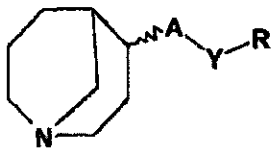
Claims

1. A compound of formula I

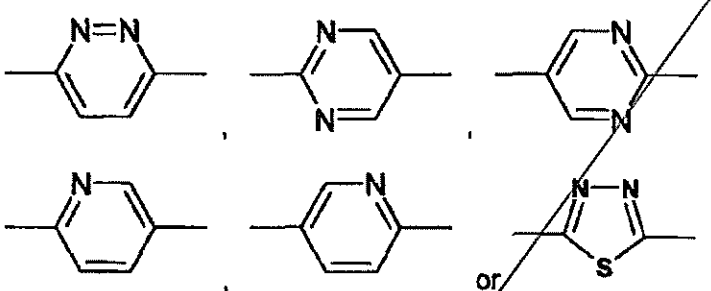


(I)

wherein

A represents O or N(R^1);

Y represents a group of formula



wherein the left bond is attached to the A group and the right bond is attached to the R group;

R represents a substituted or unsubstituted C_5-C_{10}aryl, substituted or unsubstituted hetero-C_5-C_{10}aryl, a group N(R^1)(R^4), or a group N(R^2)(CHR^3R^4);

R^1 representa hydrogen, C_1-C_4alkyl, or CF_3;

R^2 represents hydrogen, C_1-C_4alkyl, or CF_3;

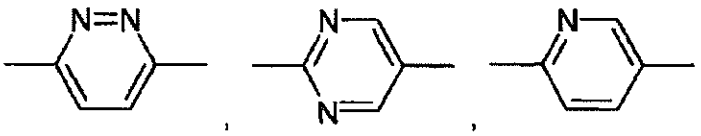
R^3 represents hydrogen, C_1-C_4alkyl, or CF_3;

R^4 represents a substituted or unsubstituted C_5-C_{10}aryl or a substituted or unsubstituted C_5-C_{10}heteroaryl;

in free base or acid addition salt form.

2. A compound of formula I according to claim 1 wherein A represents oxygen

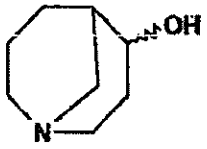
3. A compound of formula I according to claim 1 wherein Y represents one of the following groups



4. A process for the preparation of a compound of formula I as defined in claim 1, or a salt thereof, which comprises the step of reacting a compound of formula II

Z-Y-R (II)

wherein Y and R are as defined in claim 1 and Z is a leaving group with a compound of formula III



(III)

and recovering the so obtained compound of formula I in free base or acid addition salt form.

5. A compound of any one of claims 1 to 3 in free base or pharmaceutically acceptable acid addition salt form, for use as a pharmaceutical.

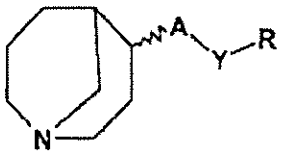
6. A pharmaceutical composition comprising a compound of any one of claims 1 to 3 in free base or pharmaceutically acceptable acid addition salt form, in association with a pharmaceutical carrier or diluent.

7. The use of a compound of any one of claims 1 to 3 in free base or pharmaceutically acceptable acid addition salt form, for the manufacture of a medicament for the prevention and treatment of psychotic and neurodegenerative disorders.

8. A product obtained according to the process of claim 2 characterized in that (-)- 1-Aza-bicyclo[3.3.1]nonan-4-ol is used as starting material.

THE CLAIMS DEFINING THE INVENTION ARE AS FOLLOWS:

1. A compound of formula I



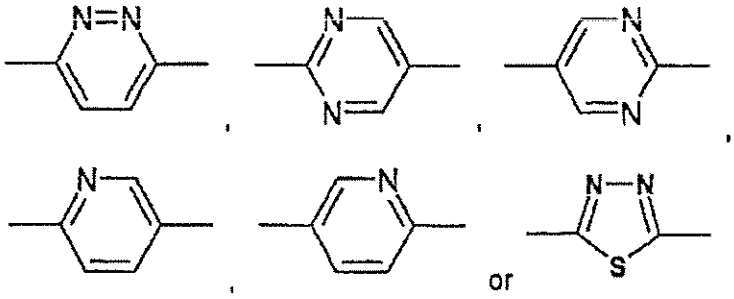
(I)

wherein

A represents O or $N(R^1)$;

R^1 represents hydrogen, C_1-C_4alkyl, or CF_3;

Y represents a group of formula



wherein the left bond is attached to the A group and the right bond is attached to the R group;

R represents phenyl or naphthyl, said phenyl or naphthyl being unsubstituted or substituted by one or more substituents selected from the group consisting of amino, C_1-C_4alkyl amino, di(C_1-C_4alky)-amino, C_3-C_5cycloalkyl amino, di(C_3-C_5)cycloalkyl amino, N-C_1-C_4alkyl-N-C_3-C_5cycloalkyl amino, halogen, C_1-C_4alkyl, C_4-C_6cycloalkyl, hydroxy, C_1-C_4alkoxy, C_3-C_5cycloalkyloxy, C_1-C_4alkoxy C_1-C_4alkoxy, di(C_1-C_4alkyl)-amino C_1-C_4alkoxy, carbamoyl, N-C_1-C_4alkyl-carbamoyl, N,N-di(C_1-C_4alkyl)-carbamoyl, nitro, cyano, carboxy, C_1-C_4alkoxy carbonyl, C_1-C_4alkanoyl, C_1-C_4alkanoyloxy, benzoyl, amidino, guanidino, ureido, mercapto, C_1-C_4alkylthio, pyridyl, phenyl, phenoxy, C_1-C_4alkoxy phenyl, phenylthio, phenyl-C_1-C_4alkylthio, C_1-C_4alkylsulfonyl, phenylsulfonyl, C_1-C_4alkylphenylsulfonyl, C_1-C_4alkenyl, C_1-C_4alkanoyl, C_1-C_4alkylene dioxy bound at adjacent C-atoms of the ring, and C_1-C_4alkyl, which is substituted by halogen, hydroxy, C_1-C_4alkoxy, nitro, cyano, carboxy, C_1-C_4alkoxy carbonyl, C_1-C_4alkanoyl or C_1-C_4alkanoyloxy;

or R represents a hetero-C_5-C_{10}aryl being an aromatic heterocyclic system wherein one or more carbon atoms are replaced by heteroatoms independently selected from nitrogen, oxygen and sulfur, said hetero-C_5-C_{10}aryl being unsubstituted or substituted by one or more substituents selected from the group consisting of amino, C_1-C_4alkyl amino, di(C_1-C_4alky)-

amino, C_3-C_5cycloalkyl amino, di(C_3-C_5)cycloalkyl amino, N-C_1-C_4alkyl-N-C_3-C_5cycloalkyl amino, halogen, C_1-C_4alkyl, C_4-C_5cycloalkyl, hydroxy, C_1-C_4alkoxy, C_3-C_5cycloalkyloxy, C_1-C_4alkoxy C_1-C_4alkoxy, di(C_1-C_4alkyl)-amino C_1-C_4alkoxy, carbamoyl, N-C_1-C_4alkyl-carbamoyl, N,N-di(C_1-C_4alkyl)-carbamoyl, nitro, cyano, carboxy, C_1-C_4alkoxy carbonyl, C_1-C_4alkanoyl, C_1-C_4alkanoyloxy, benzoyl, amidino, guanidino, ureido, mercapto, C_1-C_4alkylthio, pyridyl, phenyl, phenoxy, C_1-C_4alkoxy phenyl, phenylthio, phenyl-C_1-C_4alkylthio, C_1-C_4alkylsulfonyl, phenylsulfonyl, C_1-C_4alkylphenylsulfonyl, C_1-C_4alkenyl, C_1-C_4alkanoyl, C_1-C_4alkylene dioxy bound at adjacent C-atoms of the ring, and C_1-C_4alkyl, which is substituted by halogen, hydroxy, C_1-C_4alkoxy, nitro, cyano, carboxy, C_1-C_4alkoxy carbonyl, C_1-C_4alkanoyl or C_1-C_4alkanoyloxy;
in free base or acid addition salt form.

2. A compound of formula I according to claim 1, wherein
A represents oxygen;
Y represents a group of formula



; and

R represents a hetero-C_2-C_{11}aryl being an aromatic heterocyclic system wherein one or more carbon atoms are replaced by heteroatoms independently selected from nitrogen, oxygen and sulfur, said hetero-C_2-C_{11}aryl being unsubstituted or substituted by one or more substituents selected from the group consisting of halogen; C_1-C_2alkoxy; CN or C_1-C_2alkyl which is unsubstituted or substituted by halogen.

3. A compound of formula I according to claim 1, wherein the compound is (4SR,5SR)-4-[6-(1H-Indol-5-yl)-pyridazin-3-yloxy]-1-aza-bicyclo[3.3.1]nonane.

4. A compound of formula I according to claim 1, wherein
A represents oxygen;
Y represents a group of formula

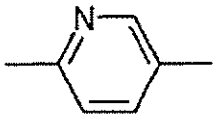


and

R represents a hetero-C_5-C_{10}aryl being an aromatic heterocyclic system wherein one or more carbon atoms are replaced by heteroatoms independently selected from nitrogen, oxygen and sulfur, said hetero-C_5-C_{10}aryl being unsubstituted or substituted by one or more substituents selected from the group consisting of halogen; C_1-C_2alkoxy; CN or C_1-C_2alkyl which is unsubstituted or substituted by halogen.

5. A compound of formula I according to claim 1, wherein the compound is selected from the group consisting of
(4SR,5SR)-4-[5-(1H-Indol-5-yl)-pyrimidin-2-yloxy]-1-aza-bicyclo[3.3.1]nonane,
(4S,5S)-4-[5-(1H-Indol-5-yl)-pyrimidin-2-yloxy]-1-aza-bicyclo[3.3.1]nonane, and
(4R,5R)-4-[5-(1H-Indol-5-yl)-pyrimidin-2-yloxy]-1-aza-bicyclo[3.3.1]nonane.

6. A compound of formula I according to claim 1, wherein
A represents oxygen;
Y represents a group of formula



; and
R represents a hetero-C_5-C_{10}aryl being an aromatic heterocyclic system wherein one or more carbon atoms are replaced by heteroatoms independently selected from nitrogen, oxygen and sulfur, said hetero-C_5-C_{10}aryl being unsubstituted or substituted by one or more substituents selected from the group consisting of halogen; C_1-C_2alkoxy; CN or C_1-C_2alkyl which is unsubstituted or substituted by halogen.

7. A compound of formula I according to claim 1, wherein the compound is selected from the group consisting of
(4SR,5SR)-4-[5-(1H-Indol-5-yl)-pyridin-2-yloxy]-1-aza-bicyclo[3.3.1]nonane,
(4S,5S)-4-[5-(1H-Indol-5-yl)-pyridin-2-yloxy]-1-aza-bicyclo[3.3.1]nonane, and
(4R,5R)-4-[5-(1H-Indol-5-yl)-pyridin-2-yloxy]-1-aza-bicyclo[3.3.1]nonane,

8. A compound of formula I according to claim 1, wherein
A represents $N(R^1)$; and

R is phenyl, which is unsubstituted or substituted by one or more substituents selected from halogen; NO_2; CN; C_1-C_4alkoxy which is unsubstituted or substituted by halogen; C_1-C_4alkyl which is unsubstituted or substituted by halogen; C_1-C_4alkylC(O)NH and C_1-C_4alkylsulfonyl; or R is hetero-C_5-C_{10}aryl being an aromatic heterocyclic system wherein one or more carbon atoms are replaced by heteroatoms independently selected from nitrogen, oxygen and sulfur, said hetero-C_5-C_{10}aryl being unsubstituted or substituted by one or more substituents selected from the group consisting of halogen; C_1-C_2alkoxy; CN and C_1-C_2alkyl which is unsubstituted or substituted by halogen.

9. A compound of any one of claims 1 to 8 in free base or pharmaceutically acceptable acid addition salt form, for use as a pharmaceutical.

10. A compound of any one of claims 1 to 8 in free base or pharmaceutically acceptable acid addition salt form, for use in the prevention and treatment of psychotic and neurodegenerative disorders.

11. A pharmaceutical composition comprising a compound of any one of claims 1 to 8 in free base or pharmaceutically acceptable acid addition salt form, in association with a pharmaceutical carrier or diluent.

12. The use of a compound of any one of claims 1 to 8 in free base or pharmaceutically acceptable acid addition salt form, as a pharmaceutical for the prevention and the treatment of psychotic and neurodegenerative disorders.

13. The use of a compound of any one of claims 1 to 8 in free base or pharmaceutically acceptable acid addition salt form, in the manufacture of a medicament for the prevention and treatment of psychotic and neurodegenerative disorders.

14. A compound of any one of claims 1 to 8 in free base or pharmaceutically acceptable acid addition salt form, for use in the treatment or prevention of a disease or condition in which α7 nAChR activation plays a role or is implicated.

15. The use of a compound of any one of claims 1 to 8 in free base or pharmaceutically acceptable acid addition salt form, as a pharmaceutical for the treatment or prevention of a disease or condition in which α7 nAChR activation plays a role or is implicated.

16. The use of a compound of any one of claims 1 to 8 in free base or pharmaceutically acceptable acid addition salt form, in the manufacture of a medicament for the treatment or prevention of a disease or condition in which α7 nAChR activation plays a role or is implicated.