DE2408906 describes styrylpyrazolopyrimidinones which can be employed as antimicrobial and anti-inflammatory agents for the treatment of, for example, oedema.

OBJECTIVE OF THE INVENTION

Changes in the substitution pattern of pyrazolopyrimidinones result in interesting changes concerning biological activity, respectively changes in the affinity towards different target enzymes.

Therefore it is an objective of the present ~~invention~~disclosure to provide compounds as herein described, in particular in the claims, that effectively modulate PDE9A for the purpose of the development of a medicament, in particular in view of diseases or conditions, the treatment of which is accessible via PDE9A modulation.

It is another objective of the present ~~invention~~disclosure to provide compounds that are useful for the manufacture of a medicament for the treatment of CNS disorders.

Yet another objective of the present ~~invention~~disclosure is to provide compounds which show a favourable safety profile.

Another objective of the present ~~invention~~disclosure is to provide compounds that have a favourable selectively profile in favour for PDE9A inhibition over other PDE family members and other pharmacological targets and by this may provide therapeutic advantage.

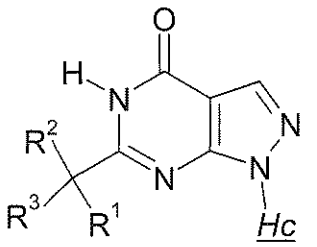
Yet another objective is to provide such a medicament that may not only serve for treatment but also for prevention or modification of the corresponding disease or condition.

The present ~~invention~~disclosure further provides a pharmaceutical composition comprising a compound as herein described, in particular in the claims, and a pharmaceutically acceptable carrier.

The present ~~invention~~disclosure further provides a method of the treatment of any of the conditions as described herein in a mammal in need of such treatment, preferably a human, comprising administering to the mammal a therapeutically effective amount of a compound as herein described, in particular in the claims.

The present ~~invention~~disclosure further provides a compound as herein described, in particular in the claims, for use in a method of treatment of the human or animal body by therapy.

In a first aspect, there is provided a compound according to general formula (I)



(I),

with

Hc being tetrahydropyranyl-,

whereby one or more carbon ring atom(s) thereof optionally may be substituted by one or by two substituents independently selected from the group of fluorine, NC-, F_3C-, HF_2C-, FH_2C-, F_3C-CH_2-, C_{1-6}-alkyl-, C_{1-6}-alkyl-O- and up to one carbon ring atom may be substituted with oxo;

R^1 being the group

V−W−*

wherein

W is selected from the group of phenyl or heteroaryl;

V is selected from the group of phenyl or heteroaryl;

-- is the binding point by which **W** is attached to the CR^2R^3 group in formula (I);

wherein **W** and **V** independently of each other optionally may be substituted by one or more substituents selected from the group of fluorine, chlorine, bromine, C_{1-6}-alkyl-, F_3C-, HF_2C-, FH_2C-, F_3C-CH_2-, F_3C-O-, HF_2C-O-, C_{3-7}-heterocycloalkyl-, H-O-C_{1-6}-alkyl-, C_{1-6}-alkyl-O-C_{1-6}-alkyl-, C_{3-7}-cycloalkyl-O-C_{1-6}-alkyl-, C_{3-7}-cycloalkyl-C_{1-3}-alkyl-O-C_{1-6}-alkyl-, phenyl-O-C_{1-6}-alkyl-, benzyl-O-C_{1-6}-alkyl-, H-O-, C_{1-6}-alkyl-O-, C_{3-7}-cycloalkyl-O-, C_{3-7}-cycloalkyl-C_{1-3}-alkyl-O-, phenyl-O-, benzyl-O-, N-morpholinyl, and NC-;

$\mathbf{R^2}$ being selected from the group of H-, fluorine, F_3C-, HF_2C-, FH_2C-, and C_{1-3}-alkyl-, preferably $\mathbf{R^2}$ being H;

$\mathbf{R^3}$ being selected from the group of H-, fluorine, F_3C-, HF_2C-, FH_2C-, and C_{1-3}-alkyl-, preferably $\mathbf{R^3}$ being H.

In a second aspect, there is provided a compound as defined above in form of a salt thereof, preferably in form of a pharmaceutically acceptable salt thereof.

In a third aspect, there is provided a compound as defined above for use as a medicament.

In a fourth aspect, there is provided a compound as defined above for use in a method for the treatment of a disease that is accessible by the inhibition of PDE9.

In a fifth aspect, there is provided a compound as defined above for use in a method for the treatment, amelioration or prevention of cognitive impairment being related to perception, concentration, cognition, learning or memory,

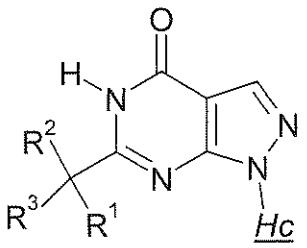
> preferably in patients that suffer from age-associated learning and memory impairments, age-associated memory losses, vascular dementia, craniocerebral trauma, stroke, dementia occurring after strokes (post stroke dementia), post-traumatic dementia, general concentration impairments, concentration impairments in children with learning and memory problems, Alzheimer's disease, Lewy body dementia, dementia with degeneration of the frontal lobes, including Pick's syndrome, Parkinson's disease, progressive nuclear palsy, dementia with corticobasal degeneration, amyotropic lateral sclerosis (ALS), Huntington's disease, multiple sclerosis, thalamic degeneration, Creutzfeld-Jacob dementia, HIV dementia, epilepsy, temporal lobe epilepsy, schizophrenia with dementia or Korsakoff's psychosis,
>
> more preferably cognitive impairment being related with Alzheimer's disease and more preferably cognitive impairment being related to learning or memory in patients suffering from Alzheimer's disease.

In a sixth aspect, there is provided a pharmaceutical composition comprising a compound as defined above and a pharmaceutical carrier, optionally in combination with another active ingredient.

In a seventh aspect, there is provided a pharmaceutical composition as defined above for the treatment of a condition as defined above.

DETAILED DESCRIPTION OF THE PRESENT INVENTION

The compounds of the present invention are characterised by general formula (I):



(I),

with the following definitions (substituents may be printed in bold for better reading):

Substituent ***Hc*** is defined by the following definitions $\underline{\mathbf{Hc}}^{i}$, whereby the index i describes the order of preference, ascending from $\underline{\mathbf{Hc}}^{1}$ to more preferably (i.e. $\underline{\mathbf{Hc}}^{2}$), and so on:

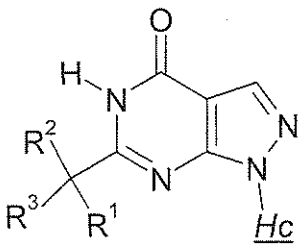
$\underline{\mathbf{Hc}}^{1}$:

Hc is tetrahydropyranyl-,

whereby one or more carbon ring atom(s) thereof optionally may be substituted by one or - where appropriate – by one or two substituents independently selected from

Claims

1. A compound according to general formula (I)



(I),

with

Hc being tetrahydropyranyl-, ~~preferably 4-tetrahydropyranyl,~~

whereby one or more carbon ring atom(s) thereof optionally may be substituted by one or by two substituents independently selected from the group of fluorine, NC-, F_3C-, HF_2C-, FH_2C-, F_3C-CH_2-, C_{1-6}-alkyl-, C_{1-6}-alkyl-O- and up to one carbon ring atom may be substituted with oxo;

R^1 being the group

V—W—*

wherein

W is selected from the group of phenyl or heteroaryl;

V is selected from the group of phenyl or heteroaryl;

~~V preferably is attached at the 2 position of W, whereby the 1 position of W is the attachment point of W to the CR^2R^3 group in formula (I);~~

-* is the binding point by which **W** is attached to the CR^2R^3 group in formula (I);

wherein **W** and **V** independently of each other optionally may be substituted by one or more substituents selected from the group of fluorine, chlorine, bromine, C_{1-6}-alkyl-, F_3C-, HF_2C-, FH_2C-, F_3C-CH_2-, F_3C-O-, HF_2C-O-, C_{3-7}-heterocycloalkyl-, H-O-C_{1-6}-alkyl-, C_{1-6}-alkyl-O-C_{1-6}-alkyl-, C_{3-7}-cycloalkyl-O-C_{1-6}-alkyl-, C_{3-7}-cycloalkyl-C_{1-3}-alkyl-O-C_{1-6}-alkyl-, phenyl-O-C_{1-6}-alkyl-, benzyl-O-C_{1-6}-alkyl-, H-O-, C_{1-6}-alkyl-O-, C_{3-7}-cycloalkyl-O-, C_{3-7}-cycloalkyl-C_{1-3}-alkyl-O-, phenyl-O-, benzyl-O-, N-morpholinyl, and NC-~~, preferably by a substituent selected from the group of fluorine, chlorine, bromine, C_{1-6}-alkyl-, F_3C-, F_3C-CH_2-, F_3C-O-, HF_2C-O-, C_{3-7}-heterocycloalkyl-, C_{1-6}-alkyl-O-, C_{3-6}-cycloalkyl-O-, C_{3-6}-cycloalkyl-CH_2-O-, aryl-CH_2-O- and NC-~~;

R^2 being selected from the group of H-, fluorine, F_3C-, HF_2C-, FH_2C-, and C_{1-3}-alkyl-, preferably **R^2** being H;

R^3 being selected from the group of H-, fluorine, F_3C-, HF_2C-, FH_2C-, and C_{1-3}-alkyl-, preferably **R^3** being H.

2. A compound according to claim 1, wherein

Hc being tetrahydropyranyl-~~, preferably 4-tetrahydropyranyl,~~

whereby one or more carbon ring atom(s) thereof optionally may be substituted by one or two substituents independently selected from the group of fluorine, NC-, F_3C-, HF_2C-, FH_2C-, F_3C-CH_2-, C_{1-6}-alkyl-, C_{1-6}-alkyl-O- and up to one carbon ring atom may be substituted with oxo;

R^1 being the group

V—W—*

wherein

W is selected from the group of phenyl or a heteroaryl, said heteroaryl being selected from the group of oxadiazolyl, triazolyl, pyrazolyl, furanyl, pyridyl, pyrimidyl and pyridazinyl,

V is selected from the group of phenyl or heteroaryl, said heteroaryl being selected from the group of oxadiazolyl, triazolyl, pyrazolyl, pyrrolyl, furanyl, pyridyl, pyrimidyl and pyridazinyl,

~~V preferably is attached at the 2 position of W, whereby the 1 position of W is the attachment point of W to the CR^2R^3 group in formula (I);~~

wherein **W** and **V** independently of each other optionally may be substituted by one or more substituents selected from the group of fluorine, chlorine, bromine, C_{1-6}-alkyl-, F_3C-, HF_2C-, FH_2C-, F_3C-CH_2-, F_3C-O-, HF_2C-O-, C_{3-7}-heterocycloalkyl-, H-O-C_{1-6}-alkyl-, C_{1-6}-alkyl-O-C_{1-6}-alkyl-, C_{3-7}-cycloalkyl-O-C_{1-6}-alkyl-, C_{3-7}-cycloalkyl-C_{1-3}-alkyl-O-C_{1-6}-alkyl-, phenyl-O-C_{1-6}-alkyl-, benzyl-O-C_{1-6}-alkyl-, H-O-, C_{1-6}-alkyl-O-, C_{3-7}-cycloalkyl-O-, C_{3-7}-cycloalkyl-C_{1-3}-alkyl-O-, phenyl-O-, benzyl-O-, N-morpholinyl, and NC-~~, preferably by a substituent selected from the group of fluorine, chlorine, bromine, C_{1-6}-alkyl-, F_3C-, F_3C-CH_2-, F_3C-O-, HF_2C-O-, C_{3-7}-heterocycloalkyl-, C_{1-6}-alkyl-O-, C_{3-6}-cycloalkyl-O-, C_{3-6}-cycloalkyl-CH_2-O-, aryl-CH_2-O- and NC-~~;

$\mathbf{R^2}$ being selected from the group of H-, fluorine, F_3C-, HF_2C-, FH_2C-, and C_{1-3}-alkyl-, preferably $\mathbf{R^2}$ being H;$\mathbf{R^3}$ being selected from the group of H-, fluorine, F_3C-, HF_2C-, FH_2C-, and C_{1-3}-alkyl-, preferably $\mathbf{R^3}$ being H.

3. A compound according to any of the claims 1 or 2, wherein

Hc is 4-tetrahydropyranyl-.

~~4~~3. A compound according to claim 1 or 3, wherein

Hc being tetrahydropyranyl-,

whereby one or more carbon ring atom(s) thereof optionally may be substituted by one or two substituents independently selected from the group of fluorine, NC-, F_3C-, HF_2C-, FH_2C-, F_3C-CH_2-, C_{1-6}-alkyl-, C_{1-6}-alkyl-O- and up to one carbon ring atom may be substituted with oxo;

R^1 being the group

V—W—*

wherein

W is selected from the group of phenyl or a heteroaryl, said heteroaryl being selected from the group of pyridyl, pyrimidyl and pyridazinyl,

V is selected from the group of phenyl or heteroaryl, said heteroaryl being selected from the group of oxadiazolyl, triazolyl, pyrazolyl, pyrrolyl, furanyl, pyridyl, pyrimidyl and pyridazinyl,

~~V preferably is attached at the 2 position of W, whereby the 1 position of W is the attachment point of W to the CR^2R^3 group in formula (I);~~

wherein **W** and **V** independently of each other optionally may be substituted by one or more substituents selected from the group of fluorine, chlorine, bromine, C_{1-6}-alkyl-, F_3C-, HF_2C-, FH_2C-, F_3C-CH_2-, F_3C-O-, HF_2C-O-, C_{3-7}-heterocycloalkyl-, H-O-C_{1-6}-alkyl-, C_{1-6}-alkyl-O-C_{1-6}-alkyl-, C_{3-7}-cycloalkyl-O-C_{1-6}-alkyl-, C_{3-7}-cycloalkyl-C_{1-3}-alkyl-O-C_{1-6}-alkyl-, phenyl-O-C_{1-6}-alkyl-, benzyl-O-C_{1-6}-alkyl-, H-O-, C_{1-6}-alkyl-O-, C_{3-7}-cycloalkyl-O-, C_{3-7}-cycloalkyl-C_{1-3}-alkyl-O-, phenyl-O-, benzyl-O-, N-morpholinyl, and NC-~~, preferably by a substituent selected from the group of fluorine, chlorine, bromine, C_{1-6}-alkyl-, F_3C-, F_3C-CH_2-, F_3C-O-, HF_2C-O-, C_{3-7}-heterocycloalkyl-, C_{1-6}-alkyl-O-, C_{3-6}-cycloalkyl-O-, C_{3-6}-cycloalkyl-CH_2-O-, aryl-CH_2-O- and NC-~~;

R^2 being selected from the group of H-, fluorine, F_3C-, HF_2C-, FH_2C-, and C_{1-3}-alkyl-, preferably **R^2** being H;

R^3 being selected from the group of H-, fluorine, F_3C-, HF_2C-, FH_2C-, and C_{1-3}-alkyl-, preferably **R^3** being H.

54. A compound according to claim 1 or 3, wherein
Hc being tetrahydropyranyl-,

whereby one or more carbon ring atom(s) thereof optionally may be substituted by one or two substituents independently selected from the group of fluorine, NC-, F_3C-, HF_2C-, FH_2C-, F_3C-CH_2-, C_{1-6}-alkyl-, C_{1-6}-alkyl-O- and up to one carbon ring atom may be substituted with oxo;

R^1 being the group

V−W−*

wherein

W is selected from the group of phenyl or pyridinyl,

V is selected from the group of phenyl or heteroaryl, said heteroaryl being selected from the group of oxadiazolyl, triazolyl, pyrazolyl, furanyl, pyridyl, pyrimidyl and pyridazinyl,

~~V preferably is attached at the 2 position of W, whereby the 1 position of W is the attachment point of W to the CR^2R^3 group in formula (I);~~

wherein **W** and **V** independently of each other optionally may be substituted by one or more substituents selected from the group of fluorine, chlorine, bromine, C_{1-6}-alkyl-, F_3C-, HF_2C-, FH_2C-, F_3C-CH_2-, F_3C-O-, HF_2C-O-, C_{3-7}-heterocycloalkyl-, H-O-C_{1-6}-alkyl-, C_{1-6}-alkyl-O-C_{1-6}-alkyl-, C_{3-7}-cycloalkyl-O-C_{1-6}-alkyl-, C_{3-7}-cycloalkyl-C_{1-3}-alkyl-O-C_{1-6}-alkyl-, phenyl-O-C_{1-6}-alkyl-, benzyl-O-C_{1-6}-alkyl-, H-O-, C_{1-6}-alkyl-O-, C_{3-7}-cycloalkyl-O-, C_{3-7}-cycloalkyl-C_{1-3}-alkyl-O-, phenyl-O-, benzyl-O-, N-morpholinyl, and NC-, ~~preferably by a substituent selected from the group of fluorine, chlorine, bromine, C_{1-6}-alkyl-, F_3C-, F_3C-CH_2-, F_3C-O-, HF_2C-O-, C_{3-7}-heterocycloalkyl-, C_{1-6}-alkyl-O-, C_{3-6}-cycloalkyl-O-, C_{3-6}-cycloalkyl-CH_2-O-, aryl-CH_2-O- and NC-,~~

~~wherein more preferably W and V independently of each other optionally may be substituted by one or more substituents selected from the group of fluorine, chlorine, H_3C-, F_3C-, CH_3O-, N-morpholinyl, and NC-, more preferably selected from the group of fluorine, H_3C-, F_3C-, CH_3O- and NC-;~~

R^2 being selected from the group of H-, fluorine, F_3C-, HF_2C-, FH_2C-, and C_{1-3}-alkyl-, preferably R^2 being H;

R^3 being selected from the group of H-, fluorine, F_3C-, HF_2C-, FH_2C-, and C_{1-3}-alkyl-, preferably R^3 being H.

6. A compound according to any of claims 1 to 5 wherein
W and V independently of each other optionally may be substituted by one or more substituents selected from the group of fluorine, chlorine, bromine, C_{1-6}-alkyl, F_3C-, F_3C-CH_2-, F_3C-O-, HF_2C-O-, C_{3-7}-heterocycloalkyl-, C_{1-6}-alkyl-O-, C_{3-6}-cycloalkyl-O-, C_{3-6}-cycloalkyl-CH_2-O-, aryl-CH_2-O- and NC-.

7. A compound according to claim 5, wherein
W and V independently of each other optionally may be substituted by one or more substituents selected from the group of fluorine, chlorine, H_3C-, F_3C-, CH_3O-, N-morpholinyl, and NC-.

8. A compound according to claim 5, wherein
W and V independently of each other optionally may be substituted by one or more substituents selected from the group of fluorine, H_3C-, F_3C-, CH_3O- and NC-.

~~9~~5. A compound according to claim 1 or 3, wherein
Hc being tetrahydropyranyl-,

whereby one or more carbon ring atom(s) thereof optionally may be substituted by one or two substituents independently selected from the group of fluorine, NC-, F_3C-, HF_2C-, FH_2C-, F_3C-CH_2-, C_{1-6}-alkyl-, C_{1-6}-alkyl-O- and up to one carbon ring atom may be substituted with oxo;

R^1 being the group

V—W—*

wherein

W is selected from the group of phenyl or pyridyl,

V is selected from the group of phenyl or heteroaryl, said heteroaryl being selected from the group of oxadiazolyl, triazolyl, pyrazolyl, pyrrolyl, furanyl, pyridyl, pyrimidyl and pyridazinyl,

~~V preferably is attached at the 2 position of W, whereby the 1 position of W is the attachment point of W to the CR^2R^3 group in formula (I);~~

wherein **W** optionally may be substituted by one or more substituents selected from the group of fluorine, chlorine, bromine, H_3C-, F_3C-, CH_3O- and NC-, preferably selected from the group of fluorine, chlorine and F_3C-;

and wherein **V** optionally may be substituted by one or more substituents selected from the group of fluorine, chlorine, H_3C-, tert-butyl-, F_3C-, CH_3O-, cyclobutyloxy-, N-morpholinyl, benzyl-O- and NC-;

R^2 being selected from the group of H-, fluorine, F_3C-, HF_2C-, FH_2C-, and C_{1-3}-alkyl-, preferably R^2 being H;

R^3 being selected from the group of H-, fluorine, F_3C-, HF_2C-, FH_2C-, and C_{1-3}-alkyl-, preferably R^3 being H.

106. A compound according to claim 1 or 3, wherein
Hc being tetrahydropyranyl-,

whereby one or more carbon ring atom(s) thereof optionally may be substituted by one or two substituents independently selected from the group of fluorine, NC-, F_3C-, HF_2C-, FH_2C-, F_3C-CH_2-, C_{1-6}-alkyl-, C_{1-6}-alkyl-O- and up to one carbon ring atom may be substituted with oxo;

R^1 being the group

V—W—*

wherein

W is phenyl whereby **W** optionally is substituted by a fluorine, chlorine or F_3C-;

V is heteroaryl being selected from the group of oxadiazolyl, triazolyl, pyrazolyl, pyrrolyl, furanyl, pyridyl, pyrimidyl and pyridazinyl, whereby

V optionally is substituted by 1 to 4, preferably 1 or 2, more preferably 1 substituent independently of each other selected from the group of fluorine, chlorine, H_3C-, *tert*-butyl-, F_3C-, CH_3O-, cyclobutyloxy-, N-morpholinyl, benzyl-O- and NC-,

V is attached at the 2 position of **W**, whereby the 1 position of **W** is the attachment point of **W** to the CR^2R^3 group in formula (I);

$\mathbf{R^2}$ being selected from the group of H-, fluorine, F_3C-, HF_2C-, FH_2C-, and C_{1-3}-alkyl-, preferably $\mathbf{R^2}$ being H;

$\mathbf{R^3}$ being selected from the group of H-, fluorine, F_3C-, HF_2C-, FH_2C-, and C_{1-3}-alkyl-, preferably $\mathbf{R^3}$ being H.

117. A compound according to claim 1, wherein
Hc being 4-tetrahydropyranyl-,

whereby each carbon ring atom thereof optionally may be substituted by one or two substituents independently selected from the group of fluorine, NC-, F_3C-, HF_2C-, FH_2C-, F_3C-CH_2-, C_{1-6}-alkyl-, C_{1-6}-alkyl-O- and up to one carbon ring atom may be substituted with oxo,

~~preferably *Hc* being unsubstituted 4-tetrahydropyranyl-;~~

R^1 being the group

V—W—*

wherein

W is selected from the group of phenyl or pyridinyl,

V is selected from the group of phenyl or heteroaryl, said heteroaryl being selected from the group of oxadiazolyl, triazolyl, pyrazolyl, furanyl, pyridyl, pyrimidyl and pyridazinyl,

~~V preferably is attached at the 2 position of W, whereby the 1 position of W is the attachment point of W to the CR^2R^3 group in formula (I);~~

wherein **W** and **V** independently of each other optionally may be substituted by one or more substituents selected from the group of fluorine, chlorine, bromine, C_{1-6}-alkyl-, F_3C-, HF_2C-, FH_2C-, F_3C-CH_2-, F_3C-O-, HF_2C-O-, C_{3-7}-heterocycloalkyl-, H-O-C_{1-6}-alkyl-, C_{1-6}-alkyl-O-C_{1-6}-alkyl-, C_{3-7}-cycloalkyl-O-C_{1-6}-alkyl-, C_{3-7}-cycloalkyl-C_{1-3}-alkyl-O-C_{1-6}-alkyl-, phenyl-O-C_{1-6}-alkyl-, benzyl-O-C_{1-6}-alkyl-, H-O-, C_{1-6}-alkyl-O-, C_{3-7}-cycloalkyl-O-, C_{3-7}-cycloalkyl-C_{1-3}-alkyl-O-, phenyl-O-, benzyl-O-, N-morpholinyl, and NC-, ~~preferably by a substituent selected from the group of fluorine, chlorine, bromine, C_{1-6}-alkyl-, F_3C-, F_3C-CH_2-, F_3C-O-, HF_2C-O-, C_{3-7}-heterocycloalkyl-, C_{1-6}-alkyl-O-, C_{3-6}-cycloalkyl-O-, C_{3-6}-cycloalkyl-CH_2-O-, aryl-CH_2-O- and NC-,~~

~~wherein more preferably W and V independently of each other optionally may be substituted by one or more substituents selected from the group of fluorine, chlorine,~~

~~H_3C-, F_3C-, CH_3O-, N-morpholinyl, and NC-, more preferably selected from the group of fluorine, H_3C-, F_3C-, CH_3O- and NC-;~~

R^2 being selected from the group of H-, fluorine, F_3C-, HF_2C-, FH_2C-, and C_{1-3}-alkyl-, preferably **R^2** being H;

R^3 being selected from the group of H-, fluorine, F_3C-, HF_2C-, FH_2C-, and C_{1-3}-alkyl-, preferably **R^3** being H.

12. A compound according to claim 11 wherein
W and **V** independently of each other optionally may be substituted by one or more substituents selected from the group of fluorine, chlorine, bromine, C_{1-6}-alkyl, F_3C-, F_3C-CH_2-, F_3C-O-, HF_2C-O-, C_{3-7}-heterocycloalkyl-, C_{1-6}-alkyl-O-, C_{3-6}-cycloalkyl-O-, C_{3-6}-cycloalkyl-CH_2-O-, aryl-CH_2-O- and NC-.

13. A compound according to claim 11, wherein
W and **V** independently of each other optionally may be substituted by one or more substituents selected from the group of fluorine, chlorine, H_3C-, F_3C-, CH_3O-, N-morpholinyl, and NC-.

14. A compound according to claim 11, wherein
W and **V** independently of each other optionally may be substituted by one or more substituents selected from the group of fluorine, H_3C-, F_3C-, CH_3O- and NC-.

15~~8~~. A compound according to claim 1, wherein
Hc being 4-tetrahydropyranyl-,

whereby each carbon ring atom thereof optionally may be substituted by one or two substituents independently selected from the group of fluorine, NC-, F_3C-, HF_2C-,

FH_2C-, F_3C-CH_2-, C_{1-6}-alkyl-, C_{1-6}-alkyl-O- and up to one carbon ring atom may be substituted with oxo,

~~preferably *Hc* being unsubstituted 4-tetrahydropyranyl ;~~

R^1 being the group

V—W—*

wherein

W is selected from the group of phenyl or pyridyl,

V is selected from the group of phenyl or heteroaryl, said heteroaryl being selected from the group of oxadiazolyl, triazolyl, pyrazolyl, pyrrolyl, furanyl, pyridyl, pyrimidyl and pyridazinyl,

~~**V** preferably is attached at the 2 position of **W**, whereby the 1 position of **W** is the attachment point of **W** to the CR^2R^3 group in formula (I);~~

wherein **W** optionally may be substituted by one or more substituents selected from the group of fluorine, chlorine, bromine, H_3C-, F_3C-, CH_3O- and NC-, preferably selected from the group of fluorine, chlorine and F_3C-;

and wherein **V** optionally may be substituted by one or more substituents selected from the group of fluorine, chlorine, H_3C-, *tert*-butyl-, F_3C-, CH_3O-, cyclobutyloxy-, N-morpholinyl, benzyl-O- and NC-;

$\mathbf{R^2}$ being selected from the group of H-, fluorine, F_3C-, HF_2C-, FH_2C-, and C_{1-3}-alkyl-, preferably $\mathbf{R^2}$ being H;

$\mathbf{R^3}$ being selected from the group of H-, fluorine, F_3C-, HF_2C-, FH_2C-, and C_{1-3}-alkyl-, preferably $\mathbf{R^3}$ being H.

169. A compound according to claim 1, wherein
Hc being 4-tetrahydropyranyl-,

whereby each carbon ring atom thereof optionally may be substituted by one or two substituents independently selected from the group of fluorine, NC-, F_3C-, HF_2C-,

FH_2C-, F_3C-CH_2-, C_{1-6}-alkyl-, C_{1-6}-alkyl-O- and up to one carbon ring atom may be substituted with oxo,

~~preferably *Hc* being unsubstituted 4-tetrahydropyranyl-;~~

R^1 being the group

V—W—*

wherein

W is phenyl whereby **W** optionally is substituted by a fluorine, chlorine or F_3C-;

V is heteroaryl being selected from the group of oxadiazolyl, triazolyl, pyrazolyl, pyrrolyl, furanyl, pyridyl, pyrimidyl and pyridazinyl, whereby

V optionally is substituted by 1 to 4, preferably 1 or 2, more preferably 1 substituent independently of each other selected from the group of fluorine, chlorine, H_3C-, *tert*-butyl-, F_3C-, CH_3O-, cyclobutyloxy-, N-morpholinyl, benzyl-O- and NC-,

V is attached at the 2 position of **W**, whereby the 1 position of **W** is the attachment point of **W** to the CR^2R^3 group in formula (I);

R^2 being selected from the group of H-, fluorine, F_3C-, HF_2C-, FH_2C-, and C_{1-3}-alkyl-, preferably **R^2** being H;

R^3 being selected from the group of H-, fluorine, F_3C-, HF_2C-, FH_2C-, and C_{1-3}-alkyl-, preferably **R^3** being H.

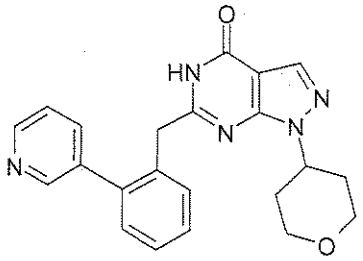
17. A compound according to any of the claims 11 to 16, wherein

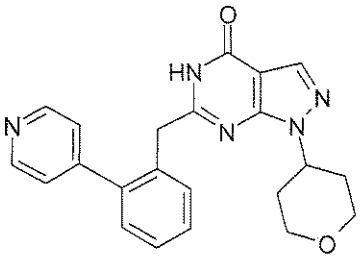
Hc is unsubstituted 4-tetrahydropyranyl-.

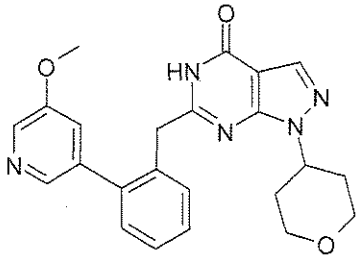
18. A compound according to any of the claims 1 to 9, 11 to 15 and 17, wherein

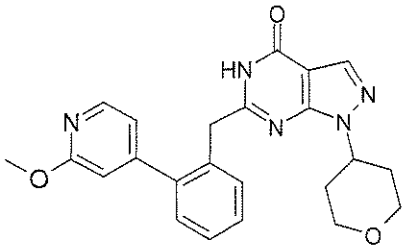
V is attached at the 2 position of **W**, whereby the 1 position of **W** is the attachment point of **W** to the CR^2R^3 group in formula (I).

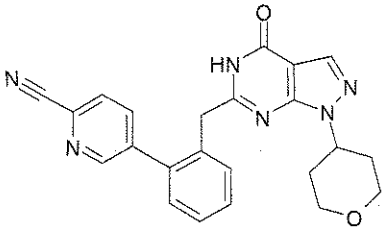
190. A compound according to claim 1, whereby the compound is selected from the group of:

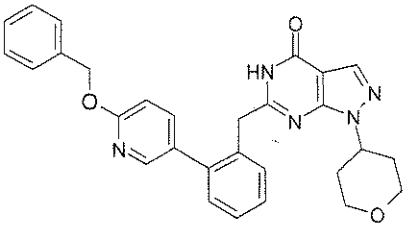

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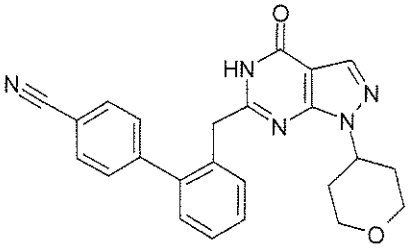

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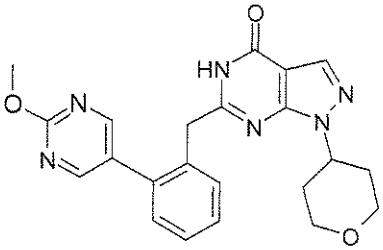

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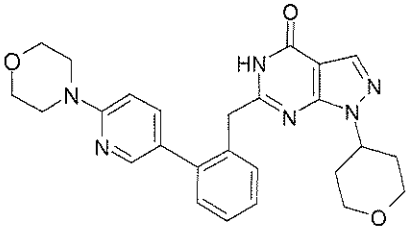

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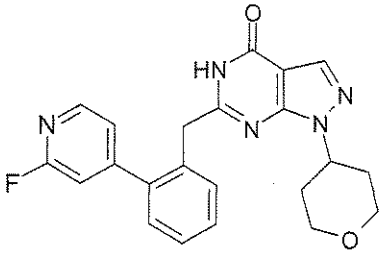

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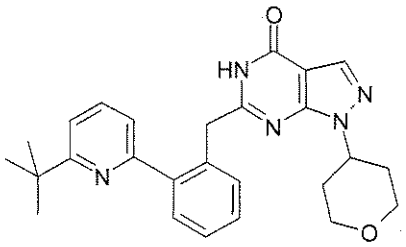
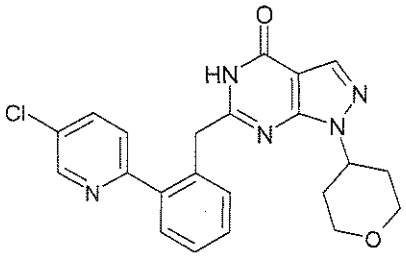

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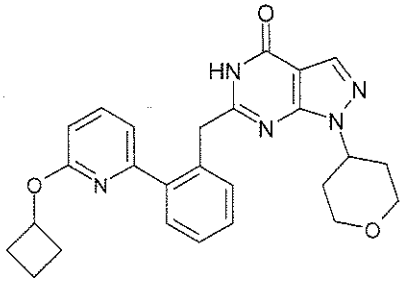
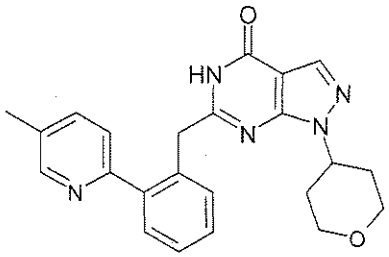

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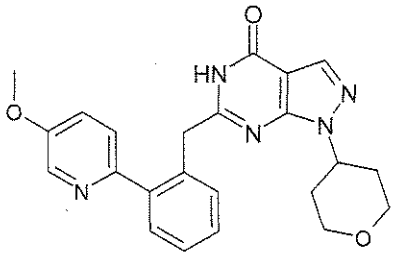

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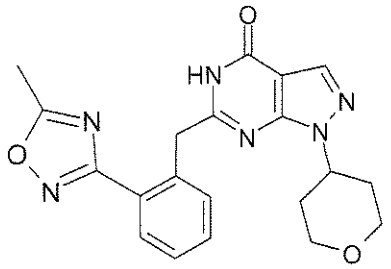

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and

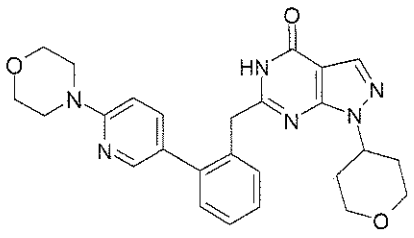

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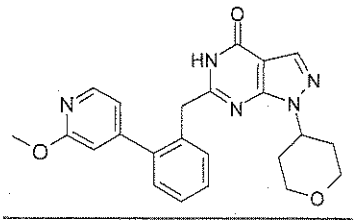
20. A compound according to claim 1 of the following formula



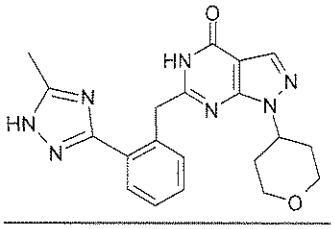
21. A compound according to claim 1 of the formula



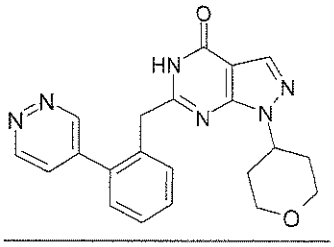
22. A compound according to claim 1 of the following formula



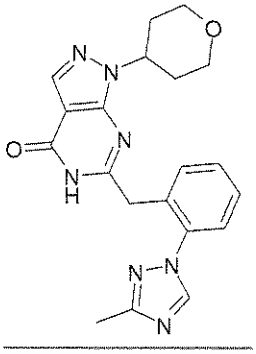
23. A compound according to claim 1 of the following formula



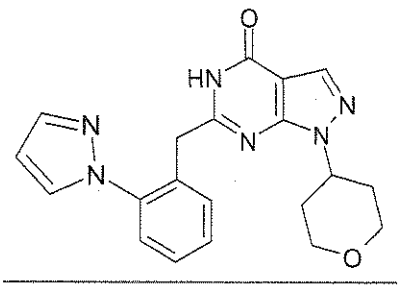
24. A compound according to claim 1 of the following formula



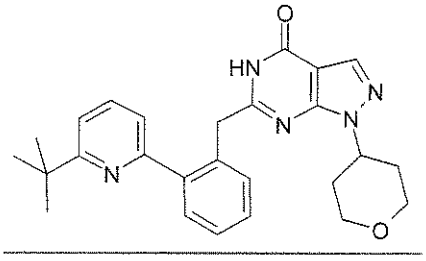
25. A compound according to claim 1 of the following formula



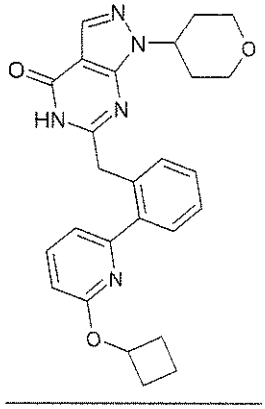
26. A compound according to claim 1 of the following formula



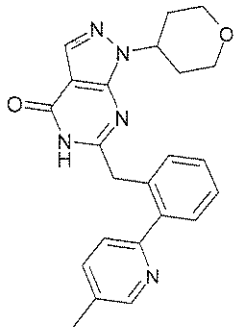
27. A compound according to claim 1 of the following formula



28. A compound according to claim 1 of the following formula



29. A compound according to claim 1 of the following formula



3011. A compound according to any of claims 1 to 2910 in form of a salt thereof, preferably in form of a pharmaceutically acceptable salt thereof.

3142. A compound according to any of claims 1 to 3011 for use as a medicament~~, preferably for use as a medicament for the treatment of a CNS disease, more preferably as a medicament for the treatment of a CNS disease, the treatment of which is accessible by the inhibition of PDE9~~

32. A compound according to claims 1 to 30 for use in a method for the treatment of a disease that is accessible by the inhibition of PDE9.

313. ~~Use of a~~A compound according to any of claims 1 to 30 for use in a method~~11 in the manufacture of a medicament~~ for the treatment, amelioration or prevention of cognitive impairment being related to perception, concentration, cognition, learning or memory,

preferably in patients that suffer from age-associated learning and memory impairments, age-associated memory losses, vascular dementia, craniocerebral trauma, stroke, dementia occurring after strokes (post stroke dementia), post-traumatic dementia, general concentration impairments, concentration impairments in children with learning and memory problems, Alzheimer's disease, Lewy body dementia, dementia with degeneration of the frontal lobes, including Pick's syndrome, Parkinson's disease, progressive nuclear palsy, dementia with corticobasal degeneration, amyotropic lateral sclerosis (ALS), Huntington's disease, multiple sclerosis, thalamic degeneration, Creutzfeld-Jacob dementia, HIV dementia, epilepsy, temporal lobe epilepsy, schizophrenia with dementia or Korsakoff's psychosis,

more preferably cognitive impairment being related with Alzheimer's disease and more preferably cognitive impairment being related to learning or memory in patients suffering from Alzheimer's disease.

314. Pharmaceutical composition comprising a compound according to any of claims 1 to 30~~11~~ and a pharmaceutical carrier, optionally in combination with another active ingredient.

315. Pharmaceutical composition according to claim 314 for the treatment of a condition as defined by claims 31~~12~~ to ~~or~~ 313.

~~16. Use according to claim 13, whereby the patients suffer from Alzheimer's disease.~~

~~17. Use according to claim 13, whereby the patients suffer from schizophrenia.~~

~~18. Use according to claim 13, whereby the patients suffer from epilepsy.~~

~~19. Use according to claim 13, whereby the patients suffer from cognitive impairment associated with Alzheimer's disease.~~

~~20. Use according to claim 13, whereby the patients suffer from cognitive impairment associated with schizophrenia.~~

~~21. Use according to claim 13, whereby the patients suffer from cognitive impairment associated with epilepsy.~~