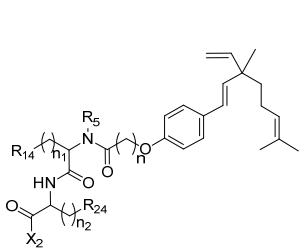
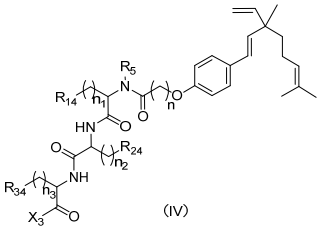
CLAIMS

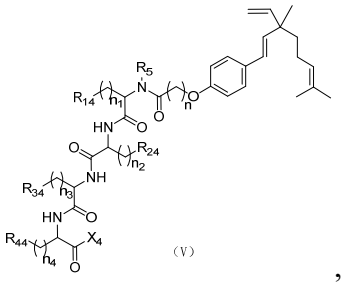
1. A bakuchiol derivative and a pharmaceutically acceptable salt thereof, selected from a compound of any of the following general formulae:



(III)

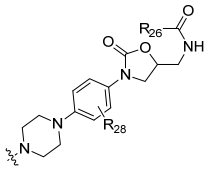
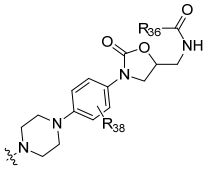
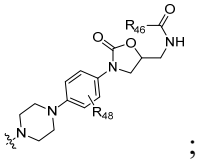


(IV)



(V)

,

wherein X_2 is $NR_{22}R_{23}$ or  ; X_3 is $NR_{32}R_{33}$, OR_{35} or  ; X_4 is OR_{45} or  ;

R_{22} and R_{23} are each independently selected from: -H;

R_{32} and R_{33} are each independently selected from: -H;

wherein R_{14}, R_{24}, R_{34} and R_{44} are each independently selected from: guanidyl, $-NR_4R_5$ or 5- to 20-membered nitrogen-containing heteroaryl;

R_4 and R_5 are each independently selected from: -H;

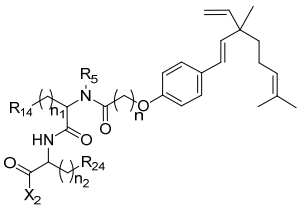
R_{26}, R_{35}, R_{36}, R_{45} and R_{46} are each independently selected from: C_{1-6} alkyl;

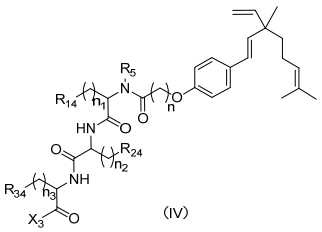
R_{28}, R_{38} and R_{48} are each independently selected from: -H or halogen;

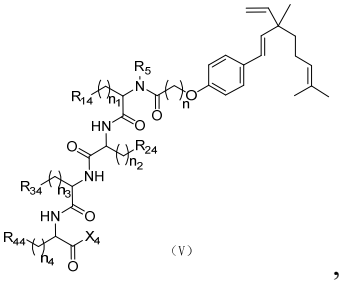
each of n_1, n_2, n_3 and n_4 is independently 0, 1, 2, 3 or 4;

n is an integer from 1 to 10.

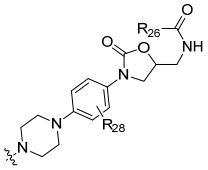
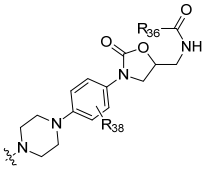
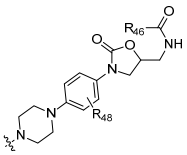
2. The bakuchiol derivative and a pharmaceutically acceptable salt thereof according to claim 1, selected from a compound of any of the following general formulae:


(III)


(IV)


(V)

,

X_2 is  ; X_3 is  ; X_4 is  ;

wherein R_{14}, R_{24}, R_{34} and R_{44} are each independently selected from: guanidyl, -NR_4R_5 or 5- to 20-membered nitrogen-containing heteroaryl;

R_4 and R_5 are each independently selected from: -H;

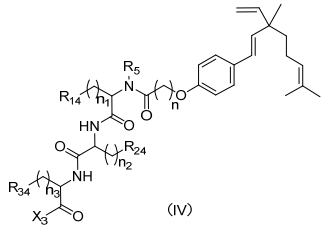
R_{26}, R_{36} and R_{46} are each independently selected from: C_{1-6} alkyl;

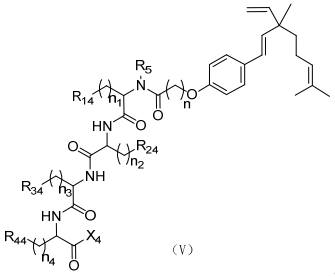
R_{28}, R_{38} and R_{48} are each independently selected from: -H or halogen;

each of n_1, n_2, n_3 and n_4 is independently 0, 1, 2, 3 or 4;

n is an integer from 1 to 10.

3. The bakuchiol derivative and a pharmaceutically acceptable salt thereof according to claim 1, selected from a compound of any of the following general formulae:


(IV)


(V)

,

X_3 is OR_{35}; X_4 is OR_{45};

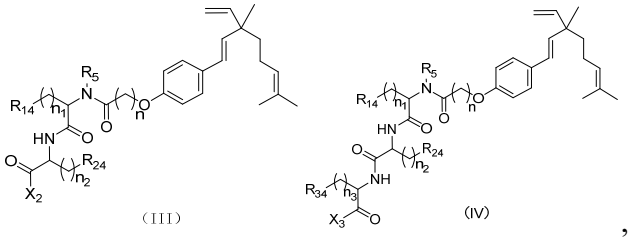
wherein R_{14}, R_{24}, R_{34} and R_{44} are each independently selected from: guanidyl, -NR_4R_5 or 5- to 20-membered nitrogen-containing heteroaryl;

R_{35} and R_{45} are each independently selected from: C_{1-6} alkyl;

each of n_1, n_2, n_3 and n_4 is independently 0, 1, 2, 3 or 4;

n is an integer from 1 to 10.

4. The bakuchiol derivative and a pharmaceutically acceptable salt thereof according to claim 1, selected from a compound of any of the following general formulae:



(III) (IV) ,

wherein X_2 is $NR_{22}R_{23}$; X_3 is $NR_{32}R_{33}$;

R_{22} and R_{23} are each independently selected from: -H;

R_{32} and R_{33} are each independently selected from: -H;

wherein R_{14}, R_{24} and R_{34} are each independently selected from: guanidyl, $-NR_4R_5$ or 5- to 20-membered nitrogen-containing heteroaryl;

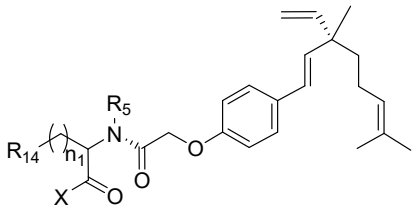
R_4 and R_5 are each independently selected from: -H;

each of n_1, n_2, n_3 and n_4 is independently 0, 1, 2, 3 or 4;

n is an integer from 1 to 10.

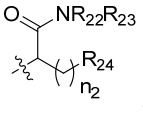
5. The bakuchiol derivative and a pharmaceutically acceptable salt thereof according to claim 1, wherein R_{14}, R_{24}, R_{34} and R_{44} are each independently selected from: guanidyl, $-NR_4R_5$, $-SR_4$, 5-membered nitrogen-containing heteroaryl.

6. The bakuchiol derivative and a pharmaceutically acceptable salt thereof according to claim 1, selected from a compound of the following general formula:

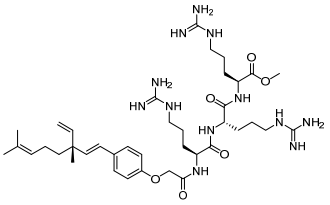


(II'),

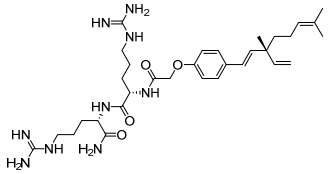
wherein X is $NR_{12}R_{13}$;

one of R_{12} and R_{13} is H, and another one is selected from  .

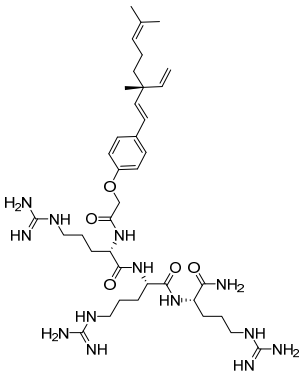
7. The bakuchiol derivative and a pharmaceutically acceptable salt thereof according to claim 1, selected from the following compounds:



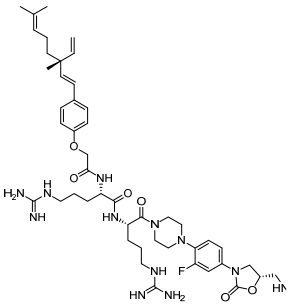
compound 45



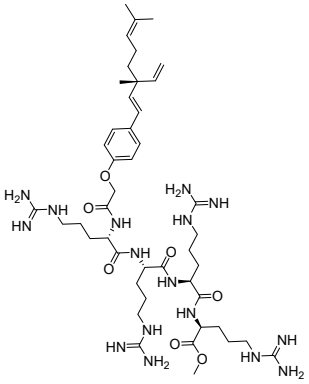
compound 49



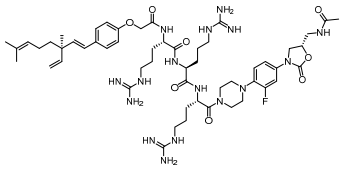
compound 58



compound 59



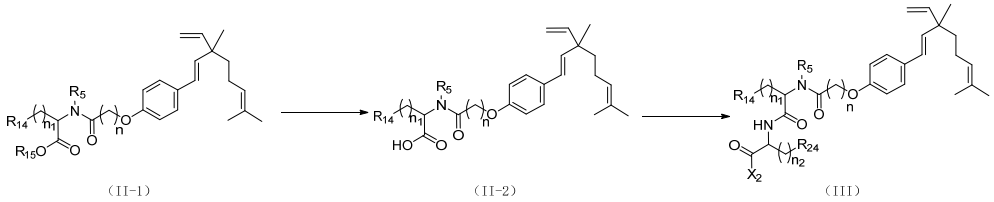
compound 60



compound 63

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8. A preparation method of the bakuchiol derivative and a pharmaceutically acceptable salt thereof of any one of claims 1-7, wherein the preparation method comprises the following step:



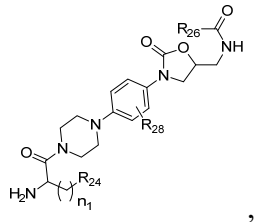
(II-1) (II-2) (III)

performing a hydrolysis reaction on a compound shown in formula (II-1), to obtain a compound shown in formula (II-2);

performing a condensation reaction on the compound shown in formula (II-2) and



or



, to obtain a compound shown in formula (III); and

R_{15} is defined as R_{35} in claim 1.

9. A pharmaceutical composition comprising at least one of the bakuchiol derivative and a pharmaceutically acceptable salt thereof of any one of claims 1-7, and a pharmaceutically acceptable excipient.

10. Use of the bakuchiol derivative and a pharmaceutically acceptable salt thereof of any one of claims 1-7 or the pharmaceutical composition of claim 9 in preparation of antibacterial agents.