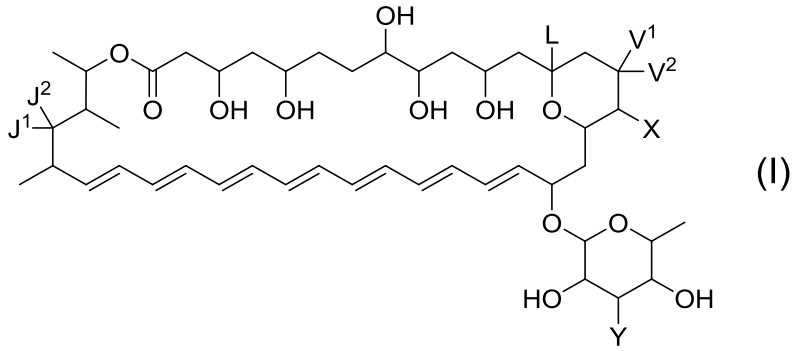
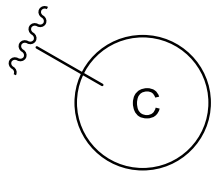
CLAIMS

1. A compound represented by formula (I):



(I)

wherein X is a group of formula (II):



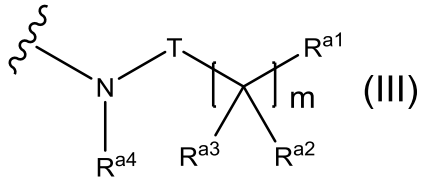
(II)

or -N(R^F)-CO-X^1;

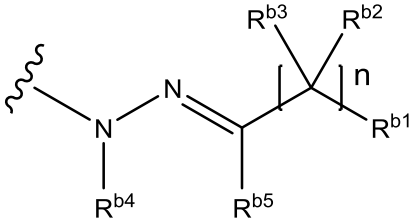
wherein in formula (II) Ring C is substituted or unsubstituted aromatic carbocycle, substituted or unsubstituted non-aromatic carbocycle, substituted or unsubstituted aromatic heterocycle or substituted or unsubstituted non-aromatic heterocycle;

wherein R^F is hydrogen, substituted or unsubstituted alkyl, substituted or unsubstituted alkenyl or substituted or unsubstituted alkynyl; and

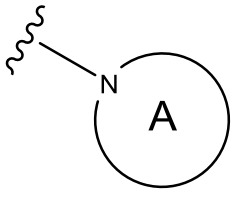
X^1 is any one of following groups (III) - (VI):



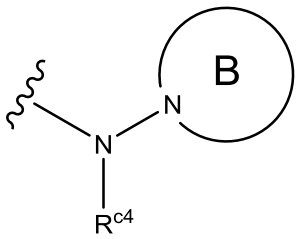
(III)



(IV)



(V)



(VI)

wherein in formula (I) L, J^1 and V^1 are each independently hydrogen, halogen, hydroxy, substituted or unsubstituted amino or substituted or unsubstituted alkyloxy;

J^2 and V^2 are each independently hydrogen, substituted or unsubstituted

alkyl, substituted or unsubstituted alkenyl or substituted or unsubstituted alkynyl;
or J^1 and J^2 and/or V^1 and V^2 may be taken together to form oxo;

wherein in formula (III) or (IV) R^{a1} and R^{b1} are each independently, hydrogen, halogen, hydroxy, carboxy, substituted or unsubstituted amino, formyl, substituted or unsubstituted carbamoyl, substituted or unsubstituted sulfamoyl, sulfo, cyano, substituted or unsubstituted ureido, guanidino, substituted or unsubstituted alkyl, substituted or unsubstituted alkenyl, substituted or unsubstituted alkynyl, substituted or unsubstituted alkyloxy, substituted or unsubstituted alkenyloxy, substituted or unsubstituted alkynyloxy, substituted or unsubstituted alkylcarbonyl, substituted or unsubstituted alkenylcarbonyl, substituted or unsubstituted alkynylcarbonyl, substituted or unsubstituted alkyl ammonium, substituted or unsubstituted alkylsulfonyl, substituted or unsubstituted alkenylsulfonyl, substituted or unsubstituted alkynylsulfonyl, substituted or unsubstituted alkylphosphonyl, substituted or unsubstituted dialkynylphosphonyl, substituted or unsubstituted alkylcarbonyloxy, substituted or unsubstituted alkenylcarbonyloxy, substituted or unsubstituted alkynylcarbonyloxy, substituted or unsubstituted alkyloxycarbonyl, substituted or unsubstituted alkenyloxycarbonyl, substituted or unsubstituted alkynyloxycarbonyl, substituted or unsubstituted aromatic carbocyclyl, substituted or unsubstituted non-aromatic carbocyclyl, substituted or unsubstituted aromatic heterocyclyl, substituted or unsubstituted non-aromatic heterocyclyl, substituted or unsubstituted aromatic carbocyclyloxy, substituted or unsubstituted non-aromatic carbocyclyloxy, substituted or unsubstituted aromatic heterocyclyloxy, substituted or unsubstituted non-aromatic heterocyclyloxy, substituted or unsubstituted aromatic carbocyclylcarbonyl, substituted or unsubstituted non-aromatic carbocyclylcarbonyl, substituted or unsubstituted aromatic heterocyclylcarbonyl, substituted or unsubstituted non-aromatic heterocyclylcarbonyl, substituted or unsubstituted aromatic carbocyclylamino, substituted or unsubstituted non-aromatic carbocyclylamino, substituted or unsubstituted aromatic heterocyclylamino, substituted or unsubstituted non-aromatic heterocyclylamino, substituted or unsubstituted aromatic carbocyclylsulfonyl, substituted or unsubstituted non-aromatic carbocyclylsulfonyl, substituted or unsubstituted aromatic heterocyclylsulfonyl or substituted or unsubstituted non-aromatic heterocyclylsulfonyl;

R^{a2} and R^{b2} are each independently hydrogen, halogen, hydroxy, carboxy, substituted or unsubstituted amino, substituted or unsubstituted carbamoyl, substituted or unsubstituted alkyl, substituted or unsubstituted alkenyl, substituted or unsubstituted alkynyl, substituted or unsubstituted alkyloxy, substituted or unsubstituted alkenyloxy, substituted or unsubstituted alkynyloxy, substituted or unsubstituted alkylcarbonyl, substituted or unsubstituted alkenylcarbonyl, substituted or unsubstituted alkynylcarbonyl, substituted or unsubstituted alkylcarbonyloxy, substituted or unsubstituted alkenylcarbonyloxy, substituted or unsubstituted alkynylcarbonyloxy, substituted or unsubstituted alkyloxycarbonyl, substituted or unsubstituted

alkenyloxycarbonyl, substituted or unsubstituted alkynyloxycarbonyl, substituted or unsubstituted non-aromatic heterocyclyloxyalkyl, substituted or unsubstituted non-aromatic heterocyclyloxyalkenyl or substituted or unsubstituted non-aromatic heterocyclyloxyalkynyl;

R^{a3} and R^{b3} are each independently, hydrogen, halogen, substituted or unsubstituted alkyl, substituted or unsubstituted alkenyl, substituted or unsubstituted alkynyl, substituted or unsubstituted alkylcarbonyl, substituted or unsubstituted alkenylcarbonyl, substituted or unsubstituted alkynylcarbonyl, substituted or unsubstituted non-aromatic heterocyclyloxyalkyl, substituted or unsubstituted non-aromatic heterocyclyloxyalkenyl or substituted or unsubstituted non-aromatic heterocyclyloxyalkynyl;

or R^{a2} and R^{a3} and/or R^{b2} and R^{b3} are each independently may be taken together to form oxo, substituted or unsubstituted imino or thioxo, or may be taken together with neighboring atoms to form substituted or unsubstituted non-aromatic carbocycle or substituted or unsubstituted non-aromatic heterocycle;

R^{a4}, R^{b4} and R^{c4} are each independently, hydrogen, hydroxy, substituted or unsubstituted amino, substituted or unsubstituted alkyl, substituted or unsubstituted alkenyl, substituted or unsubstituted alkynyl, substituted or unsubstituted alkylcarbonyl, substituted or unsubstituted alkenylcarbonyl, substituted or unsubstituted alkynylcarbonyl or substituted or unsubstituted non-aromatic carbocyclyl;

R^{b5} is hydrogen, substituted or unsubstituted alkyl, substituted or unsubstituted alkenyl or substituted or unsubstituted alkynyl;

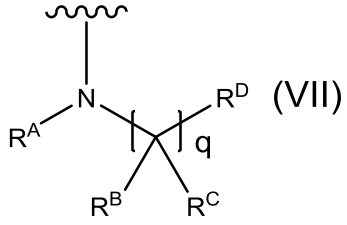
wherein in formula (V) or (VI) Ring A and Ring B are each independently, substituted or unsubstituted nitrogen-containing aromatic heterocycle or substituted or unsubstituted nitrogen-containing non-aromatic heterocycle;

wherein in formula (III) T is a bond, -N(R^{a5})- or -O-;

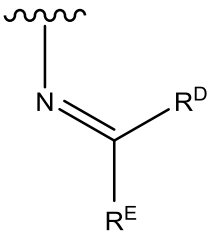
wherein R^{a5} is hydrogen, substituted or unsubstituted alkyl, substituted or unsubstituted alkenyl, substituted or unsubstituted alkynyl, substituted or unsubstituted alkylcarbonyl, substituted or unsubstituted alkenylcarbonyl or substituted or unsubstituted alkynylcarbonyl;

wherein in formula (III) or (IV) m and n are each independently an integer of 0 to 10;

wherein in formula (I) Y is any one of following groups:



(VII)



(VIII)

wherein in formula (VII) R^A is hydrogen, substituted or unsubstituted alkyl, substituted or unsubstituted alkenyl or substituted or unsubstituted alkynyl;

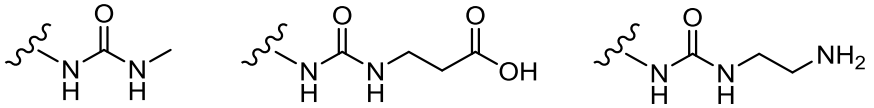
R^B and R^C are each independently hydrogen, hydroxy, substituted or

unsubstituted amino, substituted or unsubstituted alkyl, substituted or unsubstituted alkenyl or substituted or unsubstituted alkynyl;
or R^B and R^C may be taken together to form oxo, substituted or unsubstituted imino or thioxo, or may be taken together with neighboring atoms to form substituted or unsubstituted non-aromatic carbocycle or substituted or unsubstituted non-aromatic heterocycle;

wherein in formula (VII) or (VIII) R^D is hydrogen, hydroxy, carboxy, substituted or unsubstituted amino, substituted or unsubstituted carbamoyl, substituted or unsubstituted amidino, substituted or unsubstituted guanidino, substituted or unsubstituted aromatic carbocyclyl, substituted or unsubstituted non-aromatic carbocyclyl, substituted or unsubstituted aromatic heterocyclyl or substituted or unsubstituted non-aromatic heterocyclyl;

wherein in formula (VIII) R^E is hydrogen, hydroxy or substituted or unsubstituted amino;

wherein in formula (VII) q is an integer of 0 to 10;
provided that the following compounds are excluded:
(i) the compounds which X is $–CH_2OH$; and Y is $-NH_2$;
(ii) the compounds which Y is $-NH_2$; and X is either of following groups;



or a pharmaceutically acceptable salt thereof.

2. The compound or its pharmaceutically acceptable salt according to claim 1, wherein J^1, L and V^1 are hydroxy; and J^2 and V^2 are hydrogen.

3. The compound or its pharmaceutically acceptable salt according to claim 1, wherein X is a group of formula: $-N(R^F)-CO-X^1$; X^1 is a group represented by formula (III); and T is a bond.

4. The compound or its pharmaceutically acceptable salt according to claim 3, wherein R^{a1} is halogen, hydroxy, carboxy, substituted or unsubstituted amino, substituted or unsubstituted aromatic heterocyclylamino, substituted or unsubstituted non-aromatic heterocyclylamino, substituted or unsubstituted alkylammonium, carbamoyl, sulfamoyl, sulfo, cyano, substituted or unsubstituted ureido, guanidino, substituted or unsubstituted alkyloxy, substituted or unsubstituted non-aromatic heterocyclyloxy, substituted or unsubstituted alkylphosphonyl, substituted sulfamoyl, substituted or unsubstituted aromatic carbocyclyl, substituted or unsubstituted non-aromatic carbocyclyl, substituted or unsubstituted aromatic heterocyclyl or substituted or unsubstituted non-aromatic heterocyclyl;

wherein said substituted or unsubstituted amino is selected from unsubstituted amino, hydroxyamino, sulfamoylamino, substituted or unsubstituted alkylamino, substituted or unsubstituted alkylsulfonylamino, substituted or unsubstituted non-aromatic carbocyclylcarbonylamino,

substituted or unsubstituted aromatic carbocyclylcarbonylamino, substituted or unsubstituted aromatic heterocyclylcarbonylamino and substituted or unsubstituted non-aromatic heterocyclylcarbonylamino;

wherein said substituted or unsubstituted ureido is selected from ureido, substituted or unsubstituted alkylureido, substituted or unsubstituted aromatic heterocyclylureido and substituted or unsubstituted aromatic heterocyclylureido;

wherein said substituted sulfamoyl is substituted or unsubstituted aromatic heterocyclylsulfamoyl.

5. The compound or its pharmaceutically acceptable salt according to claim 3,

wherein R^{a2} are each independently hydrogen, halogen, hydroxy, carboxy, amino, carbamoyl, substituted or unsubstituted alkyl, substituted or unsubstituted non-aromatic heterocyclyloxyalkyl or substituted or unsubstituted alkylcarbonyl;

R^{a3} are each independently, hydrogen, halogen, substituted or unsubstituted alkyl orsubstituted or unsubstituted non-aromatic heterocyclyloxyalkyl;

or R^{a2} and R^{a3} may be taken together to form oxo, or may be taken together with neighboring atoms to form non-aromatic carbocycle or non-aromatic heterocycle.

6. The compound or its pharmaceutically acceptable salt according to claim 3, wherein R^{a4} is hydrogen, hydroxy, amino, substituted or unsubstituted alkyl or substituted or unsubstituted non-aromatic carbocyclyl.

7. The compound or its pharmaceutically acceptable salt according to claim 1, wherein X is a group of formula: $-N(R^F)-CO-X^1$; X^1 is a group represented by formula (III); and T is $-N(R^{a5})-$ or -O-.

8. The compound or its pharmaceutically acceptable salt according to claim 7, wherein R^{a1} is hydroxy, carboxy, substituted amino, substituted or unsubstituted aromatic heterocyclylamino, formyl, carbamoyl, cyano, guanidino, substituted or unsubstituted alkyloxy, substituted or unsubstituted non-aromatic heterocyclyloxy, substituted or unsubstituted alkylcarbonyl, substituted or unsubstituted alkyloxycarbonyl, substituted or unsubstituted alkylsulfonyl, substituted or unsubstituted aromatic heterocyclylsulfonyl, substituted or unsubstituted aromatic carbocyclyl, substituted or unsubstituted non-aromatic carbocyclyl, substituted or unsubstituted aromatic heterocyclyl, substituted or unsubstituted non-aromatic heterocyclyl, or substituted ureido;

wherein said substituted amino is hydroxyamino or substituted or unsubstituted alkylamino;

wherein said substituted ureido is substituted or unsubstituted aromatic heterocyclylureido.

9. The compound or its pharmaceutically acceptable salt according to claim 7,

wherein R^{a2} are each independently hydrogen, hydroxy or substituted or unsubstituted alkyl;

R^{a3} are each independently hydrogen or substituted or unsubstituted alkyl;

or R^{a2} and R^{a3} may be taken together to form oxo or thioxo, or may be taken together with neighboring atoms to form substituted or unsubstituted non-aromatic carbocycle.

10. The compound or its pharmaceutically acceptable salt according to claim 7, wherein R^{a4} is hydrogen.

11. The compound or its pharmaceutically acceptable salt according to claim 1, wherein X is a group of formula: $-N(R^F)-CO-X^1$; and X^1 is a group represented by formula (IV).

12. The compound or its pharmaceutically acceptable salt according to claim 11, wherein R^{b1} is hydroxy.

13. The compound or its pharmaceutically acceptable salt according to claim 11, wherein n is 1 or 2; R^{b2} are each independently hydrogen or hydroxy; and R^{b3} is hydrogen.

14. The compound or its pharmaceutically acceptable salt according to claim 11, wherein R^{b4} is hydrogen; and R^{b5} is hydrogen or substituted or unsubstituted alkyl.

15. The compound or its pharmaceutically acceptable salt according to claim 1, wherein X is $-N(R^F)-CO-X^1$; and X^1 is a group represented by formula (V).

16. The compound or its pharmaceutically acceptable salt according to claim 15, wherein ring A is substituted or unsubstituted nitrogen-containing non-aromatic heterocycle.

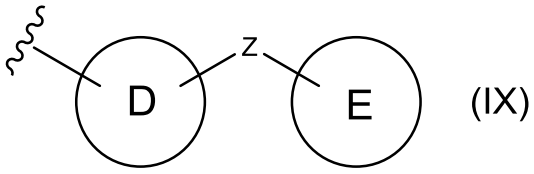
17. The compound or its pharmaceutically acceptable salt according to claim 1, wherein X is a group of formula: $-N(R^F)-CO-X^1$; X^1 is a group represented by formula (VI).

18. The compound or its pharmaceutically acceptable salt according to claim 17, wherein ring B is substituted or unsubstituted nitrogen-containing non-aromatic heterocycle.

19. The compound or its pharmaceutically acceptable salt according to claim 17, wherein R^{c4} is hydrogen.

20. The compound or its pharmaceutically acceptable salt according to claim 1, wherein R^F is hydrogen.

21. The compound or its pharmaceutically acceptable salt according to claim 1 , wherein X is a group represented by formula (II); and said group is represent by formula (IX):



(IX)

wherein ring D and ring E are each independently substituted or unsubstituted aromatic carbocycle, substituted or unsubstituted non-aromatic carbocycle, substituted or unsubstituted aromatic heterocycle or substituted or unsubstituted non-aromatic heterocycle; and

Z is a bond, alkylene, -O-, -S- or -N(H)-.

22. The compound or its pharmaceutically acceptable salt according to claim 21, wherein ring D is substituted or unsubstituted aromatic heterocycle; and ring E is substituted or unsubstituted aromatic carbocycle or substituted or unsubstituted aromatic heterocycle.

23. The compound or its pharmaceutically acceptable salt according to claim 21, wherein Z is a bond.

24. The compound or its pharmaceutically acceptable salt according to claim 21, wherein the substituent(s) on ring E is/are alkylamino.

25. The compound or its pharmaceutically acceptable salt according to claim 1, wherein R^A are each independently hydrogen or substituted or unsubstituted alkyl; R^B are each independently hydrogen or hydroxy or substituted or unsubstituted amino; R^C are each independently hydrogen or hydroxy or substituted or unsubstituted amino; or R^B and R^C may be taken together to form oxo, substituted or unsubstituted imino, hydroxyimino or cyanoimino;

R^D is hydrogen, hydroxy, carboxy, substituted or unsubstituted amino, carbamoyl, guanidine, substituted or unsubstituted aromatic carbocyclyl, substituted or unsubstituted aromatic heterocyclyl or substituted or unsubstituted non-aromatic heterocyclyl;

R^E is amino;

wherein said substituted or unsubstituted amino is unsubstituted amino or substituted or unsubstituted alkylamino;

wherein said substituted or unsubstituted imino is unsubstituted imino, hydroxyimino or cyanoimino.

26. The compound or its pharmaceutically acceptable salt according to claim 1, wherein Y is NH_2.

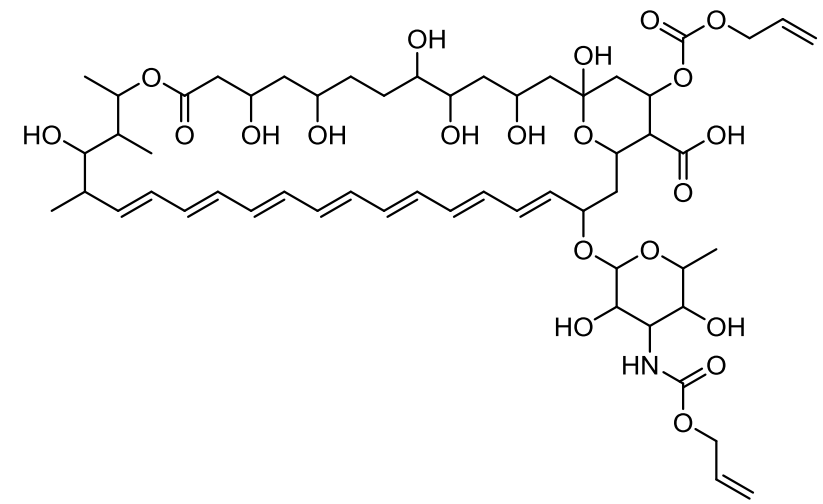
27. The compound or its pharmaceutically acceptable salt according to claim 2, wherein X is a group of formula: $-N(R^F)-CO-X^1$, wherein X^1 is a group represented by formula (III);

T is -N(H)-; R^{a1} is carboxy, carbamoyl or substituted amino; R^{a2} is each independently hydrogen or hydroxy; and R^{a3} and R^{a4} are hydrogen; m is 2; and Y is NH_2.

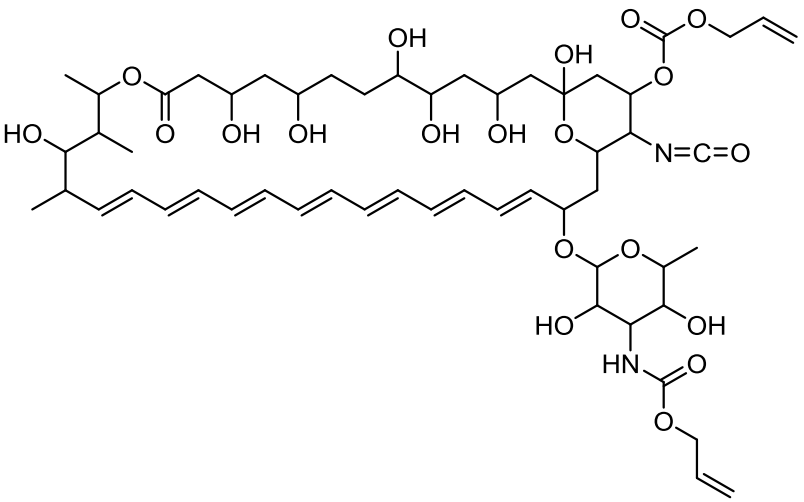
28. A pharmaceutical composition containing the compound or its pharmaceutically acceptable salt according to claim 1.

29. A pharmaceutical composition of claim 28 having antifungal activity.

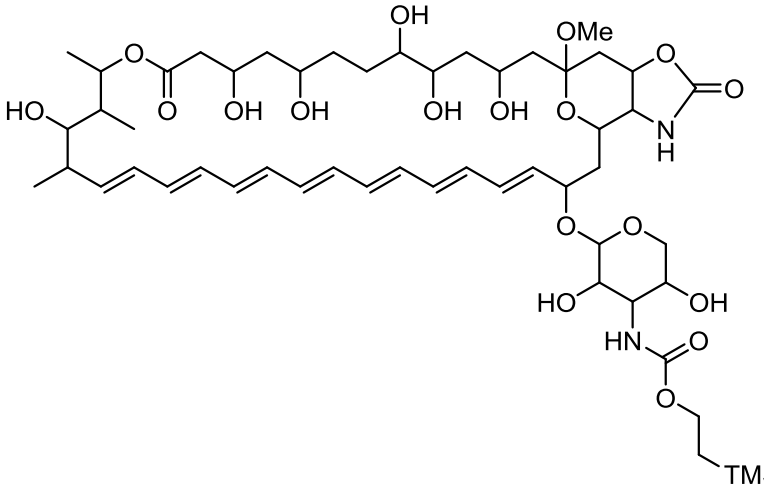
30. A compound represented by formula (X), (XI), (XII), (XVI) or (XVII):



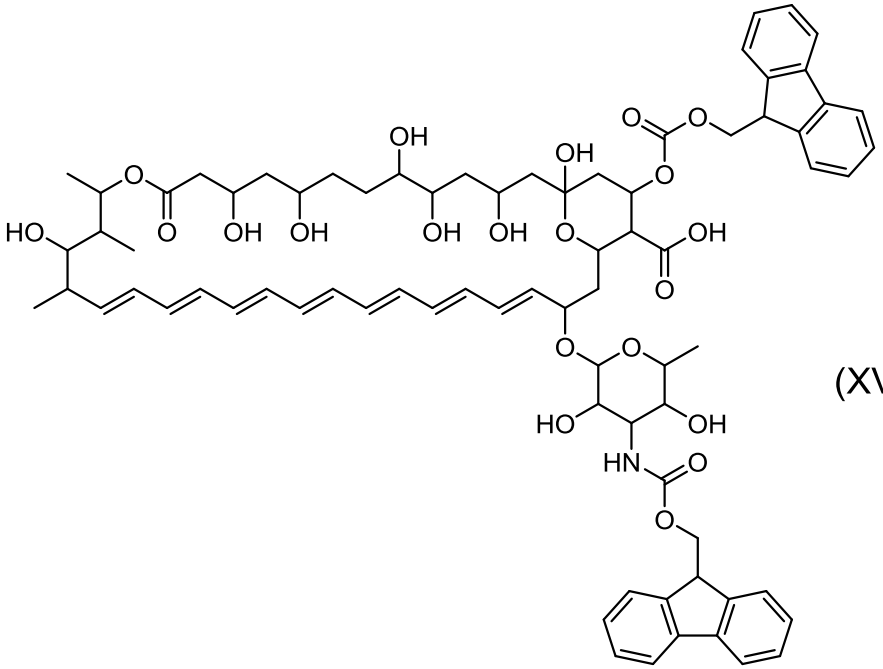
(X)



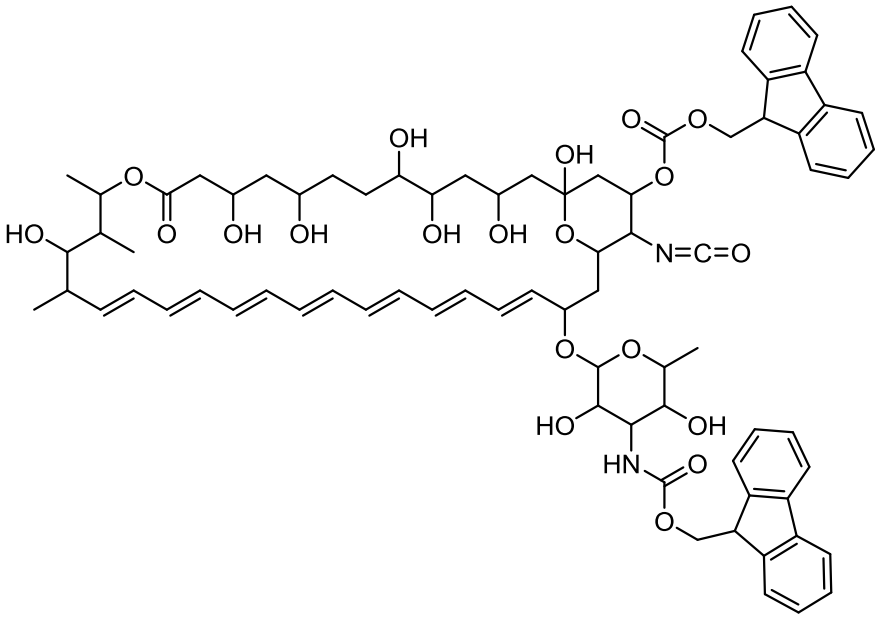
(XI)



(XII)



(XVI)



(XVII)

or its pharmaceutically acceptable salt.