DESCRIPTION

~~Title of Invention: NITROGEN-CONTAINING COMPOUND AND PHARMACEUTICAL COMPOSITION~~

TECHNICAL FIELD

The present invention relates to a nitrogen-containing compound and a pharmaceutical composition containing the same.

BACKGROUND ART

Atrial fibrillation (hereinafter referred to as "AF") is the most frequently observed type of arrhythmia in clinical examinations. Although not a lethal arrhythmia, AF causes cardiogenic cerebral embolism, and is therefore recognized as an arrhythmia that greatly affects vital prognoses and QOL. It is known that the onset of AF increases with age, and that repeated AF strokes lead to chronic (serious) AF (The Journal of American Medical Association, 285, 2370-2375 (2001) and Circulation, 114, 119-123 (2006)).

To prevent chronic AF, which causes difficulty in restoring sinus rhythm and increases the risk of cardiogenic cerebral embolism, early defibrillation and subsequent prevention of recurrence (maintenance of the sinus rhythm) are required. Antiarrhythmic drugs (classes I and III) are most commonly used as pharmacotherapy, but these drugs achieve insufficient therapeutic effects, while causing serious side effects such as a proarrhythmic effect (Am. J. Cardiol., 72, B44-B49 (1993)).

The onset of AF is triggered by atrial premature contraction with underlining causes such as intra-atrial conduction delay, shortening and heterogeneity of the atrial refractory period (Nature Reviews DRUG DISCOVERY 4, 899-910 (2005)). It is known that the prolongation of refractory period of atrial muscle can terminate AF (defibrillation) or prevent the occurence of AF. The action potential duration of the mammalian cardiac muscle is predominantly determined by voltage-dependent K^+ channels. Inhibition of the K^+ channel prolongs myocardial action potential duration, which results in prolongation of the refractory period (Nature Reviews DRUG DISCOVERY

DESCRIPTION

NITROGEN-CONTAINING COMPOUNDS AND PHARMACEUTICAL COMPOSITIONS THEREOF FOR THE TREATMENT OF ATRIAL FIBRILLATION

TECHNICAL FIELD

The present invention relates to a nitrogen-containing compound and a pharmaceutical composition containing the same.

BACKGROUND ART

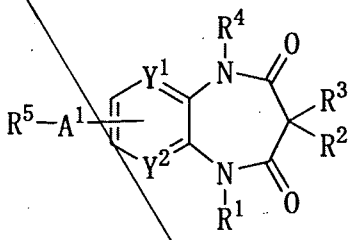
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CLAIMS

[Claim 1] A diazepine compound represented by General Formula (1)



(1)

or a salt thereof,

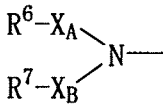
wherein R^1, R^2, R^3, and R^4 are each independently hydrogen, lower alkyl, cyclo lower alkyl or lower alkoxy lower alkyl;

R^2 and R^3 may be linked to form lower alkylene;

A^1 is lower alkylene optionally substituted with one or more substituents selected from the group consisting of hydroxyl and oxo;

Y^1 and Y^2 are each independently -N= or -CH=;

R^5 is group represented by



wherein R^6 and R^7 are each independently hydrogen or an organic group;

R^6 and R^7 may be linked to form a ring together with the neighboring group $-X_A-N-X_B-$;

X_A and X_B are each independently a bond, alkylene, alkenylene, -CO-, $-SO_2-$, or -CONH-, wherein each of the alkylene and alkenylene chains can optionally contain one or more substituents selected from the group consisting of -S-, -C(=S)-, $-SO_2-$, -CO-, -O-, -NH-, -CONH- and $-SO_2NH-$, and the hydrogen atom (H) bonded to the nitrogen atom (N) in X_A and X_B is optionally substituted with a substituent selected from the group consisting of lower alkyl, phenyl lower alkyl and phenyl.

[Claim 2] A diazepine compound or a salt thereof according to claim 1, wherein R^6 and R^7 are each independently hydrogen, lower alkyl, cyclo lower alkyl, aryl or heterocyclic group, each of which is optionally substituted, and X_A and X_B are each independently a bond, lower alkylene, lower alkenylene, -CO-, $-SO_2-$, -lower alkylene-SO_2-, -lower alkylene-CO-, -lower alkenylene-CO-, -lower alkylene-CO-N(lower alkyl)-lower alkylene-, -N(lower alkyl)-lower alkylene-, -CO-N(lower

alkyl)-lower alkylene-, -O-lower alkylene-, -N(phenyl lower alkyl)-lower alkylene-, -CO-lower alkylene-CO-, -CO-NH-lower alkylene-, -lower alkylene-N(lower alkyl)-lower alkylene-, -lower alkylene-N(lower alkyl)-lower alkylene-O-, -lower alkylene-NH-lower alkylene-, -lower alkylene-SO_2-NH-lower alkylene-, -N(lower alkyl)-CO-lower alkylene-, -N(lower alkyl)-lower alkylene-CO-, -N(lower alkyl)-lower alkylene-N(lower alkyl)-lower alkylene-, -N(phenyl)-lower alkylene-CO-, -N(phenyl)-lower alkylene-CO-, -NH-CO-, -NH-CO-lower alkylene-, -NH-lower alkylene-, -O-lower alkylene-CO-N(lower alkyl)-lower alkylene-, -O-lower alkylene-CO-, -NH-lower alkylene-CO-N(lower alkyl)-lower alkylene-, -S-lower alkylene-CO-N(lower alkyl)-lower alkylene-, -SO_2-N(lower alkyl)-lower alkylene-, -SO_2-NH-lower alkylene-, -lower alkenylene-CO-N(lower alkyl)-lower alkylene-, lower alkylene-N(phenyl lower alkyl)-lower alkylene-, -N(phenyl lower alkyl)-lower alkylene-, -N(phenyl)-lower alkylene-CO-N(lower alkyl)-lower alkylene-, or -CO-lower alkylene-O-CO-lower alkylene-O-.

[Claim 3] A diazepine compound or a salt thereof according to claim 2, wherein R^6 and R^7 are each independently hydrogen, lower alkyl, cyclo lower alkyl, aryl or saturated or unsaturated monocyclic or polycyclic heterocyclic groups containing at least one hetero atom selected from the group consisting of oxygen, sulfur and nitrogen, each of which is optionally substituted.

[Claim 4] A diazepine compound or a salt thereof according to claim 3, wherein R^6 and R^7 are each independently hydrogen, lower alkyl, cyclo lower alkyl, phenyl, naphthyl, piperidyl, piperazinyl, pyrrolidinyl, morpholinyl, furyl, thienyl, pyrazolyl, oxazolyl, isoxazolyl, thiazolyl, isothiazolyl, pyrrolyl, triazolyl, imidazolyl, pyridyl, pyrimidinyl, pyridazinyl, pyrazinyl, imidazo[2,1-b]thiazolyl, thieno[2,3-b]pyrazinyl, 2,3-dihydroimidazo[2,1-b]thiazolyl, benzothiazolyl, indolyl, imidazo[1,2-a]pyridyl, imidazo[1,5-a]pyridyl, benzothienyl, benzimidazolyl, 2,3-dihydrobenzimidazolyl, 2,3-dihydrobenzo[b]furyl, benzofuryl,

indazolyl, furo[2,3-c]pyridyl, 6,7-dihydrofuro[2,3-c]pyridyl, furo[3,2-c]pyridyl, 4,5-dihydrofuro[3,2-c]pyridyl, furo[2,3-b]pyridyl, 6,7-dihydrofuro[2,3-b]pyridyl, thieno[2,3-c]pyridyl, 6,7-dihydrothieno[2,3-c]pyridyl, thieno[3,2-c]pyridyl, 4,5-dihydrothieno[3,2-c]pyridyl, thieno[2,3-b]pyridyl, 6,7-dihydrothieno[2,3-b]pyridyl, benzo[1,3]dioxolyl, benzisoxazolyl, pyrazolo[2,3-a]pyridyl, indolizinyl, 2,3-dihydroindolyl, isoquinolyl, 1,2-dihydroisoquinolyl, 1,2,3,4-tetrahydro-1H-isoquinolyl, carbostyril, 3,4-dihydrocarbostyril, quinolyl, 1,4-dihydroquinolyl, 1,2-dihydroquinolyl, 3,4-dihydroquinolyl, 1,2,3,4-tetrahydroquinolyl, pyrido[3,4-d]imidazolyl, pyrido[2,3-d]imidazolyl, chromanyl, 5,6,7,8-tetrahydroisoquinolyl, 3,4-dihydro-1H-isoquinolyl, 3,4-dihydroisoquinolyl, naphthyridinyl, 1,4-benzodioxanyl, cinnolinyl, quinoxalinyl, 2,3-dihydrobenz-1,4-oxazinyl, azetidinyl, 1,2,4-oxadiazolyl and azepanyl, each of which is optionally substituted.

[Claim 5] A diazepine compound or a salt thereof according to claim 4, wherein R^6 and R^7 are each independently selected from the group consisting of the following substituents (1) to (54):

(1) hydrogen;

(2) lower alkyl;

(3) cyclo lower alkyl optionally substituted with one or more phenyl lower alkoxys;

(4) phenyl optionally substituted with one or more substituents selected from the group consisting of the following (4-1) to (4-27):

(4-1) cyano;

(4-2) hydroxyl;

(4-3) halogen;

(4-4) lower alkyl optionally substituted with one or more substituents selected from the group consisting of halogen, hydroxyl, lower alkoxy, imidazolyl, 2-oxo-1,2,3,4-tetrahydroquinolyl and morpholinyl;

(4-5) lower alkoxy optionally substituted with one or more substituents selected from the group consisting of amino and lower

alkyl amino;

(4-6) pyridyl;

(4-7) thienyl;

(4-8) piperazinyl optionally substituted with one or more lower alkyls;

(4-9) phenyl;

(4-10) pyrazolyl optionally substituted with one or more lower alkyls;

(4-11) pyrimidinyl optionally substituted with one or more lower alkyls;

(4-12) piperidyl optionally substituted with one or more lower alkyls;

(4-13) furyl;

(4-14) carboxy;

(4-15) lower alkoxycarbonyl;

(4-16) amino optionally substituted with one or more substituents selected from the group consisting of lower alkyl, lower alkanoyl and lower alkylsulfonyl;

(4-17) lower alkylthio;

(4-18) triazolyl;

(4-19) imidazolyl;

(4-20) pyrrolidinyl optionally substituted with one or more oxos;

(4-21) lower alkylsulfonyl;

(4-22) lower alkylenedioxy optionally substituted with one or more halogens;

(4-23) nitro;

(4-24) oxazolyl;

(4-25) thiazolyl optionally substituted with one or more lower alkyls;

(4-26) lower alkanoyl; and

(4-27) morpholinyl;

(5) naphthyl;

(6) furyl optionally substituted with one or more substituents selected from the group consisting of lower alkyl optionally substituted with halogen, carboxy, sulfo, pyridyloxy, lower alkoxycarbonyl and phenyl;

(7) thienyl optionally substituted with one or more substituents selected from the group consisting of lower alkyl, lower alkylenedioxy, carboxy, halogen, pyridyl, lower alkoxy, lower alkoxycarbonyl, oxazolyl and furyl;

(8) imidazolyl optionally substituted with one or more substituents selected from the group consisting of phenyl, lower alkyl and halogen;

(9) pyrazolyl optionally substituted with one or more substituents selected from the group consisting of lower alkyl optionally substituted with halogen or lower alkoxy; cyclo lower alkyl; halogen; phenyl optionally substituted with lower alkoxy; furyl and thienyl;

(10) oxazolyl optionally substituted with one or more substituents selected from the group consisting of lower alkyl and phenyl;

(11) isoxazolyl optionally substituted with one or more substituents selected from the group consisting of phenyl, lower alkyl, thienyl and furyl;

(12) thiazolyl optionally substituted with one or more substituents selected from the group consisting of lower alkyl optionally substituted with halogen or lower alkoxy; phenyl; phenoxy and lower alkanoylamino;

(13) pyrrolyl optionally substituted with one or more substituents selected from the group consisting of lower alkyl and lower alkoxycarbonyl;

(14) triazolyl optionally substituted with one or more lower alkyls;

(15) pyridyl optionally substituted with one or more substituents selected from the group consisting of the following (15-1) to (15-14):

(15-1) halogen;

(15-2) cyano;

(15-3) amino optionally substituted with one or more substituents selected from the group consisting of lower alkanoyl and lower alkylsulfonyl;

(15-4) lower alkyl optionally substituted with one or more substituents selected from the group consisting of halogen, lower alkoxy, lower alkanoyloxy, cyclo lower alkyl amino, lower alkyl amino, lower alkanoyl amino, hydroxyl and pyrrolidinyl optionally substituted with one or more hydroxyls;

(15-5) oxo;

(15-6) hydroxyl;
(15-7) lower alkoxy optionally substituted with one or more phenyls;
(15-8) pyrrolidinyl;
(15-9) lower alkanoyl;
(15-10) morpholinyl;
(15-11) phenoxy;
(15-12) pyrazolyl;
(15-13) thienyl; and
(15-14) N-oxide
(16) pyrimidinyl optionally substituted with one or more substituents selected from the group consisting of lower alkyl and phenyl;
(17) pyridazinyl;
(18) pyrazinyl optionally substituted with one or more phenyl lower alkoxys;
(19) imidazo[2,1-b]thiazolyl optionally substituted with one or more halogens;
(20) thieno[2,3-b]pyrazinyl;
(21) 2,3-dihydroimidazo[2,1-b]thiazolyl optionally substituted with one or more phenyls;
(22) benzothiazolyl optionally substituted with one or more lower alkyls;
(23) indolyl optionally substituted with one or more substituents selected from the group consisting of lower alkyl, lower alkanoyl and halogen;
(24) imidazo[1,2-a]pyridyl or imidazo[1,5-a]pyridyl, each of which is optionally substituted with one or more lower alkyls;
(25) benzothienyl optionally substituted with one or more lower alkyls;
(26) benzimidazolyl optionally substituted with one or more lower alkyls;
(27) 2,3-dihydrobenzo[b]furyl;
(28) benzofuryl optionally substituted with one or more halogens;
(29) indazolyl optionally substituted with one or more lower alkyls;
(30) furo[2,3-c]pyridyl or 6,7-dihydrofuro[2,3-c]pyridyl, each of which is optionally substituted with one or more substituents selected from the group consisting of oxo and lower alkyl optionally substituted

with lower alkoxy;

(31) furo[3,2-c]pyridyl or 4,5-dihydrofuro[3,2-c]pyridyl, each of which is optionally substituted with one or more substituents selected from the group consisting of oxo, lower alkyl optionally substituted with halogen or lower alkoxy, halogen, furyl, pyridyl and phenyl optionally substituted with one or more substituents selected from the group consisting of amino and lower alkoxy;

(32) thieno[2,3-c]pyridyl or 6,7-dihydrothieno[2,3-c]pyridyl, each of which is optionally substituted with one or more substituents selected from the group consisting of oxo group and lower alkyl;

(33) thieno[3,2-c]pyridyl or 4,5-dihydrothieno[3,2-c]pyridyl, each of which is optionally substituted with one or more substituents selected from the group consisting of oxo and lower alkyl;

(34) thieno[2,3-b]pyridyl;

(35) benzo[1,3]dioxolyl optionally substituted with one or more halogens;

(36) benzisoxazolyl;

(37) pyrazolo[2,3-a]pyridyl;

(38) indolizinyl;

(39) 2,3-dihydroindolyl optionally substituted with one or more substituents selected from the group consisting of oxo, lower alkyl and lower alkanoyl;

(40) isoquinolyl or 1,2-dihydroisoquinolyl, each of which is optionally substituted with one or more substituents selected from the group consisting of lower alkyl, halogen and oxo;

(41) 1,2,3,4-tetrahydroisoquinolyl optionally substituted with one or more oxos;

(42) quinolyl optionally substituted with one or more substituents selected from the group consisting of amino optionally substituted with one or two lower alkyls, lower alkoxy, lower alkyl and oxo

(43) 1,2,3,4-tetrahydroquinolyl optionally substituted with one or more substituents selected from the group consisting of lower alkyl, pyridyl lower alkyl, aralkyl, lower alkoxy and oxo;

(44) 1,2-dihydroquinolyl optionally substituted with one or more substituents selected from the group consisting of amino optionally substituted with one or two lower alkyls, lower alkoxy, lower alkyl

and oxo;

(45) chromanyl optionally substituted with one or more lower alkyls;

(46) 5,6,7,8-tetrahydroisoquinolyl optionally substituted with one or more oxos;

(47) 3,4-dihydroisoquinolyl optionally substituted with one or more oxos;

(48) naphthyridinyl;

(49) 1,4-benzodioxanyl;

(50) cinnolinyl;

(51) quinoxalinyl;

(52) 2,3-dihydrobenz-1,4-oxazinyl optionally substituted with one or more substituents selected from the group consisting of lower alkyl and oxo;

(53) 2,3-dihydro-1H-benzo[d]imidazolyl optionally substituted with one or more substituents selected from the group consisting of lower alkyl and oxo; and

(54) piperidyl optionally substituted with one or more aryl carbonyls.

[Claim 6] A diazepine compound or a salt thereof according to claim 5, wherein R^6 and R^7 are each independently (1), (4a), (6a), (7a), (8a), (9a), (10a), (11a), (12a), (15a), (16a), (17), (18), (23a), (24a), (24b), (26), (29), (30a), (30b), (31a), (31b), (32a), (32b), (33a), (33b), (35), (40a), (40b), (42a), (43a), (44a), and (53):

(1) hydrogen;

(4a) phenyl optionally substituted with one or more substituents selected from the group consisting of the following (4-1), (4-2), (4-4), (4a-5), (4-10), (4a-16), (4-18), (4-19), (4-23), (4-26), and (4-27):

(4-1) cyano;

(4-2) hydroxyl;

(4-4) lower alkyl optionally substituted with one or more substituents selected from the group consisting of halogens, hydroxyl, 2-oxo-1,2,3,4-tetrahydroquinolyl, lower alkoxy, imidazolyl, and morpholinyl;

(4a-5) lower alkoxy;

(4-10) pyrazolyl optionally substituted with one or more lower alkyls;

(4a-16) amino optionally substituted with one or more lower alkylsulfonyls;

(4-18) triazolyl;

(4-19) imidazolyl;

(4-23) nitro;

(4-26) lower alkanoyl; and

(4-27) morpholinyl;

(6a) furyl optionally substituted with one or more lower alkyls optionally substituted with halogen;

(7a) thienyl optionally substituted with one or more lower alkyls;

(8a) imidazolyl optionally substituted with one or more lower alkyls;

(9a) pyrazolyl optionally substituted with one or more lower alkyls optionally substituted with lower alkoxy;

(10a) oxazolyl optionally substituted with one or more lower alkyls;

(11a) isoxazolyl optionally substituted with one or more lower alkyls;

(12a) thiazolyl optionally substituted with one or more lower alkyls optionally substituted with halogen;

(15a) pyridyl optionally substituted with one or more substituents selected from the group consisting of the following (15-1) to (15-5), (15a-7), (15-9), (15-11), (15-12) and (15-14):

(15-1) halogen;

(15-2) cyano;

(15-3) amino optionally substituted with one or more substituents selected from the group consisting of lower alkanoyl and lower alkylsulfonyl;

(15-4) lower alkyl optionally substituted with one or more substituents selected from the group consisting of halogen, lower alkoxy, lower alkanoyloxy, cyclo lower alkyl amino, lower alkyl amino, lower alkanoyl amino, hydroxyl and pyrrolidinyl optionally substituted with one or more hydroxyls;

(15-5) oxo;

(15a-7) lower alkoxy;

(15-9) lower alkanoyl;

(15-11) phenoxy;

(15-12) pyrazolyl; and

(15-14) N-oxide

(16a) pyrimidinyl optionally substituted with one or more lower alkyls;

(17) pyridazinyl

(18) pyrazinyl optionally substituted with one or more phenyl lower alkoxys;

(23a) indolyl optionally substituted with one or more lower alkyls;

(24a) imidazo[1,2-a]pyridyl;

(24b) imidazo[1,5-a]pyridyl optionally substituted with one or more lower alkyls;

(26) benzimidazolyl optionally substituted with one or more lower alkyls;

(29) indazolyl optionally substituted with one or more lower alkyls;

(30a) furo[2,3-c]pyridyl optionally substituted with one or more substituents selected from the group consisting of oxo and lower alkyl;

(30b) 6,7-dihydrofuro[2,3-c]pyridyl optionally substituted with one or more substituents selected from the group consisting of oxo and lower alkyl;

(31a) furo[3,2-c]pyridyl optionally substituted with one or more substituents selected from the group consisting of oxo and lower alkyl;

(31b) 4,5-dihydrofuro[3,2-c]pyridyl optionally substituted with one or more substituents selected from the group consisting of oxo and lower alkyl optionally substituted with halogen or lower alkoxy;

(32a) thieno[2,3-c]pyridyl optionally substituted with one or more substituents selected from the group consisting of oxo and lower alkyl;

(32b) 6,7-dihydrothieno[2,3-c]pyridyl optionally substituted with one or more substituents selected from the group consisting of oxo group and lower alkyl;

(33a) thieno[3,2-c]pyridyl optionally substituted with one or more substituents selected from the group consisting of oxo and lower alkyl;

(33b) 4,5-dihydrothieno[3,2-c]pyridyl optionally substituted with one or more substituents selected from the group consisting of oxo and lower alkyl;

(35a) benzo[1,3]dioxolyl;

(40a) isoquinolyl optionally substituted with one or more oxos;

(40b) 1,2-dihydroisoquinolyl optionally substituted with one or more substituents selected from the group consisting of oxo and lower alkyl;

(42a) quinolyl optionally substituted with one or more oxos;

(43a) 1,2,3,4-tetrahydroquinolyl optionally substituted with one or more substituents selected from the group consisting of aralkyl (e.g., phenyl lower alkyl, etc.), pyridyl lower alkyl and oxo;

(44) 1,2-dihydroquinolyl optionally substituted with one or more oxos; and

(53) 2,3-dihydrobenzo[d]imidazolyl optionally substituted with one or more substituents selected from the group consisting of lower alkyl and oxo.

[Claim 7] A diazepine compound or a salt thereof according to claim 6, wherein R^6 and R^7 are each independently phenyl, pyridyl, pyrazolyl, indolyl, 4,5-dihydrofuro[3,2-c]pyridyl, and 1,2-dihydroisoquinolyl, each of which is optionally substituted with one or two substituents selected from the group consisting of oxo, lower alkyl, lower alkoxy lower alkyl, and lower alkylsulfonylamino.

[Claim 8] A diazepine compound or a salt thereof according to claim 7, which is selected from the group consisting of the following compounds:

1-ethyl-3,3,5-trimethyl-7-(3-{N-[2-(2-methyl-4-oxo-4H-furo[3,2-c]pyridin-5-yl)ethyl]-N-(pyridin-4-ylmethyl)amino}propyl)-1,5-dihydrobenzo[b][1,4]diazepine-2,4-dione,

1-ethyl-3,3,5-trimethyl-7-(2-{N-[2-(2-methyl-4-oxo-4H-furo[3,2-c]pyridin-5-yl)ethyl]-N-(pyridin-4-ylmethyl)amino}ethyl)-1,5-dihydrobenzo[b][1,4]diazepine-2,4-dione,

1-ethyl-3,3,5-trimethyl-7-(2-{N-(2-methylpyridin-3-ylmethyl)-N-[2-(4-oxo-4H-furo[3,2-c]pyridin-5-yl)ethyl]amino}ethyl)-1,5-dihydrobenzo[b][1,4]diazepine-2,4-dione,

1-ethyl-3,3,5-trimethyl-7-{2-[N-[2-(2-methyl-4-oxo-4H-furo[3,2-c]pyridin-5-yl)ethyl]-N-(4-methylpyridin-3-ylmethyl)amino]ethyl}-1,5-dihydrobenzo[b][1,4]diazepine-2,4-dione,

1-ethyl-3,3,5-trimethyl-7-({N-(2-methylpyridin-3-ylmethyl)-N-[2-(1-oxo-1H-isoquinolin-2-yl)ethyl]amino}methyl)-1,5-dihydrobenzo[b][1,4]diazepine-2,4-dione,

N-(1-ethyl-3,3,5-trimethyl-2,4-dioxo-2,3,4,5-tetrahydro-1H-benzo[

b][1,4]diazepin-7-ylmethyl)-4-methyl-N-(2-pyridin-3-ylethyl)benza
mide,
N-(1-ethyl-3,3,5-trimethyl-2,4-dioxo-2,3,4,5-tetrahydro-1H-benzo[
b][1,4]diazepin-7-ylmethyl)-N-(2-pyridin-3-ylethyl)benzenesulfona
mide,
7-{[N-benzyl-N-(2-pyridin-3-ylethyl)amino]methyl}-1-ethyl-3,3,5-t
rimethyl-1,5-dihydrobenzo[b][1,4]diazepine-2,4-dione,
N-(2-{[(1-ethyl-3,3,5-trimethyl-2,4-dioxo-2,3,4,5-tetrahydro-1H-b
enzo[b][1,4]diazepin-7-ylmethyl)(2-pyridin-3-ylethyl)amino]methyl
}phenyl)methanesulfonamide,
7-{[N-[2-(2,7-dimethyl-4-oxo-4H-furo[3,2-c]pyridin-5-yl)ethyl]-N-
(2,5-dimethyl-2H-pyrazol-3-ylmethyl)amino]methyl}-1-ethyl-3,3,5-t
rimethyl-1,5-dihydrobenzo[b][1,4]diazepine-2,4-dione,
1-Ethyl-7-({N-(2-methoxymethylpyridin-3-ylmethyl)-N-[2-(2-methyl-
4-oxo-4H-furo[3,2-c]pyridin-5-yl)ethyl]amino}methyl)-3,3,5-trimet
hyl-1,5-dihydrobenzo[b][1,4]diazepine-2,4-dione,
1-Ethyl-7-({N-(2-methoxymethylpyridin-3-ylmethyl)-N-[2-(7-methyl-
4-oxo-4H-furo[3,2-c]pyridin-5-yl)ethyl]amino}methyl)-3,3,5-trimet
hyl-1,5-dihydrobenzo[b][1,4]diazepine-2,4-dione,
N-(1-Ethyl-3,3,5-trimethyl-2,4-dioxo-2,3,4,5-tetrahydro-1H-benzo[
b][1,4]diazepin-7-ylmethyl)-2-(1-methyl-1H-indol-3-yl)-N-(2-pyrid
in-3-ylethyl)acetamide.

[Claim 9] A diazepine compound according to claim 8, which is selected from the group consisting of the following compounds:
1-ethyl-3,3,5-trimethyl-7-(3-{N-[2-(2-methyl-4-oxo-4H-furo[3,2-c]
pyridin-5-yl)ethyl]-N-(pyridin-4-ylmethyl)amino}propyl)-1,5-dihyd
robenzo[b][1,4]diazepine-2,4-dione dihydrochloride,
1-ethyl-3,3,5-trimethyl-7-(2-{N-[2-(2-methyl-4-oxo-4H-furo[3,2-c]
pyridin-5-yl)ethyl]-N-(pyridin-4-ylmethyl)amino}ethyl)-1,5-dihydr
obenzo[b][1,4]diazepine-2,4-dione dihydrochloride,
1-ethyl-3,3,5-trimethyl-7-(2-{N-(2-methylpyridin-3-ylmethyl)-N-[2
-(4-oxo-4H-furo[3,2-c]pyridin-5-yl)ethyl]amino}ethyl)-1,5-dihydro
benzo[b][1,4]diazepine-2,4-dione dihydrochloride,
1-ethyl-3,3,5-trimethyl-7-{2-[N-[2-(2-methyl-4-oxo-4H-furo[3,2-c]
pyridin-5-yl)ethyl]-N-(4-methylpyridin-3-ylmethyl)amino]ethyl}-1,

5-dihydrobenzo[b][1,4]diazepine-2,4-dione dihydrochloride,
1-ethyl-3,3,5-trimethyl-7-({N-(2-methylpyridin-3-ylmethyl)-N-[2-(1-oxo-1H-isoquinolin-2-yl)ethyl]amino}methyl)-1,5-dihydrobenzo[b][1,4]diazepine-2,4-dione dihydrochloride,
N-(1-ethyl-3,3,5-trimethyl-2,4-dioxo-2,3,4,5-tetrahydro-1H-benzo[b][1,4]diazepin-7-ylmethyl)-4-methyl-N-(2-pyridin-3-ylethyl)benzamide hydrochloride,
N-(1-ethyl-3,3,5-trimethyl-2,4-dioxo-2,3,4,5-tetrahydro-1H-benzo[b][1,4]diazepin-7-ylmethyl)-N-(2-pyridin-3-ylethyl)benzenesulfonamide,
7-{[N-benzyl-N-(2-pyridin-3-ylethyl)amino]methyl}-1-ethyl-3,3,5-trimethyl-1,5-dihydrobenzo[b][1,4]diazepine-2,4-dione hydrochloride,
N-(2-{[(1-ethyl-3,3,5-trimethyl-2,4-dioxo-2,3,4,5-tetrahydro-1H-benzo[b][1,4]diazepin-7-ylmethyl)(2-pyridin-3-ylethyl)amino]methyl}phenyl)methanesulfonamide dihydrochloride,
7-{[N-[2-(2,7-dimethyl-4-oxo-4H-furo[3,2-c]pyridin-5-yl)ethyl]-N-(2,5-dimethyl-2H-pyrazol-3-ylmethyl)amino]methyl}-1-ethyl-3,3,5-trimethyl-1,5-dihydrobenzo[b][1,4]diazepine-2,4-dione,
1-Ethyl-7-({N-(2-methoxymethylpyridin-3-ylmethyl)-N-[2-(2-methyl-4-oxo-4H-furo[3,2-c]pyridin-5-yl)ethyl]amino}methyl)-3,3,5-trimethyl-1,5-dihydrobenzo[b][1,4]diazepine-2,4-dione,
1-Ethyl-7-({N-(2-methoxymethylpyridin-3-ylmethyl)-N-[2-(7-methyl-4-oxo-4H-furo[3,2-c]pyridin-5-yl)ethyl]amino}methyl)-3,3,5-trimethyl-1,5-dihydrobenzo[b][1,4]diazepine-2,4-dione, and
N-(1-Ethyl-3,3,5-trimethyl-2,4-dioxo-2,3,4,5-tetrahydro-1H-benzo[b][1,4]diazepin-7-ylmethyl)-2-(1-methyl-1H-indol-3-yl)-N-(2-pyridin-3-ylethyl)acetamide hydrochloride.

[Claim 10] A diazepine compound or a salt thereof according to claim 1, wherein Y^1 and Y^2 are each -CH=.

[Claim 11] A pharmaceutical composition comprising a diazepine compound or a salt thereof according to claim 1, and a pharmacologically acceptable carrier.

[Claim 12] A pharmaceutical composition according to claim 11 for preventing and/or treating arrhythmia.

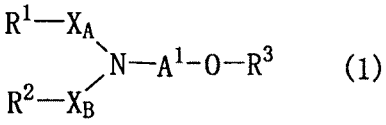
[Claim 13] A diazepine compound or a salt thereof according to claim 1 for use in the pharmaceutical composition.

[Claim 14] Use of a diazepine compound or a salt thereof according to claim 1 as a pharmaceutical composition.

[Claim 15] Use of a diazepine compound or a salt thereof according to claim 1 for the production of a pharmaceutical composition.

[Claim 16] A method of preventing and/or treating arrhythmia, comprising administering to a patient a diazepine compound or a salt thereof according to claim 1.

[Claim 17] An amino compound represented by General Formula (1):



(1)

or a salt thereof,

wherein R^1 and R^2 are each independently hydrogen or organic group;

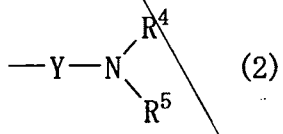
X_A and X_B are each independently a bond, alkylene, alkenylene, -CO-, $-SO_2-$, or -CONH-, wherein each of the alkylene and alkenylene chains can optionally contain one or more substituents selected from the group consisting of -S-, -C(=S)-, $-SO_2-$, -CO-, -O-, -NH-, -CONH- and $-SO_2NH-$, and the hydrogen atom (H) bonded to the nitrogen atom (N) in X_A and X_B is optionally substituted with a substituent selected from the group consisting of lower alkyl, phenyl lower alkyl and phenyl;

A^1 is lower alkylene optionally substituted with one or more substituents selected from the group consisting of hydroxyl and oxo;

R^3 is (i) a heterocyclic group which is optionally substituted with one or more substituents, or

(ii) an aryl group substituted with one or more substituents selected from the group consisting of oxo, lower alkyl, carboxyl, halo-lower alkyl, lower alkanoyl lower alkyl, phenyl lower alkyl, cyclo lower

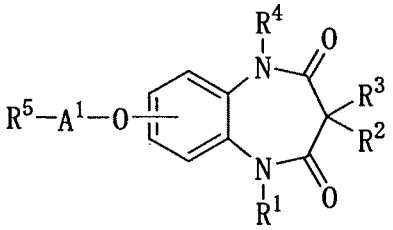
alkyl, lower alkoxy, halo lower alkoxy, phenyl lower alkoxy, phenoxy, cyano, hydroxyl, halogen, nitro, lower alkyl thio, lower alkanoyl, lower alkoxy carbonyl, lower alkenyl, phenyl, triazolyl, isoxazolyl, imidazolyl, pyrrolyl, benzo[d]oxazolyl, benzo[d]thiazolyl and the group represented by General Formula (2):



(2)

wherein Y is a bond, lower alkylene, or -CO-; R^4 and R^5 are each independently hydrogen, lower alkyl, cyclo lower alkyl, phenyl, or lower alkanoyl; or R^4 and R^5 may be linked to form a ring together with the neighboring nitrogen, and the ring may optionally have one or more substituents.

[Claim 18] A benzodiazepine compound represented by General Formula (1):



(1)

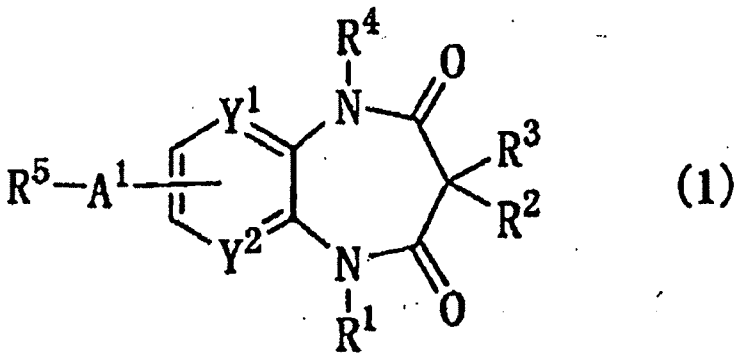
or a salt thereof,

wherein R^1, R^2, R^3, and R^4 are each independently hydrogen or lower alkyl; R^2 and R^3 may be linked to form lower alkylene;

A^1 is lower alkylene optionally substituted with one or more hydroxyls; and R^5 is an aryl or heterocyclic group, each of which is optionally substituted.

CLAIMS

1. A diazepine compound represented by General Formula (1)



(1)

or a pharmaceutically acceptable salt thereof,

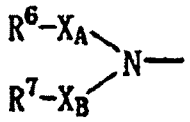
wherein R^1, R^2, R^3, and R^4 are each independently hydrogen, C_{1-6}-alkyl, cyclo C_{3-8}-alkyl C_{1-6}-alkoxy C_{1-6}-alkyl;

R^2 and R^3 may be linked to form C_{1-6}-alkylene;

A^1 is C_{1-6}-alkylene optionally substituted with one or more hydroxyls;

Y^1 and Y^2 are each independently -N= or -CH=;

R^5 is a group represented by



wherein R^6 and R^7 are each independently hydrogen or C_{1-6}-alkyl, cyclo C_{3-8}-alkyl, aryl or heterocyclic group, each of which is optionally substituted;

R^6 and R^7 may be linked to form a ring together with the neighboring group $-X_A-N-X_B-$;

X_A and X_B are each independently a bond, alkylene, alkenylene, -CO-, $-SO_2-$, or -CONH-, wherein each of the alkylene and alkenylene chains can optionally contain one or more substituents selected from the group consisting of -S-, -C(=S)-, $-SO_2-$, -CO-, -O-, -NH-, -CONH- and $-SO_2NH-$, and the hydrogen atom (H) bonded to the nitrogen atom (N) in X_A and X_B

is optionally substituted with a substituent selected from the group consisting of C_{1-6}-alkyl, phenyl C_{1-6}-alkyl and phenyl.

2. A diazepine compound or a pharmaceutically acceptable salt thereof according to claim 1, wherein R^6 and R^7 are each independently hydrogen, C_{1-6}-alkyl, cyclo C_{3-8}-alkyl, aryl or heterocyclic group, each of which is optionally substituted, and X_A and X_B are each independently a bond, C_{1-6}-alkylene, C_{2-6}-alkenylene, -CO-, $-SO_2-$, $-C_{1-6}$-alkylene-SO_2-, $-C_{1-6}$--alkylene-CO-, $-C_{2-6}$-alkenylene-CO-, $-C_{1-6}$-alkylene-CO-N(C_{1-6}-alkyl)-C_{1-6}-alkylene-, -N(C_{1-6}-alkyl)-C_{1-6}-alkylene-, -CO-N(C_{1-6}-alkyl)-C_{1-6}-alkylene-, -O-C_{1-6}-alkylene-, -N(phenyl C_{1-6}-alkyl)-C_{1-6}-alkylene-, -CO-C_{1-6}-alkylene-CO-, -CO-NH-C_{1-6}-alkylene-, $-C_{1-6}$-alkylene-N(C_{1-6}-alkyl)-C_{1-6}-alkylene-, $-C_{1-6}$-alkylene-N(C_{1-6}-alkyl)-C_{1-6}-alkylene-O-, $-C_{1-6}$-alkylene -NH-C_{1-6}-alkylene-, $-C_{1-6}$-alkylene-SO_2-NH-C_{1-6}-alkylene-, -N(C_{1-6}-alkyl)-CO-C_{1-6}-alkylene-, -N(C_{1-6}-alkyl)-C_{1-6}-alkylene-CO-, -N(C_{1-6}-alkyl)-C_{1-6}-alkylene-N(C_{1-6}-alkyl)-C_{1-6}-alkylene-, -N(phenyl)-C_{1-6}-alkylene-CO-, -N(phenyl)-C_{1-6}-alkylene-CO-, -NH-CO-, -NH-CO-C_{1-6}-alkylene-, -NH-C_{1-6}-alkylene-, -O-C_{1-6}-alkylene-CO-N(C_{1-6}-alkyl)-C_{1-6}-alkylene-, -O-C_{1-6}-alkylene-CO-, -NH-C_{1-6}-alkylene-CO-N(C_{1-6}-alkyl)-C_{1-6}-alkylene-, -S-C_{1-6}-alkylene-CO-N(C_{1-6}-alkyl)-C_{1-6}-alkylene-, $-SO_2-$N(C_{1-6}-alkyl)-C_{1-6}-alkylene-, $-SO_2-$NH-C_{1-6}-alkylene-, $-C_{2-6}$-alkenylene-CO-N(C_{1-6}-alkyl)-C_{1-6}-alkylene-, C_{1-6}-alkylene-N(phenyl C_{1-6}-alkyl)-C_{1-6}-alkylene-, -N(phenyl C_{1-6}-alkyl)-C_{1-6}-alkylene-, -N(phenyl)-C_{1-6}-alkylene-CO-N(C_{1-6}-alkyl)-C_{1-6}-alkylene-, or -CO-C_{1-6}-alkylene-O-CO-C_{1-6}-alkylene-O-.

3. A diazepine compound or a pharmaceutically acceptable salt thereof according to claim 2, wherein R^5 and R^7 are each independently hydrogen, C_{1-6}-alkyl, cyclo C_{3-8}-alkyl, aryl or saturated or unsaturated monocyclic or polycyclic heterocyclic groups containing at least one hetero atom selected from the group consisting of oxygen, sulfur and nitrogen, each of which is optionally substituted.

4. A diazepine compound or a pharmaceutically acceptable salt thereof according to claim 3, wherein R^6 and R^7 are each independently hydrogen, C_{1-6}-alkyl, cyclo C_{3-8}-alkyl, phenyl, naphthyl, piperidyl, piperazinyl, pyrrolidinyl, morpholinyl, furyl, thienyl, pyrazolyl, oxazolyl, isoxazolyl, thiazolyl, isothiazolyl, pyrrolyl, triazolyl, imidazolyl, pyridyl, pyrimidinyl, pyridazinyl, pyrazinyl, imidazo[2,1-b]thiazolyl, thieno[2,3-b]pyrazinyl, 2,3-dihydroimidazo[2,1-b]thiazolyl, benzothiazolyl, indolyl, imidazo[1,2-a]pyridyl, imidazo[1,5-a]pyridyl, benzothienyl, benzimidazolyl, 2,3-dihydrobenzimidazolyl, 2,3-dihydrobenzo[b]furyl, benzofuryl, indazolyl, furo[2,3-c]pyridyl, 6,7-dihydrofuro[2,3-c]pyridyl, furo[3,2-c]pyridyl, 4,5-dihydrofuro[3,2-c]pyridyl, furo[2,3-b]pyridyl, 6,7-dihydrofuro[2,5-b]pyridyl, thieno[2,3-c]pyridyl, 6,7-dihydrothieno[2,3-c]pyridyl, thieno[3,2-c]pyridyl, 4,5-dihydrothieno[3,2-c]pyridyl, thieno[2,3-b]pyridyl, 6,7-dihydrothieno[2,3-b]pyridyl, benzo[1,3]dioxolyl, benzisoxazolyl, pyrazolo[2,3-a]pyridyl, indolizinyl, 2,3-dihydroindolyl, isoquinolyl, 1,2-dihydroisoquinolyl, 1,2,3,4-tetrahydro-1H-isoquinolyl, carbostyril, 3,4-dihydrocarbostyril, quinolyl, 1,4-dihydroquinolyl, 1,2-dihydroquinolyl, 3,4-dihydroquinolyl, 1,2,3,4-tetrahydroquinolyl, pyrido[3,4-d]imidazolyl, pyrido[2,3-d]imidazolyl, chromanyl,, 5,6,7,8-tetrahydroisoquinolyl, 3,4-dihydro-1H-isoquinolyl, 3,4-dihydroisoquinolyl, naphthyridinyl, 1,4-benzodioxanyl, cinnolinyl, quinoxalinyl, 2,3-dihydrobenz-1,4-oxazinyl, azetidinyl, 1,2,4-oxadiazolyl and azepanyl, each of which is optionally substituted.

5. A diazepine compound or a pharmaceutically acceptable salt thereof according to claim 4, wherein R^6 and R^7 are each independently selected from the group consisting of the following substituents (1) to (54):

(1) hydrogen;

(2) C_{1-6}-alkyl;

(3) cyclo C_{3-8}-alkyl optionally substituted with one or more phenyl C_{1-6}-alkoxys;

(4) phenyl optionally substituted with one or more substituents selected from the group consisting of the following (4-1) to (4-27):

(4-1) cyano:

(4-2) hydroxyl;

(4-3) halogen;

(4-4) C_{1-6}-alkyl optionally substituted with one or more substituents selected from the group consisting of halogen, hydroxyl, C_{1-6}-alkoxy, imidazolyl, 2-oxo-1,2,3,4-tetrahydroquinolyl and morpholinyl;

(4-5) C_{1-6}-alkoxy optionally substituted with one or more substituents selected from the group consisting of amino and C_{1-6}-alkyl amino;

(4-6) pyridyl;

(4-7) thienyl;

(4-8) piperazinyl optionally substituted with one or more C_{1-6}-alkyls;

(4-9) phenyl;

(4-10) pyrazolyl optionally substituted with one or more C_{1-6}-alkyls;

(4-11) pyrimidinyl optionally substituted with one or more C_{1-6}-alkyls;

(4-12) piperidyl optionally substituted with one or more C_{1-6}-alkyls;

(4-13) furyl;

(4-14) carboxy;

(4-15) C_{1-6}-alkoxycarbonyl;

(4-16) amino optionally substituted with one or more substituents selected from the group consisting of C_{1-6}-alkyl, C_{1-6}- alkanoyl and C_{1-6}-alkylsulfonyl,

(4-17) C_{1-6}-alkylthio;

(4-18) triazolyl;

(4-19) imidazolyl;

(4-20) pyrrolidinyl optionally substituted with one o= more oxos;

(4-21) C_{1-6}-alkylsulfonyl;

(4-22) C_{1-4}-alkylenedioxy optionally substituted with one or more halogens;

(4-23) nitro;

(4-24) oxazolyl;

(4-25) thiazolyl optionally substituted with one or more C_{1-6}-alkyls:

(4-26) C_{1-6}-alkanoyl; and

(4-27) morpholinyl;

(5) naphthyl;

(6) furyl optionally substituted with one or more substituents selected from the group consisting of C_{1-6}-alkyl optionally substituted with halogen, carboxy, sulfo, pyridyloxy, C_{1-6}-alkoxycarbonyl and phenyl;

(7) thienyl optionally substituted with one or more substituents selected from the group consisting of C_{1-6}-alkyl, C_{1-4}-alkylenedioxy, carboxy, halogen, pyridyl, C_{1-6}-alkoxy, C_{1-6}-alkoxycarbonyl, oxazolyl and furyl;

(8) imidazolyl optionally substituted with one or more substituents selected from the group consisting of phenyl, C_{1-6}-alkyl and halogen;

(9) pyrazolyl cationally substituted with one or more substituents selected from the group consisting of C_{1-6}-alkyl optionally substituted with halogen, or C_{1-6}-alkoxy; cyclo C_{3-8}-alkyl; halogen; phenyl optionally substituted with C_{1-6}-alkoxy; furyl and thienyl;

(10) oxazolyl optionally substituted with one or more substituents selected from the group consisting of C_{1-6}-alkyl and phenyl;

(11) isoxazolyl optionally substituted with one or more substituents selected from the group consisting of phenyl, C_{1-6}-alkyl, thienyl and furyl;

(12) thiazolyl optionally substituted with one or more substituents selected from the group consisting of C_{1-6}-alkyl

optionally substituted with halogen or C_{1-6}-alkoxy; phenyl; phenoxy and C_{1-6}-alkanoylamino;

(13) pyrrolyl optionally substituted with one or more substituents selected from the group consisting of C_{1-6}-alkyl and C_{1-6}-alkoxycarbonyl;

(14) triazolyl optionally substituted with one or more C_{1-6}-alkyls;

(15) pyridyl optionally substituted with one or more substituents selected from the group consisting of the following (15-1) to (15-14): (15-1) halogen;

(15-2) cyano;

(15-3) amino optionally substituted with one or more substituents selected from the group consisting of C_{1-6}-alkanoyl and C_{1-6}-alkylsulfonyl;

(15-4) C_{1-6}-alkyl optionally substituted with one or more substituants selected from the group consisting of halogen, C_{1-6}-alkoxy, C_{1-6}-alkanoyloxy, cyclo C_{3-8} alkyl amino, C_{1-6}-alkyl amino, C_{1-6}-alkanoyl amino, hydroxyl and pyrrolidinyl optionally substituted with one or more hydroxyle;

(15-5) oxo;

(15-6) hydroxyl;

(15-7) C_{1-6}-alkoxy optionally substituted with one or more phenyls;

(15-8) pyrrolidinyl;

(15-9) C_{1-6}-alkanoyl ;

(15-10) morpholinyl;

(15-11) phenoxy;

(15-12) pyrazolyl;

(15-13) thienyl; and

(15-14) N-oxide

(16) pyrimidinyl optionally substituted with one or more substituents selected from the group consisting of C_{1-6}-alkyl and phenyl;

(17) pyridazinyl;

(18) pyrazinyl optionally substituted with one or more phenyl C_{1-6}-alkoxys;

(19) imidazo[2,1-b] thiazolyl optionally substituted with one or more halogens;

(20) thieno[2,3-b]pyrazinyl;

(21) 2,3-dihydroimidazo[2,1-b]thiazolyl optionally substituted with one or more phenyls;

(22) benzothiazolyl optionally substituted with one or more C_{1-6}-alkyls;

(23) indolyl optionally substituted with one or more substituents selected from the group consisting of C_{1-6}-alkyl, C_{1-6}-alkanoyl and halogen;

(24) imidazo[1,2-a]pyridyl or imidazo[1,5-a]pyridyl, each of which is optionally substituted with one or more C_{1-6}-alkyls;

(25) benzothienyl optionally substituted with one or more C_{1-6}-alkyls;

(26) benzimidazolyl optionally substituted with one or more C_{1-6}-alkyls;

(27) 2,3-dihydrobenzo[b]furyl;

(28) benzofuryl optionally substituted with one or more halogens;

(29) indazolyl optionally substituted with one or more C_{1-6}-alkyls;

(30) furo[2,3-c]pyridyl or 6,7-dihydrofuro[2,3-c]pyridyl, each of which is optionally substituted with one or more substituents selected from the group consisting of oxo and C_{1-6}-alkyl optionally substituted with C_{1-6}-alkoxy;

(31) furo[3,2-c]pyridyl or 4,5-dihydrofuro[3,2-c]pyridyl, each of which is optionally substituted with one or more substituents selected from the group consisting of oxo, C_{1-6}-alkyl optionally substituted with halogen or C_{1-6}-alkoxy, halogen, furyl, pyridyl and phenyl optionally substituted with one or more substituents selected from the group consisting of amino and C_{1-6}-alkoxy;

(32) thieno[2,3-c]pyridyl or 6,7-dihydrothieno[2,3-c]pyridyl, each of which is optionally substituted with one or more substituents selected from the group consisting of oxo group and C_{1-6}-alkyl;

(33) thieno[3,2-c]pyridyl or 4,5-dihydrothieno[3,2-c]pyridyl, each of which is optionally substituted with one or more substituents selected from the group consisting of oxo and C_{1-6}-alkyl;

(34) thieno[2,3-b]pyridyl;

(35) benzo[1,3]dioxolyl optionally substituted with one or more halogens;

(36) benzisoxazolyl;

(37) pyrazolo[2,3-a]pyridyl;

(38) indolizinyl;

(39) 2,3-dihydroindolyl optionally substituted with one or more substituents selected from the group consisting of oxo, C_{1-6}-alkyl and C_{1-6}-alkanoyl;

(40) isoquinolyl or 1,2-dihydroisoquinolyl, each of which is optionally substituted with one or more substituents selected from the group consisting of C_{1-6}-alkyl, halogen and oxo;

(41) 1,2,3,4-tetrahydroisoquinolyl optionally substituted with one or more oxos;

(42) quinolyl optionally substituted with one or more substituents selected from the group consisting of amino optionally substituted with one or two C_{1-6}-alkyls, C_{1-6}-alkoxy, C_{1-6}-alkyl and oxo

(43) 1,2,3,4-tetrahydroquinolyl optionally substituted with one or more substituents selected from the group consisting of C_{1-6}-alkyl, pyridyl C_{1-6}-alkyl, aralkyl, C_{1-6}-alkoxy and oxo;

(44) 1,2-dihydroquinolyl optionally substituted with one or more substituents selected from the group consisting of amino optionally substituted with one or two C_{1-6}-alkyls, C_{1-6}-alkoxy, C_{1-6}-alkyl and oxo;

(45) chromanyl optionally substituted with one or more C_{1-6}-alkyls;

(46) 5,6,7,8-tetrahydroisoquinolyl optionally substituted with one or more oxos;

(47) 3,4-dihydroisoquinolyl optionally substituted with one or more oxos;

(48) naphthyridinyl;

(49) 1,4-benzodioxanyl;
(50) cinnolinyl;
(51) quinoxalinyl;
(52) 2,3-dihydrobenz-1,4-oxazinyl optionally substituted with one or more substituents selected from the group consisting of C_{1-6}-alkyl and oxo;
(53) 2,3-dihydro-1H-benzo[d]imidazolyl optionally substituted with one or more substituents selected from the group consisting of C_{1-6}-alkyl and oxo, and
(54) piperidyl optionally substituted with one or more aryl carbonyls.

6. A diazepine compound or a pharmaceutically acceptable salt thereof according to claim 5, wherein R^6 and R^7 are each independently (1), (4a), (6a), (7a), (8a), (9a), (10a), (11a), (12a), (15a), (16a), (17), (18), (23a), (24a), (24b), (26), (29), (30a), (30b), (31a), (31b), (32a), (32b), (33a), (33b), (35), (40a), (40b), (42a), (43a), (44a), and (53):
(1) hydrogen;
(4a) phenyl optionally substituted with one or more substituents selected from the group consisting of the following (4-1), (4-2), (4-4), (4a-5), (4-10), (4a-16), (4-18), (4-19), (4-23), (4-26), and (4-27):
(4-1) cyano;
(4-2) hydroxyl;
(4-4) C_{1-6}-alkyl optionally substituted with one or more substituents selected from the group consisting of halogens, hydroxyl, 2-oxo-1,2,3,4-tetrahydroquinolyl, C_{1-6}-alkoxy, imidazolyl, and morpholinyl;
(4a-5) C_{1-6}-alkoxy;
(4-10) pyrazolyl optionally substituted with one or more C_{1-6}-alkyls;
(4a-16) amino optionally substituted with one or more C_{1-6}-alkylsulfonyls;
(4-18) triazolyl;
(4-19) imidazolyl;

(4-23) nitro;

(4-26) C_{1-6}-alkanoyl; and

(4-27) morpholinyl;

(6a) furyl optionally substituted with one or more C_{1-6}-alkyls optionally substituted with halogen;

(7a) thienyl optionally substituted with one or more C_{1-6}-alkyls;

(8a) imidazolyl optionally substituted with one or more C_{1-6}-alkyls;

(9a) pyrazolyl optionally substituted with one or more C_{1-6}-alkyls optionally substituted with C_{1-6}-alkoxy;

(10a) oxazolyl optionally substituted with one or more C_{1-6}-alkyls;

(11a) isoxazolyl optionally substituted with one or more C_{1-6}-alkyls;

(12a) thiazolyl optionally substituted with one or more C_{1-6}-alkyls optionally substituted with halogen;

(15a) pyridyl optionally substituted with one or more substituents selected from the group consisting of the following (15-1) to (15-5), (15a-7), (15-9), (15-11), (15-12) and (15-14):

(15-1) halogen;

(15-2) cyano;

(15-3) amino optionally substituted with one or more substituents selected from the group consisting of C_{1-6}-alkanoyl and C_{1-6}-alkylsulfonyl;

(15-4) C_{1-6}-alkyl optionally substituted with one or more substituents selected from the group consisting of halogen, C_{1-6}-alkoxy, C_{1-6}-alkanoyloxy, cyclo C_{3-8}-alkyl amino, C_{1-6}-alkyl amino, C_{1-6}-alkanoyl amino, hydroxyl and pyrrolidinyl optionally substituted with one or more hydroxyis;

(15-5) oxo;

(15a-7) C_{1-6}-alkoxy;

(15-9) C_{1-6}-alkanoyl;

(15-11) phenoxy;

(15-12) pyrazolyl; and

(15-14) N-oxide

(16a) pyrimidinyl optionally substituted with one or more C_{1-6}-alkyls;

(17) pyridarinyl

(18) pyrazinyl optionally substituted with one or more phenyl, C_{1-6}-alkoxys;

(23a) indolyl optionally substituted with one or more C_{1-6}-alkyls; (24a) imidazo[1,2-a]pyridyl;

(24b) imidazo[1,5-a]pyridyl optionally substituted with one or more C_{1-6}-alkyls;

(26) benzimidazolyl optionally substituted with one or more C_{1-6}-alkyls;

(29) indazolyl optionally substituted with one or more C_{1-6}-alkyls;

(30a) furo[2,3-c]pyridyl optionally substituted with one or more substituents selected from the group consisting of oxo and C_{1-6}-alkyl;

(30b) 6,7-dihydrofuro[2,3-c]pyridyl optionally substituted with one or more substituents selected from the group consisting of oxo and C_{1-6}-alkyl;

(31a) furo[3,2-c]pyridyl optionally substituted with one or more substituents selected from the group consisting of oxo and C_{1-6}-alkyl;

(31b) 4,5-dihydrofuro[3,2-c]pyriiyl optionally substituted with one or more substituents selected from the group consisting of oxo and C_{1-6}-alkyl optionally substituted with halogen or C_{1-6}-alkoxy;

(32a) thieno[2,3-c]pyridyl optionally substituted with one or more substituents selected from the group consisting of oxo and C_{1-6}-alkyl;

(32b) 6,7-dihydrothieno[2,3-c]pyridyl optionally substituted with one or more substituents selected from the group consisting of oxo group and C_{1-6}-alkyl;

(33a) thieno[3,2-c]pyridyl optionally substituted with one or more substituents selected from the group consisting of oxo and C_{1-6}-alkyl;

(33b) 4,5-dihydrothieno[3,2-c]pyridyl optionally substituted with one or more substituents selected from the group consisting of oxo and C_{1-6}-alkyl;

(35a) benzo[1,3]dioxolyl;

(40a) isoquinolyl, optionally substituted with one or more oxos;

(40b) 1,2-dihydroisoquinolyl optionally substituted with one or more substituents selected from the group consisting of oxo and C_{1-6}-alkyl;

(42a) quinolyl, optionally substituted with one or more oxos;

(43a) 1,2,3,4-tetrahydrocuinolyl optionally substituted with one or more substituents selected from the group consisting of aralkyl (e.g., phenyl C_{1-6}-alkyl, etc.), pyridyl C_{1-6}-alkyl and oxo;

(44) 1,2-dihydroquinoly optionally substitutes one or more oxos; and

(53) 2,3-dihydrobenzo[d]imidazolyl optionally substituted with one or more substituents selected from the group consisting of C_{1-6}-alkyl and oxo.

7. A diazepine cortmound or a pharmaceutically acceptable salt thereof according to claim 6, wherein R^6 and R^7 are each independently phenyl, pyridyl, pyrazolyl, indolyl, 4,5-dihydrofuro[3,2-c]pyridyl, and 1,2-dihydroisoquinolyl, each of which is optionally substituted with one or two substituents selected from the group consisting of oxo, C_{1-6}-alkyl, C_{1-6}-alkoxy C_{1-6}-alkyl, and C_{1-6}-alkylsulfonylamino.

8. A diazepine compound or a pharmaceutically acceptable salt thereof according to claim 7, which is selected from the group consisting of the following compounds:
1-ethyl-3,3,5-trimethyl-7-(3-{N-[2-(2-methyl-4-oxo-4H-furo[3,2-c] pyridin-5-yl)ethyl]-N-(pyridin-4-ylmethyl)amino}propyl)-1,5-dihyd robenzo[b][1,4]diazepine-2,4-dion,

1-ethyl-3,3,5-trimethyl-7-(2-{N-[2-(2-methyl-4-oxo-4H-furo[3,2-c] pyridin-5-yl)ethyl]-N-(pyridin-4-ylmethyl)amino}ethyl)-1,5-dihydr obenzo[b][1,4]diazepine-2,4-dione,

1-ethyl-3,3,5-trimethyl-7-(2-{N-(2-methylpyridin-3-ylmethyl)-N-[2 -(4-oxo-4H-furo[3,2-c]pyridin-5-yl)ethyl]amino)ethyl}-1,5-dihydro benzo[b][1,4]diazepine-2,4-dione,

1-ethyl-3,3,5-trimethyl-7-{2-[N-[2-(2-methyl-4-oxo-4H-furo[3,2-c] pyridin-5-yl)ethyl]-N-(4-methylpyridin-3-ylmethyl)amino]ethyl}-1, 5-dihydrobenzo[b][1,4]diazepine-2,4-dione,

1-ethyl-3,3,5-trimethyl-7-({N-(2-methylpyridin-3-ylmethyl)-N-[2-(1-oxo-1H-isoquinolin-2-yl)ethyl]amino}methyl)-1,5-dihydrobenzo[b] [1,4]diazepine-2,4-dione,

N-(1-ethyl-3,3,5-trimethyl-2,4-dioxo-2,3,4,5-tetrahydro-1H-benzo[b][1,4]diazepin-7-ylmethyl)-4-methyl-N-(2-pyridin-3-ylethyl)benza mide,

N-(1-ethyl-3,3,5-trimethyl-2,4-dioxo-2,3,4,5-tetrahydro-1H-benzo[b]1,4]diazepin-7-ylmethyl)-N-(2-pyridin-3-ylethyl)benzenesulfona mide,

7-{[N-benzyl-N-(2-pyridin-3-ylethyl)amino]methyl}-1-ethyl-3,3,5-t rimethyl-1,5-dihydrobenzo[b][1,4]diazepine-2,4-dione,

N-(2-{[(1-ethyl-3,3,5-trimethyl-2,4-dioxo-2,3,4,5-tetrahydro-1H-b enzo[b][1,4]diazepin-7-ylmethyl)(2-pyridin-3-ylethyl)amino]methyl }phenyl)methanesufonamide,

7-{[N-[2-(2,7-dimethyl-4-oxo-4H-furo[3,2-c]pyridin-5-yl)ethyl]-N-(2,5-dimethyl-2H-pyrazol-3-ylmethyl)amino]methyl}-1-ethyl-3,3,5-t rimethyl-1,5-dihydrobenzo[b][1,4]diazepine-2,4-dione,

1-Ethyl-7-({N-(2-methoxymethylpyridin-3-ylmethyl)-N-[2-(2-methyl-4-oxo-4H-furo[3,2-c]pyridin-5-yl)ethyl]amino}methyl)-3,3,5-trimet hyl-1,5-dihydrobenzo[b][1,4]diazepine-2,4-dione,

1-Ethyl-7-({N-(2-methoxymethylpyridin-3-ylmethyl)-N-[2-(7-methyl-4-oxo-4H-furo[3,2-c]pyridin-5-yl)ethyl]amino)methyl}-3,3,5-trimet hyl-1,5-dihydrobenzo [b][1,4]diazagine-2,4-dione,

N-(1-Ethyl-3,3,5-trimethyl-2,4-dioxo-2,3,4,5-tetrahydro-1H-benzo[b][1,4]diazepin-7-ylmethyl)-2-(1-methyl-1H-indol-3-yl)-N-(2-pyrid in-3-ylethyl)acetamide.

9. A diazepine compound according to claim 8, which is selected from the group consisting of the following compounds: 1-ethyl-3,3,5-trimethyl-7-(3-{N-[2-(2-methyl-4-oxo-4H-furo[3,2-c] pyridin-5-yl)ethyl]-N-(pyridin-4-ylmethyl)amino}propyl)-1,5-dihyd robenzo[b][1,4]diazepine-2,4-dione dihydrochloride, 1-ethyl-3,3,5-trimethyl-7-(2-{N-[2-(2-methyl-4-oxo-4H-fluro[3,2-c] pyridin-3-yl)ethyl]-N-(pyridin-4-ylmethyl)amino}ethyl)-1,5-dihydr obenzo[b][1,4]diazepine-2,4-dione dihydrochloride, 1-ethyl-3,3,5-trimethyl-7-(2-{N-(2-methylpyridin-3-ylmethyl)-N-[2 -(4-oxo-4H-furo[3,2-c]pyridin-5-yl)ethyl]amino}ethyl)1,5-dihydro benzo[b][1,4]diazepine-2,4-dione dihydrochloride, 1-ethyl-3,3,5-trimethyl-7-{2-[N-[2-(2-methyl-4-oxo-4H-furo[3,2-c] pyridin-5-yl)ethyl]-N-(4-methylpyridin-3-ylmethyl)amino]ethyl}-1, 5-dihydrobenzo[b][1,4]diazepine-2,4-dione dihydrochloride, 1-ethyl-3,3,5-trimethyl-7-({N-(2-methylpyridin-3-ylmethyl)-N-[2-(1-oxo-1H-isoquinolin-2-yl)ethyl]amino}methyl)-1,5-dihydrobenzo[b] [1,4]diazepine-2,4-dione dihydrochloride, N-(1-ethyl-3,3,5-trimethyl-2,4-dioxo-2,3,4,5-tetrahydro-1H-benzo[b][1,4]diazepin-7-ylmethyl)-4-methyl-N-(2-pyridin-3-ylethyl)benza mide hydrochloride, N-(1-ethyl-3,3,5-trimethyl-2,4-dioxo-2,3,4,3-tetrahydro-1H-benzo[b][1,4]diazepin-7-ylmethyl)-N-(2-pyridin-3-ylethyl)benzenesulfona mide, 7-{[N-benzyl-N-(2-pyridin-3-ylethyl)amino]methyl)-1-ethyl-3,3,5-t rimethyl-1,5-dihydrobenzo[b][1,4]diazepine-2,4-dione hydrochloride, N-(2-{[(1-ethyl-3,3,5-trimethyl-2,4-dioxo-2,3,4,5-tetrahydro-1H-b enzo[b][1,4]diazepin-7-ylmethyl)(2-pyridin-3-ylethyl)amino}methyl }phenyl)methanesulfonamide dihydrochloride, 7-{[N-[2-(2,7-dimethyl-4-oxo-4H-furo[3,2-c]pyridin-5-yl)ethyl]-N-(2,5-dimethyl-2H-pyrazol-3-ylmethyl)amino]methy}-1-ethyl-3,3,5-t rimethyl-1,5-dihydrobenzo[b][1,4]diazepine-2,4-dione, 1-Ethyl-7-({N-(2-

methoxymethylpyridin-3-ylmethyl)-N-[2-(2-methyl-4-oxo-4H-furo[3,2-c]pyridin-5-yl)ethyl]amino}methyl)-3,3,5-trimet hyl-1,5-dihydrobenzo[b][1,4]diazepine-2,4-dione, 1-Ethyl-7-({N-(2-methoxymethylpyridin-3-ylmethyl)-N-[2-(7-methyl-4-oxo-4H-furo[3,2-c]pyridin-5-yl)ethyl]amino}methyl)-3,3,5-trimet hyl-1,5-dihydrobenzo[b][1,4]diazepine-2,4-dione, and N-(1-Ethyl-3,3,5-trimethyl-2,4-dioxo-2,3,4,5-tetrahydro-1H-benzo[b][1,4]diazepin-7-ylmethyl)-2-(1-methyl-1H-indol-3-yl)-N-(2-pyrid in-3-ylethyl)acetamide hydrochloride.

10. A diazepine compound or a pharmaceutically acceptable salt thereof according to claim 1, wherein Y^1 and Y^2 are each -CH=.

11. A pharmaceutical composition comprising a diazepine compound or a pharmaceutically acceptable salt thereof according to any one of claims 1 to 10, and a pharmacologically acceptable carrier.

12. A pharmaceutical composition according to claim 11 for use in the prevention and/or treatment of arrhythmia.

13. A diazepine compound or a pharmaceutically acceptable salt thereof according to any one of claims 1 to 10 for use in the prevention and/or treatment of arrhythmia.

14. Use of a diazepine compound or of a pharmaceutically acceptable salt thereof according to any one of claims 1 to 10 for the production of a pharmaceutical composition.