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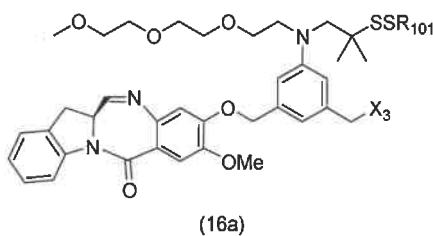
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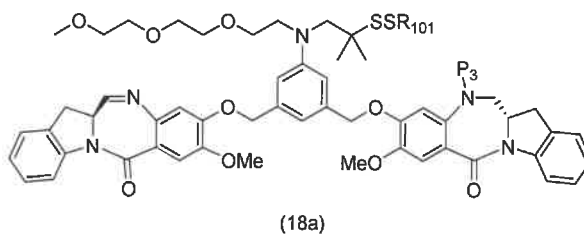


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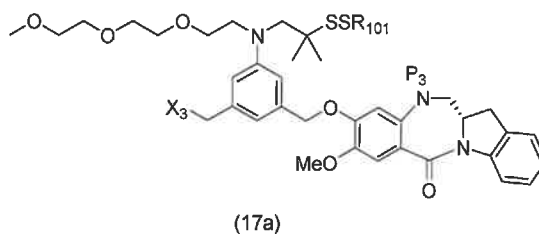


with an imine reducing agent, wherein  $X_3$  is  $-Cl$ ; and  $R_{101}$  is  $(C_1-C_3)$ alkyl, pyridyl, or nitropyridyl.

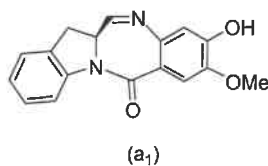
In a thirty-fourth embodiment, the present invention provides a method of  
5 preparing a compound of formula (18a),



or a pharmaceutically acceptable salt thereof, said method comprising reacting a  
compound of formula of (17a):

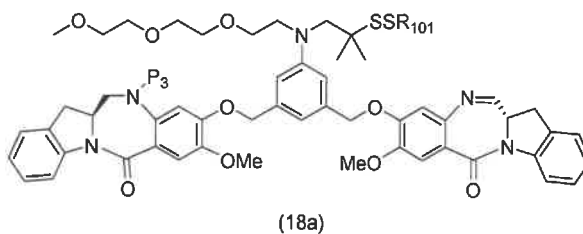


10 with a monomer of formula ( $a_1$ ):



wherein  $X_3$  is  $-Cl$ ;  $P_3$  is H or an amine protecting group; and  $R_{101}$  is  $(C_1-C_3)$ alkyl, pyridyl, or nitropyridyl.

In a thirty-fifth embodiment, the present invention provides a method of  
15 preparing a compound of formula (18a),



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or a salt thereof, to form a compound of formula (15a):



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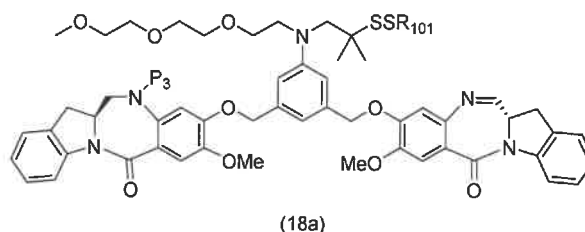


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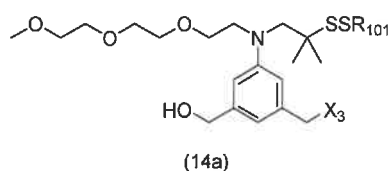
to form a compound of formula (18a), or a pharmaceutically acceptable salt thereof, wherein  $X_3$  is  $-Cl$ ;  $X_4$  is a sulfonate ester or an activated ester (preferably, a sulfonate ester);  $P_1$  is an alcohol protecting group;  $P_3$  is H or an amine protecting group; and  $R_{101}$  is  $(C_1-C_3)$ alkyl, pyridyl, or nitropyridyl.

5 In a thirty-sixth embodiment, the present invention provides a method of preparing a compound of formula (18a),

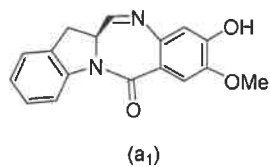


or a pharmaceutically acceptable salt thereof, said method comprising the steps of:

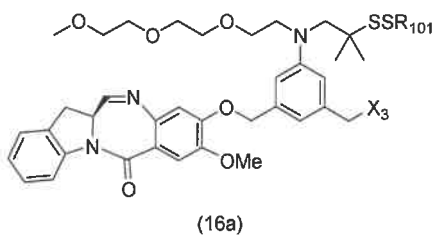
10 (1) reacting the compound of formula (14a):



or a salt thereof, with a monomer compound of formula (a<sub>1</sub>),



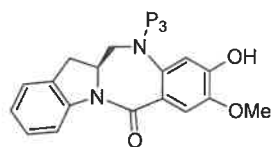
to form a compound of formula (16a):



15

or a salt thereof; and

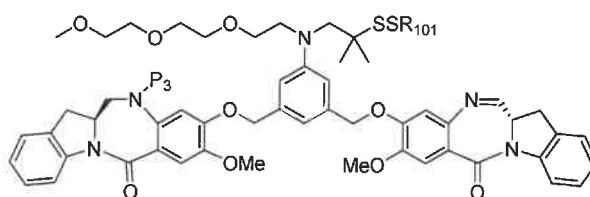
(2) reacting the compound of formula of (16a) with a reduced monomer of formula (d<sub>1</sub>):



(d<sub>1</sub>)

to form a compound of formula (18a), or a pharmaceutically acceptable salt thereof, wherein X<sub>3</sub> is –Cl; P<sub>1</sub> is an alcohol protecting group; P<sub>3</sub> is H or an amine protecting group; and R<sub>101</sub> is (C<sub>1</sub>-C<sub>3</sub>)alkyl, pyridyl, or nitropyridyl.

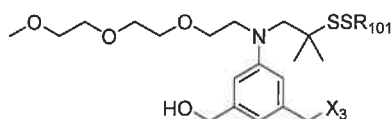
- 5 In a thirty-seventh embodiment, the present invention provides a method of preparing a compound of formula (18a),



(18a)

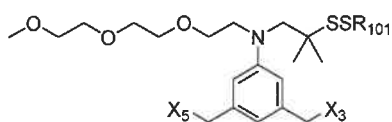
or a pharmaceutically acceptable salt thereof, said method comprising the steps of:

- 10 (1) reacting a halogenating reagent with the compound of formula (14a):



(14a)

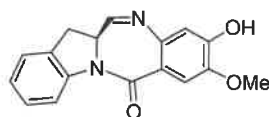
or a salt thereof, to form a compound of formula (20a):



(20a)

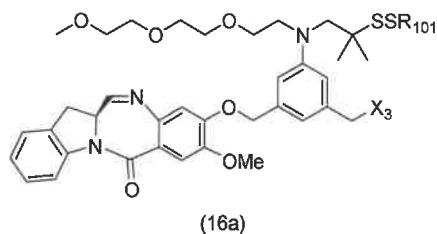
or a salt thereof;

- 15 (2) reacting a compound of formula (20a) or a salt thereof with a monomer compound of formula (a<sub>1</sub>),



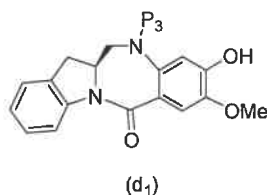
(a<sub>1</sub>)

to form a compound of formula (16a):



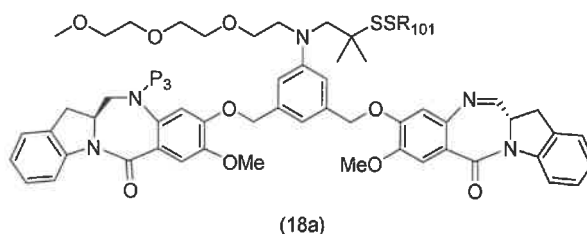
or a salt thereof; and

(3) reacting the compound of formula of (16a) with a reduced monomer of formula (d<sub>1</sub>):



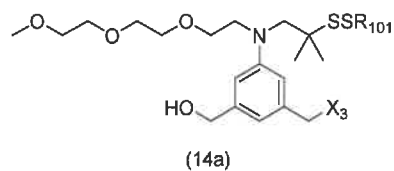
to form a compound of formula (18a), or a pharmaceutically acceptable salt thereof, wherein X<sub>3</sub> is -Cl; X<sub>5</sub> is -Br or -I; P<sub>3</sub> is H or an amine protecting group; and R<sub>101</sub> is (C<sub>1</sub>-C<sub>3</sub>)alkyl, pyridyl, or nitropyridyl.

In a thirty-eighth embodiment, the present invention provides a method of preparing a compound of formula (18a),

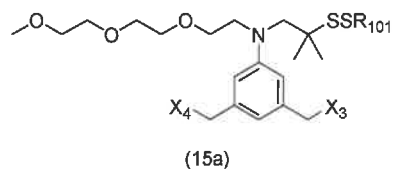


or a pharmaceutically acceptable salt thereof, said method comprising the steps of:

(1) reacting a sulfonating reagent or an esterification reagent with the compound of formula (14a):

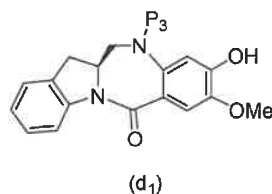


or a salt thereof, to form a compound of formula (15a):

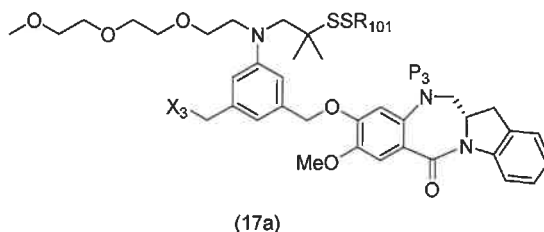


or a salt thereof;

(2) reacting the compound of formula (15a) with a reduced monomer compound of formula (d<sub>1</sub>),



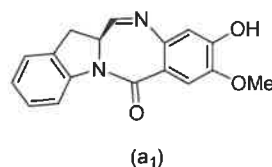
to form a compound of formula (17a):



5

or a salt thereof; and

(3) reacting the compound of formula of (17a) with a monomer of formula (a<sub>1</sub>):

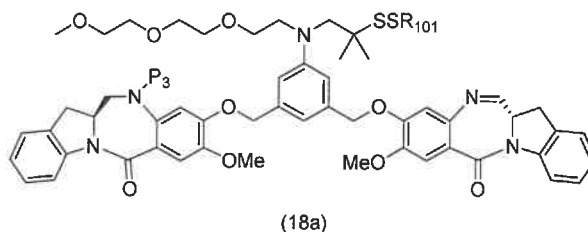


to form a compound of formula (18a), or a pharmaceutically acceptable salt thereof,

10 wherein X<sub>3</sub> is -Cl; X<sub>4</sub> is a sulfonate ester or an activated ester (preferably, a sulfonate ester); P<sub>1</sub> is an alcohol protecting group; P<sub>3</sub> is H or an amine protecting group; and R<sub>101</sub> is (C<sub>1</sub>-C<sub>3</sub>)alkyl, pyridyl, or nitropyridyl.

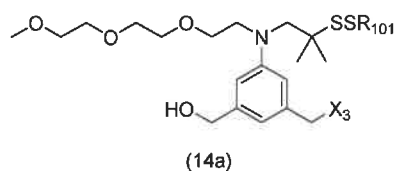
In a thirty-ninth embodiment, the present invention provides method of preparing a compound of formula (18a),

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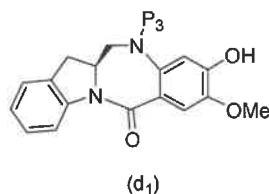


or a pharmaceutically acceptable salt thereof, said method comprising the steps of:

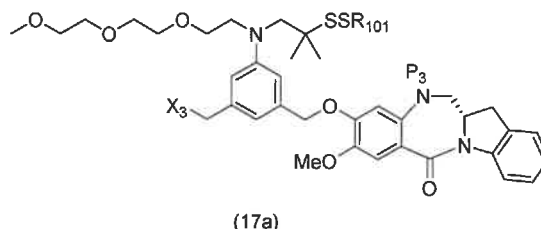
(1) reacting the compound of formula (14a):



or a salt thereof, with a reduced monomer compound of formula (d<sub>1</sub>),

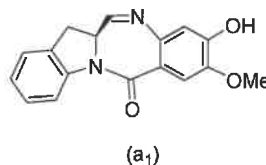


to form a compound of formula (17a):



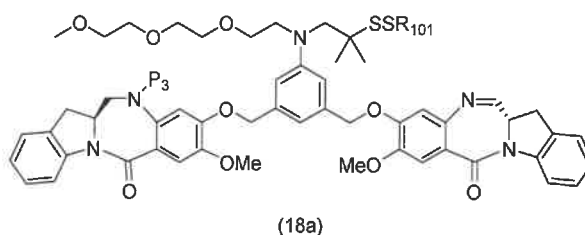
5 or a salt thereof; and

(2) reacting the compound of formula of (17a) with a monomer of formula (a<sub>1</sub>):



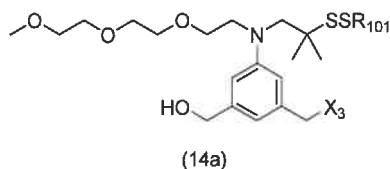
to form a compound of formula (18a), or a pharmaceutically acceptable salt thereof,  
wherein X<sub>3</sub> is -Cl; P<sub>1</sub> is an alcohol protecting group; P<sub>3</sub> is H or an amine protecting  
10 group; and R<sub>101</sub> is (C<sub>1</sub>-C<sub>3</sub>)alkyl, pyridyl, or nitropyridyl.

In a fortieth embodiment, the present invention provides a method of preparing a  
compound of formula (18a),

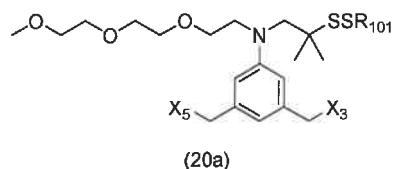


15 or a pharmaceutically acceptable salt thereof, said method comprising the steps of:

(1) reacting a brominating or iodinating reagent with the compound of formula  
(14a):

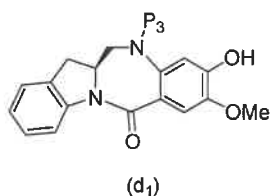


or a salt thereof, to form a compound of formula (20a):



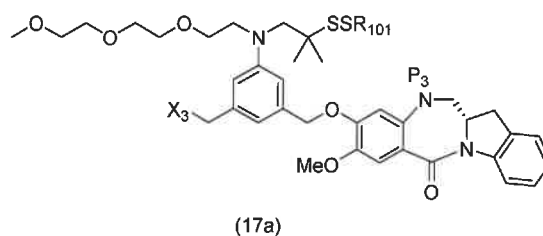
or a salt thereof;

(2) reacting the compound of formula (20a) with a reduced monomer compound of formula (d<sub>1</sub>),



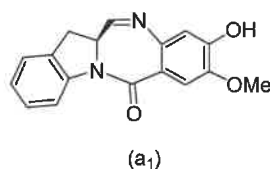
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to form a compound of formula (17a):



or a salt thereof; and

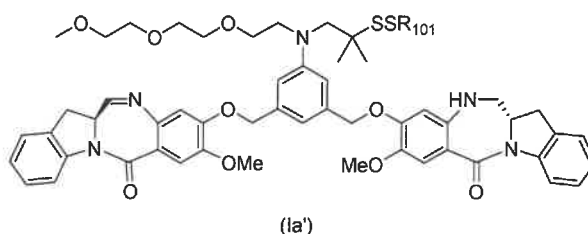
(3) reacting the compound of formula of (17a) with a monomer of formula (a<sub>1</sub>):



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to form a compound of formula (18a), or a pharmaceutically acceptable salt thereof, wherein X<sub>3</sub> is -Cl; X<sub>5</sub> is -Br or -I; P<sub>1</sub> is an alcohol protecting group; P<sub>3</sub> is H or an amine protecting group; and R<sub>101</sub> is (C<sub>1</sub>-C<sub>3</sub>)alkyl, pyridyl, or nitropyridyl.

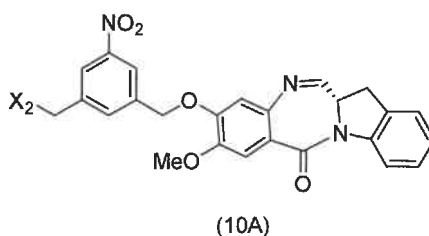
15 In a forty-first embodiment, the present invention provides a method of preparing a compound of formula (Ia'),



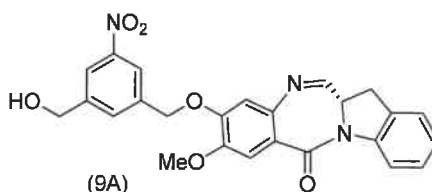
or a pharmaceutically acceptable salt thereof, said method comprising the steps of:

(1) reacting a sulfonating reagent or an esterification reagent with the compound of formula (14a):

20



or a salt thereof, said method comprising reacting the compound of formula (9A) with a halogenating reagent, a sulfonating reagent or an esterification reagent,



5 wherein X<sub>2</sub> is -Br, -I, -Cl, a sulfonate ester or an activated ester.

In a specific embodiment, for the methods of the twelfth embodiment, X<sub>2</sub> is -Br, -I or a sulfonate ester.

In a specific embodiment, for the methods of the twelfth embodiment, X<sub>2</sub> is mesylate, tosylate, brosylate, or triflate. Preferably, X<sub>2</sub> is mesylate.

10 In another specific embodiment, the method described in the twelfth embodiment comprises reacting the compound of formula (9a) or (9A) with a halogenating reagent. Exemplary halogenating reagent include, but are not limited to, bromine, hydrobromic acid, carbon tetrabromide, phosphorus tribromide, potassium bromide, hydroiodic acid, iodine, carbon tetraiodide, phosphorus triiodide, sodium iodide, or potassium iodide.

15 In yet another specific embodiment, the method of the twelfth embodiment comprises reacting the compound of formula (9a) or (9A) with a sulfonating reagent. Preferably, the sulfonating reagent is a sulfonic anhydride, such as methanesulfonic anhydride, or a sulfonic chloride, such as methanesulfonyl chloride (MsCl).

20 In one embodiment, the reaction between the compound of formula (9a) or (9A) and the sulfonating reagent is carried out in the presence of a base. Preferably, the base is a non-nucleophilic base. Exemplary non-nucleophilic base include, but are not limited to, triethylamine, imidazole, triethylamine, diisopropylethylamine, pyridine, 2,6-lutidine, dimethylformamide, 1,8-diazabicyclo[5.4.0]undec-7-ene (DBU), or tetramethylpiperidine. Preferably, the base is triethylamine or diisopropylethylamine.

25 In a thirteenth embodiment, the present invention provides a method of preparing a compound of formula (18a),

carbonate, potassium carbonate, cesium carbonate, sodium hydride, or potassiumhydride. Preferably, the base is potassium carbonate.

Any suitable organic solvents can be used for the methods of the thirty-fourth embodiment. In one embodiment, the solvent is a polar aprotic solvent. Exemplary solvents include, but are not limited to, dimethylformamide (DMF), CH<sub>2</sub>Cl<sub>2</sub>, dichloroethane, THF, dimethylacetamide, etc. In certain embodiments, dimethylformamide or dimethylacetamide is used as the solvent.

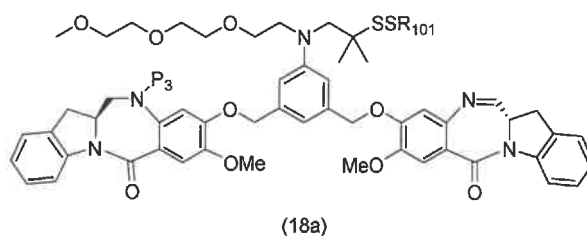
In a specific embodiment of the thirty-fourth embodiment, the compound of formula (17a) or (17A) is reacted with the monomer of formula (a<sub>1</sub>), wherein P<sub>3</sub> is H, to form a compound of formula (Ia') or (IA), respectively.

In another specific embodiment of the thirty-fourth embodiment, P<sub>3</sub> is an amine protecting group. Any suitable amine protecting group can be used in the method described above. In one embodiment, the amine protecting group is 2-trimethylsilylethyl, (2-phenyl-2-trimethylsilyl)ethyl, triisopropylsiloxy, 2-(trimethylsilyl)ethoxymethyl, allyloxycarbonyl, 9-fluorenylmethoxycarbonyl, 2-(trimethylsilyl)ethoxycarbonyl, or 2, 2,2,2-trichloroethoxycarbonyl.

When P<sub>3</sub> is an amine protecting group, the compound of formula (18a) or (18A) is further reacted with an amine deprotecting reagent to form a compound of formula (Ia') or (IA), respectively.

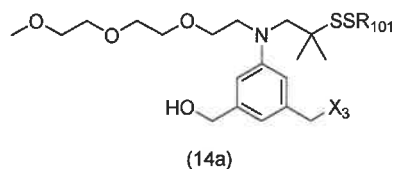
Examples of suitable amine deprotecting reagent include, but are not limited to, the amine deprotecting reagent is selected from the group consisting of tetra-n-butylammonium fluoride, acetic acid, hydrogen fluoride pyridine, cesium fluoride, piperidine, morpholine, or trifluoroacetic acid.

In a thirty-fifth embodiment, the present invention provides a method of preparing a compound of formula (18a),

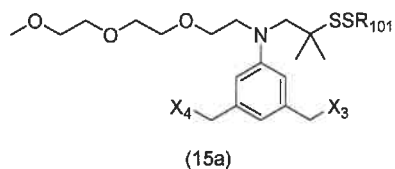


or a pharmaceutically acceptable salt thereof, said method comprising the steps of:

- (1) reacting a sulfonating reagent or an esterification reagent with the compound of formula (14a):

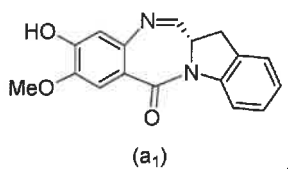


or a salt thereof, to form a compound of formula (15a):

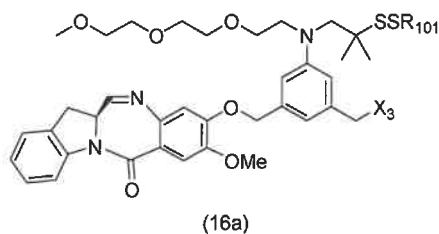


or a salt thereof;

- 5 (2) reacting the compound of formula (15a) with a monomer compound of formula (a<sub>1</sub>),

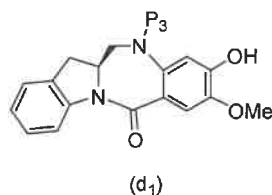


to form a compound of formula (16a):



- 10 or a salt thereof; and

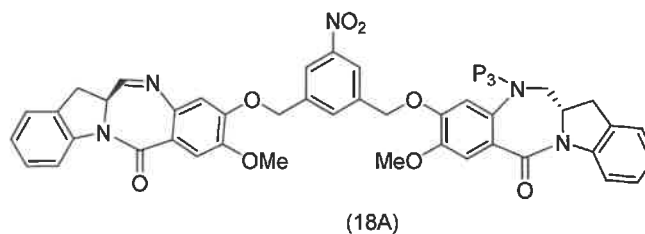
- (3) reacting the compound of formula of (16a) with a reduced monomer of formula (d<sub>1</sub>):



- 15 to form a compound of formula (18a), or a pharmaceutically acceptable salt thereof, wherein X<sub>3</sub> is -Cl; X<sub>4</sub> is a sulfonate ester or an activated ester; P<sub>1</sub> is an alcohol protecting group; P<sub>3</sub> is H or an amine protecting group; and R<sub>101</sub> is (C<sub>1</sub>-C<sub>3</sub>)alkyl, pyridyl, or nitropyridyl. In one embodiment, X<sub>4</sub> is a sulfonate ester.

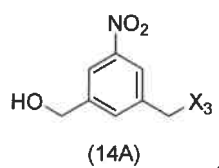
Also included in the thirty-fifth embodiment is a method of preparing a

compound of formula (18A),

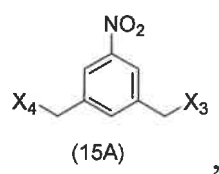


or a pharmaceutically acceptable salt thereof, said method comprising the steps of:

- 5 (1) reacting a sulfonating reagent or an esterification reagent with the compound of formula (14A):

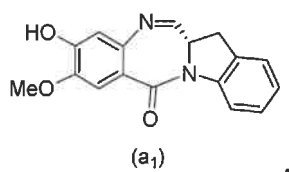


or a salt thereof, to form a compound of formula (15A):

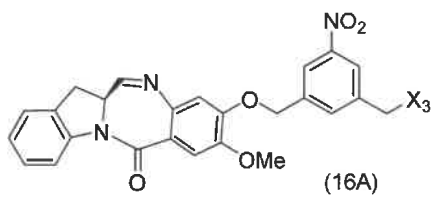


or a salt thereof;

- 10 (2) reacting the compound of formula (15A) with a monomer compound of formula (a<sub>1</sub>),

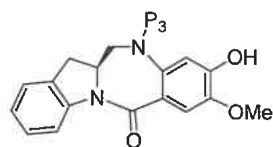


to form a compound of formula (16A):



- 15 or a salt thereof; and

(3) reacting the compound of formula of (16A) with a reduced monomer of formula (d<sub>1</sub>):

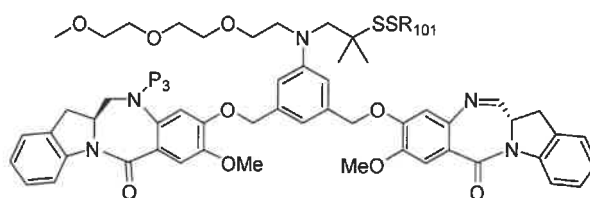


(d<sub>1</sub>)

to form a compound of formula (18A), or a pharmaceutically acceptable salt thereof, wherein X<sub>3</sub> is -Cl; X<sub>4</sub> is a sulfonate ester or an activated ester; P<sub>1</sub> is an alcohol protecting group; and P<sub>3</sub> is H or an amine protecting group. In one embodiment, X<sub>4</sub> is a sulfonate ester.

The conditions and reagents for the method of thirty-fifth embodiment are as described above in the twenty-fourth, twenty-sixth and/or twenty-ninth embodiment(s) and any specific embodiments described therein.

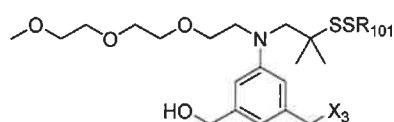
In a thirty-sixth embodiment, the present invention provides a method of preparing a compound of formula (18a),



(18a)

or a pharmaceutically acceptable salt thereof, said method comprising the steps of:

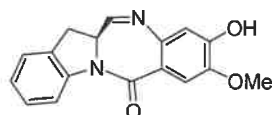
(1) reacting the compound of formula (14a):



(14a)

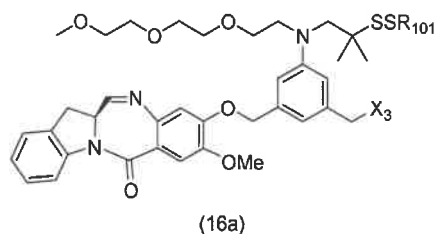
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or a salt thereof, with a monomer compound of formula (a<sub>1</sub>),



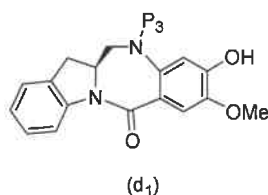
(a<sub>1</sub>)

to form a compound of formula (16a):



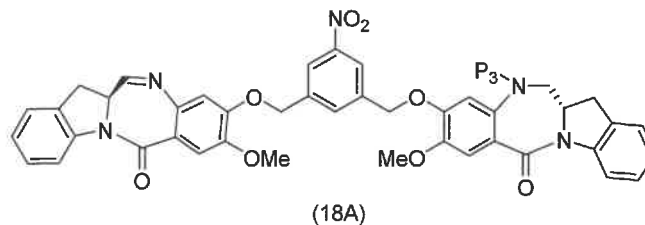
or a salt thereof; and

(2) reacting the compound of formula of (16a) with a reduced monomer of formula (d<sub>1</sub>):



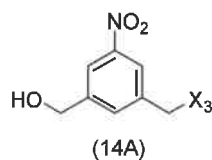
to form a compound of formula (18a), or a pharmaceutically acceptable salt thereof, wherein X<sub>3</sub> is -Cl; P<sub>1</sub> is an alcohol protecting group; P<sub>3</sub> is H or an amine protecting group; and R<sub>101</sub> is (C<sub>1</sub>-C<sub>3</sub>)alkyl, pyridyl, or nitropyridyl.

Also provided in the thirty-sixth embodiment is a method of preparing a compound of formula (18A),

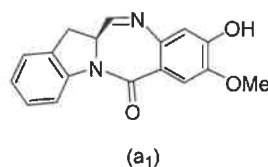


or a pharmaceutically acceptable salt thereof, said method comprising the steps of:

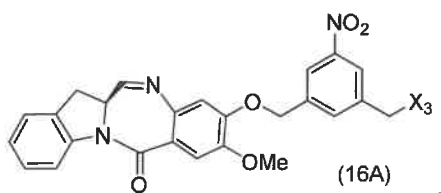
(1) reacting the compound of formula (14A):



or a salt thereof, with a monomer compound of formula (a<sub>1</sub>),

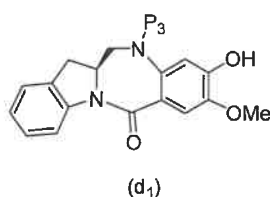


to form a compound of formula (16A):



or a salt thereof; and

- (2) reacting the compound of formula of (16A) with a reduced monomer of  
5 formula (d<sub>1</sub>):

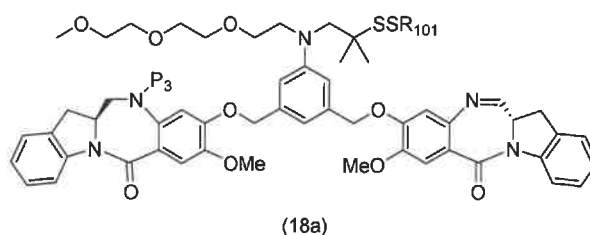


to form a compound of formula (18A), or a pharmaceutically acceptable salt thereof,  
wherein X<sub>3</sub> is -Cl; P<sub>1</sub> is an alcohol protecting group; and P<sub>3</sub> is H or an amine protecting  
group.

- 10 The conditions and reagents for the method of thirty-sixth embodiment are as  
described above in the twenty-eighth, and/or twenty-ninth embodiment(s) and any  
specific embodiments described therein.

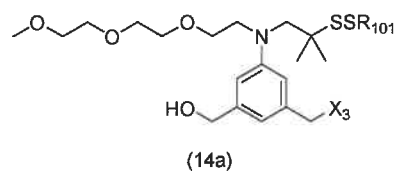
In a thirty-seventh embodiment, the present invention provides a method of  
preparing a compound of formula (18a),

15

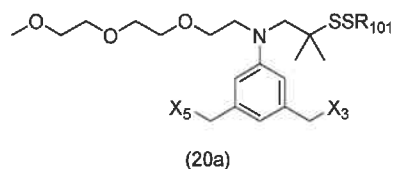


or a pharmaceutically acceptable salt thereof, said method comprising the steps of:

- (1) reacting a halogenating reagent with the compound of formula (14a):

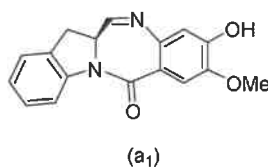


or a salt thereof, to form a compound of formula (20a):

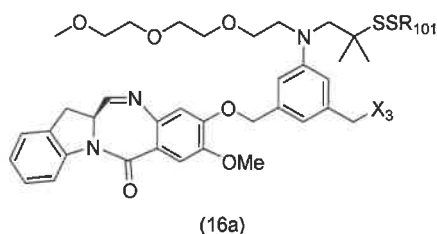


or a salt thereof;

- (2) reacting a compound of formula (20a) or a salt thereof with a monomer  
5 compound of formula (a<sub>1</sub>),

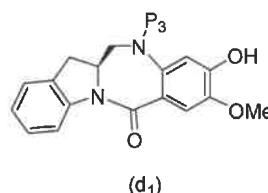


to form a compound of formula (16a):



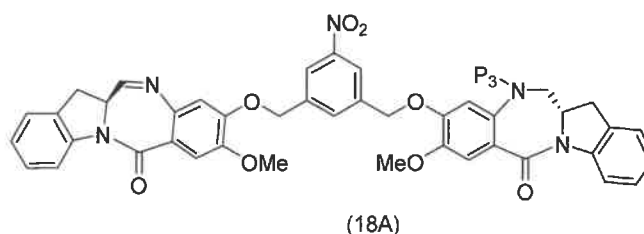
or a salt thereof; and

- 10 (3) reacting the compound of formula of (16a) with a reduced monomer of  
formula (d<sub>1</sub>):



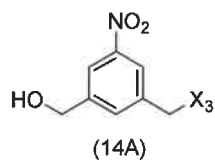
- to form a compound of formula (18a), or a pharmaceutically acceptable salt thereof,  
wherein X<sub>3</sub> is -Cl; X<sub>5</sub> is -Br or -I; P<sub>3</sub> is H or an amine protecting group; and R<sub>101</sub> is (C<sub>1</sub>-  
15 C<sub>3</sub>)alkyl, pyridyl, or nitropyridyl.

Also provided in the thirty-seventh embodiment is a method of preparing a  
compound of formula (18A),

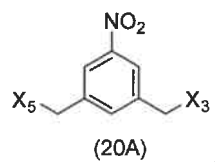


or a pharmaceutically acceptable salt thereof, said method comprising the steps of:

(1) reacting a halogenating reagent with the compound of formula (14A):

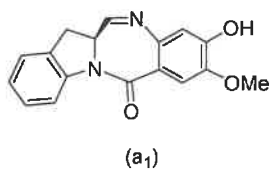


or a salt thereof, to form a compound of formula (20A):

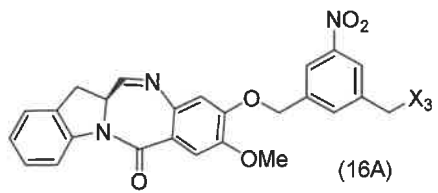


5 or a salt thereof;

(2) reacting a compound of formula (20A) or a salt thereof with a monomer compound of formula (a<sub>1</sub>),



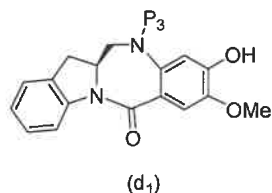
to form a compound of formula (16A):



10

or a salt thereof; and

(3) reacting the compound of formula of (16A) with a reduced monomer of formula (d<sub>1</sub>):



15 to form a compound of formula (18A), or a pharmaceutically acceptable salt thereof, wherein X<sub>3</sub> is -Cl; X<sub>5</sub> is -Br or -I; and P<sub>3</sub> is H or an amine protecting group.

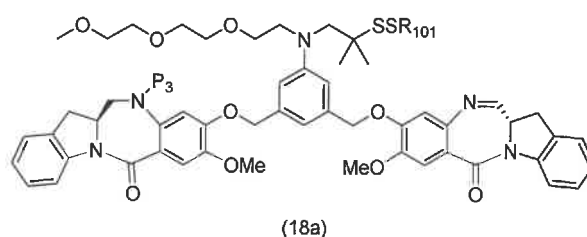
The conditions and reagents for the method of thirty-seventh embodiment are as described above in the twenty-fifth, twenty-seventh, and/or twenty-ninth embodiment(s) and any specific embodiments described therein.

20 In a specific embodiment, for the methods of the thirty-fifth, thirty-sixth and thirty-seventh embodiments, P<sub>3</sub> is H, the compound of formula (16a) or (16A) is reacted

with reduced monomer of formula (d<sub>1</sub>) to form a compound of formula (Ia') or (IA) respectively.

In another specific embodiment, for the methods of thirty-fifth, thirty-sixth and thirty-seventh embodiments, P<sub>3</sub> is an amine protecting group and the methods further  
5 comprise reacting the compound of formula (18a) or (18A) with an amine deprotecting reagent to form a compound of formula (Id') or (IA) respectively.

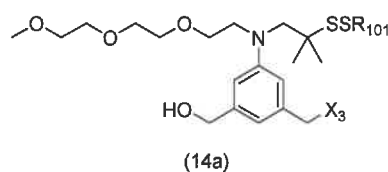
In a thirty-eighth embodiment, the present invention provides a method of preparing a compound of formula (18a),



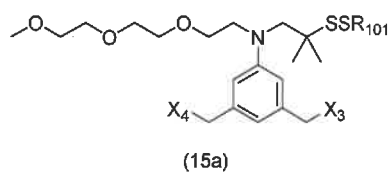
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or a pharmaceutically acceptable salt thereof, said method comprising the steps of:

(1) reacting a sulfonating reagent or an esterification reagent with the compound of formula (14a):

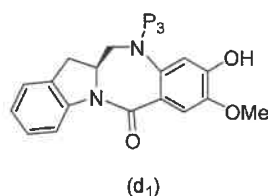


15 or a salt thereof, to form a compound of formula (15a):



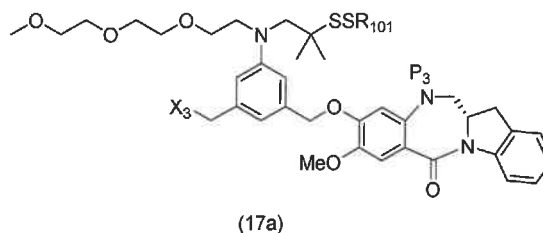
or a salt thereof;

(2) reacting the compound of formula (15a) with a reduced monomer compound of formula (d<sub>1</sub>),



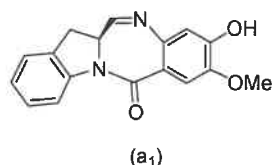
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to form a compound of formula (17a):



or a salt thereof; and

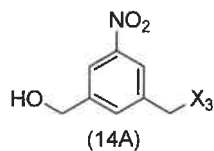
(3) reacting the compound of formula of (17a) with a monomer of formula (a<sub>1</sub>):



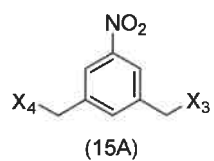
- 5 to form a compound of formula (18a), or a pharmaceutically acceptable salt thereof, wherein X<sub>3</sub> is -Cl; X<sub>4</sub> is a sulfonate ester or an activated ester; P<sub>1</sub> is an alcohol protecting group; P<sub>3</sub> is H or an amine protecting group; and R<sub>101</sub> is (C<sub>1</sub>-C<sub>3</sub>)alkyl, pyridyl, or nitropyridyl. In one embodiment, X<sub>4</sub> is a sulfonate ester.

Also provided in the thirty-eighth embodiment is a method of preparing a  
10 compound of formula (18A),

(1) reacting a sulfonating reagent or an esterification reagent with the compound of formula (14A):



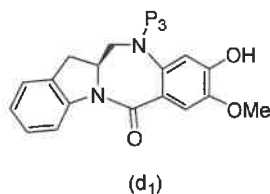
or a salt thereof, to form a compound of formula (15A):



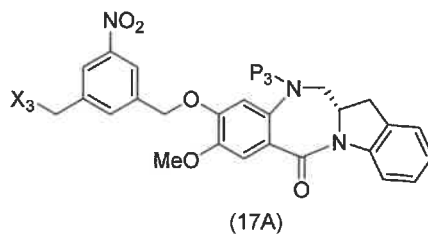
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or a salt thereof;

(2) reacting the compound of formula (15A) with a reduced monomer compound of formula (d<sub>1</sub>),

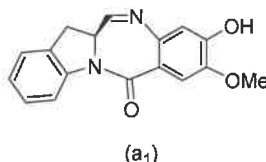


20 to form a compound of formula (17A):



or a salt thereof; and

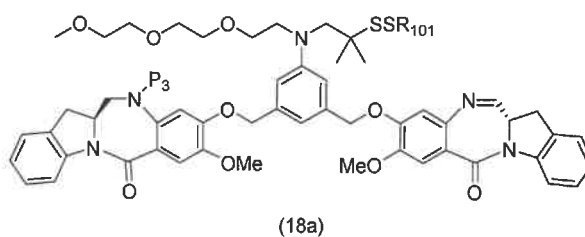
(3) reacting the compound of formula of (17A) with a monomer of formula (a<sub>1</sub>):



- 5 to form a compound of formula (18A), or a pharmaceutically acceptable salt thereof, wherein X<sub>3</sub> is -Cl; X<sub>4</sub> is a sulfonate ester or an activated ester; P<sub>1</sub> is an alcohol protecting group; and P<sub>3</sub> is H or an amine protecting group. In one embodiment, X<sub>4</sub> is a sulfonate ester.

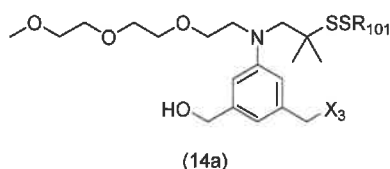
The conditions and reagents for the method of thirty-eighth embodiment are as described above in the twenty-fifth, thirtieth and/or thirty-fourth embodiment(s) and any specific embodiments described therein.

In a thirty-ninth embodiment, the present invention provides method of preparing a compound of formula (18a),

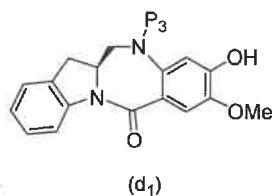


- 15 or a pharmaceutically acceptable salt thereof, said method comprising the steps of:

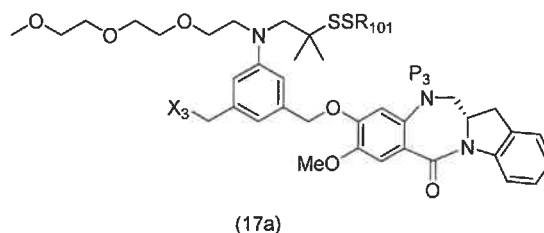
(1) reacting the compound of formula (14a):



or a salt thereof, with a reduced monomer compound of formula (d<sub>1</sub>),

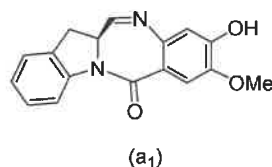


to form a compound of formula (17a):



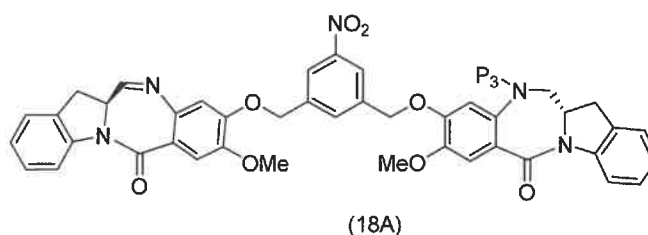
or a salt thereof; and

- 5 (2) reacting the compound of formula of (17a) with a monomer of formula (a<sub>1</sub>):



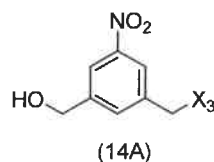
to form a compound of formula (18a), or a pharmaceutically acceptable salt thereof, wherein X<sub>3</sub> is -Cl; P<sub>1</sub> is an alcohol protecting group; P<sub>3</sub> is H or an amine protecting group; and R<sub>101</sub> is (C<sub>1</sub>-C<sub>3</sub>)alkyl, pyridyl, or nitropyridyl.

- 10 Also provided in the thirty-ninth embodiment is a method of preparing a compound of formula (18A),



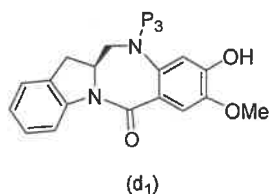
or a pharmaceutically acceptable salt thereof, said method comprising the steps of:

- (1) reacting the compound of formula (14A):

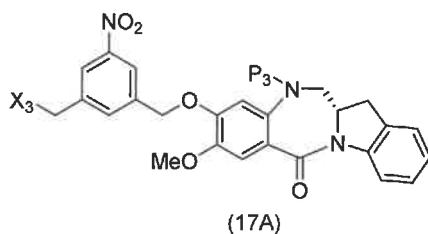


- 15

or a salt thereof, with a reduced monomer compound of formula (d<sub>1</sub>),

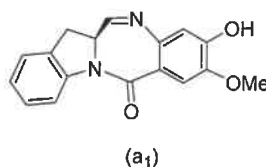


to form a compound of formula (17A):



or a salt thereof; and

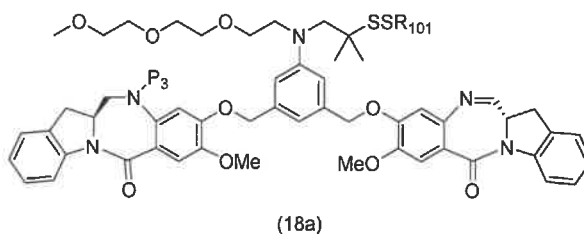
- 5 (2) reacting the compound of formula of (17A) with a monomer of formula (a<sub>1</sub>):



to form a compound of formula (18A), or a pharmaceutically acceptable salt thereof, wherein X<sub>3</sub> is -Cl; P<sub>1</sub> is an alcohol protecting group; and P<sub>3</sub> is H or an amine protecting group.

- 10 The conditions and reagents for the method of thirty-ninth embodiment are as described above in the thirty-first and/or thirty-fourth embodiment(s) and any specific embodiments described therein.

In a fortieth embodiment, the present invention provides a method of preparing a compound of formula (18a),



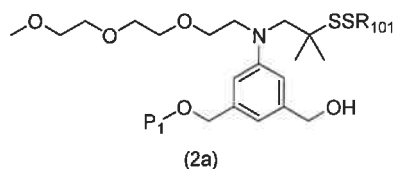
or a pharmaceutically acceptable salt thereof, said method comprising the steps of:

- (1) reacting a brominating or iodinating reagent with the compound of formula (14a):

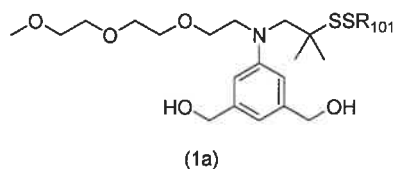
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## CLAIMS

1. A method of preparing a compound of formula (2a),

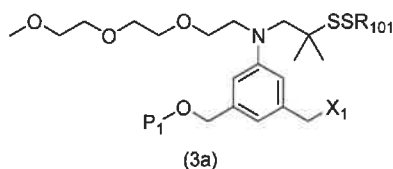


or a salt thereof, said method comprising introducing an alcohol protecting group onto one of the primary alcohols of a compound of formula (1a) by reacting the compound of formula (1a) with an alcohol protecting reagent,

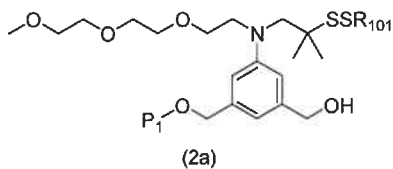


wherein P<sub>1</sub> is the alcohol protecting group; and R<sub>101</sub> is (C<sub>1</sub>-C<sub>3</sub>)alkyl, pyridyl, or nitropyridyl.

2. A method of preparing a compound of formula (3a),

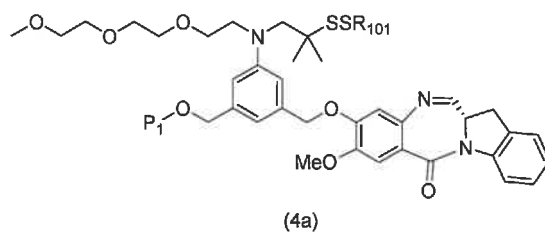


or a salt thereof, said method comprising reacting a halogenating reagent, a sulfonating reagent or an esterification reagent with a compound of formula (2a),

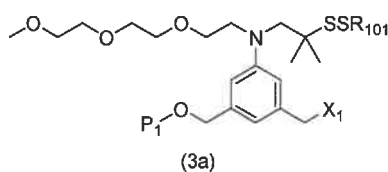


wherein P<sub>1</sub> is an alcohol protecting group; X<sub>1</sub> is a leaving group selected from the group consisting of: -Br, -I, -Cl a sulfonate ester, and an activated ester (preferably, X<sub>1</sub> is -Br, -I, or a sulfonate ester); and R<sub>101</sub> is (C<sub>1</sub>-C<sub>3</sub>)alkyl, pyridyl, or nitropyridyl.

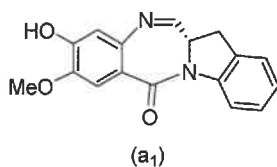
3. A method of preparing a compound of formula (4a),



or a salt thereof, said method comprising reacting a compound of formula (3a)

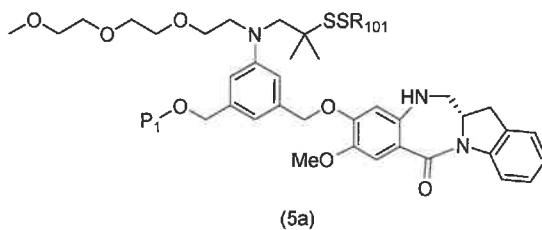


with a monome compound of the formula (a<sub>1</sub>),

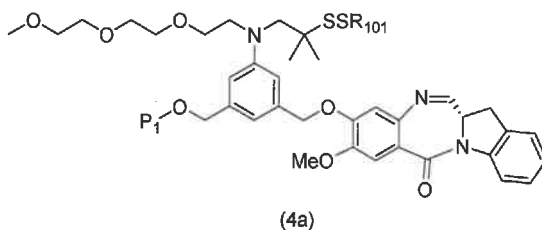


wherein  $P_1$  is an alcohol protecting group;  $X_1$  is a leaving group selected from the group consisting of: -Br, -I, -Cl, a sulfonate ester, and an activated ester (preferably,  $X_1$  is -Br, -I, or a sulfonate ester); and  $R_{101}$  is (C<sub>1</sub>-C<sub>3</sub>)alkyl, pyridyl, or nitropyridyl.

4. A method of preparing a compound of formula (5a),

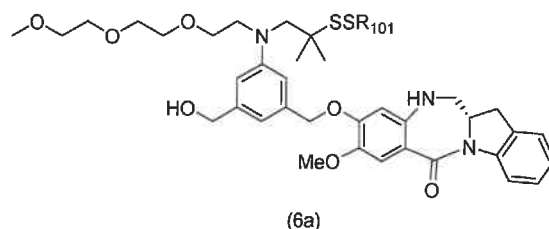


or a salt thereof, said method comprising reacting a compound of formula (4a),

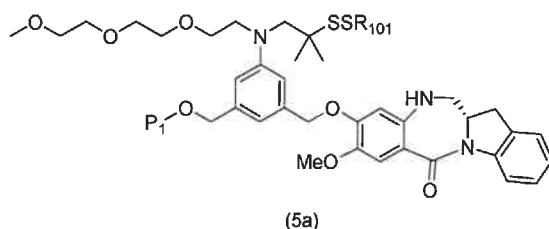


with an imine reducing agent, wherein  $P_1$  is an alcohol protecting group; and  $R_{101}$  is  $(C_1-C_3)$ alkyl, pyridyl, or nitropyridyl.

5. A method of preparing a compound of formula (6a),

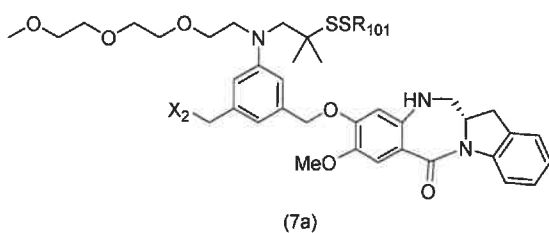


or a salt thereof, said method comprising reacting a compound of formula (5a),

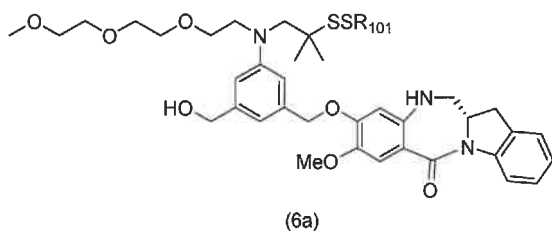


with an alcohol deprotecting reagent, wherein  $P_1$  is an alcohol protecting group; and  $R_{101}$  is  $(C_1-C_3)$ alkyl, pyridyl, or nitropyridyl.

6. A method of preparing a compound of formula (7a),

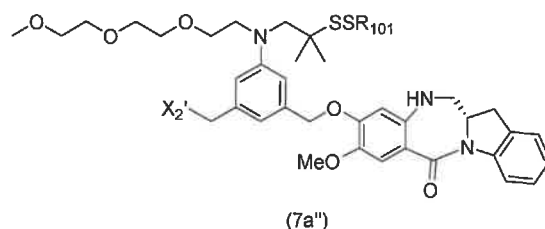


or a salt thereof, said method comprising reacting a halogenating reagent, a sulfonating reagent or an esterification reagent with the primary alcohol compound of formula (6a),

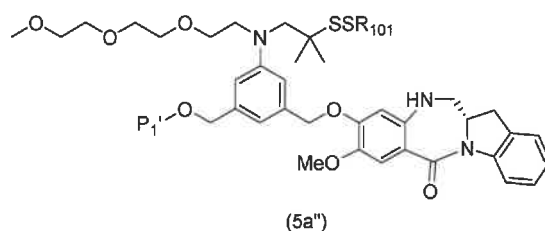


wherein  $X_2$  is a leaving group selected from the group consisting of: -Br, -I, -Cl, a sulfonate ester, and an activated ester (preferably,  $X_2$  is -Br, -I, a sulfonate ester); and  $R_{101}$  is (C<sub>1</sub>-C<sub>3</sub>)alkyl, pyridyl, or nitropyridyl.

7. A method of preparing a compound of formula (7a''),

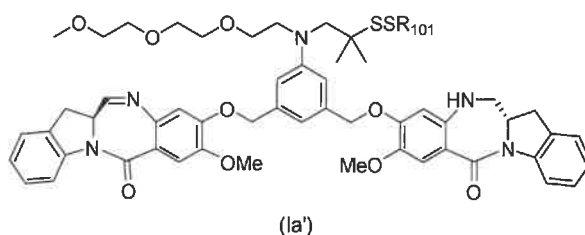


or a salt thereof, said method comprising reacting a compound of formula (5a'')



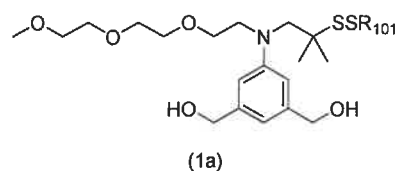
with an alcohol deprotecting reagent and a halogenating reagent, wherein  $P_1'$  is an acid labile alcohol protecting group;  $X_2'$  is -Br or -I; and  $R_{101}$  is (C<sub>1</sub>-C<sub>3</sub>)alkyl, pyridyl, or nitropyridyl.

8. A method of preparing a compound of formula (1a'),

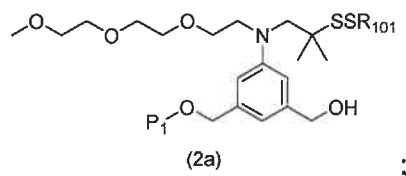


or a pharmaceutically acceptable salt thereof, said method comprising the steps of:

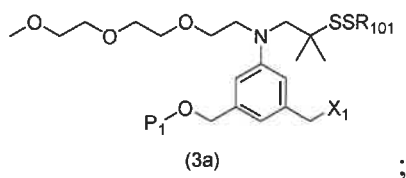
- (1) introducing an alcohol protecting group onto one of the primary alcohols of a compound of formula (1a),



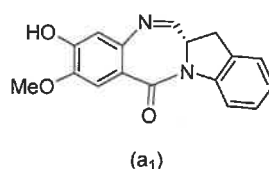
to form a compound of formula (2a),



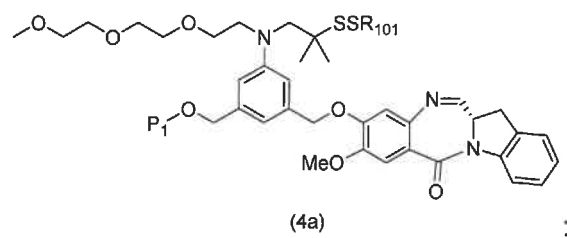
(2) reacting the compound of formula (2a) with a halogenating reagent, a sulfonating reagent or an esterification reagent to form a compound of formula (3a),



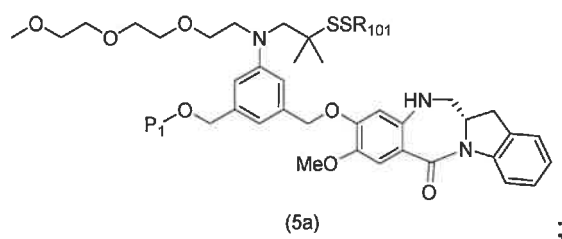
(3) reacting the compound of formula (3a) with a monomer compound of the formula (a<sub>1</sub>),



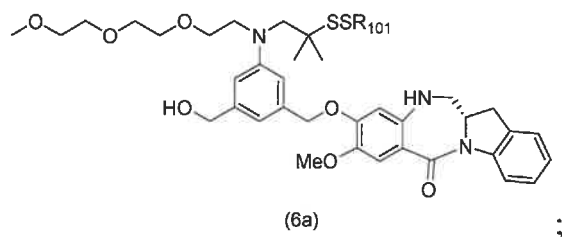
to form a compound of formula (4a),



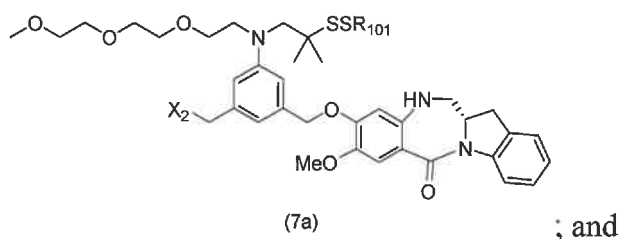
(4) reacting the compound of formula (4a) with an imine reducing agent to form a compound of formula (5a),



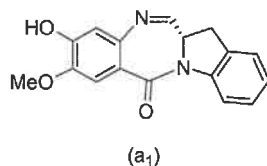
(5) reacting the compound of formula (5a) with an alcohol deprotecting reagent to form a compound of formula (6a),



(6) reacting the compound of formula (6a) with a second halogenating reagent, a second sulfonating reagent or a second esterification reagent to form a compound of formula (7a),

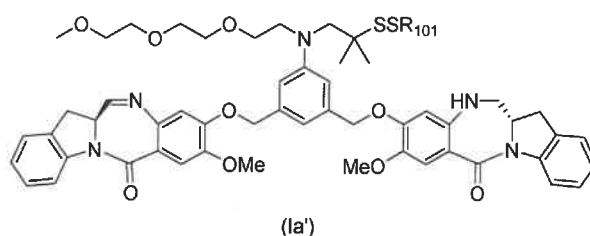


(7) reacting the compound of formula (7a) with a monomer compound of the formula (a<sub>1</sub>),



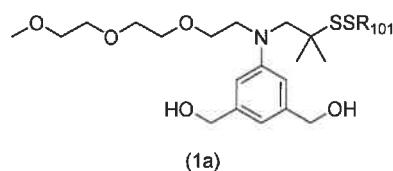
to form the compound of formula (Ia'); wherein P<sub>1</sub> is an alcohol protecting group; X<sub>1</sub> and X<sub>2</sub> are each independently a leaving group selected from the group consisting of: -Br, -I, -Cl, a sulfonate ester and an activated ester (preferably, X<sub>1</sub> and X<sub>2</sub> are each independently -Br, -I, or a sulfonate ester); and R<sub>101</sub> is (C<sub>1</sub>-C<sub>3</sub>)alkyl, pyridyl, or nitropyridyl.

9. A method of forming a compound of formula (Ia'),

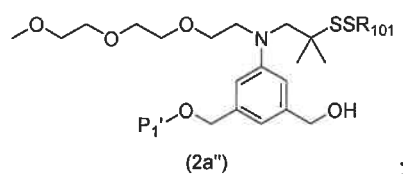


or a pharmaceutically acceptable salt thereof, said method comprising the steps of:

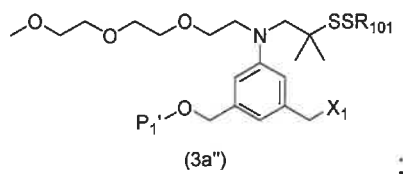
- (1) introducing an alcohol protecting group onto one of the primary alcohols of a compound of formula (1a),



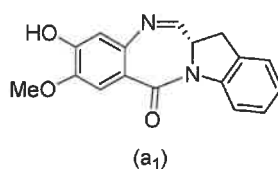
to form a compound of formula (2a''),



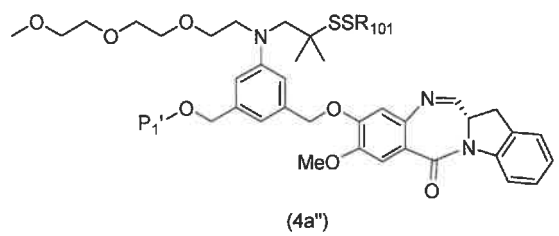
- (2) reacting the compound of formula (2a'') with a halogenating reagent, a sulfonating reagent or an esterification reagent to form a compound of formula (3a''),



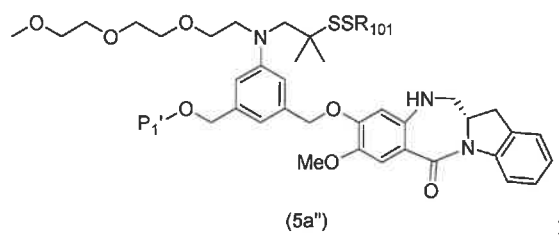
- (3) reacting the compound of formula (3a'') with a monomer compound of the formula (a<sub>1</sub>),



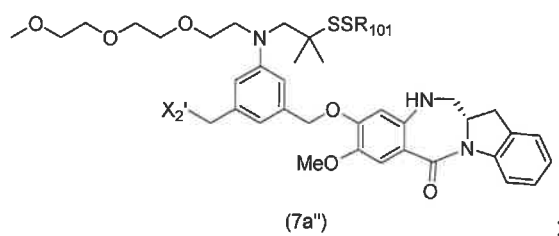
to form a compound of formula (4a''),



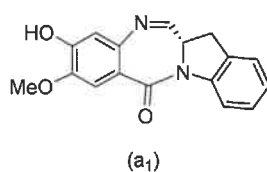
(4) reacting the compound of formula (4a'') with an imine reducing agent to form a compound of formula (5a''),



(5) reacting the compound of formula (5a'') with an alcohol deprotecting reagent and a halogenating reagent to form a compound of formula (7a''),

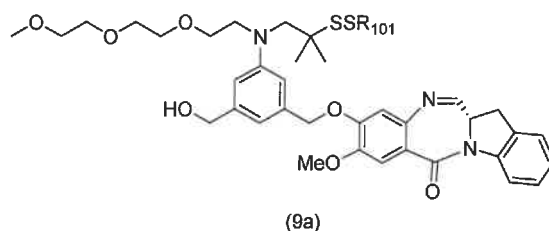


(6) reacting a compound of formula (7a'') with a monomer compound of the formula (a<sub>1</sub>),

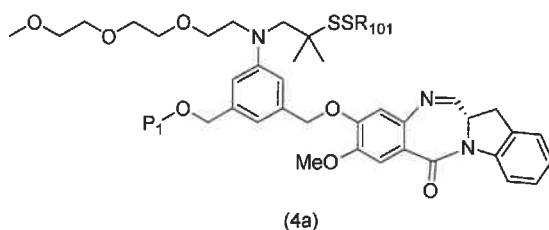


to form the compound of formula (Ia'), wherein P<sub>1</sub>' is an acid labile alcohol protecting group; X<sub>1</sub> is a leaving group selected from the group consisting of: -Br, -I, -Cl, a sulfonate ester and an activated ester (preferably, -Br, -I, a sulfonate ester); X<sub>2</sub>' is -Br or -I; and R<sub>101</sub> is (C<sub>1</sub>-C<sub>3</sub>)alkyl, pyridyl, or nitropyridyl.

10. A method of preparing a compound of formula (9a),

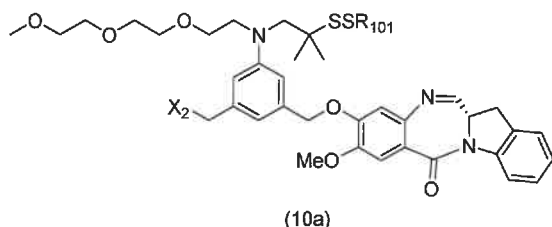


or a salt thereof, said method comprising reacting a compound of formula (4a),

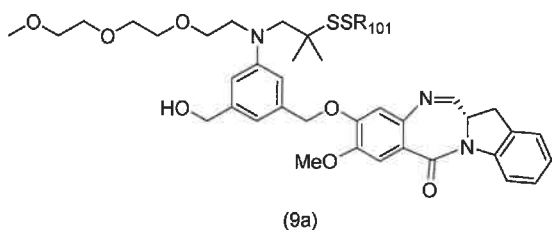


with an alcohol deprotecting reagent; wherein P<sub>1</sub> is an alcohol protecting group; and R<sub>101</sub> is (C<sub>1</sub>-C<sub>3</sub>)alkyl, pyridyl, or nitropyridyl.

11. A method of preparing a compound of formula (10a),

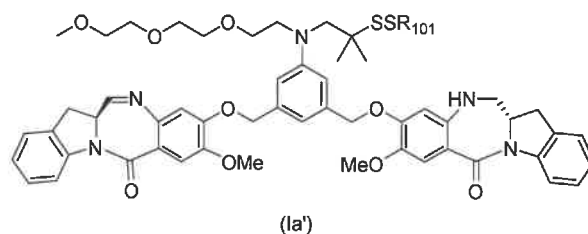


or a salt thereof, said method comprising reacting a halogenating reagent, a sulfonating reagent or an esterification reagent with the compound of formula (9a),



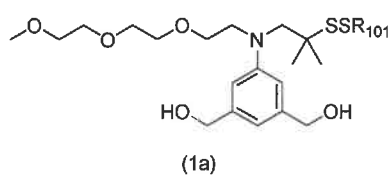
wherein X<sub>2</sub> is a leaving group selected from the group consisting of -Br, -I, -Cl, a sulfonate ester, and an activated ester (preferably, X<sub>2</sub> is -Br, -I, or a sulfonate ester); and R<sub>101</sub> is (C<sub>1</sub>-C<sub>3</sub>)alkyl, pyridyl, or nitropyridyl.

12. A method of preparing a compound of formula (Ia'),

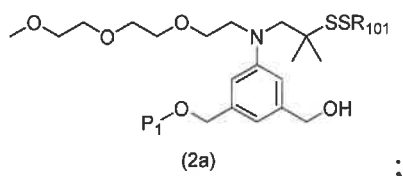


or a pharmaceutically acceptable salt thereof, said method comprising the steps of:

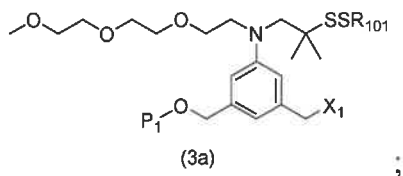
- (1) introducing an alcohol protecting group onto one of the primary alcohols of the compound of formula (1a),



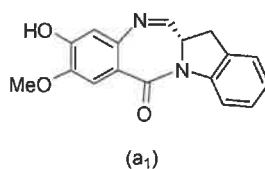
to form a compound of formula (2a),



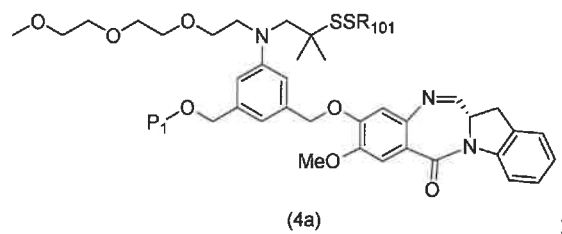
- (2) reacting a halogenating reagent, a sulfonating reagent or an esterification reagent with the compound of formula (2a) to form a compound of formula (3a),



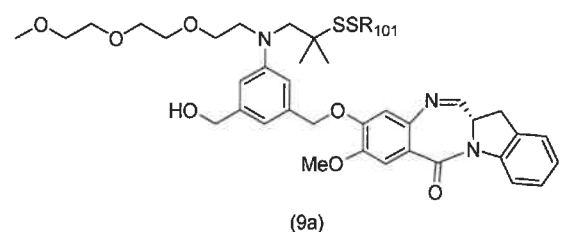
- (3) reacting the compound of formula (3a) with a monomer compound of the formula (a<sub>1</sub>),



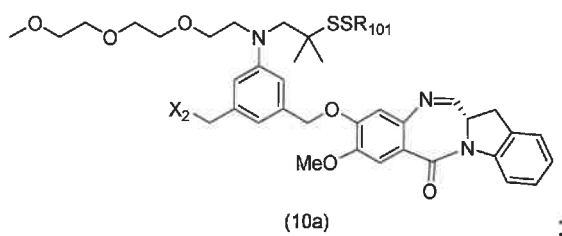
to form a compound of formula (4a),



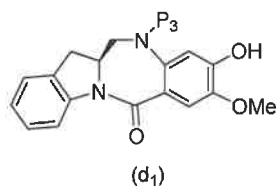
(4) reacting the compound of formula (4a) with an alcohol deprotecting reagent to form a compound of formula (9a),



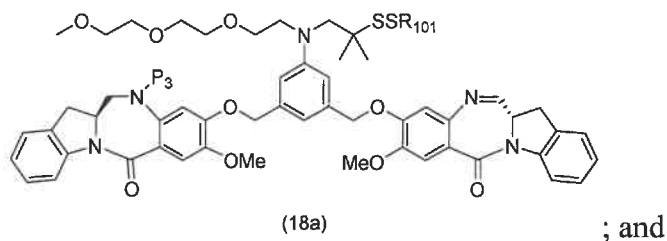
(5) reacting a second halogenating reagent, a second sulfonating reagent or a second esterification reagent with the compound of formula (9a) to form a compound of formula (10a),



(6) reacting the compound of formula (10a) with a monomer compound of the formula (d<sub>1</sub>)



to form a compound of formula (18a),

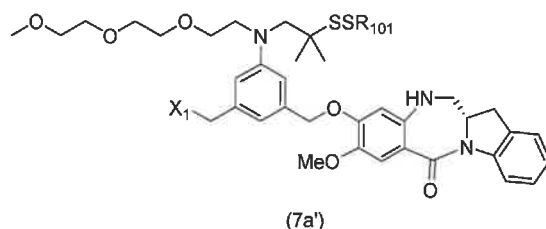


(7) reacting the compound of formula (11a) to an amine deprotecting reagent to form the compound of formula (Ia');

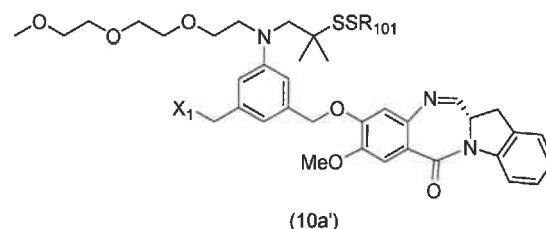
wherein P<sub>1</sub> is an alcohol protecting group; X<sub>1</sub> and X<sub>2</sub> are each independently a leaving group selected from the group consisting of: -Br, -I, -Cl, a sulfonate ester,

and an activated ester (preferably, -Br, -I, a sulfonate ester); P<sub>3</sub> is H or an amine protecting group; and R<sub>101</sub> is (C<sub>1</sub>-C<sub>3</sub>)alkyl, pyridyl, or nitropyridyl.

13. A method of preparing a compound of formula (7a'),

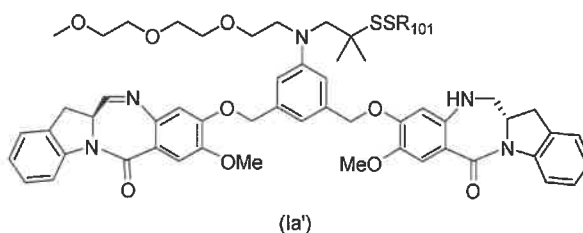


or a salt thereof, said method comprising reacting a compound of formula (10a'),



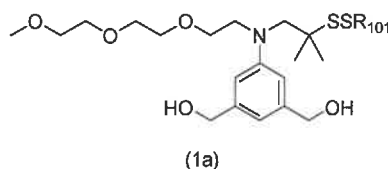
or a salt thereof, with an imine reducing agent, wherein X<sub>1</sub> is -Br, -I, -Cl, a sulfonate ester, or an activated ester (preferably, X<sub>1</sub> is -Br, -I, a sulfonate ester); and R<sub>101</sub> is (C<sub>1</sub>-C<sub>3</sub>)alkyl, pyridyl, or nitropyridyl.

14. A method of preparing a compound of formula (1a'),



or a pharmaceutically acceptable salt thereof, said method comprising the steps of:

(1) reacting a halogenating reagent, a sulfonating reagent or an esterification reagent with a compound of formula (1a),



to form a compound of formula (12a),

COC1=CC=C2C(=C1)C(=O)N3C(=C2)C(=C4C=CC=CC4N3)N=C2  
(a<sub>1</sub>)

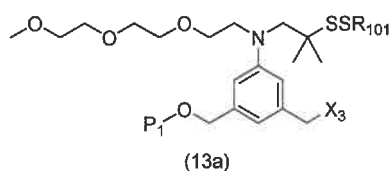
(10a')

(7a')

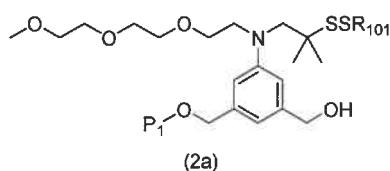
COC1=CC=C2C(=C1)C(=O)N(C2)C3=CC=CC=C3

(a<sub>1</sub>)

15. A method of preparing a compound of formula (13a),

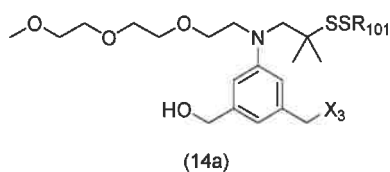


or a salt thereof, said method comprising reacting a chlorinating reagent with a compound of formula (2a),

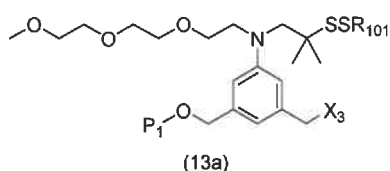


wherein P<sub>1</sub> is an alcohol protecting group; X<sub>3</sub> is -Cl; and R<sub>101</sub> is (C<sub>1</sub>-C<sub>3</sub>)alkyl, pyridyl, or nitropyridyl.

16. A method of preparing a compound of formula (14a),



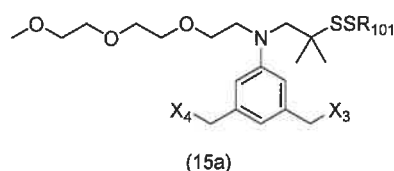
or a salt thereof, said method comprising reacting a compound of formula (13a)



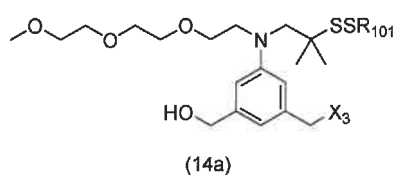
with an alcohol deprotecting reagent, wherein P<sub>1</sub> is an alcohol protecting group; X<sub>3</sub> is -Cl; and R<sub>101</sub> is (C<sub>1</sub>-C<sub>3</sub>)alkyl, pyridyl, or nitropyridyl.

17. The method of claim 16, wherein the alcohol protecting group is a silyl protecting group.
18. The method of claim 17, wherein the silyl protecting group is the silyl protecting group is dimethylisopropylsilyl, diethylisopropylsilyl, dimethylhexylsilyl, trimethylsilyl, triisopropylsilyl, tribenzylsilyl, triphenylsilyl, 2-norbornyldimethylsilyl, *tert*-butyldimethylsilyl, *tert*-butyldiphenylsilyl, 2-trimethylethylsilyl (TEOC), or [2-(trimethylsilyl)ethoxy]methyl.

19. The method of claim 18, wherein the silyl protecting group is triethylsilyl, triisopropylsilyl, or tert-butyldimethylsilyl.
20. The method of claim 19, wherein the silyl protecting group is tert-butyldimethylsilyl.
21. The method of any one of claims 16-20, wherein the alcohol deprotecting reagent is tetra-n-butylammonium fluoride, tris(dimethylamino)sulfonium difluorotrimethylsilicate, hydrogen fluoride or a solvate thereof, hydrogen fluoride pyridine, silicon tetrafluoride, hexafluorosilicic acid, cesium fluoride, hydrochloric acid, acetic acid, trifluoroacetic acid, pyridinium p-toluenesulfonate, p-toluenesulfonic acid (p-TsOH), formic acid, periodic acid.
22. The method of claim 21, wherein the alcohol deprotecting agent is hydrogen fluoride pyridine.
23. A method of preparing a compound of formula (15a):

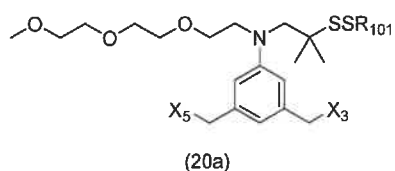


or a salt thereof, said method comprising reacting a sulfonating reagent or an esterification reagent with a compound of formula (14a),

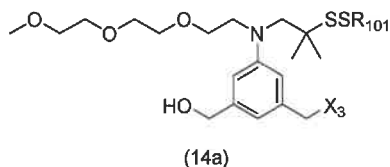


wherein  $X_3$  is  $-Cl$ ;  $X_4$  is a sulfonate ester or an activated ester (preferably, a sulfonate ester); and  $R_{101}$  is  $(C_1-C_3)$ alkyl, pyridyl, or nitropyridyl.

24. A method of preparing a compound of formula (20a):

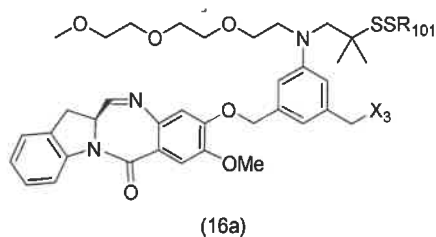


or a salt thereof, said method comprising reacting a brominating or iodinating reagent with a compound of formula (14a),

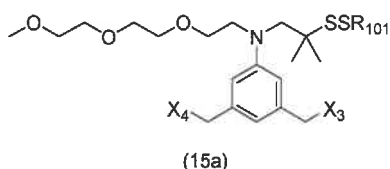


wherein X<sub>3</sub> is -Cl; X<sub>5</sub> is -Br or -I; and R<sub>101</sub> is (C<sub>1</sub>-C<sub>3</sub>)alkyl, pyridyl, or nitropyridyl.

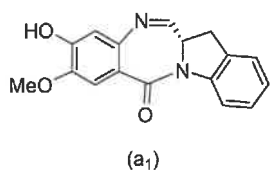
25. A method of preparing a compound of formula (16a):



or a salt thereof, said method comprising reacting a compound of formula (15a)

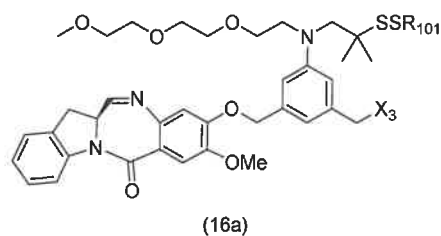


with a monomer compound of formula (a<sub>1</sub>),

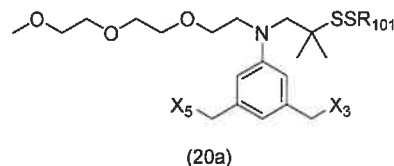


wherein X<sub>3</sub> is -Cl; X<sub>4</sub> is a sulfonate ester or an activated ester (preferably, a sulfonate ester); and R<sub>101</sub> is (C<sub>1</sub>-C<sub>3</sub>)alkyl, pyridyl, or nitropyridyl.

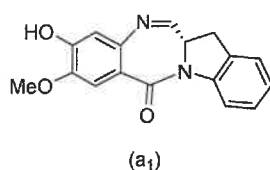
26. A method of preparing a compound of formula (16a):



or a salt thereof, said method comprising reacting a compound of formula (20a)

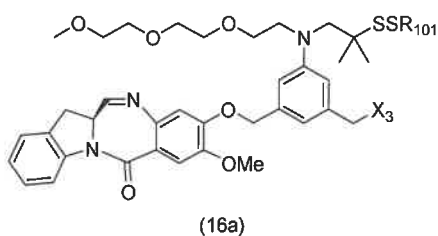


with a monomer compound of formula (a<sub>1</sub>),

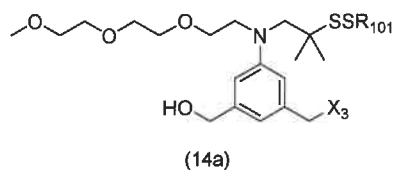


wherein X<sub>3</sub> is -Cl; X<sub>5</sub> is -Br or -I; and R<sub>101</sub> is (C<sub>1</sub>-C<sub>3</sub>)alkyl, pyridyl, or nitropyridyl.

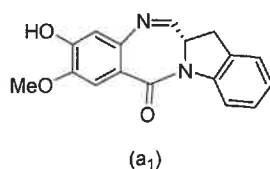
27. A method of preparing a compound of formula (16a):



or a salt thereof, said method comprising reacting a compound of formula (14a)



with a monomer compound of formula (a<sub>1</sub>),



wherein X<sub>3</sub> is -Cl; and R<sub>101</sub> is (C<sub>1</sub>-C<sub>3</sub>)alkyl, pyridyl, or nitropyridyl.

28. A method of preparing a compound of formula (18a):



3



3



3

3



3

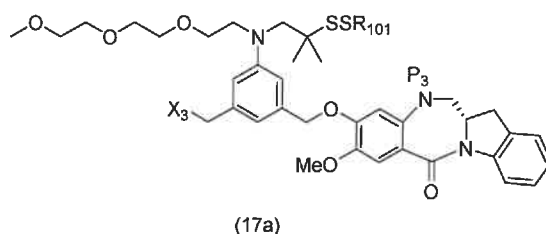


3

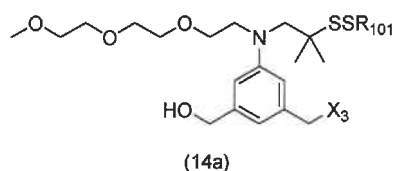


wherein  $X_3$  is  $-Cl$ ;  $X_4$  is a sulfonate ester or an activated ester (preferably, a sulfonate ester);  $P_3$  is H or an amine protecting group; and  $R_{101}$  is  $(C_1-C_3)$ alkyl, pyridyl, or nitropyridyl.

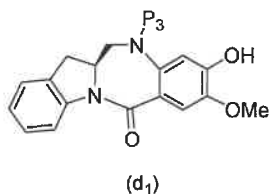
30. A method of preparing a compound of formula (17a):



or a salt thereof, said method comprising reacting a compound of formula (14a)



with a monomer compound of formula ( $d_1$ ),

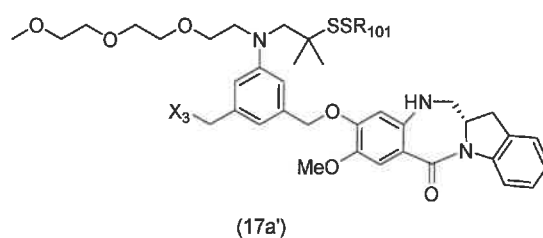


wherein  $X_3$  is  $-Cl$ ;  $P_3$  is H or an amine protecting group; and  $R_{101}$  is  $(C_1-C_3)$ alkyl, pyridyl, or nitropyridyl.

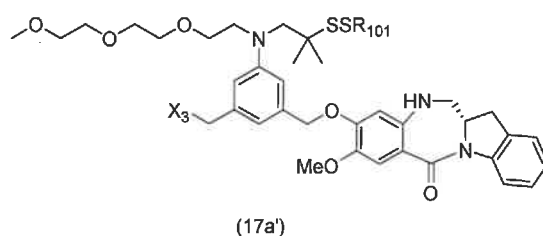
31. The method of claim 30, wherein the compound of formula (14a) is reacted with a monomer of formula ( $d_1$ ) in the presence of an alcohol activating agent.
32. The method of claim 31, wherein the alcohol activating agent is triphenylphosphine.
33. The method of any one of claims 30-32, wherein the compound of formula (14a) is reacted with a monomer of formula ( $d_1$ ) in the presence of an azodicarboxylate.
34. The method of claim 33, wherein the azodicarboxylate is selected from the group consisting of: diethyl azodicarboxylate (DEAD), diisopropyl azodicarboxylate

(DIAD), 1,1'-(azodicarbonyl)dipiperidine (ADDP), and di-tert-butyl azodicarboxylate (DTAD).

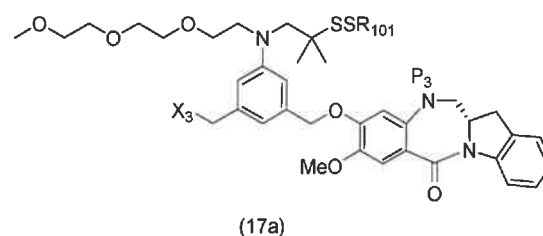
35. The method of any one of claims 30-34, wherein the compound of formula (14a) is reacted with the monomer compound of formula (d<sub>1</sub>), wherein P<sub>3</sub> is H, to form a compound of formula (17a'):



36. The method of any one of claims 30-34, wherein P<sub>3</sub> is an amine protecting group.
37. The method of claim 36, further comprising the step of reacting the compound of formula (17a) with an amine deprotecting reagent to form a compound of formula (17a'):



38. The method of claim 37, wherein the amine deprotecting reagent is selected from the group consisting of tetra-n-butylammonium fluoride, acetic acid, hydrogen fluoride pyridine, cesium fluoride, piperidine, morpholine, or trifluoroacetic acid.
39. A method of preparing a compound of formula (17a):



or a salt thereof, said method comprising reacting a compound of formula (20a)

COC1=C(O)C=CC2=C1C(=O)N(C2)C3Cc1ccccc1N3P3  
(d<sub>1</sub>)

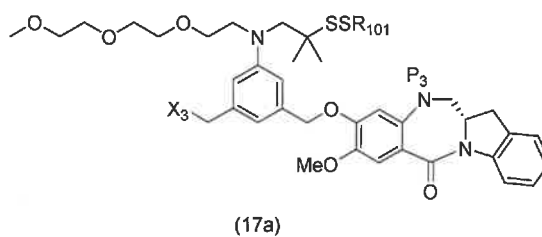
(17a')

COC1=CC=C(C(=C1)OCCN(CC(C)(C)SSR101)COCCOCCOC)c2c(c3ccccc3n2C(=O)N3C=CC4=CC=CC=C43)OC

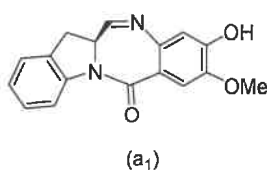
(16a)

(18a)

(17a)

COC1=CC=C2C(=C1)N(C2=O)C3=CC=CC=C3

(a<sub>1</sub>)



The method of claim 41, wherein the compound of formula (17a) is reacted with a monomer compound of formula (a<sub>1</sub>) in the presence of a base.

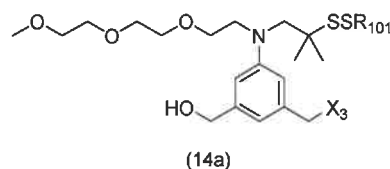
44. The method of claim 43, wherein the base is potassium carbonate.

46. The method of claim 45, wherein the polar aprotic solvent is dimethylformamide or dimethylacetamide.

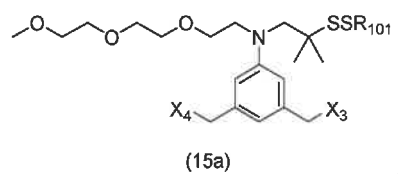
185



(1) reacting a sulfonating reagent or an esterification reagent with the compound of formula (14a):

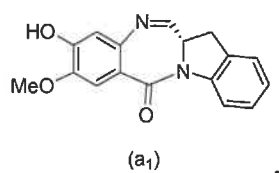


or a salt thereof, to form a compound of formula (15a):

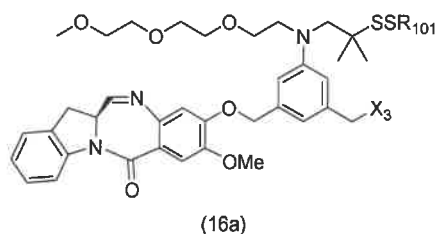


or a salt thereof;

(2) reacting the compound of formula (15a) with a monomer compound of formula (a<sub>1</sub>),

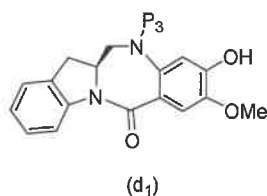


to form a compound of formula (16a):



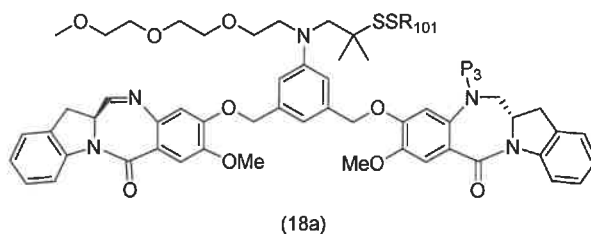
or a salt thereof; and

(3) reacting the compound of formula of (16a) with a reduced monomer of formula (d<sub>1</sub>):



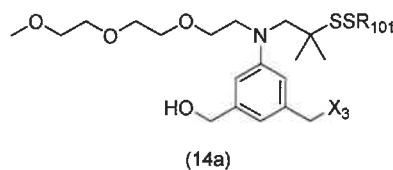
to form a compound of formula (18a), or a pharmaceutically acceptable salt thereof, wherein X<sub>3</sub> is -Cl; X<sub>4</sub> is a sulfonate ester or an activated ester (preferably, a sulfonate ester); P<sub>3</sub> is H or an amine protecting group; and R<sub>101</sub> is (C<sub>1</sub>-C<sub>3</sub>)alkyl, pyridyl, or nitropyridyl.

53. A method of preparing a compound of formula (18a),

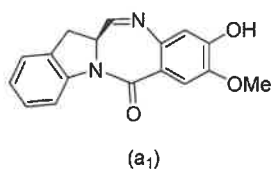


or a pharmaceutically acceptable salt thereof, said method comprising the steps of:

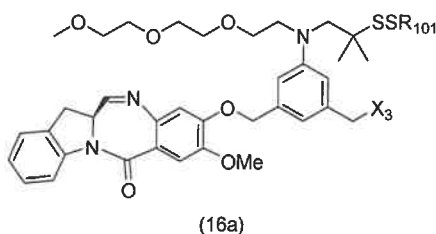
(1) reacting the compound of formula (14a):



or a salt thereof, with a monomer compound of formula (a<sub>1</sub>),

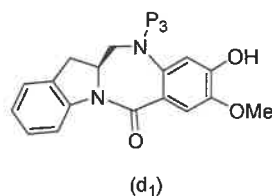


in the presence of an alcohol activating agent to form a compound of formula (16a):



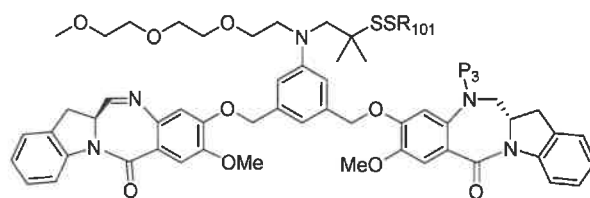
or a salt thereof; and

(2) reacting the compound of formula of (16a) with a reduced monomer of formula (d<sub>1</sub>):



to form a compound of formula (18a), or a pharmaceutically acceptable salt thereof, wherein X<sub>3</sub> is -Cl; P<sub>3</sub> is H or an amine protecting group; and R<sub>101</sub> is (C<sub>1</sub>-C<sub>3</sub>)alkyl, pyridyl, or nitropyridyl.

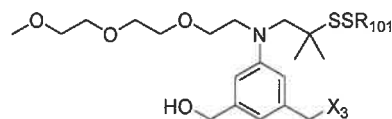
54. A method of preparing a compound of formula (18a),



(18a)

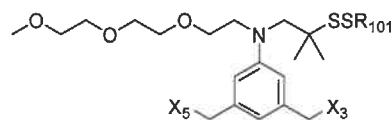
or a pharmaceutically acceptable salt thereof, said method comprising the steps of:

(1) reacting a brominating or iodinating reagent with the compound of formula (14a):



(14a)

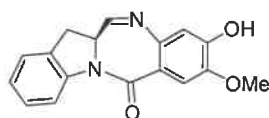
or a salt thereof, to form a compound of formula (20a):



(20a)

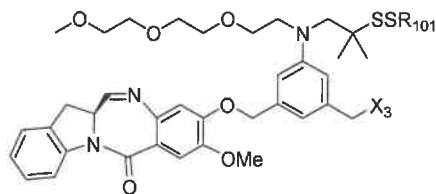
or a salt thereof;

(4) reacting a compound of formula (20a) or a salt thereof with a monomer compound of formula (a<sub>1</sub>),



(a<sub>1</sub>)

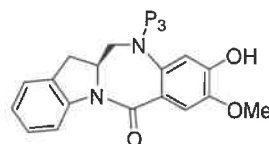
to form a compound of formula (16a):



(16a)

or a salt thereof; and

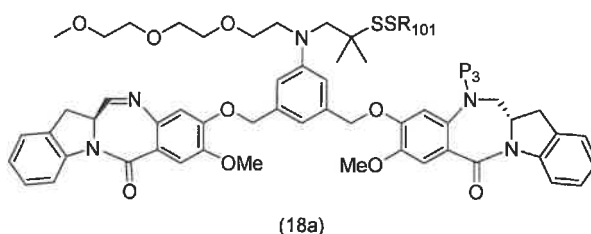
(5) reacting the compound of formula (16a) with a reduced monomer of formula (d<sub>1</sub>):



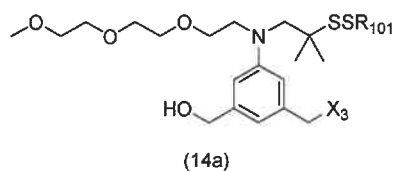
(d<sub>1</sub>)

to form a compound of formula (18a), or a pharmaceutically acceptable salt thereof, wherein  $X_3$  is  $-\text{Cl}$ ;  $X_5$  is  $-\text{Br}$  or  $-\text{I}$ ;  $P_3$  is  $\text{H}$  or an amine protecting group; and  $R_{101}$  is  $(\text{C}_1\text{-C}_3)\text{alkyl}$ , pyridyl, or nitropyridyl.

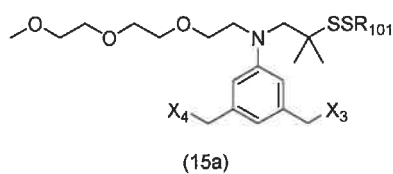
55. A method of preparing a compound of formula (18a),



or a pharmaceutically acceptable salt thereof, said method comprising the steps of:  
(1) reacting a sulfonating reagent or an esterification reagent with the compound of formula (14a):

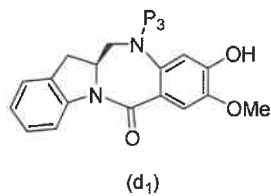


or a salt thereof, to form a compound of formula (15a):

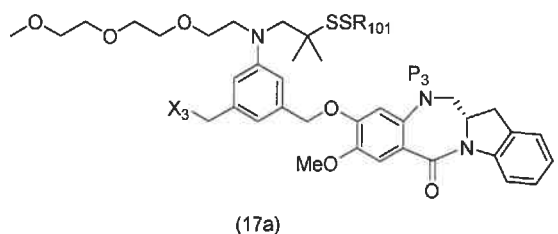


or a salt thereof;

(2) reacting the compound of formula (15a) with a reduced monomer compound of formula (d<sub>1</sub>),

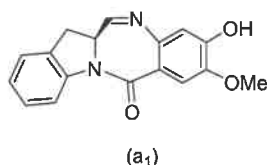


to form a compound of formula (17a):



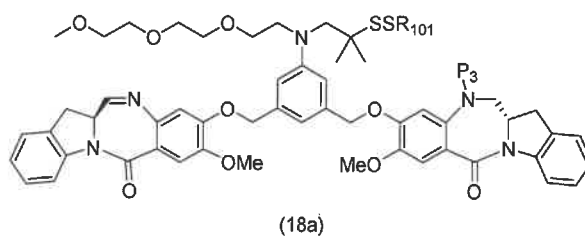
or a salt thereof; and

(3) reacting the compound of formula of (17a) with a monomer of formula (a<sub>1</sub>):



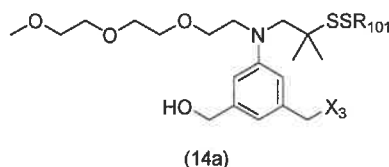
to form a compound of formula (18a), or a pharmaceutically acceptable salt thereof, wherein X<sub>3</sub> is -Cl; X<sub>4</sub> is a sulfonate ester or an activated ester (preferably, a sulfonate ester); P<sub>3</sub> is H or an amine protecting group; and R<sub>101</sub> is (C<sub>1</sub>-C<sub>3</sub>)alkyl, pyridyl, or nitropyridyl.

56. A method of preparing a compound of formula (18a),

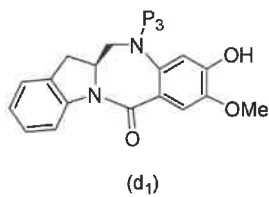


or a pharmaceutically acceptable salt thereof, said method comprising the steps of:

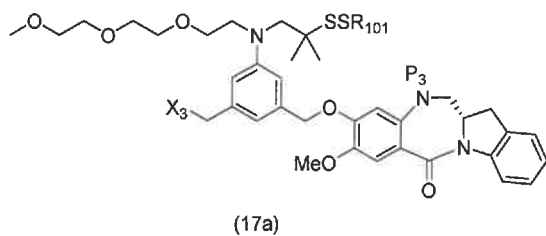
(1) reacting the compound of formula (14a):



or a salt thereof, with a reduced monomer compound of formula (d<sub>1</sub>),

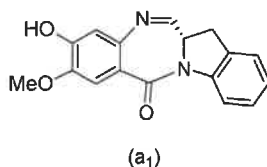


in the presence of an alcohol activating agent to form a compound of formula (17a):



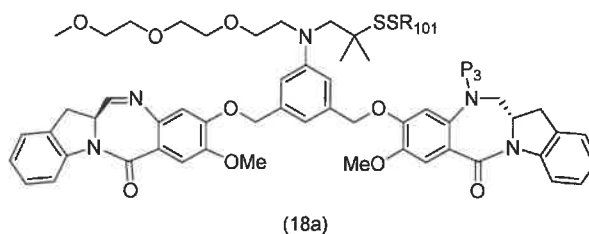
or a salt thereof; and

(2) reacting the compound of formula of (17a) with a monomer of formula (a<sub>1</sub>):



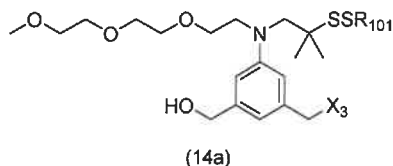
to form a compound of formula (18a), or a pharmaceutically acceptable salt thereof, wherein X<sub>3</sub> is -Cl; P<sub>3</sub> is H or an amine protecting group; and R<sub>101</sub> is (C<sub>1</sub>-C<sub>3</sub>)alkyl, pyridyl, or nitropyridyl.

57. A method of preparing a compound of formula (18a),

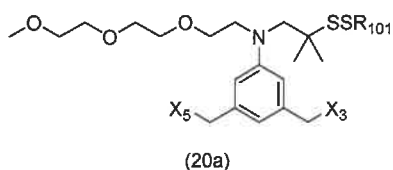


or a pharmaceutically acceptable salt thereof, said method comprising the steps of:

(1) reacting a brominating or iodinating reagent with the compound of formula (14a):

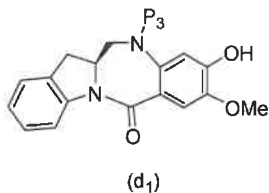


or a salt thereof, to form a compound of formula (20a):

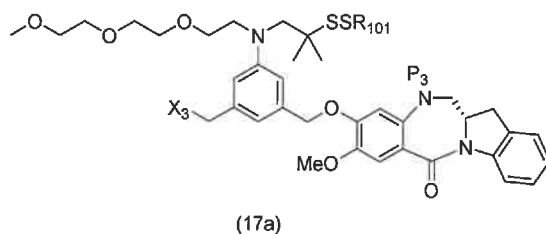


or a salt thereof;

(2) reacting the compound of formula (20a) with a reduced monomer compound of formula (d<sub>1</sub>),

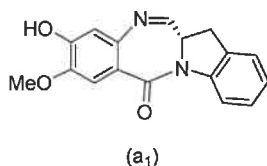


to form a compound of formula (17a):



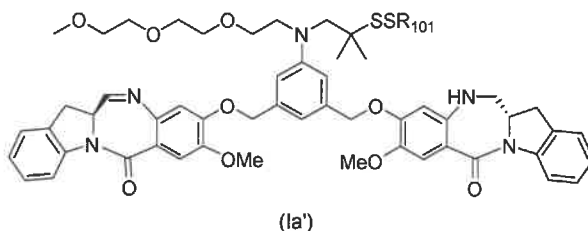
or a salt thereof; and

(3) reacting the compound of formula of (17a) with a monomer of formula (a<sub>1</sub>):

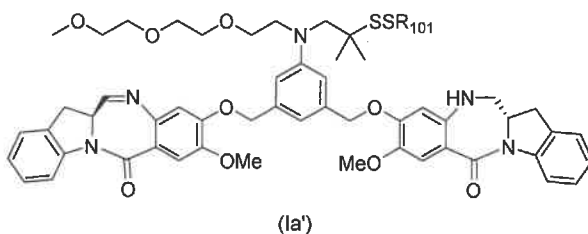


to form a compound of formula (18a), or a pharmaceutically acceptable salt thereof, wherein X<sub>3</sub> is -Cl; X<sub>5</sub> is -Br or -I; P<sub>3</sub> is H or an amine protecting group; and R<sub>101</sub> is (C<sub>1</sub>-C<sub>3</sub>)alkyl, pyridyl, or nitropyridyl.

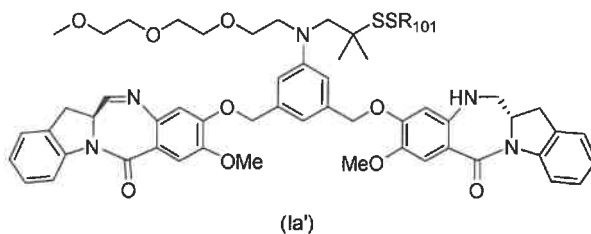
58. The method of claim 55, 56, or 57, wherein the compound of formula (17a) is reacted with monomer of formula (a<sub>1</sub>), wherein P<sub>3</sub> is H, to form a compound of formula (Ia'):



59. The method of claim 55, 56, or 57, wherein P<sub>3</sub> is an amine protecting group.
60. The method of claim 59, wherein the compound of formula (18a) is further reacted with an amine deprotecting reagent to form a compound of formula (Ia'):

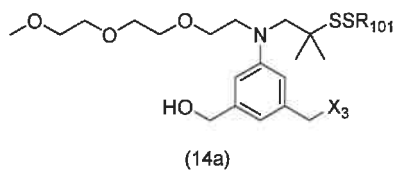


61. A method of preparing a compound of formula (Ia'),

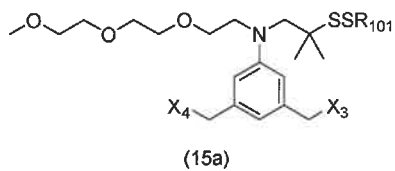


or a pharmaceutically acceptable salt thereof, said method comprising the steps of:

(1) reacting a sulfonating reagent or an esterification reagent with the compound of formula (14a):

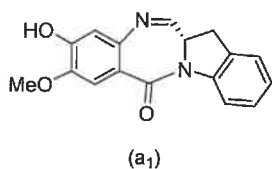


or a salt thereof, to form a compound of formula (15a):

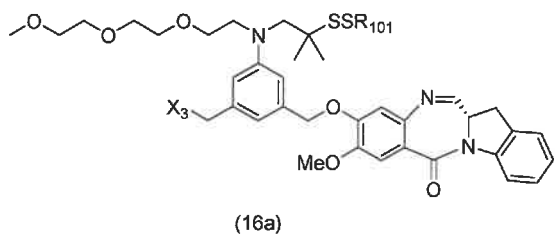


or a salt thereof;

(2) reacting the compound of formula (15a) with a monomer compound of formula (a<sub>1</sub>),

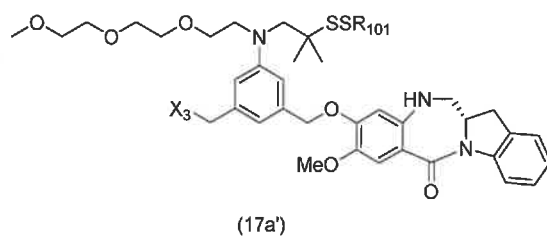


to form a compound of formula (16a):



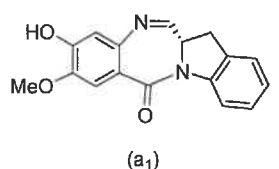
or a salt thereof;

(3) reacting the compound of formula (16a) with an imine reducing agent to form a compound of formula (17a'):



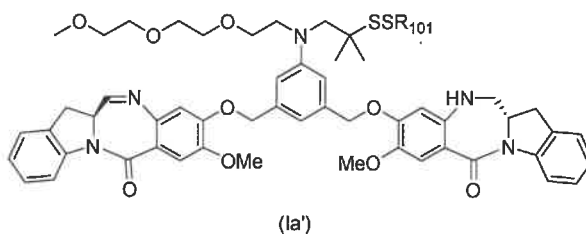
or a salt thereof; and

(4) reacting the compound of formula (17a') with a monomer of formula (a<sub>1</sub>):



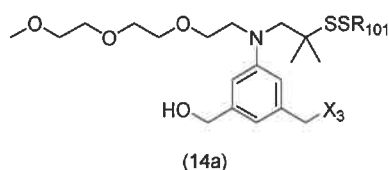
to form the compound of formula (Ia'); wherein X<sub>3</sub> is -Cl; X<sub>4</sub> is a sulfonate ester or an activated ester (preferably, a sulfonate ester); P<sub>2</sub> is an amine protecting group; and R<sub>101</sub> is (C<sub>1</sub>-C<sub>3</sub>)alkyl, pyridyl, or nitropyridyl.

62. A method of preparing a compound of formula (Ia'),

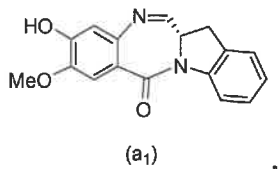


or a pharmaceutically acceptable salt thereof, said method comprising the steps of:

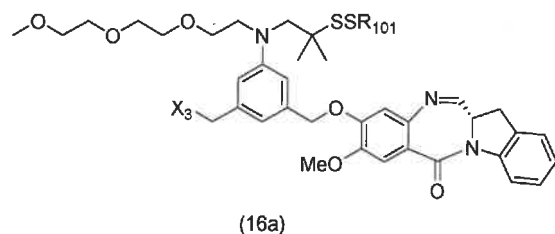
(1) reacting the compound of formula (14a):



or a salt thereof, with a monomer compound of formula (a<sub>1</sub>),

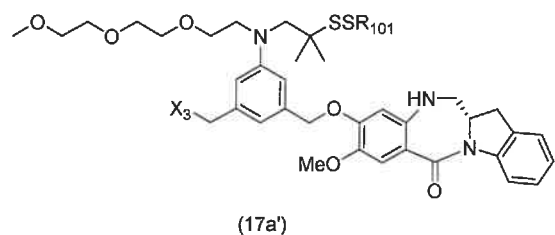


in the presence of an alcohol activating agent to form a compound of formula (16a):



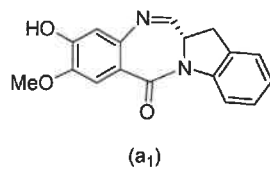
or a salt thereof;

(2) reacting the compound of formula (16a) with an imine reducing agent to form a compound of formula (17a'):



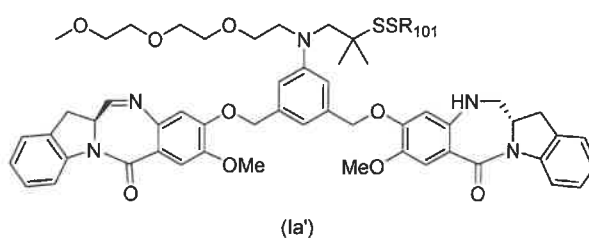
or a salt thereof; and

(3) reacting the compound of formula (17a') with a monomer of formula (a<sub>1</sub>):



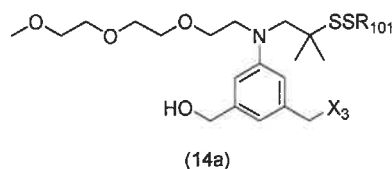
to form the compound of formula (Ia'); wherein X<sub>3</sub> is -Cl; and R<sub>101</sub> is (C<sub>1</sub>-C<sub>3</sub>)alkyl, pyridyl, or nitropyridyl.

63. A method of preparing a compound of formula (Ia'),

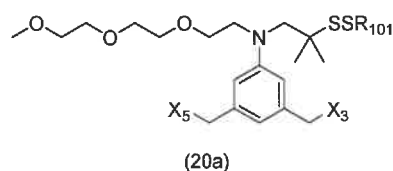


or a pharmaceutically acceptable salt thereof, said method comprising the steps of:

(1) reacting a brominating or iodinating reagent with the compound of formula (14a):

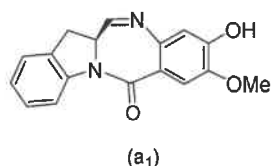


or a salt thereof, to form a compound of formula (20a):

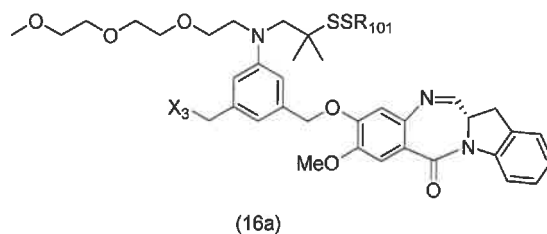


or a salt thereof;

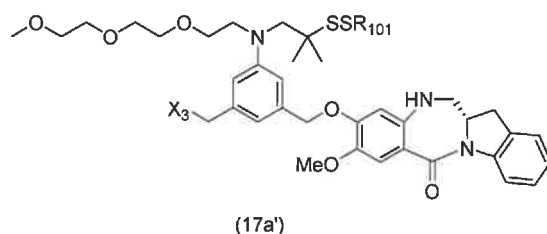
(2) reacting a compound of formula (20a) or a salt thereof with a monomer compound of formula (a<sub>1</sub>),



to form a compound of formula (16a):

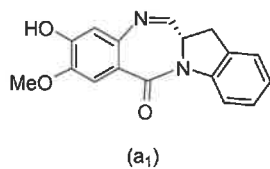


(3) reacting the compound of formula (16a) with an imine reducing agent to form a compound of formula (17a'):



or a salt thereof; and

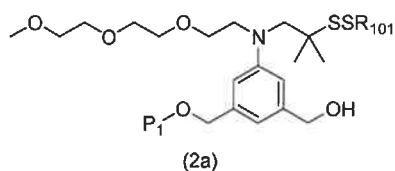
(4) reacting the compound of formula (17d') with a monomer of formula (a<sub>1</sub>):



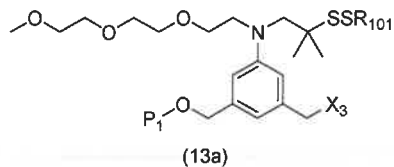
to form the compound of formula (Id'); wherein X<sub>3</sub> is -Cl; and R<sub>101</sub> is (C<sub>1</sub>-C<sub>3</sub>)alkyl, pyridyl, or nitropyridyl.

64. The method of any one of claims 52-63, wherein the compound of formula (14a) or a salt thereof is prepared a method comprising the following steps:

(1) reacting a chlorinating reagent with a compound of formula (2a),



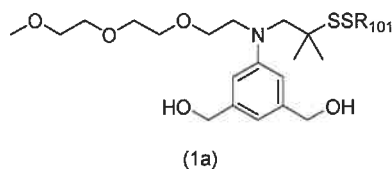
to form a compound a compound of formula (13a),



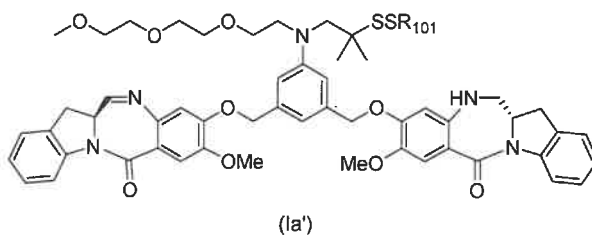
or a salt thereof;

(2) reacting the compound of formula (13a) with an alcohol deprotecting reagent to form the compound of formula (14a) or a salt thereof, wherein P<sub>1</sub> is an alcohol protecting group.

65. The method of claim 64, wherein the compound of formula (2a) is prepared by reacting a compound of formula (1a) with an alcohol protecting reagent

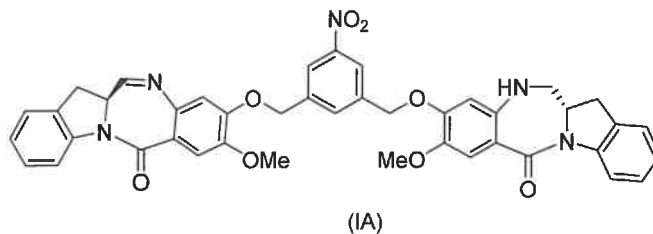


66. A method of preparing a compound of formula (Ia'),

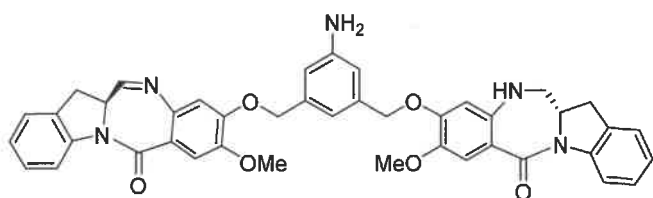


or a pharmaceutically acceptable salt thereof, said method comprising the steps of:

(1) reacting a compound of formula (IA):



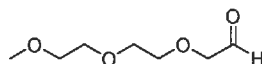
with a reducing agent to form a compound of formula (IB):



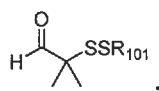
(IB)

; and

(2) reacting the compound of formula (IB) with a compound of formula (L1a),

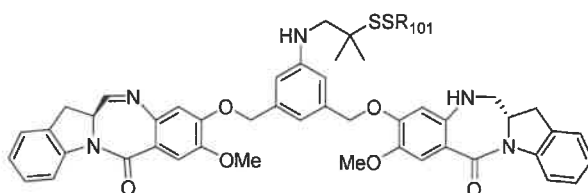


and a compound of formula (L1b):



in the presence of a reducing agent to form the compound of formula (Ia'), wherein  $R_{101}$  is (C<sub>1</sub>-C<sub>3</sub>)alkyl, pyridyl, or nitropyridyl.

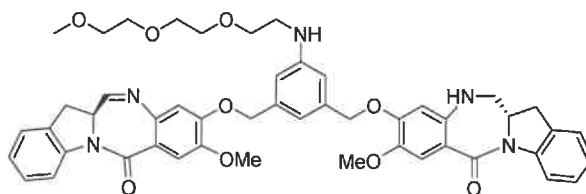
67. The method of claim 66, wherein the compound of formula (IB) is reacted with a compound of formula (L1b) in the presence of a reducing agent to form a compound of (Ia'-1):



(Ia'-1)

or a salt thereof, followed by reacting the compound of (Ia'-1) with the compound of formula (L1a) in the presence of a reducing agent to form the compound of formula (Ia').

68. The method of claim 66, wherein the compound of formula (IB) is reacted with a compound of formula (L1a) in the presence of a reducing agent to form a compound of (Ia'-2)



(Ia'-2)

or a salt thereof, followed by reacting the compound of formula (Ia'-2) with the compound of formula (L1b) in the presence of a reducing agent to form the compound

of formula (Ia').

69. The method of any one of claims 66-68, wherein the reducing agent in step (2) is selected from the group consisting of: sodium borohydride, sodium triacetoxo borohydride, sodium cyanoborohydride, hydrogen gas, ammonium formate, titanium isopropoxide, borane, 9-borabicyclo[3.3.1]nonane (9-BBN), lithium borohydride ( $\text{LiBH}_4$ ), potassium borohydride ( $\text{KBH}_4$ ), titanium isopropoxide, and stannous chloride.
70. The method of claim 68, wherein the reducing agent is sodium borohydride, sodium triacetoxo borohydride, sodium cyanoborohydride, or potassium borohydride.
71. The method of claim 70, wherein the reducing agent is sodium borohydride.
72. The method of any one of claims 66-71, wherein the reducing agent in step (1) is selected from the group consisting of: hydrogen gas, sodium hydrosulfite, sodium sulfide, stannous chloride, titanium (II) chloride, zinc, iron and samarium iodide.
73. The method of claim 72, wherein the reducing agent in step (1) is  $\text{Fe}/\text{NH}_4\text{Cl}$  or  $\text{Zn}/\text{NH}_4\text{Cl}$ .
74. The method of any one of claims 1-73, wherein  $\text{R}_{101}$  is methyl.