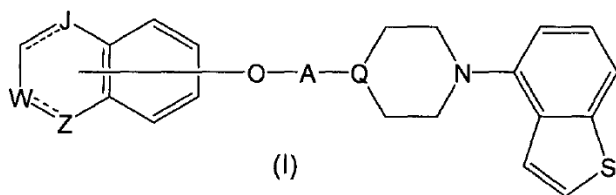


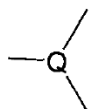
CLAIMS

1. A heterocyclic compound represented by the formula (I)

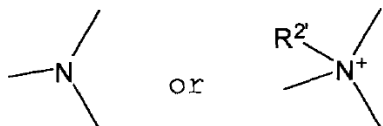


wherein

A is a lower alkylene group;

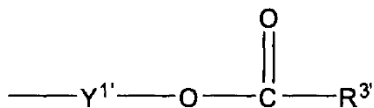


in the monocyclic heterocycle containing Q is



wherein

R^{2'} is the following group



wherein

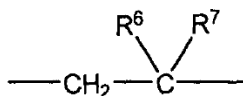
Y^{1'} is a lower alkylene group,

R^{3'} is

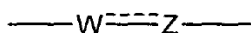
- (1) an alkyl group,
- (2) a cycloalkyl group optionally substituted by a lower alkyl group,
- (3) a phenyl group,
- (4) a phenyl lower alkyl group
- (5) a lower alkoxy group,
- (6) a cycloalkyloxy group,
- (7) an amino group optionally having 1 or 2 substituents selected from the group consisting of an alkyl group and a phenyl lower alkyl group, or
- (8) a piperidyl group optionally having a piperidyl group;

-----J

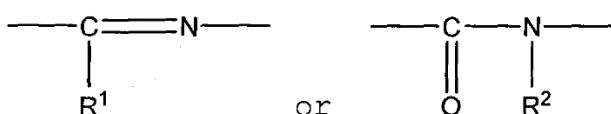
at the 3-position and the 4-position of the bicyclic heterocycle skeleton containing Z and W is -CH=CH- or



wherein R⁶ and R⁷ are the same or different and each is a hydrogen or a lower alkyl group;



is



wherein

R¹ is

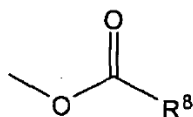
a lower alkoxy lower alkoxy group,

a phosphonooxy lower alkoxy group,

a phenyl lower alkoxy lower alkoxy group,

a phosphonooxy group optionally having 1 or 2 lower alkyl groups,

the following group

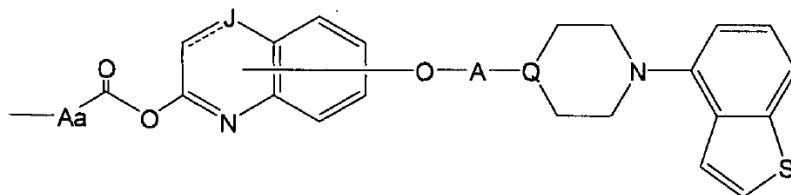


wherein

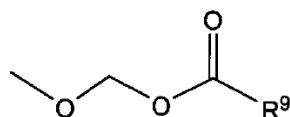
R⁸ is

- (1) an alkyl group,
- (2) a hydroxy-substituted lower alkyl group,
- (3) a cycloalkyl group,
- (4) a phenyl group,
- (5) a phenyl lower alkyl group,
- (6) an alkenyl group,
- (7) a lower alkoxy group,
- (8) a cycloalkyloxy group,
- (9) a lower alkoxy lower alkoxy group,

- (10) an amino group optionally having 1 or 2 substituents selected from the group consisting of an alkyl group and a hydroxy-substituted lower alkyl group,
 (11) a piperidyl group optionally having a piperidyl group,
 (12) a piperazinyl group optionally having a lower alkyl group,
 or
 (13) the following group



wherein Aa is an alkylene group, and other symbols are as defined above, or
 the following group



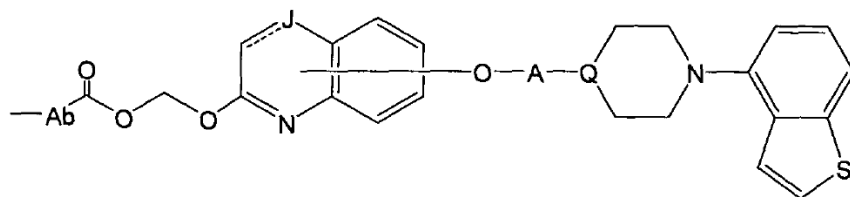
wherein

R⁹ is

- (1) an alkyl group,
- (2) a hydroxy-substituted lower alkyl group,
- (3) a cycloalkyl group,
- (4) a phenyl group,
- (5) a phenyl lower alkyl group,
- (6) an alkenyl group,
- (7) a lower alkoxy group,
- (8) a cycloalkyloxy group,
- (9) a lower alkoxy lower alkoxy group,
- (10) a phenyloxy group,
- (11) an amino group optionally having 1 or 2 substituents selected from the group consisting of an alkyl group and a hydroxy-substituted lower alkyl group,
- (12) a piperidyl group optionally having a piperidyl group,
- (13) a piperazinyl group optionally having a lower alkyl group,

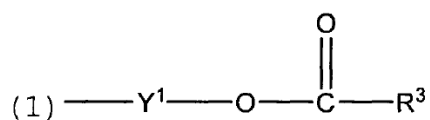
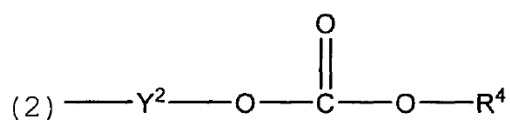
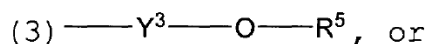
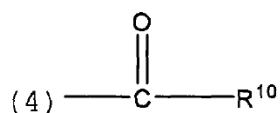
or

(14) the following group



wherein Ab is an alkylene group, and other symbols are as defined above;

R² is a hydrogen or
the following group



wherein

Y¹ is a lower alkylene group optionally substituted by

- (1) a lower alkoxy carbonyl group or
- (2) a lower alkyl group,

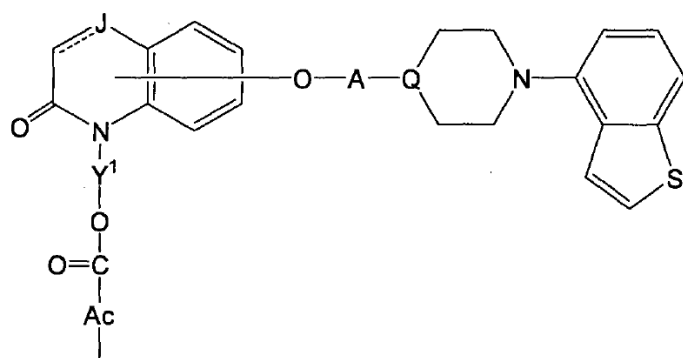
Y² is a lower alkylene group,

Y³ is a single bond or a lower alkylene group optionally substituted by a lower alkyl group,

R³ is

- (1) an alkyl group,
- (2) a halogen-substituted lower alkyl group,
- (3) an alkenyl group,
- (4) an amino lower alkyl group,
- (5) a cycloalkyl group,
- (6) a phenyl group,

- (7) a phenyl lower alkyl group,
- (8) a piperidyl group optionally having 1 or 2 substituents selected from the group consisting of a lower alkyl group and a piperidyl group,
- (9) a halogen-substituted piperidyl group,
- (10) a morpholinyl group,
- (11) a pyrrolidinyl group,
- (12) a tetrahydropyranyl group,
- (13) a furyl group,
- (14) a thienyl group,
- (15) a pyridyl group,
- (16) a pyrimidinyl group,
- (17) a pyridazinyl group,
- (18) a benzofuryl group,
- (19) a quinolyl group,
- (20) a lower alkoxycarbonyl lower alkyl group,
- (21) a lower alkoxy lower alkoxy lower alkyl group,
- (22) a lower alkoxy lower alkoxy lower alkoxy lower alkyl group,
- (23) an amino group optionally having 1 or 2 substituents selected from the group consisting of an alkyl group, a cycloalkyl group, a cycloalkyl lower alkyl group, a lower alkenyl group, a halogen-substituted lower alkyl group, a lower alkoxy group, a lower alkoxy lower alkyl group, a lower alkoxycarbonyl lower alkyl group, a phenyl lower alkyl group, a phenyl lower alkoxy group, a furyl lower alkyl group, a pyridyl lower alkyl group, a hydroxy-substituted lower alkyl group,
- (24) an amino lower alkyl group optionally having a lower alkylcarbonyl group,
- (25) a piperazinyl group optionally having a lower alkyl group, or
- (26) the following group



wherein Ac is an alkylene group, and other symbols are as defined above,

R⁴ is

- (1) an alkyl group,
- (2) a phenyl group,
- (3) a phenyl lower alkyl group,
- (4) a halogen-substituted lower alkyl group, or
- (5) a cycloalkyl group,

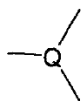
R⁵ is

- (1) a hydrogen,
- (2) a lower alkyl group,
- (3) a halogen-substituted lower alkyl group,
- (4) a phenyl lower alkyl group,
- (5) a phenyl lower alkoxy lower alkyl group,
- (6) a tri-lower alkylsilyl group,
- (7) a tetrahydropyranyl group, or
- (8) a phosphono group,

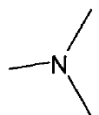
R¹⁰ is

- (1) an alkyl group,
- (2) an alkenyl group,
- (3) a phenyl group,
- (4) a phenyl lower alkyl group,
- (5) a hydroxy-substituted lower alkyl group,
- (6) a cycloalkyl group,
- (7) an amino lower alkyl group optionally having 1 or 2 substituents selected from the group consisting of an amino lower alkylcarbonyl group and a lower alkylcarbonyl group,

- (8) a pyrrolidinyl group optionally having an amino lower alkylcarbonyl group,
 - (9) an alkoxy group,
 - (10) a lower alkoxy lower alkoxy lower alkyl group,
 - (11) a lower alkoxy lower alkoxy lower alkoxy lower alkyl group,
 - (12) a phenyl lower alkoxy group,
 - (13) an amino group optionally having 1 or 2 substituents selected from the group consisting of an alkyl group, a hydroxy-substituted lower alkyl group and a phenyl lower alkyl group,
 - (14) a morpholino group,
 - (15) a piperazinyl group optionally having a lower alkyl group,
 - (16) a piperidyl group optionally having a piperidyl group, or
 - (17) a cycloalkyloxy group;
- provided when



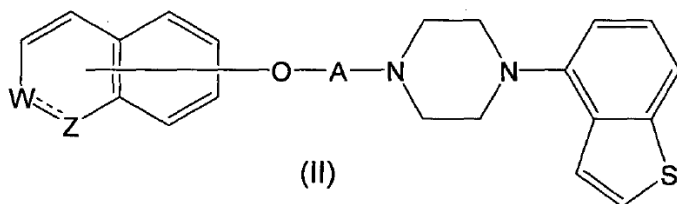
is



, then

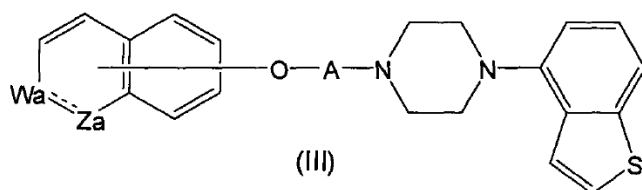
R^2 is not a hydrogen,
or a salt thereof.

2. The heterocyclic compound according to claim 1, which is represented by the formula (II)

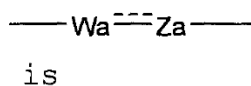
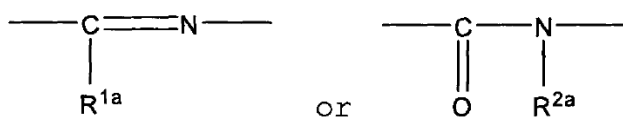


wherein each symbol is as defined in claim 1, or a salt thereof.

3. The heterocyclic compound according to claim 1, which is represented by the formula (III)

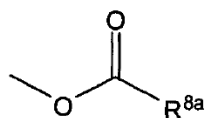


wherein



wherein

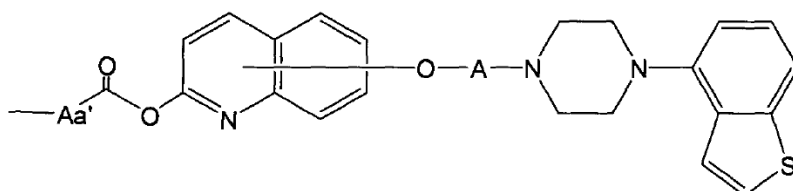
R^{1a} is the following group



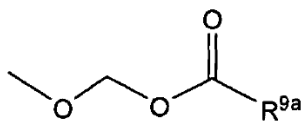
wherein

R^{8a} is

- (1) an alkyl group,
- (2) a cycloalkyl group,
- (3) a lower alkoxy group,
- (4) a cycloalkyloxy group,
- (5) a lower alkoxy lower alkoxy group,
- (6) an amino group optionally having 1 or 2 substituents selected from the group consisting of an alkyl group and a hydroxy-substituted lower alkyl group, or
- (7) the following group



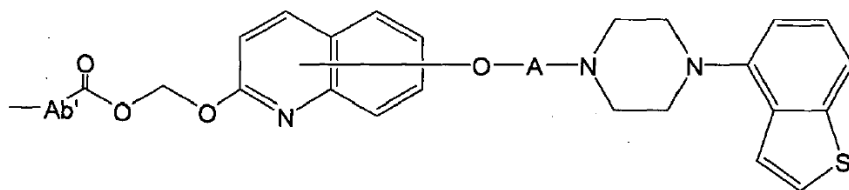
wherein Aa' is an alkylene group, and other symbol is as defined in claim 1, or the following group



wherein

R^{9a} is

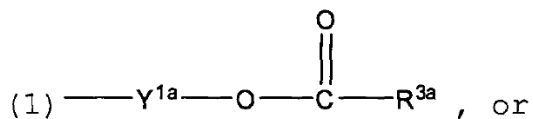
- (1) an alkyl group,
 - (2) a hydroxy-substituted lower alkyl group,
 - (3) a cycloalkyl group,
 - (4) a lower alkoxy group,
 - (5) a cycloalkyloxy group,
 - (6) a lower alkoxy lower alkoxy group,
 - (7) a phenyloxy group,
 - (8) an amino group optionally having 1 or 2 substituents selected from the group consisting of an alkyl group,
 - (9) a piperidyl group optionally having a piperidyl group,
 - (10) a piperazinyl group optionally having a lower alkyl group,
- or
- (11) the following group

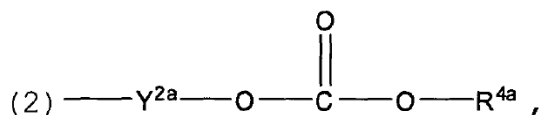


wherein Ab' is an alkylene group, and other symbol is as defined in claim 1;

R^{2a} is

the following group





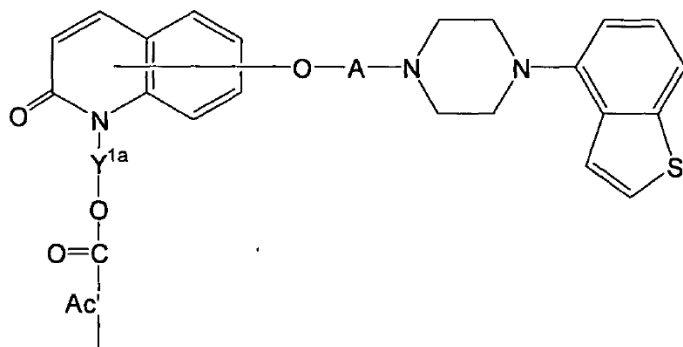
wherein

Y^{1a} is a lower alkylene group,

Y^{2a} is a lower alkylene group,

R^{3a} is

- (1) an alkyl group,
- (2) a cycloalkyl group,
- (3) a piperidyl group optionally having 1 or 2 substituents selected from the group consisting of a lower alkyl group,
- (4) a tetrahydropyranyl group,
- (5) a lower alkoxycarbonyl lower alkyl group,
- (6) a lower alkoxy lower alkoxy lower alkyl group
- (7) an amino lower alkyl group optionally having a lower alkylcarbonyl group, or
- (8) the following group



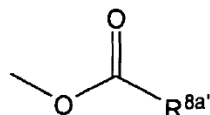
wherein Ac' is an alkylene group, Y^{1a} is a lower alkylene group and other symbols are as defined in claim 1,

R^{4a} is

- (1) an alkyl group, or
 - (2) a cycloalkyl group; and
- A is a lower alkylene group,
or a salt thereof.

4. The heterocyclic compound according to claim 2, wherein R^1 is

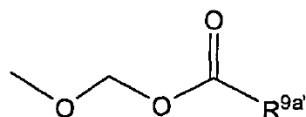
the following group



wherein

$\text{R}^{8a'}$ is

- (1) an alkyl group,
 - (2) a cycloalkyl group,
 - (3) a lower alkoxy group,
 - (4) a cycloalkyloxy group,
 - (5) a lower alkoxy lower alkoxy group, or
 - (6) an amino group optionally having 1 or 2 substituents selected from the group consisting of an alkyl group and a hydroxy-substituted lower alkyl group, or
- the following group



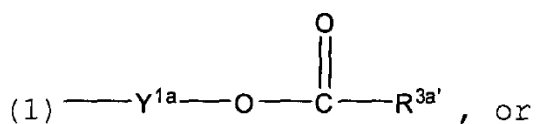
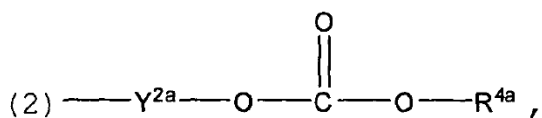
wherein

$\text{R}^{9a'}$ is

- (1) an alkyl group,
- (2) a hydroxy-substituted lower alkyl group,
- (3) a cycloalkyl group,
- (4) a lower alkoxy group,
- (5) a cycloalkyloxy group,
- (6) a lower alkoxy lower alkoxy group,
- (7) a phenyloxy group,
- (8) an amino group optionally having 1 or 2 substituents selected from the group consisting of an alkyl group,
- (9) a piperidyl group optionally having a piperidyl group, or
- (10) a piperazinyl group optionally having a lower alkyl group;

R^2 is

the following group



wherein

Y^{1a} is a lower alkylene group,

Y^{2a} is a lower alkylene group,

$R^{3a'}$ is

(1) an alkyl group,

(2) a cycloalkyl group

(3) a piperidyl group optionally having 1 or 2 substituents selected from the group consisting of a lower alkyl group,

(4) a tetrahydropyranyl group,

(5) a lower alkoxycarbonyl lower alkyl group,

(6) a lower alkoxy lower alkoxy lower alkyl group

(7) an amino lower alkyl group optionally having a lower alkylcarbonyl group,

R^{4a} is

(1) an alkyl group, or

(2) a cycloalkyl group;

or a salt thereof.

5. A pharmaceutical composition comprising the heterocyclic compound according to claim 1 or a pharmaceutically acceptable salt thereof, and a pharmaceutically acceptable diluent and/or a carrier.

6. A prophylactic and/or therapeutic agent for a central neurological disease, comprising the heterocyclic compound according to claim 1 or a pharmaceutically acceptable salt thereof as an active ingredient.

7. The agent according to claim 6, wherein the central

neurological disease is selected from the group consisting of schizophrenia, treatment-resistant, refractory or chronic schizophrenia, emotional disturbance, psychotic disorder, mood disorder, bipolar disorder, mania, depression, endogenous depression, major depression, melancholic and treatment-resistant depression, dysthymic disorder, cyclothymic disorder, anxiety disorder, somatoform disorder, factitious disorder, dissociative disorder, sexual disorder, eating disorder, sleep disorder, adjustment disorder, substance-related disorder, anhedonia, delirium, Alzheimer's disease, Parkinson disease, cognitive impairment, cognitive impairment associated with neurodegenerative diseases, cognitive impairment caused by neurodegenerative diseases, cognitive impairment in schizophrenia, cognitive impairment caused by treatment-resistant, refractory or chronic schizophrenia, vomiting, motion sickness, obesity, migraine, pain, mental retardation, autistic disorder, Tourette's disorder, tic disorder, attention deficit hyperactivity disorder, conduct disorder and Down's syndrome.

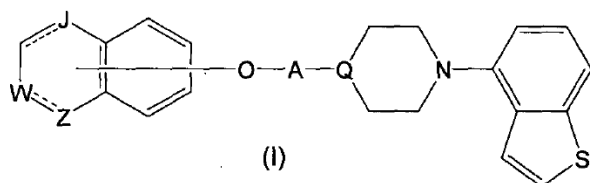
8. The heterocyclic compound according to claim 1 or a pharmaceutically acceptable salt thereof, for use as a medicament.

9. The heterocyclic compound according to claim 1 or a pharmaceutically acceptable salt thereof, for use in preventing and/or treating a central neurological disease.

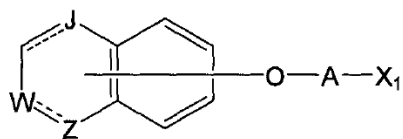
10. The compound according to claim 9, wherein the central neurological disease is selected from the group consisting of schizophrenia, treatment-resistant, refractory or chronic schizophrenia, emotional disturbance, psychotic disorder, mood disorder, bipolar disorder, mania, depression, endogenous depression, major depression, melancholic and treatment-

resistant depression, dysthymic disorder, cyclothymic disorder, anxiety disorder, somatoform disorder, factitious disorder, dissociative disorder, sexual disorder, eating disorder, sleep disorder, adjustment disorder, substance-related disorder, anhedonia, delirium, Alzheimer's disease, Parkinson disease, cognitive impairment, cognitive impairment associated with neurodegenerative diseases, cognitive impairment caused by neurodegenerative diseases, cognitive impairment in schizophrenia, cognitive impairment caused by treatment-resistant, refractory or chronic schizophrenia, vomiting, motion sickness, obesity, migraine, pain, mental retardation, autistic disorder, Tourette's disorder, tic disorder, attention deficit hyperactivity disorder, conduct disorder and Down's syndrome.

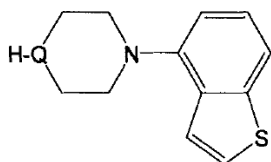
11. A method of producing a heterocyclic compound represented by the formula (I)



wherein each symbol is as defined in claim 1,
or a salt thereof, comprising reacting a compound represented by
the formula



wherein X_1 is a halogen atom or a group that causes a substitution reaction similar to that by a halogen atom, and other symbols are as defined in claim 1, or a salt thereof, with a compound represented by



wherein Q is as defined in claim 1, or a salt thereof.

12. Use of the heterocyclic compound according to claim 1 or a pharmaceutically acceptable salt thereof in the manufacture of a medicament for preventing and/or treating a central neurological disease.

13. The use according to claim 12, wherein the central neurological disease is selected from the group consisting of schizophrenia, treatment-resistant, refractory or chronic schizophrenia, emotional disturbance, psychotic disorder, mood disorder, bipolar disorder, mania, depression, endogenous depression, major depression, melancholic and treatment-resistant depression, dysthymic disorder, cyclothymic disorder, anxiety disorder, somatoform disorder, factitious disorder, dissociative disorder, sexual disorder, eating disorder, sleep disorder, adjustment disorder, substance-related disorder, anhedonia, delirium, Alzheimer's disease, Parkinson disease, cognitive impairment, cognitive impairment associated with neurodegenerative diseases, cognitive impairment caused by neurodegenerative diseases, cognitive impairment in schizophrenia, cognitive impairment caused by treatment-resistant, refractory or chronic schizophrenia, vomiting, motion sickness, obesity, migraine, pain, mental retardation, autistic disorder, Tourette's disorder, tic disorder, attention deficit hyperactivity disorder, conduct disorder and Down's syndrome.