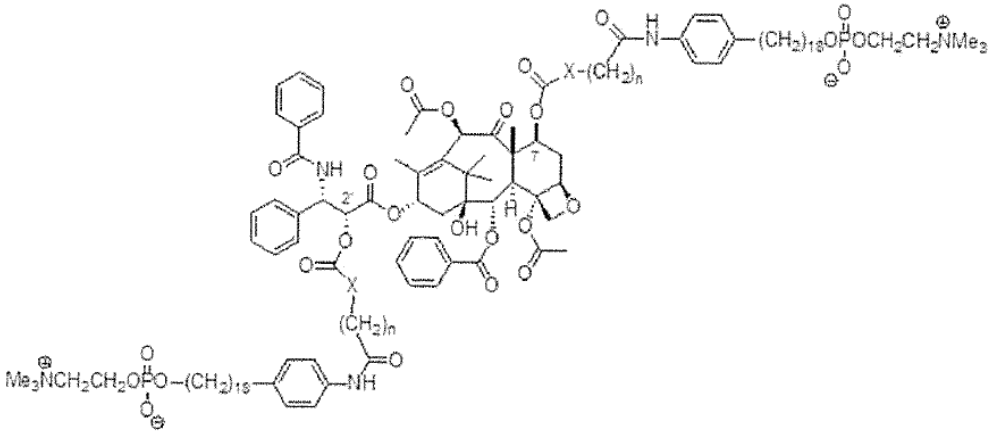
;



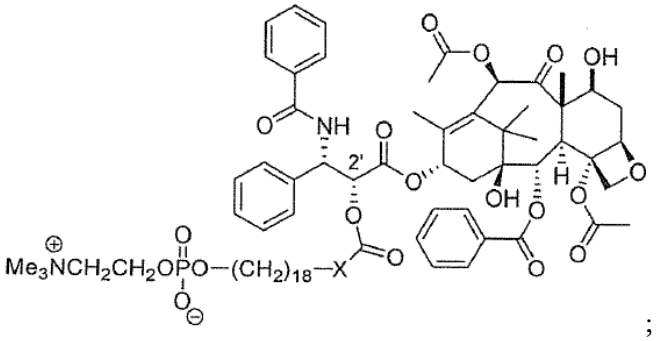
;



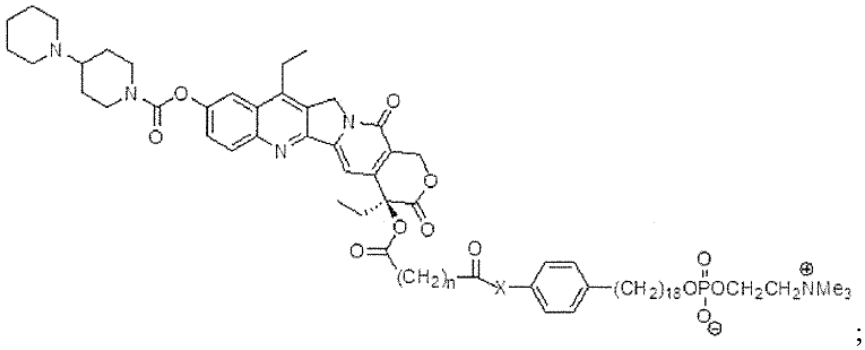
;



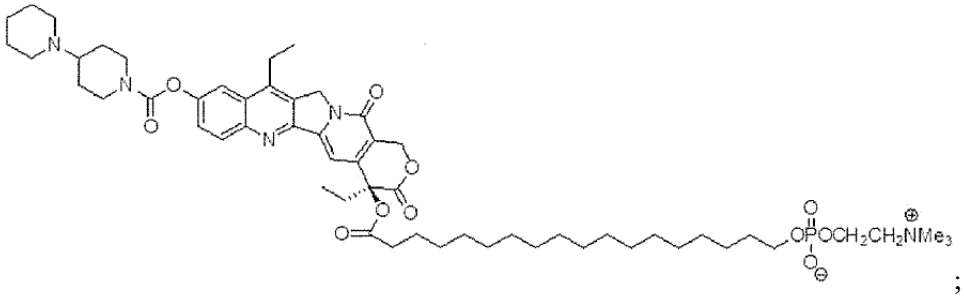
;



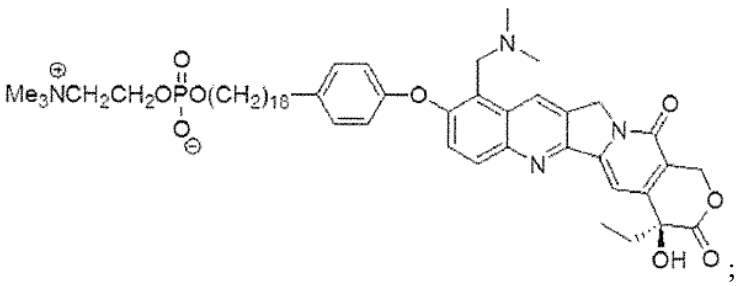
;



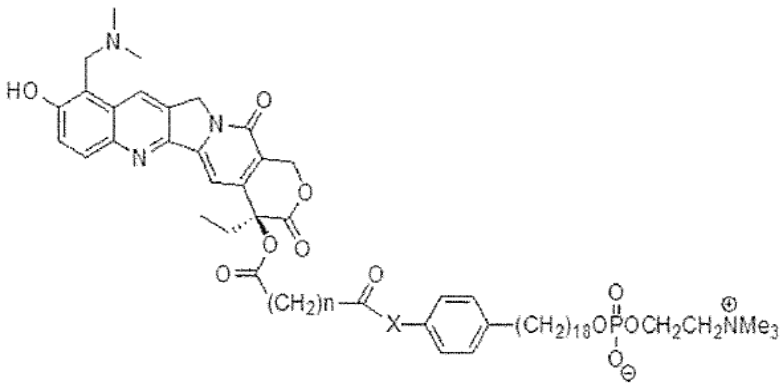
;

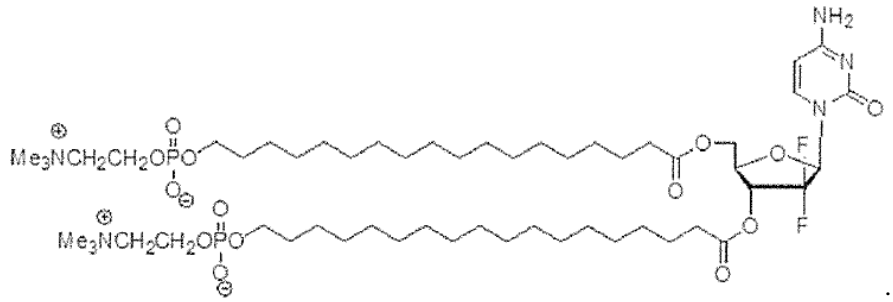


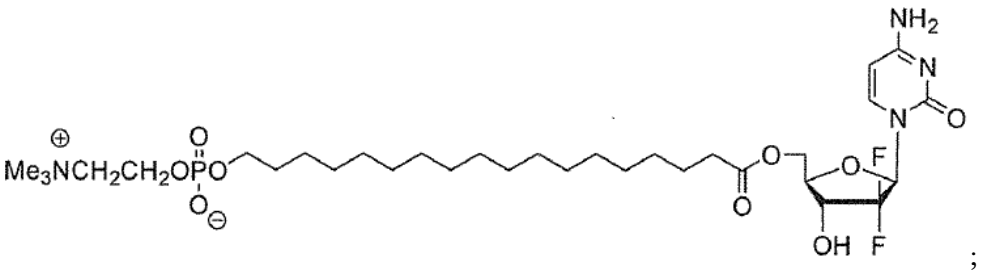
;

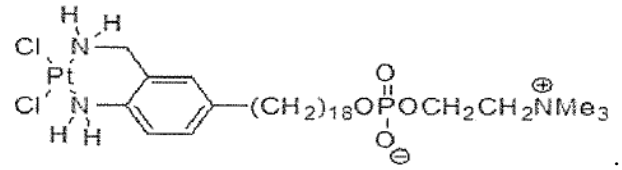


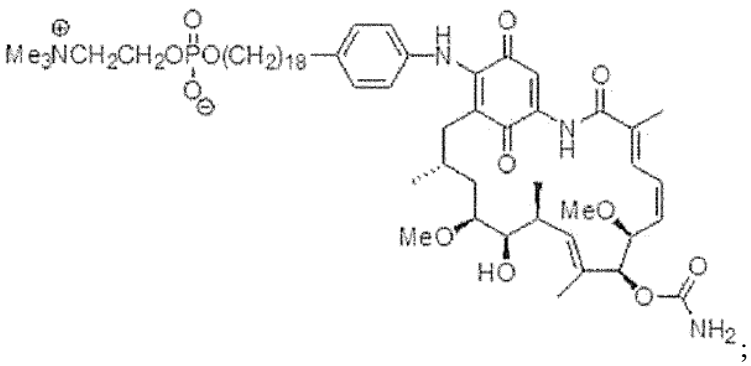
;

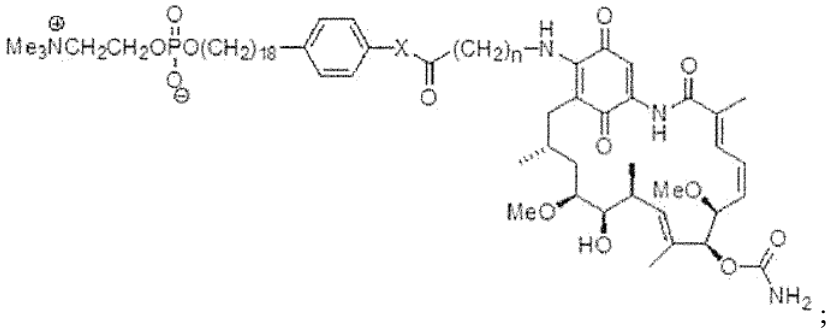

;

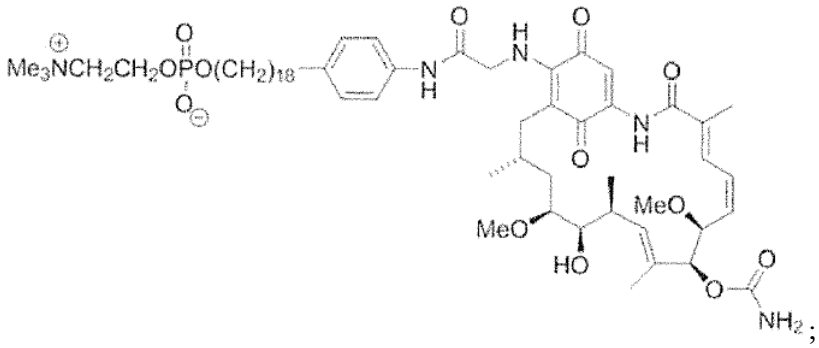

;

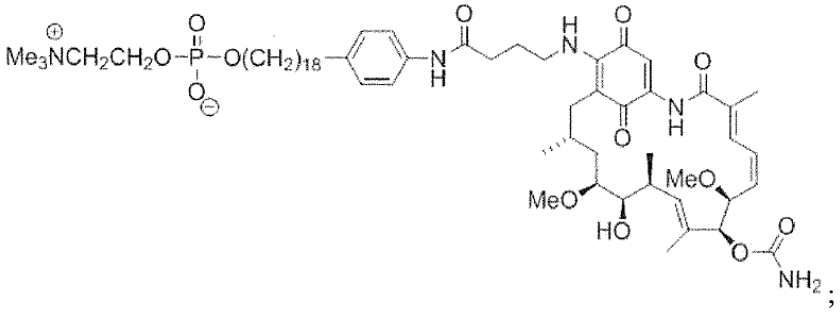

;

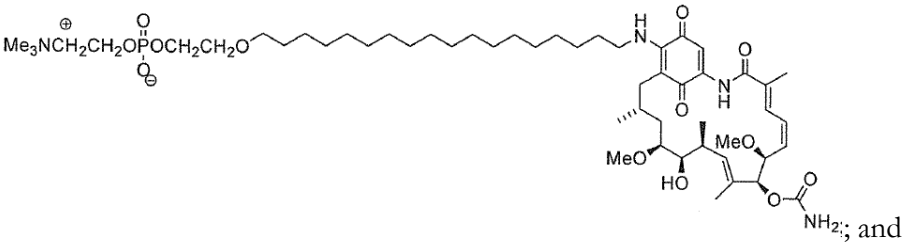

;


;

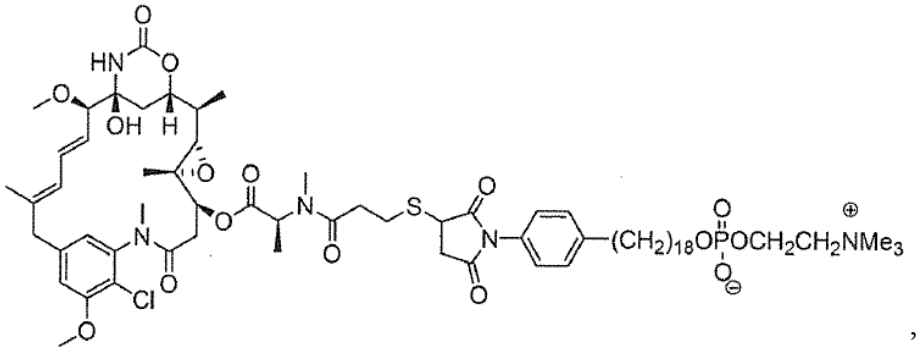






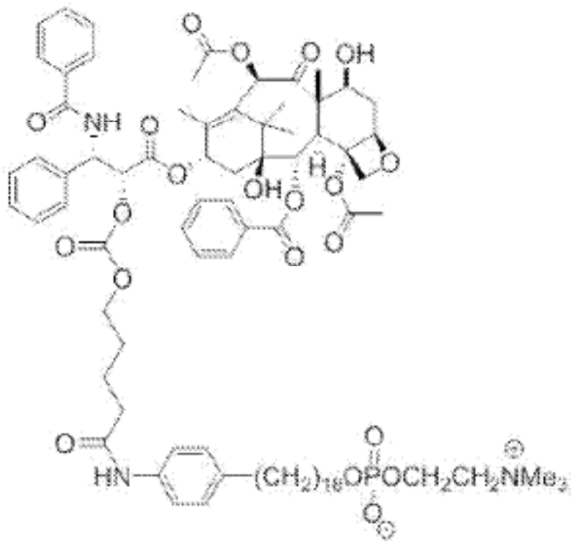


; and



wherein n is an integer from 0 to 6 and X is O or NH.

7. A therapeutic compound of Formula (V),



(V).

8. A pharmaceutical composition comprising a therapeutic compound of claims 1, 6, or 7 and one or more pharmaceutically acceptable carriers.

9. Use of a therapeutic compound of claim 1, 6, or 7 in the manufacture of a medicament for treating cancer in a subject.

10. The use of claim 9 wherein the cancer comprises cancer stem cells.

11. The use of claim 9 wherein the cancer is recurrent.