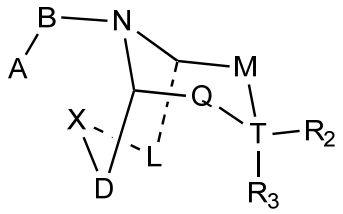
Claims

1. A compound of formula (I), or a pharmaceutically acceptable salt thereof,



(I)

wherein:

A is selected from an optionally substituted 3-12 membered cyclohydrocarbyl or heterocyclohydrocarbyl or cyclic heterohydrocarbyl;

B is selected from C(=O) or $S(=O)_2$;

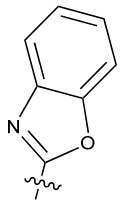
X is a single bond of linkage ;

D and L are independently selected from optionally substituted CH_2, wherein the substituent is selected from F, Cl, Br, OH, NH_2, halogen-substituted, or unsubstituted C_{1-6} alkyl;

T is C;

M is selected from $C(Y)(R_{1a})$ when Q is selected from $C(R_{1b})(R_{1c})$, or M is selected from $C(R_{1b})(R_{1c})$ when Q is selected from $C(Y)(R_{1a})$;

Y is selected from $-(CH_2)_{r4}(G)_{r5}(CH_2)_{r6}-Y_1$, wherein Y_1 is selected from -O-E or a structure of formula (Y_{22}) which is optionally substituted,



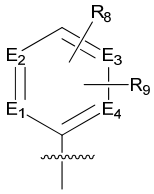
(Y_{22})

wherein the substituent is selected from F, Cl, Br, halogen-substituted, or unsubstituted C_{1-6} alkyl;

G is selected from halogen-substituted or unsubstituted CH_2;

r_4 and r_6 are independently selected from 0, r_5 is selected from 0 or 1, and when r_4, r_5 and r_6 are all 0, it means the corresponding structure is a single bond of linkage;

E is selected from optionally substituted 6 membered cyclohydrocarbyl or heterocyclic group, wherein the substituent is selected from F, Cl, Br, CN, OH, NH_2, halogen-substituted, hydroxy-substituted, amino-substituted or unsubstituted C_{1-6} alkyl; wherein the E is selected from a structure unit of formula (E_a):



(E_a)

wherein:

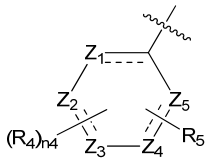
E_1, E_2, E_3, and E_4 are independently selected from halogen-substituted or unsubstituted CH, N; and

R_8 and R_9 are independently selected from H, F, Cl, Br, CN, OH, NH_2, halogen-substituted, hydroxy-substituted, amino-substituted or unsubstituted C_{1-6} alkyl;

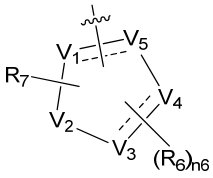
each of R_{1a}, R_{1b}, R_{1c}, R_2, and R_3 is independently selected from H, F, Cl, halogen-substituted, hydroxy-substituted, amino-substituted or unsubstituted C_{1-6} alkyl; and

the compound or the pharmaceutically acceptable salt thereof comprises one or more chiral center;

wherein A is selected from a structure unit as shown in formula (A_1) or (A_2):



(A_1)



(A_2)

wherein:

Z_1, Z_2, Z_3, Z_4, and Z_5 are independently selected from CH or CH_2, NH, N;

V_1, V_2, V_3, V_4, and V_5 are independently selected from CH or CH_2, C, N or S, and at least one of V_1 to V_5 is C or N;

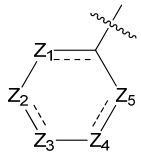
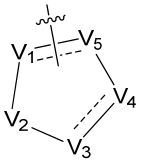
------ represents a single bond or a double bond;

R_4 and R_6 are independently selected from H, F, Cl, Br, halogen-substituted, hydroxy-substituted, amino-substituted or unsubstituted C_{1-6} alkyl;

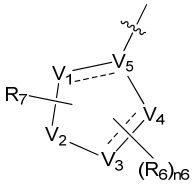
R_5 and R_7 are independently selected from optionally substituted 5-6 membered cyclohydrocarbyl or heterocyclic group, while the substituent is selected from F, Cl, Br, CN, OH, NH_2, halogen-substituted, hydroxy-substituted, amino-substituted or unsubstituted C_{1-6} alkyl; wherein the 5-6 membered cyclohydrocarbyl or heterocyclic group are each independently selected from phenyl, pyridyl, furyl, thienyl, thiazolyl , pyrimidinyl, pyrazolyl, 1,2,3-triazolyl or 1,2,5-triazolyl;

n_4 is selected from 0, 1, 2, 3, 4; and

n_6 is selected from 0, 1, 2, 3.

2. The compound of claim 1 or the pharmaceutically acceptable salt thereof, wherein the structure unit  is selected from phenyl or pyridyl;  is selected from furyl, thienyl or thiazolyl.

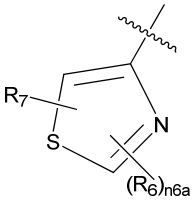
3. The compound of claims 1 or 2 or the pharmaceutically acceptable salt thereof, wherein formula (A_2) is selected from a structure of formula (A_{21}):



(A_{21})

wherein the V_1, V_2, V_3, V_4, V_5, R_6, R_7 and n_6 are defined as in claim 1.

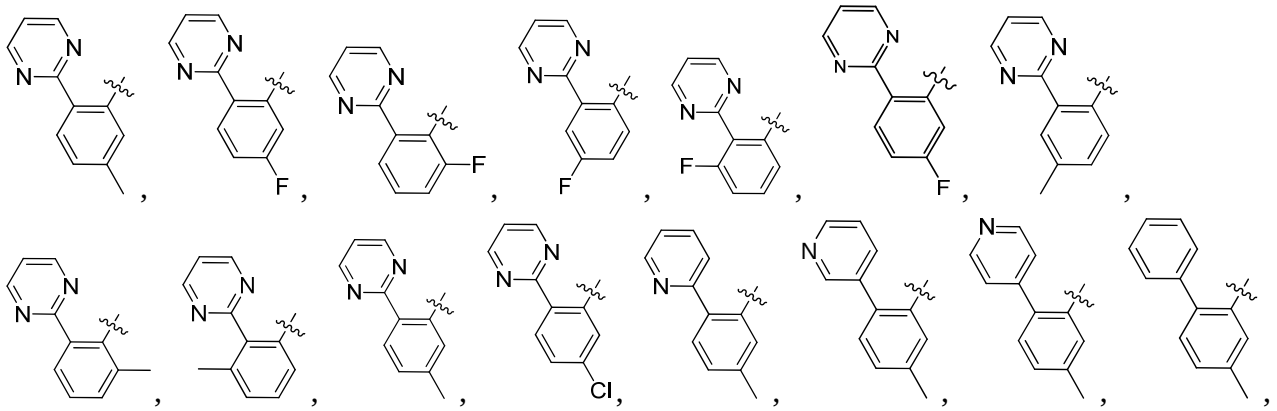
4. The compound of claim 3 or the pharmaceutically acceptable salt thereof, wherein A is selected from a structure unit of formula (A_{22}):

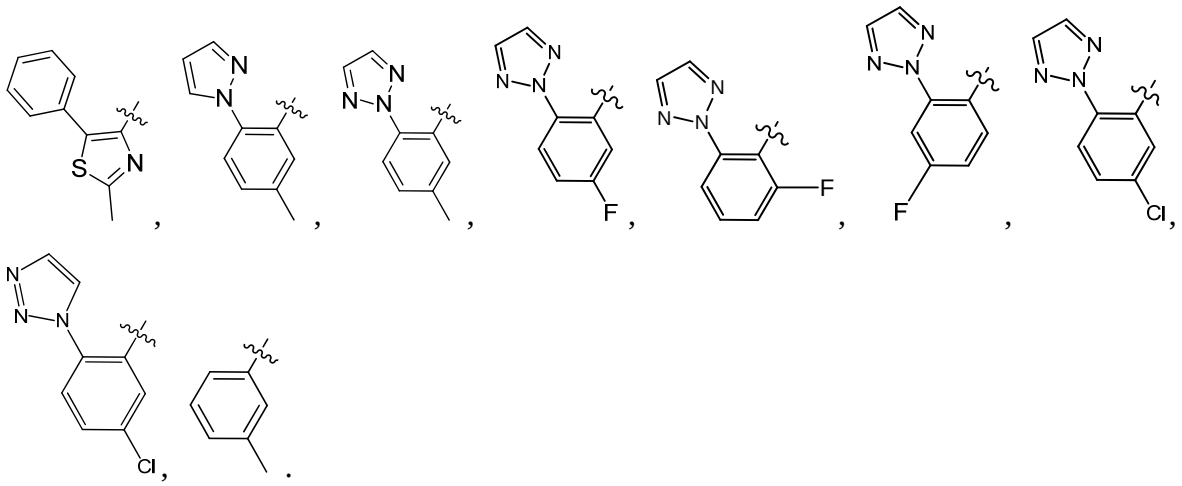


(A_{22})

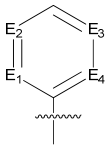
wherein R_6 and R_7 are defined as in claim 1; and n_{6a} is selected from 0 or 1.

5. The compound of any of claims 1-4 or the pharmaceutically acceptable salt thereof, wherein A is selected from:

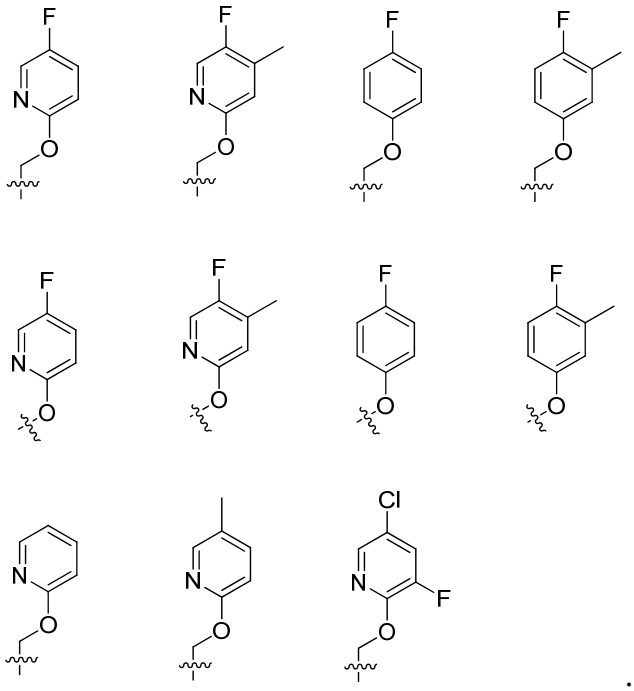




6. The compound of claim 1 or the pharmaceutically acceptable salt thereof, wherein Y is selected from -CH_2-O-E or -O-E, wherein E is defined as in claim 1.

7. The compound of claim 1or the pharmaceutically acceptable salt thereof, wherein the structure unit  is defined as phenyl or pyridyl.

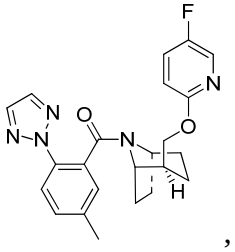
8. The compound of claim 6 or the pharmaceutically acceptable salt thereof, wherein Y is selected from:



9. The compound of claim 1 or the pharmaceutically acceptable salt thereof, wherein R_{1a}, R_{1b}, and R_{1c} are independently selected from H, methyl, or fluoro.

10. The compound of claim 1 or the pharmaceutically acceptable salt thereof, wherein R_2 and R_3 are independently selected from H, methyl, fluoro.

11. The compound of claim 1 or the pharmaceutically acceptable salt thereof, which has any of the following structures: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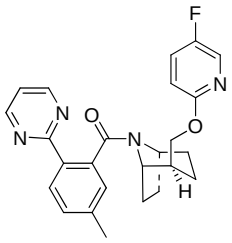
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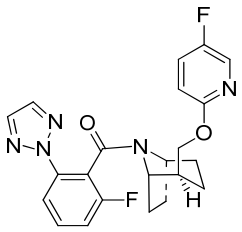
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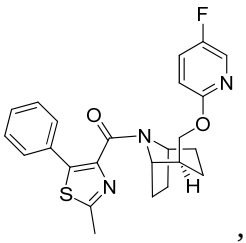
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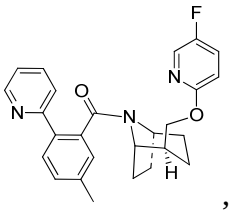
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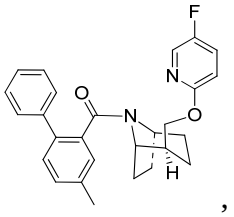
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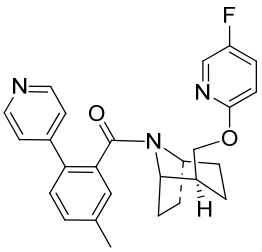
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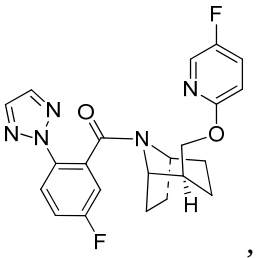
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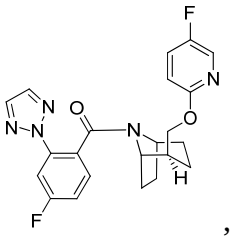
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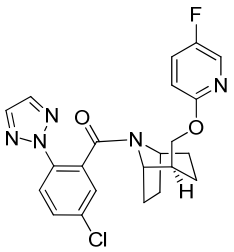
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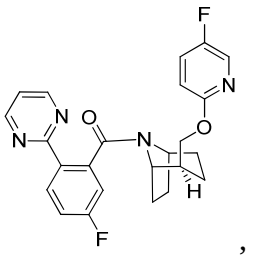
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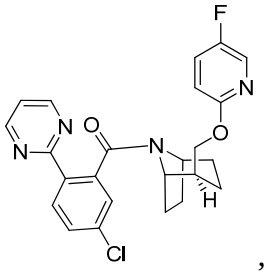
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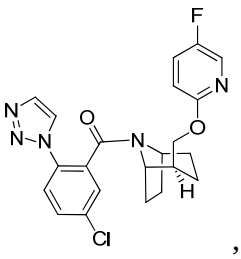
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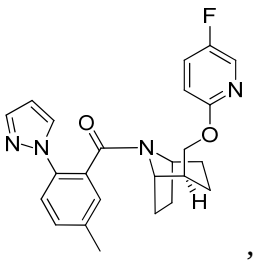
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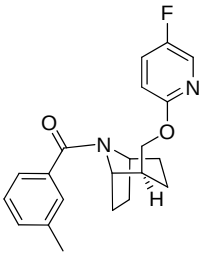
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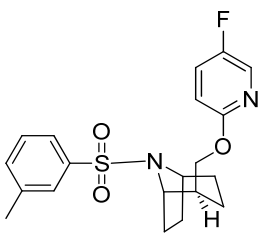
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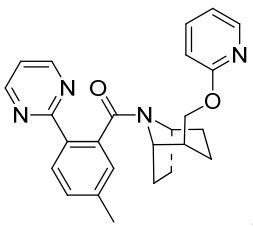
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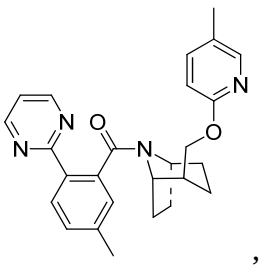
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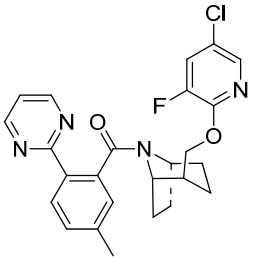
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12. A pharmaceutical composition comprising a therapeutically effective amount of the compound of any of claims 1-11, or a pharmaceutically acceptable salt thereof, and a pharmaceutically acceptable carrier.

13. The use of a compound of any of claims 1-11 or a pharmaceutically acceptable salt thereof or a pharmaceutical composition of claim 12 in preparing a medicament for treatment of insomnia, chronic obstructive pulmonary disease, obstructive sleep apnea, hypersomnia, anxiety, obsessive-compulsive disorder, panic attack, nicotine addiction, or binge eating disorder.