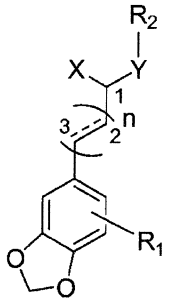
What is claimed is :

1. A compound of a general formula (I) or its pharmaceutically acceptable acid addition salts:



(I)

wherein, R_1 is H, OH, F, Cl, Br, I, OCH_3, OCF_3, $OCHF_2$, OCH_2F, CF_3, CHF_2, CH_2F, CH_3, CH_3CH_2, CF_3CH_2, CN, NO_2, NH_2 or $COOR_3$; wherein said R_3 is H, C_1~C_{10} straight chain hydrocarbyl, C_3~C_{10} branched chain hydrocarbyl, C_3~C_{10} cyclic hydrocarbyl or C_6~C_{10} aromatic hydrocarbyl;

n represents 0, 1, 2 or 3, and the unit of  contains at least one carbon-carbon single or double bond;

X is =O, =S, H, SH or SR_3;

Y is N or NR_3, O or S, wherein said R_3 is H, C_1~C_{10} straight chain hydrocarbyl; C_3~C_{10} branched chain hydrocarbyl; C_3~C_{10} cyclic hydrocarbyl or C_6~C_{10} aromatic hydrocarbyl;

R_2 is H, C_1~C_{10} straight chain hydrocarbyl, C_3~C_{10} branched chain hydrocarbyl, C_3~C_{10} cyclic hydrocarbyl, C_6~C_{10} aromatic hydrocarbyl, C_1~C_{10} hydroxyalkyl or N-substituted piperazine derivatives group; or R_2 is a group which forms tetrahydropyrrolyl, piperidyl or hexamethyleneimino group with the neighboring Y.

2. The compound or its pharmaceutically acceptable acid addition salts according to claim 1, wherein

R_1 is $-CF_3$;

n represents 0, 1, 2 or 3, and  contains at least one carbon-carbon single or double bond;

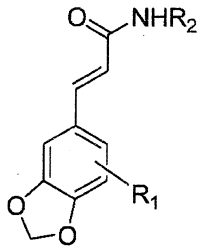
X is =O;

Y is N or NH;

R_2 is H, C_1~C_{10} straight chain hydrocarbyl, C_3~C_{10} branched chain hydrocarbyl, C_3~C_{10} cyclic hydrocarbyl, C_6~C_{10} aromatic hydrocarbyl, C_1~C_{10} hydroxyalkyl or N-substituted piperazine derivatives group; or R_2 is a group which forms tetrahydropyrrolyl, piperidyl or hexamethyleneimino group with the neighboring Y.

3. The compound or its pharmaceutically acceptable acid addition salts according to

claim 1, wherein the substituted cinnamamide derivatives of a general formula (II)



(II)

wherein, R_1 is H, OH, F, Cl, Br, I, OCH_3, OCF_3, $OCHF_2$, OCH_2F, CF_3, CHF_2, CH_2F, CH_3, CH_3CH_2, CF_3CH_2, CN, NO_2, NH_2 or $COOR_3$; said R_3 is H, C_1~C_{10} straight chain hydrocarbyl, C_3~C_{10} branched chain hydrocarbyl, C_3~C_{10} cyclic hydrocarbyl or C_6~C_{10} aromatic hydrocarbyl;

R_2 is H, C_1~C_{10} straight chain hydrocarbyl, C_3~C_{10} branched chain hydrocarbyl, C_3~C_{10} cyclic hydrocarbyl, C_6~C_{10} aromatic hydrocarbyl, C_1~C_{10} hydroxyalkyl or N-substituted piperazine derivatives group.

4. The compound or its pharmaceutically acceptable acid addition salts according to claim 1, the compound is selected from the group consisting of:
N-isobutyl-5'-methoxy-3',4'-methylenedioxy cinnamamide;
N-isobutyl-5'-nitro-3',4'-methylenedioxy cinnamamide;
N-isobutyl-5'-iodo-3',4'-methylenedioxy cinnamamide;
N-isobutyl-5'-chloro-3',4'-methylenedioxy cinnamamide;
N-isobutyl-5'-trifluoromethyl-3',4'-methylenedioxy cinnamamide;
N-isobutyl-5-(5'-methoxy-3',4'-methylenedioxy phenyl) pentadienamide;
N-isobutyl-3',4'-methylenedioxy cinnamamide;
N,N-dimethyl-5'-trifluoromethyl-3',4'-methylenedioxy cinnamamide;
N,N-diethyl-5'-trifluoromethyl-3',4'-methylenedioxy cinnamamide;
1-(5'-trifluoromethyl-3',4'-methylenedioxy cinnamyl)-piperidine;
N-isobutyl-3-(5'-trifluoromethyl-3',4'-methylenedioxy phenyl)-propionamide;
N-isobutyl-5-trifluoromethyl-3,4-methylenedioxy benzamide; and
1-(5-trifluoromethyl-3,4-methylenedioxy benzoyl)-piperidine.

5. The compound or its pharmaceutically acceptable acid addition salts according to any one of claims 1~4, wherein said acceptable acid addition salts are prepared by reacting the compound of the general formula (I) with the following acids: sulfuric acid, hydrochloric acid, hydrobromic acid, phosphoric acid, tartaric acid, fumaric acid, maleic acid, citric acid, acetic acid, formic acid, methane sulfonic acid, p-toluene sulphonic acid, oxalic acid or succinic acid.

6. A pharmaceutical composition containing the compound of any one of claims 1~5 or its pharmaceutically acceptable acid addition salts.

7. The pharmaceutical composition according to claim 6, wherein said composition further contains pharmaceutically acceptable carrier(s).

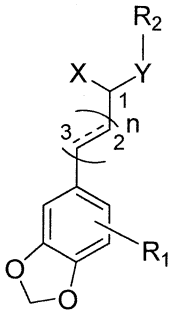
8. A method for preparing the compound or its pharmaceutically acceptable acid addition salts according to any one of claims 1~5, comprising the following steps:
a. reacting a substituted piperonal derivative with ethoxyformyl methylene triphenyl phosphine or triethyl phosphonoacetate by a Wittig reaction or Wittig-Horner reaction to obtain a substituted cinnamic acid derivative;
b. obtaining an acylated derivative (including acyl halide, azide, anhydride, active ester) of the substituted cinnamic acid derivative from the substituted cinnamic acid derivative, and reacting the acylated derivative with an organic amine to obtain an amide derivative; Alternatively, reacting the substituted cinnamic acid derivative with an organic amine and a condensing agent (HATU, HBTU, EDCI, DCC etc.) to obtain an amide derivative;
or using 5'-trifluoromethyl-3',4'-methylenedioxy cinnamic acid as a starting material to obtain an acylated derivative (including acyl halide, azide, anhydride, active ester) thereof, and reacting the acylated derivative with an organic amine to obtain an amide derivative; or reacting 5'-trifluoromethyl-3',4'-methylenedioxy cinnamic acid with an organic amine and a condensing agent (HATU, HBTU, EDCI, DCC etc.) to obtain an amide derivative;
preparing a derivative containing carbon-carbon single bond in its side chain by reducing a derivative containing carbon-carbon double bond in its side chain with a catalytic hydrogenation or sodium borohydride.

9. A use of any compound or its pharmaceutically acceptable acid addition salts of any one of claims 1~3 in preparation of a medicine for preventing and treating depressive-type mental diseases.

10. The use according to claim 9, wherein said compound is selected from the group consisting of:
N-isobutyl-5'-methoxy-3',4'-methylenedioxy cinnamamide;
N-isobutyl-5'-nitro-3',4'-methylenedioxy cinnamamide;
N-isobutyl-5'-iodo-3',4'-methylenedioxy cinnamamide;
N-isobutyl-5'-chloro-3',4'-methylenedioxy cinnamamide;
N-isobutyl-5'-trifluoromethyl-3',4'-methylenedioxy cinnamamide;
N-isobutyl-5-(5'-methoxy-3',4'-methylenedioxy phenyl) pentadienamide;
N-isobutyl-3',4'-methylenedioxy cinnamamide;
N,N-dimethyl-5'-trifluoromethyl-3',4'-methylenedioxy cinnamamide;
N,N-diethyl-5'-trifluoromethyl-3',4'-methylenedioxy cinnamamide;
1-(5'-trifluoromethyl-3',4'-methylenedioxy cinnamyl)-piperidine;
N-isobutyl-3-(5'-trifluoromethyl-3',4'-methylenedioxy phenyl)-propionamide;
N-isobutyl-5-trifluoromethyl-3,4-methylenedioxy benzamide; and
1-(5-trifluoromethyl-3,4-methylenedioxy benzoyl)-piperidine.

What is claimed is :

1. A compound of a general formula (I) or its pharmaceutically acceptable acid addition salts:



(I)

wherein, R_1 is F, Br, I, OCF_3, $OCHF_2$, OCH_2F, CF_3, CHF_2, CH_2F, CH_3, CH_3CH_2, CF_3CH_2, NO_2;

n represents 0, 1, 2 or 3, and the unit of  contains at least one carbon-carbon single or double bond;

X is =O;

Y is N or NR_3, wherein said R_3 is H, C_1~C_{10} straight chain hydrocarbyl; C_3~C_{10} branched chain hydrocarbyl; R_2 is H, C_1~C_{10} straight chain hydrocarbyl, C_3~C_{10} branched chain hydrocarbyl; or R_2 is a group which forms piperidyl group with the neighboring Y.

2. The compound or its pharmaceutically acceptable acid addition salts according to claim 1, wherein

R_1 is $-CF_3$;

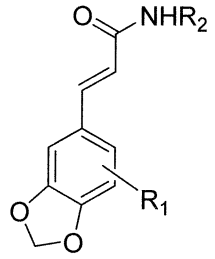
n represents 0, 1, 2 or 3, and  contains at least one carbon-carbon single or double bond;

X is =O;

Y is N or NH;

R_2 is H, C_1~C_{10} straight chain hydrocarbyl, C_3~C_{10} branched chain hydrocarbyl; or R_2 is a group which forms piperidyl group with the neighboring Y.

3. The compound or its pharmaceutically acceptable acid addition salts according to claim 1, wherein the substituted cinnamamide derivatives of a general formula (II)



(II)

wherein, R_1 is F, Br, I, OCF_3, $OCHF_2$, OCH_2F, CF_3, CHF_2, CH_2F, CH_3, CH_3CH_2, CF_3CH_2, NO_2;
R_2 is H, C_1~C_{10} straight chain hydrocarbyl, C_3~C_{10} branched chain hydrocarbyl.

4. A compound or its pharmaceutically acceptable acid addition salts, wherein the compound is selected from the group consisting of:
N-isobutyl-5'-nitro-3',4'-methylenedioxy cinnamamide;
N-isobutyl-5'-iodo-3',4'-methylenedioxy cinnamamide;
N-isobutyl-5'-chloro-3',4'-methylenedioxy cinnamamide;
N-isobutyl-5'-trifluoromethyl-3',4'-methylenedioxy cinnamamide;
N-isobutyl-5-(5'-methoxy-3',4'-methylenedioxy phenyl) pentadienamide;
N,N-dimethyl-5'-trifluoromethyl-3',4'-methylenedioxy cinnamamide;
N,N-diethyl-5'-trifluoromethyl-3',4'-methylenedioxy cinnamamide;
1-(5'-trifluoromethyl-3',4'-methylenedioxy cinnamyl)-piperidine;
N-isobutyl-3-(5'-trifluoromethyl-3',4'-methylenedioxy phenyl)-propionamide;
N-isobutyl-5-trifluoromethyl-3,4-methylenedioxy benzamide; and
1-(5-trifluoromethyl-3,4-methylenedioxy benzoyl)-piperidine.

5. The compound or its pharmaceutically acceptable acid addition salts according to any one of claims 1~4, wherein said acceptable acid addition salts are prepared by reacting the compound of the general formula (I) with the following acids: sulfuric acid, hydrochloric acid, hydrobromic acid, phosphoric acid, tartaric acid, fumaric acid, maleic acid, citric acid, acetic acid, formic acid, methane sulfonic acid, p-toluene sulphonic acid, oxalic acid or succinic acid.

6. A pharmaceutical composition containing the compound of any one of claims 1~5 or its pharmaceutically acceptable acid addition salts.

7. The pharmaceutical composition according to claim 6, wherein said composition further contains pharmaceutically acceptable carrier(s).

8. A method for preparing the compound or its pharmaceutically acceptable acid addition salts according to any one of claims 1~5, comprising the following steps:

a. reacting a substituted piperonal derivative with ethoxyformyl methylene triphenyl phosphine or triethyl phosphonoacetate by a Wittig reaction or Wittig-Horner reaction to obtain a substituted cinnamic acid derivative;

b. obtaining an acylated derivative (including acyl halide, azide, anhydride, active ester) of the substituted cinnamic acid derivative from the substituted cinnamic acid derivative, and reacting the acylated derivative with an organic amine to obtain an amide derivative; alternatively, reacting the substituted cinnamic acid derivative with an organic amine and a condensing agent (HATU, HBTU, EDCI, DCC etc.) to obtain an amide derivative;

or using 5'-trifluoromethyl-3',4'-methylenedioxy cinnamic acid as a starting material to obtain an acylated derivative (including acyl halide, azide, anhydride, active ester) thereof, and reacting the acylated derivative with an organic amine to obtain an amide derivative; or reacting 5'-trifluoromethyl-3',4'-methylenedioxy cinnamic acid with an organic amine and a condensing agent (HATU, HBTU, EDCI, DCC etc.) to obtain an amide derivative;

preparing a derivative containing carbon-carbon single bond in its side chain by reducing a derivative containing carbon-carbon double bond in its side chain with a catalytic hydrogenation or sodium borohydride.

9. A use of any compound or its pharmaceutically acceptable acid addition salts of any one of claims 1~3 in preparation of a medicine for preventing and/or treating depressive-type mental diseases.

10. A use of any compound or its pharmaceutically acceptable acid addition salts of claim 4 in preparation of a medicine for preventing and/or treating depressive-type mental diseases, wherein said compound is selected from the group consisting of:

N-isobutyl-5'-nitro-3',4'-methylenedioxy cinnamamide;
N-isobutyl-5'-iodo-3',4'-methylenedioxy cinnamamide;
N-isobutyl-5'-chloro-3',4'-methylenedioxy cinnamamide;
N-isobutyl-5'-trifluoromethyl-3',4'-methylenedioxy cinnamamide;
N-isobutyl-5-(5'-methoxy-3',4'-methylenedioxy phenyl) pentadienamide;
N,N-dimethyl-5'-trifluoromethyl-3',4'-methylenedioxy cinnamamide;
N,N-diethyl-5'-trifluoromethyl-3',4'-methylenedioxy cinnamamide;
1-(5'-trifluoromethyl-3',4'-methylenedioxy cinnamyl)-piperidine;
N-isobutyl-3-(5'-trifluoromethyl-3',4'-methylenedioxy phenyl)-propionamide;
N-isobutyl-5-trifluoromethyl-3,4-methylenedioxy benzamide; and
1-(5-trifluoromethyl-3,4-methylenedioxy benzoyl)-piperidine.