

Description

This invention is concerned with N-aryl-3-aryl-4,5-dihydro-1H-pyrazole-1-carboxamides, processes for their production, insecticidal compositions containing them and methods for combatting insects.

The search for pesticides which have a combination of excellent pesticidal activity and essentially no toxicity is a continuing one due to recognition of the possible toxicity to animals and humans of many known pesticides.

Certain pyrazoline derivatives have been disclosed as having insecticidal activity.

German Offenlegungsschrift No. 2,304,584 discloses pyrazoline compounds which are substituted in the 1,3 or 1,3,5 positions of the pyrazoline ring that exert biocidal activity. German Offenlegungsschrift No. 2,304,584 corresponds to U.S. Patents 3,991,073; 4,095,026; and 4,010,271.

U.S. Patents 4,156,007; 4,070,365; and 4,174,393 and EP-A-0021506 and EP-A-0065334 disclose pyrazoline compounds which are substituted in the 1,3 and 4 positions of the pyrazoline ring that have insecticidal activity.

EP-A-0058424 and EP-A-0113213 disclose pyrazoline compounds which are substituted in the 1,3,4 and, optionally, 5 positions of the pyrazoline ring that have insecticidal activity.

U.S. Patents 4,140,787 and 4,140,792 disclose pyrazoline compounds which are substituted in the 1,3,5 positions of the pyrazoline ring that possess anthropecidicidal properties.

Presently known compounds are believed to be subject to problems with photostability and biodegradability. These compounds tend to degrade faster than is desirable when applied to the external parts of plants due to the action of sunlight on these compounds. Moreover, when known compounds are applied to the soil, they exhibit poor biodegradability causing an undesirable residue to remain in the soil.

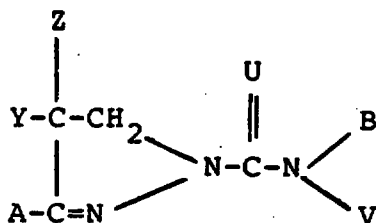
The present invention discloses N-aryl-3-aryl-4,5-dihydro-1H-pyrazole-1-carboxamides (hereinafter at times referred to as 1-substituted-4-substituted-4,5-dihydro-1H-pyrazoles), including N-aryl-3-aryl-4,5-dihydro-1H-pyrazole-1-thiocarboxamides and including N-aryl-3-aryl-4,5-dihydro-1H-pyrazole-1-iminocarboxamides which are disubstituted at the 4 position or monosubstituted at the 4 position. When these compounds are monosubstituted at the 4 position, the substituent has, at the 4-position, 1-oxo, 1-thiono or 1-imino functionality.

It is believed this 4,4-disubstitution greatly lessens photodegradation and metabolic pathway transformations in plants and insects by blocking hydrogen loss and subsequent aromatization of the dihydropyrazole moiety to a pyrazole moiety resulting in an inactivation of the compound as an insecticide.

Certain of the 4-carboalkoxy substituted compounds (4-monosubstituted and 4-disubstituted) of this invention exhibit enhanced rates of soil metabolism thus minimizing undesirable residues.

It is therefore an object of the invention to provide novel compounds, and compositions containing said compounds, which possess pesticidal activity. It is another object of the present invention to provide compounds which demonstrate improved photostability and biodegradability. It is a further object of the invention to provide methods for the synthesis of 1-substituted-4-substituted-4,5-dihydro-1H-pyrazoles. It is still another object of the present invention to provide methods for controlling pests and insects using the novel compounds.

In accordance with the present invention, there are provided compounds having the formula:



wherein

A is aryl;

B is aryl;

U is O, S or N-Q;

V is hydrogen, (C₃-C₆)cycloalkyl, aryl or R⁴-Q;

Y is lower (C₁-C₆) straight or branched chain unsubstituted or substituted alkyl, aryl, or a group having the formula



5 where X is O, S or N-Q;

Z is hydrogen, (C₃-C₆)cycloalkyl, aryl or R⁴-Q;

provided that when Z is hydrogen, Y is X-C-G; and provided that Z is not methyl when Y is methyl;

Q is hydrogen, halogen, cyano, nitro, OR¹, R⁴OR¹, CO₂R¹, OR⁴OR¹, CR¹R²R³, CONR¹R², NR¹R², NR¹COR², N(COR¹)COR², CSR¹, SR¹, SOR¹, SO₂R¹, NR¹SOR², R⁴SR¹, OR⁴SR¹, SR⁴SR¹, SNHSR¹,
10 SNHSO₂R¹, CONHSR¹, OCOR¹, R¹, C(=NR¹)R², COR¹, N₃, OSO₂R¹, NR¹SO₂R², NR¹CSR², alkenyl (CR¹=CR²R³), alkynyl (C≡CR¹), or aryl;

R¹, R² and R³ are, independently, hydrogen, halogen, cyano, nitro, hydroxy, an alkoxy group (OR) having up to four carbon atoms, an amino group (NH₂), an alkylamino group (NHR) having up to six carbon atoms, a dialkylamino group (NR₂) having, independently, up to six carbon atoms in each alkyl moiety, a
15 carboxy group (CO₂H), a carbalkoxy group (CO₂R) having up to six carbon atoms, an alkylcarbonyl group (COR) having up to six carbon atoms, an alkanoyloxy group (OCOR) having up to six carbon atoms, a carboxamide group (CONH₂, CONHR or CONR₂) having independently, up to six carbon atoms in each alkyl moiety, a carbamoyloxy group (OCONH₂, OCONHR or OCONR₂) having, independently, up to six carbon atoms in each alkyl moiety, a sulfhydryl, a sulfinyl group (-SOR) having up to six carbon atoms, a
20 sulfonyl group (-SO₂R) having up to six carbon atoms, a sulfonate group (-SO₂R) having up to six carbon atoms, an alkylthio group (SR) having up to six carbon atoms, a sulfonamide (SO₂NH₂, SO₂NHR or SO₂NR₂) having, independently, up to six carbon atoms in each alkyl moiety, an amido group (NRCOR) having, independently, up to six carbon atoms in each alkyl moiety, an alkylsulfonamide (NRSO₂R) having, independently, up to six carbon atoms in each alkyl moiety, an alkylthiocarbonyl group (CSR) having up to
25 six carbon atoms, a thioamido group (NRCSR) having, independently, up to six carbon atoms in each alkyl moiety, an alkylsulfonamide (NRSOR) having, independently, up to six carbon atoms in each alkyl moiety, an imido group (N(COR)COR) having, independently, up to six carbon atoms in each alkyl moiety, an unsubstituted or substituted straight or branched chain lower (C₁-C₆)alkyl, (C₃-C₆)cycloalkyl or aryl where the substituent on the alkyl moiety can be one or more of the same or different hydroxy, halogen, cyano,
30 nitro, or an alkoxy group (OR) having up to four carbon atoms, an amino group (NH₂), an alkylamino group (NHR) having up to six carbon atoms, a dialkylamino group (NR₂) having, independently, up to six carbon atoms in each alkyl moiety, a carboxy group (CO₂H), a carbalkoxy group (CO₂R) having up to six carbon atoms, an alkylcarbonyl group (COR) having up to six carbon atoms, an alkanoyloxy group (OCOR) having up to six carbon atoms, a carboxamide group (CONH₂, CONHR or CONR₂) having independently, up to six carbon atoms in each alkyl moiety, a carbamoyloxy group (OCONH₂, OCONHR or OCONR₂) having,
35 independently, up to six carbon atoms in each alkyl moiety, a sulfhydryl, a sulfinyl group (-SOR) having up to six carbon atoms, a sulfonyl group (-SO₂R) having up to six carbon atoms, a sulfonate group (-OSO₂R) having up to six carbon atoms, an alkylthio group (SR) having up to six carbon atoms, a sulfonamide (SO₂NH₂, SO₂NHR or SO₂NR₂) having, independently, up to six carbon atoms in each alkyl moiety, an
40 amido group (NRCOR) having, independently, up to six carbon atoms in each alkyl moiety, an alkylsulfonamide (NRSO₂R) having, independently, up to six carbon atoms in each alkyl moiety, an alkylthiocarbonyl group (CSR) having up to six carbon atoms, a thioamido group (NRCSR) having, independently, up to six carbon atoms in each alkyl moiety, an alkylsulfonamide (NRSOR) having, independently, up to six carbon atoms in each alkyl moiety, an imido group (N(COR)COR) having, independently, up to six carbon atoms in each alkyl moiety, or an aryl group, where R is an alkyl group having the stated number of carbon atoms, or an aryl group;



where R¹ and R² are independent

for each carbon atom of a chain;

55 G is (C₃-C₆)cycloalkyl, unsubstituted or substituted aryl or R⁴-Q;

n is from 0 to 10;

and agronomically acceptable salts thereof.

Halogen can be chosen from fluorine, chlorine, bromine, or iodine;

Cycloalkyl can be chosen from cyclopropyl, cyclobutyl, cyclopentyl, cyclohexyl, cycloheptyl, cyclooctyl, cyclononyl, cyclodecyl, cycloundecyl, and cyclododecyl.

Aryl can be chosen from phenyl, optionally substituted with 1-5 substituents independently chosen from

- 5 W; naphthyl, optionally substituted with 1-7 substituents independently chosen from W; a 5 membered heterocycle containing up to 2 nitrogen atoms, up to 2 oxygen atoms, up to 2 sulfur atoms and up to 4 nuclear carbon atoms, optionally substituted with 1-4 substituents independently chosen from W; or a 6 membered heterocycle containing up to 3 nitrogen atoms, up to 2 oxygen atoms, up to 2 sulfur atoms and 1-5 nuclear carbon atoms optionally substituted with 1-4 substituents independently chosen from W.
- 10 Representative examples of 5 and 6 membered heterocycles include pyrrol, furyl, thiophenyl, imidazolyl, oxazolyl, thiazolyl, pyrazolyl, pyridyl, pyrimidyl and the like.

W is halogen, cyano, nitro, R^1 , CO_2R^1 , $CONR^1R^2$, $CR^1=CR^2R^3$, $C=CR^1$, SR^1 , OR^1 , NR^1R^2 , SOR^1 , SO_2R^1 , OSO_2R^1 , NR^1COR^2 , SF_5 , CF_3 , OCF_3 , OCF_3 , OCF_2H , SCF_3 , OCF_2Br , SCF_2Br , SCF_2Cl , SCF_2H , $NR^1SO_2R^2$ or $N(COR^1)COR^2$. SCF_2Br , SCF_2Cl , SCF_2H , $NR^1SO_2R^2$ or $N(COR^1)COR^2$.

- 15 In a preferred compound,

Y is a group having the formula



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where X is O, S or N-Q;

- 25 Z is hydrogen, (C_3-C_6) cycloalkyl, unsubstituted or substituted aryl or R^4-Q ; and A, B, U, V, Q, R, R^1 , R^2 , R^3 , R^4 , G and n are as defined above. In a more preferred compound,

A is unsubstituted or substituted phenyl;

B is unsubstituted or substituted phenyl;

U is O or S;

- 30 V is hydrogen, (C_3-C_6) cycloalkyl, unsubstituted or substituted phenyl or R^4-Q ;

Y is a group having the formula



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where X is O or S; and

Z is hydrogen, (C_3-C_6) cycloalkyl, unsubstituted or substituted phenyl or R^4-Q . In an even more preferred compound,

B is substituted phenyl; and

V is hydrogen, unsubstituted or substituted phenyl or R^4-Q . In yet a more preferred compound,

A is unsubstituted or monosubstituted or disubstituted phenyl;

- 45 B is monosubstituted or disubstituted phenyl;

V is hydrogen or R^4-Q ; and

Z is hydrogen, unsubstituted or substituted phenyl, or R^4-Q . In yet an even more preferred compound,

A is monosubstituted phenyl;

- 50 B is monosubstituted phenyl;

U is O; and

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Y is



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In yet an even more preferred compound,

- 10 A is monosubstituted phenyl where the substituent is fluoro, chloro, bromo, trifluoromethyl, trifluoromethoxy, difluoromethoxy or methyl;
 B is monosubstituted phenyl where the substituent is fluoro, chloro, bromo, trifluoromethyl, trifluoromethoxy, difluoromethoxy, carbomethoxy, carboethoxy, carboisopropoxy, methylthio or methylsulfonyl;
 15 U is O;
 V is hydrogen, lower (C₁-C₆) straight or branched chain unsubstituted or substituted alkyl, lower (C₁-C₆) alkoxy, lower (C₁-C₆) alkylsulfonyl, unsubstituted or substituted arylsulfonyl,



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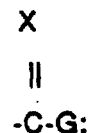
25 where X is O or S and R¹ is as defined in claim 6, cyano, lower (C₁-C₆) alkylheteroalkyl, wherein the substituent or the alkyl moiety is lower (C₁-C₄) alkoxy, lower (C₁-C₄) alkylsulfonyl, unsubstituted or substituted phenylsulfonyl, lower (C₁-C₄) carboalkoxy, cyano or lower (C₁-C₄)-alkylheteroalkyl;

Y is



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- 35 Z is hydrogen, lower (C₁-C₄) alkyl, or unsubstituted or substituted phenyl; and
 G is hydroxy, lower (C₁-C₄) alkyl, lower (C₁-C₄)-alkoxy, lower (C₁-C₄) alkylamino, lower dialkylamino having independently one to four carbon atoms in each alkyl moiety, or phenyl. In yet an even more preferred compound.
 40 A is 4-chlorophenyl, 4-bromophenyl, 4-trifluoromethylphenyl, 4-trifluoromethoxyphenyl or 4-difluoromethoxyphenyl;
 B is 4-chlorophenyl, 4-bromophenyl, 4-carbomethoxyphenyl, 4-carboethoxyphenyl, 4-carboisopropoxyphenyl, 4-difluoromethoxyphenyl, 4-trifluoromethoxyphenyl, 4-trifluoromethylphenyl, 4-methylthiophenyl or 4-methylsulfonylphenyl;
 U is O;
 45 V is hydrogen, methyl, methylsulfonyl, 2-nitrophenylsulfonyl, carbomethoxy, acetyl, trifluoroacetyl, formyl or methoxyalyl;
 Y is



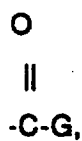
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- 55 Z is hydrogen, methyl, phenyl, 4-chlorophenyl, 4-trifluoromethylphenyl, 4-trifluoromethoxyphenyl, 4-trifluoromethoxyphenyl, 4-difluoromethoxyphenyl or 4-difluorobromomethoxyphenyl; and
 G is hydroxy, methyl, ethyl, methoxy, ethoxy, dimethylamino or phenyl. In a most preferred compound
 A is 4-chlorophenyl.

B is 4-chlorophenyl,
 U is O,
 V is hydrogen,
 Y is



Z is methyl, and
 G is methoxy; or
 A is 4-chlorophenyl,
 B is 4-chlorophenyl,
 U is O,
 V is hydrogen,
 Y is



Z is methyl, and
 G is ethoxy; or
 A is 4-chlorophenyl,
 B is 4-chlorophenyl,
 U is O,
 V is hydrogen,
 Y is



Z is methyl, and
 G is dimethylamino; or
 A is 4-Chlorophenyl,
 B is 4-chlorophenyl,
 U is O,
 V is carbomethoxy,
 Y is



Z is methyl, and
 G is methoxy; or
 A is 4-chlorophenyl,
 B is 4-chlorophenyl,
 U is O,
 V is acetyl.

Y. is

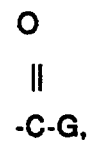
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Z is methyl, and
G is methoxy; or
A is 4-chlorophenyl,
B is 4-chlorophenyl,
U is O,
V is trifluoroacetyl,
Y is

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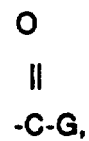


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Z is methyl, and
G is methoxy; or
A is 4-chlorophenyl,
B is 4-chlorophenyl,
U is O,
V is formyl,
Y is

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Z is methyl, and
G is methoxy, or
A is 4-chlorophenyl,
B is 4-chlorophenyl,
U is O,
V is carbomethoxycarbonyl
Y is

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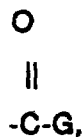
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Z is methyl, and
G is methoxy; or
A is 4-chlorophenyl,
B is 4-bromophenyl,
U is O,
V is hydrogen,

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Y is

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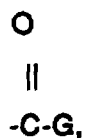
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10 Z is methyl, and
G is methoxy; or
A is 4-chlorophenyl,
B is 4-trifluoromethylphenyl
U is O,
V is hydrogen,
15 Y is

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25 Z is methyl, and
G is methoxy; or
A is 4-trifluoromethylphenyl,
B is 4-trifluoromethylphenyl
U is O,
V is hydrogen,
Y is

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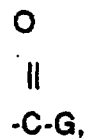
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40 Z is methyl, and
G is methoxy; or
A is 4-chlorophenyl,
B is 4-trifluoromethoxyphenyl,
U is O,
V is hydrogen,
Y is

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55 Z is methyl, and
G is methoxy; or
A is 4-bromophenyl,
B is 4-trifluoromethylphenyl,
U is O,
V is hydrogen,

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Y is*



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10 Z is methyl, and
G is methoxy. These preferred compounds may be in the form of their agronomically acceptable salts.

In another preferred compound,

- Y is lower (C₁-C₆) straight or branched chain unsubstituted or substituted alkyl or unsubstituted or substituted aryl;
15 Z is (C₃-C₆) cycloalkyl, unsubstituted or substituted aryl or R⁴-Q provided that Z is not hydrogen and Z is not methyl when Y is methyl, and A, B, U, V, Q, R, R¹, R², R³, R⁴, and n are as defined in the paragraph commencing on page 3 above. In a more preferred compound,
A is unsubstituted or substituted phenyl;
B is unsubstituted or substituted phenyl; and
20 U is O or S. In an even more preferred compound,
A is substituted phenyl;
B is substituted phenyl;
V is unsubstituted or substituted phenyl or R⁴-Q; and
Z is unsubstituted or substituted phenyl or R⁴-Q, provided that Z is not hydrogen and Z is not methyl
25 when Y is methyl. In yet a more preferred compound,
A is monosubstituted or disubstituted phenyl;
B is monosubstituted or disubstituted phenyl; and
V is hydrogen or R⁴-Q. In yet an even more preferred compound,
A is monosubstituted phenyl;
30 B is monosubstituted phenyl;
U is O; and
Z is unsubstituted or monosubstituted phenyl or R⁴-Q, provided that Z is not methyl when Y is methyl. In yet an even more preferred compound,
A is monosubstituted phenyl where the substituent is fluoro, chloro, bromo, trifluoromethyl,
35 trifluoromethoxy, difluoromethoxy or methyl;
B is monosubstituted phenyl where the substituent is fluoro, chloro, bromo, trifluoromethyl, trifluoromethoxy, difluoromethoxy, carbomethoxy, carboethoxy, carboisopropoxy, methylthio or methylsulfonyl;
V is hydrogen, lower (C₁-C₆) straight or branched chain unsubstituted or substituted alkyl, lower (C₁-C₆) alkoxy, lower (C₁-C₆) alkylsulfenyl, unsubstituted or substituted arylsulfenyl
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50 where X is O or S and R¹ is as in claim 14, cyano, lower (C₁-C₆) alkylheteroalkyl, wherein the substituent or the alkyl moiety is lower (C₁-C₄) alkoxy, lower (C₁-C₄) alkylsulfenyl, unsubstituted or substituted phenylsulfenyl, lower (C₁-C₄) carboalkoxy, cyano or lower (C₁-C₄) alkylheteroalkyl;
Y is lower (C₁-C₆) straight or branched chain unsubstituted or substituted alkyl, or unsubstituted or substituted phenyl; and
Z is lower (C₁-C₄) alkyl, or unsubstituted or substituted phenyl, provided that Z is not methyl when Y is methyl. In yet an even more preferred compound,
55 A is 4-chlorophenyl, 4-bromophenyl, 4-trifluoromethylphenyl, 4-trifluoromethoxyphenyl or 4-difluoromethoxyphenyl;

- B is 4-chlorophenyl, 4-bromophenyl, 4-carbomethoxyphenyl, 4-carboethoxyphenyl, 4-carboisopropoxyphenyl, 4-difluoromethoxyphenyl, 4-trifluoromethoxyphenyl, 4-trifluoromethylphenyl, 4-methylthiophenyl or 4-methylsulfonylphenyl;
- V is hydrogen, methyl, methylsulfenyl, 2-nitrophenylsulfenyl, carbomethoxy, acetyl, trifluoroacetyl, formyl or methoxalyl;
- Y is ethyl, n-propyl, n-butyl, 3-chloropropyl, 4-bromopropyl or phenyl; and
- Z is methyl, ethyl, n-propyl, n-butyl or phenyl. In a most preferred compound,
- A is 4-chlorophenyl,
- B is 4-chlorophenyl,
- U is O,
- V is hydrogen,
- Y is phenyl, and
- Z is methyl; or
- A is 4-chlorophenyl,
- B is 4-chlorophenyl,
- U is O,
- V is hydrogen,
- Y is n-butyl, and
- Z is methyl; or
- A is 4-chlorophenyl,
- B is 4-chlorophenyl,
- U is O,
- V is hydrogen,
- Y is 3-chloropropyl, and
- Z is methyl.

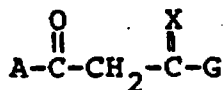
These preferred compounds may be in the form of their agronomically acceptable salts.

Further, in accordance with the present invention, there are provided compositions containing compounds of the present invention and processes for preparing 1-substituted-4-substituted-4,5-dihydro-1H-pyrazoles of the present invention. One process comprises dissolving a 1-substituted-4,5-dihydro-1H-pyrazole in an aprotic solvent, mixing a strong base with the resulting solution, allowing deprotonation to take place at the 4 position of the pyrazole ring, and then adding an alkylating or acylating agent, wherein the 1-substituted-4,5-dihydro-1H-pyrazole dissolved in the aprotic solvent must be a 1-substituted-4-monosubstituted-4,5-dihydro-1H-pyrazole when the desired end product is a 1-substituted-4,4-disubstituted-4,5-dihydro-1H-pyrazole.

A second process for preparing compounds of the present invention where Y is a group having the formula

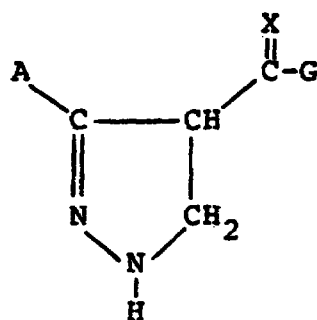


(Group B) comprises treating a beta-dicarbonyl compound of the formula:



II

where A, X and G are as defined above with a mixture of hydrazine and formaldehyde to produce a 3-aryl-4-monosubstituted-4,5-dihydropyrazole having the formula:



III

where A, X and G are as defined above.

Treatment of the dihydropyrazole of Formula III with an aryl isocyanate affords the N-aryl-3-aryl-4-monosubstituted-4,5-dihydropyrazole-1-carboxamides of this invention.

Further treatment of this 1-substituted-4-monosubstituted-4,5-dihydropyrazole-1-carboxamide with a base, followed by an alkylating agent or acylating agent will yield the N-aryl-3-aryl-4,4-disubstituted-4,5-dihydropyrazole-1-carboxamides of this invention.

The compounds of the instant invention are N-aryl-3-aryl-4,5-dihydro-1H-pyrazole-1-carboxamides which are disubstituted at the 4 position of the pyrazole ring and 4,5-dihydro-1H-pyrazole-1-carboxamides which are monosubstituted at the 4 position of the pyrazole ring, said monosubstituted compounds having 1-oxo or 1-thiono functionality at the 4 position of the pyrazole ring. The substituents that may be covalently bonded at the 4 position of the pyrazole ring, whether monosubstituted or disubstituted, are defined by Y and Z in Formula I. It should be appreciated that certain compounds of the present invention can exist as geometric isomers; that is enantiomers or diastereomers. The present invention includes compounds and compositions as disclosed herein comprising substantially pure dextrorotatory, levorotatory or racemic mixtures of said compounds.

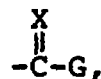
The 4,5-dihydro-1H-pyrazole-1-carboxamides of the instant invention are deemed to include 4,5-dihydro-1H-pyrazole-1-thiocarboxamides and 4,5-dihydro-1H-pyrazole-1-iminocarboxamides. When U in Formula I is oxygen, the compound is an oxocarboxamide and when U is sulfur in Formula I, the compound is a thiocarboxamide and when U is N-Q, the compound is an iminocarboxamide. The preferred U substituent is oxygen.

The relationship between Y and Z is such that when Y is lower (C_1-C_6) straight or branched chain unsubstituted or substituted alkyl, unsubstituted or substituted aryl, (Group A), Z can be cycloalkyl (C_3-C_6), unsubstituted or substituted aryl or R^4-Q provided that Z is not hydrogen and Z is not methyl when Y is methyl. When Y is

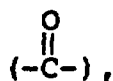


(Group B) where X and G are as defined above for Formula I, Z can be hydrogen, cycloalkyl (C_3-C_6), unsubstituted or substituted aryl or R^4-Q .

The only compounds of the invention which can be monosubstituted at the four position of the pyrazole ring (i.e., where Z is hydrogen) are those where Y is



and these monosubstituted compounds have, necessarily, 1-oxo



or 1-thiono



functionality at the 4 position of the pyrazole ring. Otherwise, the compounds of the present invention are disubstituted at the 4 position of the pyrazole ring.

Possible Z substituents, when Y is Group A include, but are not limited to: alkyl, aryl, aralkyl, haloalkyl, alkoxyalkyl, alkylthioalkyl, alkylsulfanylalkyl, cyanoalkyl, carboalkoxy, carboalkoxyalkyl, carboxamido, carboxyamidoalkyl, N-alkylcarboxamido, N-alkylcarboxamidoalkyl, N,N-dialkylcarboxamido, N,N-dialkylcarboxamidoalkyl, hydroxyalkyl, ketoalkyl, ketoaryl, thionoalkyl, thionoaryl, iminoalkyl, iminoaryl, halo, hydroxy, carboxy, dithiocarboxy, dithiocarboxyalkyl or dithiocarboalkoxy.

Preferred Z substituents when Y is Group A are phenyl, 4-chlorophenyl, carbomethoxy, carboethoxy, dimethylcarbamoyl, acetyl, propionyl, benzoyl, butyl, 2-methylthioethyl, 3-cyanopropyl, 2-methylsulfonyl or carbomethoxymethyl.

Possible Z substituents when Y has 1-oxo or 1-thiono functionality (Group B), as defined in Formula I include, but are not limited to: hydrogen, alkyl, aryl, aralkyl, haloalkyl, alkoxyalkyl, alkylthioalkyl, alkylsulfanylalkyl, cyanoalkyl, carboalkoxy, carboalkoxyalkyl, carboxamido, carboxamidoalkyl, N-alkylcarboxamido, N-alkylcarboxamidoalkyl, N,N-dialkylcarboxamido, N,N-dialkylcarboxamidoalkyl, hydroxyalkyl, ketoalkyl, ketoaryl, thionoalkyl, thionoaryl, iminoalkyl, iminoaryl, halo, hydroxy, carboxy, dithiocarboxy, dithiocarboxyalkyl or dithiocarboalkoxy.

Preferred Z substituents when Y has 1-oxo or 1-thiono functionality (Group B) are hydrogen, methyl, phenyl, 4-chlorophenyl, 4-trifluoromethylphenyl, 4-trifluoromethoxyphenyl, 4-trifluorothiomethoxyphenyl, 4-difluoromethoxyphenyl or 4-difluorobromothiomethoxyphenyl. The most preferred substituent is methyl.

When the compounds of the present invention are monosubstituted at the 4 position (Group B), those compounds having 1-oxo functionality at the Y substituent are preferred.

Examples of substituents for G include hydrogen, alkoxy, thioalkoxy, alkyl, hydroxy, alkoxyalkyl, thioalkoxyalkyl, alkoxyalkoxy, thioalkoxyalkoxy, amino, alkylamino, dialkylamino, carbalkoxy, cyano, ketoalkyl and alkyl substituted with alkoxy, thioalkoxy, carbalkoxy, cyano or alkylheteroalkyl. Preferred G substituents include methyl, ethyl, methoxy, ethoxy, hydroxy, dimethylamino and phenyl. Most preferred are methoxy, ethoxy or dimethylamino.

Substituent A may be aryl or substituted aryl. The preferred A substituent is unsubstituted or substituted phenyl and most preferred is substituted phenyl. While the phenyl group may be substituted with up to five substituents, it is preferred that it be unsubstituted, or monosubstituted or disubstituted with the same or different substituents and most preferred that the phenyl group be monosubstituted with the substituent located in the para position. Preferred phenyl substituents include fluoro, chloro, bromo, trifluoromethyl, trifluoromethoxy, difluoromethoxy or methyl. Most preferred substituents are chloro, bromo, trifluoromethyl, trifluoromethoxy or difluoromethoxy at the 4 position on the phenyl ring.

Substituent B may be aryl or substituted aryl. The preferred B substituent is unsubstituted or substituted phenyl and most preferred is substituted phenyl having up to two of the same or different substituents located in the 3 and/or 4 positions. When substituent B is monosubstituted, it is preferred the phenyl group be substituted in the para position. Preferred substituents include fluoro, chloro, bromo, trifluoromethyl, trifluoromethoxy, difluoromethoxy, carbomethoxy, carboethoxy, carboisopropoxy, methylthio or methylsulfonyl. Most preferred substituents include chloro, bromo, carbomethoxy, carboethoxy, carboisopropoxy, difluoromethoxy, trifluoromethoxy, trifluoromethyl, methylthio or methylsulfonyl.

Representative examples of substituent V include alkyl, branched alkyl, cycloalkyl, aryl or R⁴-Q where Q and R⁴ are as defined above for Formula I. Preferably, V is hydrogen, lower (C₁-C₆) straight or branched chain unsubstituted or substituted alkyl, lower (C₁-C₆)alkoxy, lower (C₁-C₆)alkylsulfenyl, unsubstituted or substituted arylsulfenyl, lower (C₁-C₆)carboalkoxy, cyano, lower (C₁-C₆)alkylheteroalkyl, wherein the substituent on the alkyl moiety is lower (C₁-C₄)alkoxy, lower (C₁-C₄)alkylsulfenyl, lower (C₁-C₄)carboalkoxy, cyano or lower (C₁-C₄)heteroalkyl. Most preferred are hydrogen, methyl, methylsulfenyl, 2-nitrophenylsulfenyl, carbomethoxy, acetyl, trifluoroacetyl, formyl or methoxalyl.

Aryl can be chosen from phenyl, optionally substituted with 1-5 substituents independently chosen from W; naphthyl, optionally substituted with 1-7 substituents independently chosen from W; a 5 membered heterocycle containing up to 2 nitrogen atoms, up to 2 oxygen atoms, up to 2 sulfur atoms and up to 4 nuclear carbon atoms, optionally substituted with 1-4 substituents independently chosen from W; or a 6 membered heterocycle containing up to 3 nitrogen atoms, up to 2 oxygen atoms, up to 2 sulfur atoms and 1-5 nuclear carbon atoms optionally substituted with 1-4 substituents independently chosen from W. Representative examples of 5 and 6 membered heterocycles include pyrrol, furyl, thiophenyl, imidazolyl,

oxazolyl, thiazolyl, pyrazolyl, pyridyl, pyrimidyl and the like.

W is halogen, cyano, nitro, R^1 , CO_2R^1 , $CONR^1R^2$, $CR^1=CR^2R^3$, $C=CR^1SR^1$, OR^1 , NR^1R^2 , SOR^1 , SO_2R^1 , OSO_2R^1 , NR^1COR^2 , SF_5 , CF_3 , OCF_3 , OCF_2H , SCF_3 , OCF_2Br , SCF_2Br , SCF_2Cl , SCF_2H , $NR^1SO_2R^2$ or $N(COR^1)COR^2$.

- 5 Since the 1-substituted-4-substituted-4,5-dihydro-1H-pyrazoles of Formula I may possess acidic or basic functional groups, they may form novel salts with appropriate bases or acids which also exhibit pesticidal activity. Typical salts are the agronomically acceptable metal salts, ammonium salts and acid addition salts. Among the metal salts are those in which the metal cation is an alkali metal cation such as sodium, potassium, lithium or the like; alkaline earth metal cation such as calcium, magnesium, barium, strontium or the like; or heavy metal cation such as zinc, manganese, cupric, cuprous, ferric, ferrous, titanium, aluminum or the like. Among the ammonium salts are those in which the ammonium cation has the formula $NR^5R^6R^7R^8$ wherein each of R^5 , R^6 , R^7 and R^8 are independently a hydrogen atom, a hydroxy group, a (C_1-C_4) alkoxy group, a (C_1-C_{20}) alkyl group, a (C_3-C_8) alkenyl group, a (C_3-C_8) alkynyl group, a (C_2-C_8) hydroxyalkyl group, a (C_2-C_8) alkoxyalkyl group, a (C_2-C_6) aminoalkyl group, a (C_2-C_6) haloalkyl group, an amino group, a (C_1-C_4) alkyl or (C_1-C_4) dialkylamino group, a substituted or unsubstituted phenyl group, a substituted or unsubstituted phenylalkyl group, having up to four carbon atoms in the alkyl moiety, or any two of R^5 , R^6 , R^7 or R^8 can be taken together to form with the nitrogen atom a 5- or 6-membered heterocyclic ring, optionally having up to one additional hetero atom (e.g., oxygen, nitrogen, or sulfur) in the ring, and preferably saturated, such as piperidino, morpholino, pyrrolidino, piperazino or the like, or any three of R^5 , R^6 , R^7 or R^8 can be taken together to form with the nitrogen atom a 5- or 6-membered aromatic heterocyclic ring, such as piperazole or pyridine. When the ammonium group contains a substituted phenyl or substituted phenylalkyl group, the substituents will generally be selected from halogen atoms, (C_1-C_8) -alkyl groups, (C_1-C_4) alkoxy groups, hydroxy group, nitro groups, trifluoromethyl groups, cyano groups, amino groups, (C_1-C_4) alkylthio groups, and the like. Such substituted phenyl groups preferably have up to two such substituents. Representative ammonium cations include ammonium, dimethylammonium, 2-ethylhexylammonium, bis(2-hydroxyethyl)ammonium, tris(2-hydroxyethyl)ammonium, dicyclohexylammonium, t-octylammonium, 2-hydroxyethylammonium, morpholinium, piperidinium, 2-phenethylammonium, 2-methylbenzylammonium, n-hexylammonium, triethylammonium, trimethylammonium, tri(n-butyl)-ammonium, methoxyethylammonium, diisopropylammonium, pyridinium, dialkyl ammonium, pyrazolium, propargylammonium, dimethylhydrazinium, octadecylammonium, 4-dichlorophenylammonium, 4-nitrobenzylammonium, benzyltrimethylammonium, 2-hydroxyethyldimethyloctadecylammonium, 2-hydroxyethyldiethyloctylammonium, decyltrimethylammonium, hexyltriethylammonium, 4-methylbenzyltrimethylammonium, and the like. Among the acid addition salts are those in which the anion is an agronomically acceptable anion such as hydrochloride, hydrobromide, sulfate, nitrate, perchlorate, acetate, oxalate or the like.

- 35 The invention, in its various embodiments and preferences, is further described in the Claims attached hereto.

Representative examples of the compounds of the invention embraced by Formula I are listed below.

- Those examples listed under Group A include compounds where Y is a Group A substituent as defined above for Formula I. Those examples listed under Group B include compounds where Y is a Group B substituent as defined above for Formula I.

GROUP A

- 45 N,3,4-tris-(4-chlorophenyl)-4-methyl-4,5-dihydro-1H-pyrazole-1-carboxamide
N,3,4-tris-(4-chlorophenyl)-N,4-dimethyl-4,5-dihydro-1H-pyrazole-1-carboxamide
N,3-bis-(4-bromophenyl)-4-carbomethoxy-4-methyl-4,5-dihydro-1H-pyrazole-1-carboxamide
N,3-bis-(4-chlorophenyl)-4-(1-ethylpropyl)-4-methyl-4,5-dihydro-1H-pyrazole-1-carboxamide
N,3-bis-(4-chlorophenyl)-4-(1-hydroxy-1-(4-fluorophenyl)-methyl)-4-methyl-4,5-dihydro-1H-pyrazole-1-
50 carboxamide
N,3-bis-(4-chlorophenyl)-4-(1-hydroxyethyl)-4-methyl-4,5-dihydro-1H-pyrazole-1-carboxamide
N,3-bis-(4-chlorophenyl)-4-(1-methylethyl)-4-methyl-4,5-dihydro-1H-pyrazole-1-carboxamide
N,3-bis-(4-chlorophenyl)-4-(1-methylpropyl)-4-methyl-4,5-dihydro-1H-pyrazole-1-carboxamide
N,3-bis-(4-chlorophenyl)-4-(2,3-dibromopropyl)-4-methyl-4,5-dihydro-1H-pyrazole-1-carboxamide
55 N,3-bis-(4-chlorophenyl)-4-(2,3-dichloropropyl)-4-methyl-4,5-dihydro-1H-pyrazole-1-carboxamide
N,3-bis-(4-chlorophenyl)-4-(2-acetoxyethyl)-4-methyl-4,5-dihydro-1H-pyrazole-1-carboxamide
N,3-bis-(4-chlorophenyl)-4-(2-ethylthioethyl)-4-methyl-4,5-dihydro-1H-pyrazole-1-carboxamide
N,3-bis-(4-chlorophenyl)-4-(2-hydroxyethyl)-4-methyl-4,5-dihydro-1H-pyrazole-1-carboxamide N,3-bis-(4-

chlorophenyl)-4-(2-hydroxypropyl)-4-methyl-4,5-dihydro-1H-pyrazole-1-carboxamide
 N,3-bis-(4-chlorophenyl)-4-(2-methoxyethoxymethyl)-4-methyl-4,5-dihydro-1H-pyrazole-1-carboxamide
 N,3-bis-(4-chlorophenyl)-4-(2-methoxyethyl)-4-methyl-4,5-dihydro-1H-pyrazole-1-carboxamide
 N,3-bis-(4-chlorophenyl)-4-(2-methylpropyl)-4-methyl-4,5-dihydro-1H-pyrazole-1-carboxamide
 5 N,3-bis-(4-chlorophenyl)-4-(2-methylpropyl)-N,4-dimethyl-4,5-dihydro-1H-pyrazole-1-carboxamide
 N,3-bis-(4-chlorophenyl)-4-(2-methylsulfonylethyl)-4-methyl-4,5-dihydro-1H-pyrazole-1-carboxamide
 N,3-bis-(4-chlorophenyl)-4-(2-methylsulfoxylethyl)-4-methyl-4,5-dihydro-1H-pyrazole-1-carboxamide
 N,3-bis-(4-chlorophenyl)-4-(2-methylthioethyl)-4-methyl-4,5-dihydro-1H-pyrazole-1-carboxamide
 N,3-bis-(4-chlorophenyl)-4-(2-phenylthioethyl)-4-methyl-4,5-dihydro-1H-pyrazole-1-carboxamide
 10 N,3-bis-(4-chlorophenyl)-4-(3-azidopropyl)-4-methyl-4,5-dihydro-1H-pyrazole-1-carboxamide
 N,3-bis-(4-chlorophenyl)-4-(3-butenyl)-4-methyl-4,5-dihydro-1H-pyrazole-1-carboxamide
 N,3-bis-(4-chlorophenyl)-4-(3-chloropropyl)-4-methyl-4,5-dihydro-1H-pyrazole-1-carboxamide
 N,3-bis-(4-chlorophenyl)-4-(3-cyanopropyl)-4-methyl-4,5-dihydro-1H-pyrazole-1-carboxamide
 N,3-bis-(4-chlorophenyl)-4-(4-chlorobenzoyl)-4-methyl-4,5-dihydro-1H-pyrazole-1-carboxamide
 15 N,3-bis-(4-chlorophenyl)-4-(4-chlorobutyl)-4-methyl-4,5-dihydro-1H-pyrazole-1-carboxamide
 N,3-bis-(4-chlorophenyl)-4-(4-methoxybutyl)-4-methyl-4,5-dihydro-1H-pyrazole-1-carboxamide
 N,3-bis-(4-chlorophenyl)-4-(5-hexenyl)-4-methyl-4,5-dihydro-1H-pyrazole-1-carboxamide
 N,3-bis-(4-chlorophenyl)-4-acetyl-4-methyl-4,5-dihydro-1H-pyrazole-1-carboxamide
 N,3-bis-(4-chlorophenyl)-4-allyl-4-methyl-4,5-dihydro-1H-pyrazole-1-carboxamide
 20 N,3-bis-(4-chlorophenyl)-4-benzoyl-4-methyl-4,5-dihydro-1H-pyrazole-1-carboxamide
 N,3-bis-(4-chlorophenyl)-4-benzyl-4-methyl-4,5-dihydro-1H-pyrazole-1-carboxamide
 N,3-bis-(4-chlorophenyl)-4-butyl-4-methyl-4,5-dihydro-1H-pyrazole-1-carboxamide
 N,3-bis-(4-chlorophenyl)-4-butyl-N,4-dimethyl-4,5-dihydro-1H-pyrazole-1-carboxamide
 N,3-bis-(4-chlorophenyl)-4-carbo(2-dimethylaminoethoxy)-4-methyl-4,5-dihydro-1H-pyrazole-1-
 25 carboxamide
 N,3-bis-(4-chlorophenyl)-4-carbo(2-dimethylaminoethoxy)-4-methyl-4,5-dihydro-1H-pyrazole-1-
 carboxamide hydrochloride salt
 N,3-bis-(4-chlorophenyl)-4-carbo(2-methylsulfonylethoxy)-4-methyl-4,5-dihydro-1H-pyrazole-1-
 carboxamide
 30 N,3-bis-(4-chlorophenyl)-4-carbo(2-methylthioethoxy)-4-methyl-4,5-dihydro-1H-pyrazole-1-carboxamide
 N,3-bis-(4-chlorophenyl)-4-carbobutoxy-4-methyl-4,5-dihydro-1H-pyrazole-1-carboxamide
 N,3-bis-(4-chlorophenyl)-4-carboethoxy-4-methyl-4,5-dihydro-1H-pyrazole-1-carboxamide
 N,3-bis-(4-chlorophenyl)-4-carboisopropoxy-4-methyl-4,5-dihydro-1H-pyrazole-1-carboxamide
 N,3-bis-(4-chlorophenyl)-4-carbomethoxy-4-methyl-4,5-dihydro-1H-pyrazole-1-carboxamide
 35 N,3-bis-(4-chlorophenyl)-4-carbomethoxy-4-ethyl-4,5-dihydro-1H-pyrazole-1-carboxamide
 N,3-bis-(4-chlorophenyl)-4-carbomethoxy-4-methyl-4,5-dihydro-1H-pyrazole-1-carboxamide
 N,3-bis-(4-chlorophenyl)-4-carbomethoxy-4-methyl-N-acetyl-4,5-dihydro-1H-pyrazole-1-carboxamide
 N,3-bis-(4-chlorophenyl)-4-carbomethoxy-N,4-dimethyl-4,5-dihydro-1H-pyrazole-1-carboxamide
 N,3-bis-(4-chlorophenyl)-4-carbomethoxy-N-(1-carbomethoxy-prop-2-yl-thio)-4-methyl-4,5-dihydro-1H-
 40 pyrazole-1-carboxamide
 N,3-bis-(4-chlorophenyl)-4-carbomethoxy-N-(2-nitrophenylsulfenyl)-4-methyl-4,5-dihydro-1H-pyrazole-1-
 carboxamide
 N,3-bis-(4-chlorophenyl)-4-carbomethoxy-N-(3-cyanopropylthio)-4-methyl-4,5-dihydro-1H-pyrazole-1-
 carboxamide
 45 N,3-bis-(4-chlorophenyl)-4-carbomethoxy-N-acetyl-4-methyl-4,5-dihydro-1H-pyrazole-1-carboxthioamide
 N,3-bis-(4-chlorophenyl)-4-carbomethoxy-N-carboethoxy-4-methyl-4,5-dihydro-1H-pyrazole-1-
 carboxamide
 N,3-bis-(4-chlorophenyl)-4-carbomethoxy-N-carbomethoxythio-4-methyl-4,5-dihydro-1H-pyrazole-1-
 carboxamide
 50 N,3-bis-(4-chlorophenyl)-4-carbomethoxy-N-carbophenoxy-4-methyl-4,5-dihydro-1H-pyrazole-1-
 carboxamide
 N,3-bis-(4-chlorophenyl)-4-carbomethoxy-N-carbovinyl-4-methyl-4,5-dihydro-1H-pyrazole-1-
 carboxamide
 N,3-bis-(4-chlorophenyl)-4-carbomethoxy-N-dimethylcarbamoyl-4-methyl-4,5-dihydro-1H-pyrazole-1-
 55 carboxamide
 N,3-bis-(4-chlorophenyl)-4-carbomethoxy-N-formyl-4-methyl-4,5-dihydro-1H-pyrazole-1-carboxamide
 N,3-bis-(4-chlorophenyl)-4-carbomethoxy-N-methoxymethyl-4-methyl-4,5-dihydro-1H-pyrazole-1-
 carboxamide

N,3-bis-(4-chlorophenyl)-4-carbomethoxy-N-methyloxallyl-4-methyl-4,5-dihydro-1H-pyrazole-1-carboxamide
 N,3-bis-(4-chlorophenyl)-4-carbomethoxy-N-methylthio-4-methyl-4,5-dihydro-1H-pyrazole-1-carboxamide
 N,3-bis-(4-chlorophenyl)-4-carbomethoxy-N-phenylthio-4-methyl-4,5-dihydro-1H-pyrazole-1-carboxamide
 N,3-bis-(4-chlorophenyl)-4-carbomethoxy-N-propylthio-4-methyl-4,5-dihydro-1H-pyrazole-1-carboxamide
 N,3-bis-(4-chlorophenyl)-4-carbomethoxy-N-trifluoroacetyl-4-methyl-4,5-dihydro-1H-pyrazole-1-carboxamide
 N,3-bis-(4-chlorophenyl)-4-carbomethoxymethyl-4-methyl-4,5-dihydro-1H-pyrazole-1-carboxamide
 N,3-bis-(4-chlorophenyl)-4-carbomethylthiomethoxy-4-methyl-4,5-dihydro-1H-pyrazole-1-carboxamide
 N,3-bis-(4-chlorophenyl)-4-carbopropoxy-4-methyl-4,5-dihydro-1H-pyrazole-1-carboxamide
 N,3-bis-(4-chlorophenyl)-4-carboxy-4-methyl-4,5-dihydro-1H-pyrazole-1-carboxamide
 N,3-bis-(4-chlorophenyl)-4-carboxy-4-methyl-4,5-dihydro-1H-pyrazole-1-carboxamide sodium salt
 N,3-bis-(4-chlorophenyl)-4-cyano-4-methyl-4,5-dihydro-1H-pyrazole-1-carboxamide
 N,3-bis-(4-chlorophenyl)-4-cyclohexyl-4-methyl-4,5-dihydro-1H-pyrazole-1-carboxamide
 N,3-bis-(4-chlorophenyl)-4-diethylcarboxamido-4-methyl-4,5-dihydro-1H-pyrazole-1-carboxamide
 N,3-bis-(4-chlorophenyl)-4-dimethylcarboxamido-4-methyl-4,5-dihydro-1H-pyrazole-1-carboxamide
 N,3-bis-(4-chlorophenyl)-4-dimethylthiocarbamoyl-4-methyl-4,5-dihydro-1H-pyrazole-1-carboxamide
 N,3-bis-(4-chlorophenyl)-4-ethyl-4-methyl-4,5-dihydro-1H-pyrazole-1-carboxamide
 N,3-bis-(4-chlorophenyl)-4-hexyl-4-methyl-4,5-dihydro-1H-pyrazole-1-carboxamide
 N,3-bis-(4-chlorophenyl)-4-isobutyl-4-methyl-4,5-dihydro-1H-pyrazole-1-carboxamide
 N,3-bis-(4-chlorophenyl)-4-methoxymethyl-4-methyl-4,5-dihydro-1H-pyrazole-1-carboxamide
 N,3-bis-(4-chlorophenyl)-4-methylthiomethyl-4-methyl-4,5-dihydro-1H-pyrazole-1-carboxamide
 N,3-bis-(4-chlorophenyl)-4-methylthiothiocarbonyl-4-methyl-4,5-dihydro-1H-pyrazole-1-carboxamide
 N,3-bis-(4-chlorophenyl)-4-pentyl-4-methyl-4,5-dihydro-1H-pyrazole-1-carboxamide
 N,3-bis-(4-chlorophenyl)-4-phenyl-4-methyl-4,5-dihydro-1H-pyrazole-1-carboxamide
 N,3-bis-(4-chlorophenyl)-4-phenyl-N,4-dimethyl-4,5-dihydro-1H-pyrazole-1-carboxamide
 N,3-bis-(4-chlorophenyl)-4-phenyl-N-acetyl-4-methyl-4,5-dihydro-1H-pyrazole-1-carboxamide
 N,3-bis-(4-chlorophenyl)-4-phenyl-N-benzoyl-4-methyl-4,5-dihydro-1H-pyrazole-1-carboxamide
 N,3-bis-(4-chlorophenyl)-4-phenyl-N-carbomethoxy-4-methyl-4,5-dihydro-1H-pyrazole-1-carboxamide
 N,3-bis-(4-chlorophenyl)-4-phenyl-N-carbomethoxythio-4-methyl-4,5-dihydro-1H-pyrazole-1-carboxamide
 N,3-bis-(4-chlorophenyl)-4-phenyl-N-cyano-4-methyl-4,5-dihydro-1H-pyrazole-1-carboxamide
 N,3-bis-(4-chlorophenyl)-4-phenyl-N-methoxymethyl-4-methyl-4,5-dihydro-1H-pyrazole-1-carboxamide
 N,3-bis-(4-chlorophenyl)-4-phenyl-N-propionyl-4-methyl-4,5-dihydro-1H-pyrazole-1-carboxamide
 N,3-bis-(4-chlorophenyl)-4-phenyl-N-trimethylacetyl-4-methyl-4,5-dihydro-1H-pyrazole-1-carboxamide
 N,3-bis-(4-chlorophenyl)-4-pivaloyl-4-methyl-4,5-dihydro-1H-pyrazole-1-carboxamide
 N,3-bis-(4-chlorophenyl)-4-propionyl-4-methyl-4,5-dihydro-1H-pyrazole-1-carboxamide
 N,3-bis-(4-chlorophenyl)-4-propyl-4-methyl-4,5-dihydro-1H-pyrazole-1-carboxamide
 N,3-bis-(4-dichlorophenyl)-4-phenyl-4-methyl-4,5-dihydro-1H-pyrazole-1-carboxamide
 N,3-bis-(4-fluorophenyl)-4-butyl-4-methyl-4,5-dihydro-1H-pyrazole-1-carboxamide
 N,3-bis-(4-trifluoromethylphenyl)-4-carbomethoxy-4-methyl-4,5-dihydro-1H-pyrazole-1-carboxamide
 N-(1-naphthyl)-3-(4-chlorophenyl)-4-carbomethoxy-4,5-dihydro-1H-pyrazole-1-carboxamide
 N-(2,4-dinitrophenyl)-3-(4-chlorophenyl)-4-carbomethoxy-4,5-dihydro-1H-pyrazole-1-carboxamide
 N-(2-fluoro-4-trifluoromethylphenyl)-3-(3-chloro-4-trifluoromethylphenyl)-4-(3-methylthiopropyl)-4-methyl-4,5-dihydro-1H-pyrazole-1-carboxamide
 N-(2-fluoro-4-trifluoromethylphenyl)-3-(3-chloro-4-trifluoromethylphenyl)-4-carboethoxy-4-methyl-4,5-dihydro-1H-pyrazole-1-carboxamide
 N-(2-fluoro-4-trifluoromethylphenyl)-3-(3-chloro-4-trifluoromethylphenyl)-4-phenyl-4-methyl-4,5-dihydro-1H-pyrazole-1-carboxamide
 N-(2-fluoro-4-trifluoromethylphenyl)-3-(4-chlorophenyl)-4-(3-methylthiopropyl)-4-methyl-4,5-dihydro-1H-pyrazole-1-carboxamide
 N-(2-fluoro-4-trifluoromethylphenyl)-3-(4-chlorophenyl)-4-carboethoxy-4-methyl-4,5-dihydro-1H-pyrazole-1-carboxamide
 N-(2-fluoro-4-trifluoromethylphenyl)-3-(4-chlorophenyl)-4-phenyl-4-methyl-4,5-dihydro-1H-pyrazole-1-carboxamide
 N-(2-methyl-4-trifluoromethylphenyl)-3-(3-chloro-4-trifluoromethylphenyl)-4-(3-methylthiopropyl)-4-methyl-4,5-dihydro-1H-pyrazole-1-carboxamide
 N-(2-methyl-4-trifluoromethylphenyl)-3-(3-chloro-4-trifluoromethylphenyl)-4-carboethoxy-4-methyl-4,5-dihydro-1H-pyrazole-1-carboxamide

N-(2-methyl-4-trifluoromethylphenyl)-3-(3-chloro-4-trifluoromethylphenyl)-4-phenyl-4-methyl-4,5-dihydro-1H-pyrazole-1-carboxamide

N-(2-methyl-4-trifluoromethylphenyl)-3-(4-chlorophenyl)-4-(3-methylthiopropyl)-4-methyl-4,5-dihydro-1H-pyrazole-1-carboxamide

5 N-(2-methyl-4-trifluoromethylphenyl)-3-(4-chlorophenyl)-4-carboethoxy-4-methyl-4,5-dihydro-1H-pyrazole-1-carboxamide

N-(2-methyl-4-trifluoromethylphenyl)-3-(4-chlorophenyl)-4-phenyl-4-methyl-4,5-dihydro-1H-pyrazole-1-carboxamide

10 N-(3,4-dichlorophenyl)-3-(4-chlorophenyl)-4-carbomethoxy-4-methyl-4,5-dihydro-1H-pyrazole-1-carboxamide

N-(3,4-dichlorophenyl)-3-(4-chlorophenyl)-4-phenyl-4-methyl-4,5-dihydro-1H-pyrazole-1-carboxamide

N-(3,4-dichlorophenyl)-3-phenyl-4-carbomethoxy-4-methyl-4,5-dihydro-1H-pyrazole-1-carboxamide

N-(3-bromo-4-trifluoromethylphenyl)-3-(3-chloro-4-trifluoromethylphenyl)-4-(3-methylthiopropyl)-4-methyl-4,5-dihydro-1H-pyrazole-1-carboxamide

15 N-(3-bromo-4-trifluoromethylphenyl)-3-(3-chloro-4-trifluoromethylphenyl)-4-carboethoxy-4-methyl-4,5-dihydro-1H-pyrazole-1-carboxamide

N-(3-bromo-4-trifluoromethylphenyl)-3-(3-chloro-4-trifluoromethylphenyl)-4-phenyl-4-methyl-4,5-dihydro-1H-pyrazole-1-carboxamide

20 N-(3-bromo-4-trifluoromethylphenyl)-3-(4-chlorophenyl)-4-(3-methylthiopropyl)-4-methyl-4,5-dihydro-1H-pyrazole-1-carboxamide

N-(3-bromo-4-trifluoromethylphenyl)-3-(4-chlorophenyl)-4-carboethoxy-4-methyl-4,5-dihydro-1H-pyrazole-1-carboxamide

N-(3-bromo-4-trifluoromethylphenyl)-3-(4-chlorophenyl)-4-phenyl-4-methyl-4,5-dihydro-1H-pyrazole-1-carboxamide

25 N-(3-bromophenyl)-3-(3-chloro-4-trifluoromethylphenyl)-4-(3-methylthiopropyl)-4-methyl-4,5-dihydro-1H-pyrazole-1-carboxamide

N-(3-bromophenyl)-3-(3-chloro-4-trifluoromethylphenyl)-4-carboethoxy-4-methyl-4,5-dihydro-1H-pyrazole-1-carboxamide

30 N-(3-bromophenyl)-3-(3-chloro-4-trifluoromethylphenyl)-4-phenyl-4-methyl-4,5-dihydro-1H-pyrazole-1-carboxamide

N-(3-bromophenyl)-3-(4-chlorophenyl)-4-(3-methylthiopropyl)-4-methyl-4,5-dihydro-1H-pyrazole-1-carboxamide

N-(3-bromophenyl)-3-(4-chlorophenyl)-4-carboethoxy-4-methyl-4,5-dihydro-1H-pyrazole-1-carboxamide

N-(3-bromophenyl)-3-(4-chlorophenyl)-4-phenyl-4-methyl-4,5-dihydro-1H-pyrazole-1-carboxamide

35 N-(3-carboethoxyphenyl)-3-(3-chloro-4-trifluoromethylphenyl)-4-(3-methylthiopropyl)-4-methyl-4,5-dihydro-
1H-pyrazole-1-carboxamide

N-(3-carboethoxyphenyl)-3-(3-chloro-4-trifluoromethylphenyl)-4-carboethoxy-4-methyl-4,5-dihydro-1H-pyrazole-1-carboxamide

N-(3-carboethoxyphenyl)-3-(3-chloro-4-trifluoromethylphenyl)-4-phenyl-4-methyl-4,5-dihydro-1H-pyrazole-1-carboxamide

N-(3-carboethoxyphenyl)-3-(4-chlorophenyl)-4-(3-methylthiopropyl)-4-methyl-4,5-dihydro-1H-pyrazole-1-carboxamide

N-(3-carboethoxyphenyl)-3-(4-chlorophenyl)-4-carboethoxy-4-methyl-4,5-dihydro-1H-pyrazole-1-carboxamide

45 N-(3-carboethoxyphenyl)-3-(4-chlorophenyl)-4-phenyl-4-methyl-4,5-dihydro-1H-pyrazole-1-carboxamide

N-(3-carboisopropoxyphenyl)-3-(3-chloro-4-trifluoromethylphenyl)-4-(3-methylthiopropyl)-4-methyl-4,5-dihydro-1H-pyrazole-1-carboxamide

N-(3-carboisopropoxyphenyl)-3-(3-chloro-4-trifluoromethylphenyl)-4-carboethoxy-4-methyl-4,5-dihydro-1H-pyrazole-1-carboxamide

50 N-(3-carboisopropoxyphenyl)-3-(3-chloro-4-trifluoromethylphenyl)-4-phenyl-4-methyl-4,5-dihydro-1H-pyrazole-1-carboxamide

N-(3-carboisopropoxyphenyl)-3-(4-chlorophenyl)-4-(3-methylthiopropyl)-4-methyl-4,5-dihydro-1H-pyrazole-1-carboxamide

55 N-(3-carboisopropoxyphenyl)-3-(4-chlorophenyl)-4-carboethoxy-4-methyl-4,5-dihydro-1H-pyrazole-1-carboxamide

N-(3-carboisopropoxyphenyl)-3-(4-chlorophenyl)-4-phenyl-4-methyl-4,5-dihydro-1H-pyrazole-1-carboxamide

N-(3-carbomethoxyphenyl)-3-(3-chloro-4-trifluoromethylphenyl)-4-(3-methylthiopropyl)-4-methyl-4,5-

dihydro-1H-pyrazole-1-carboxamide

N-(3-carbomethoxyphenyl)-3-(3-chloro-4-trifluoromethylphenyl)-4-carboethoxy-4-methyl-4,5-dihydro-1H-pyrazole-1-carboxamide

N-(3-carbomethoxyphenyl)-3-(3-chloro-4-trifluoromethylphenyl)-4-phenyl-4-methyl-4,5-dihydro-1H-pyrazole-1-carboxamide

N-(3-carbomethoxyphenyl)-3-(4-chlorophenyl)-4-(3-methylthiopropyl)-4-methyl-4,5-dihydro-1H-pyrazole-1-carboxamide

N-(3-carbomethoxyphenyl)-3-(4-chlorophenyl)-4-carboethoxy-4-methyl-4,5-dihydro-1H-pyrazole-1-carboxamide

N-(3-carbomethoxyphenyl)-3-(4-chlorophenyl)-4-phenyl-4-methyl-4,5-dihydro-1H-pyrazole-1-carboxamide

N-(3-chloro-4-trifluoromethylphenyl)-3-(3-chloro-4-trifluoromethylphenyl)-4-(3-methylthiopropyl)-4-methyl-4,5-dihydro-1H-pyrazole-1-carboxamide

N-(3-chloro-4-trifluoromethylphenyl)-3-(3-chloro-4-trifluoromethylphenyl)-4-carboethoxy-4-methyl-4,5-dihydro-1H-pyrazole-1-carboxamide

N-(3-chloro-4-trifluoromethylphenyl)-3-(3-chloro-4-trifluoromethylphenyl)-4-phenyl-4-methyl-4,5-dihydro-1H-pyrazole-1-carboxamide

N-(3-chloro-4-trifluoromethylphenyl)-3-(4-chlorophenyl)-4-(3-methylthiopropyl)-4-methyl-4,5-dihydro-1H-pyrazole-1-carboxamide

N-(3-chloro-4-trifluoromethylphenyl)-3-(4-chlorophenyl)-4-carboethoxy-4-methyl-4,5-dihydro-1H-pyrazole-1-carboxamide

N-(3-chloro-4-(trifluoromethyl)phenyl)-3-(4-chlorophenyl)-4-phenyl-4-methyl-4,5-dihydro-1H-pyrazole-1-carboxamide

N-(3-chlorophenyl)-3-(4-chlorophenyl)-4-carbomethoxy-4-methyl-4,5-dihydro-1H-pyrazole-1-carboxamide
N-(3-chlorophenyl)-3-(4-chlorophenyl)-4-phenyl-4-methyl-4,5-dihydro-1H-pyrazole-1-carboxamide

N-(3-cyano-4-trifluoromethylphenyl)-3-(3-chloro-4-trifluoromethylphenyl)-4-(3-methylthiopropyl)-4-

4,5-dihydro-1H-pyrazole-1-carboxamide
N-(3-cyano-4-trifluoromethylphenyl)-3-(3-chloro-4-trifluoromethylphenyl)-4-carboethoxy-4-methyl-4,5-

N-(3-cyano-4-trifluoromethylphenyl)-5-(5-chloro-4-trifluoromethylphenyl)-1-carboxethoxy-1-methyl-1*H*-pyrazole-1-carboxamide
N-(3-cyano-4-trifluoromethylphenyl)-3-(3-chloro-4-trifluoromethylphenyl)-4-phenyl-4-methyl-4,5-dihydro-1*H*-pyrazole-1-carboxamide

N-(3-cyano-4-trifluoromethylphenyl)-3-(4-chlorophenyl)-4-(3-methylthiopropanoyl)-4-methyl-4,5-dihydro-1H-pyrazole-1-carboxamide

N-(5-cyano-4-aminodimethylphenyl)-5-(4-chlorophenyl)-4-(5-methylisopropyl)-4-methyl-4,5-dihydro-1H-pyrazole-1-carboxamide
N-(3-cyano-4-trifluoromethylphenyl)-3-(4-chlorophenyl)-4-carboethoxy-4-methyl-4,5-dihydro-1H-pyrazole

N-(3-cyano-4-trifluoromethylphenyl)-3-(4-chlorophenyl)-4-phenyl-4-methyl-4,5-dihydro-1H-pyrazole-1-carboxamide

N-(3-cyano-4-(4-methylphenyl)phenyl)-3-(4-chlorophenyl)-4-phenyl-4-methyl-4,5-dihydro-1H-pyrazole-1-carboxamide

N-(3-(4-methoxy-4-methylphenyl)phenyl)-5-(3-chloro-4-(4-methylphenyl)propyl)-4-methyl-4,5-dihydro-1H-pyrazole-1-carboxamide
N-(3-(4-fluoromethyl-4-trifluoromethylphenyl)-3-(3-chloro-4-(trifluoromethyl)phenyl)-4-carboethoxy-4-

N-(3-chloro-4-methoxy-4-(4-methoxyphenyl)phenyl)-3-(3-chloro-4-(4-methoxyphenyl)phenyl)-4-carboethoxy-4-methyl-4,5-dihydro-1H-pyrazole-1-carboxamide
N-(3-difluoromethoxy-4-(4-trifluoromethylphenyl)phenyl)-3-(3-chloro-4-(trifluoromethylphenyl)-4-phenyl-4-methyl-4,5-dihydro-1H-pyrazole-1-carboxamide

N-(3-dimethoxy-4-(dimethylamino)phenyl)-3-(3-chloro-4-(dimethylamino)phenyl)-4-phenyl-4-methyl-4,5-dihydro-1H-pyrazole-1-carboxamide

N-(3-difluoromethoxy-4-(trifluoromethyl)phenyl)-3-(4-chlorophenyl)-4-(3-methylbutyryl)-4-methyl-4,5-dihydro-1H-pyrazole-1-carboxamide

N-(3-difluoromethoxy-4-(trifluoromethyl)phenyl)-3-(4-chlorophenyl)-4-carboethoxy-4-methyl-4,5-dihydro-1H-pyrazole-1-carboxamide

N-(3-difluoromethoxy-4-trifluoromethylphenyl)-3-(4-chlorophenyl)-4-phenyl-4-methyl-4,5-dihydro-1H-pyrazole-1-carboxamide

N-(3-difluoromethoxyphenyl)-3-(3-chloro-4-trifluoromethylphenyl)-4-(3-methylthiopropyl)-4-methyl-4,5-dihydro-1H-pyrazole-1-carboxamide

N-(3-difluoromethoxyphenyl)-3-(3-chloro-4-(trifluoromethyl)phenyl)-4-carboethoxy-4-methyl-4,5-dihydro-1H-pyrazole-1-carboxamide

N-(3-difluoromethoxyphenyl)-3-(3-chloro-4-trifluoromethylphenyl)-4-phenyl-4-methyl-4,5-dihydro-1H-pyrazole-1-carboxamide

N-(3-difluoromethoxyphenyl)-3-(4-chlorophenyl)-4-(3-methylthiopropyl)-4-methyl-4,5-dihydro-1H-pyrazole-1-carboxamide

N-(3-difluoromethoxyphenyl)-3-(4-chlorophenyl)-4-carboethoxy-4-methyl-4,5-dihydro-1H-pyrazole-1-carboxamide

N-(3-difluoromethoxyphenyl)-3-(4-chlorophenyl)-4-phenyl-4-methyl-4,5-dihydro-1H-pyrazole-1-carboxamide
 N-(3-dimethylsulfonamidophenyl)-3-(3-chloro-4-trifluoromethylphenyl)-4-(3-methylthiopropyl)-4-methyl-4,5-dihydro-1H-pyrazole-1-carboxamide
 5 N-(3-dimethylsulfonamidophenyl)-3-(3-chloro-4-trifluoromethylphenyl)-4-carboethoxy-4-methyl-4,5-dihydro-1H-pyrazole-1-carboxamide
 N-(3-dimethylsulfonamidophenyl)-3-(3-chloro-4-trifluoromethylphenyl)-4-phenyl-4-methyl-4,5-dihydro-1H-pyrazole-1-carboxamide
 10 N-(3-dimethylsulfonamidophenyl)-3-(4-chlorophenyl)-4-(3-methylthiopropyl)-4-methyl-4,5-dihydro-1H-pyrazole-1-carboxamide
 N-(3-dimethylsulfonamidophenyl)-3-(4-chlorophenyl)-4-carboethoxy-4-methyl-4,5-dihydro-1H-pyrazole-1-carboxamide
 N-(3-dimethylsulfonamidophenyl)-3-(4-chlorophenyl)-4-phenyl-4-methyl-4,5-dihydro-1H-pyrazole-1-carboxamide
 15 N-(3-fluoro-4-trifluoromethylphenyl)-3-(3-chloro-4-trifluoromethylphenyl)-4-(3-methylthiopropyl)-4-methyl-4,5-dihydro-1H-pyrazole-1-carboxamide
 N-(3-fluoro-4-trifluoromethylphenyl)-3-(3-chloro-4-trifluoromethylphenyl)-4-carboethoxy-4-methyl-4,5-dihydro-1H-pyrazole-1-carboxamide
 N-(3-fluoro-4-trifluoromethylphenyl)-3-(3-chloro-4-trifluoromethylphenyl)-4-phenyl-4-methyl-4,5-dihydro-1H-pyrazole-1-carboxamide
 20 N-(3-fluoro-4-trifluoromethylphenyl)-3-(4-chlorophenyl)-4-(3-methylthiopropyl)-4-methyl-4,5-dihydro-1H-pyrazole-1-carboxamide
 N-(3-fluoro-4-trifluoromethylphenyl)-3-(4-chlorophenyl)-4-carboethoxy-4-methyl-4,5-dihydro-1H-pyrazole-1-carboxamide
 25 N-(3-fluoro-4-trifluoromethylphenyl)-3-(4-chlorophenyl)-4-phenyl-4-methyl-4,5-dihydro-1H-pyrazole-1-carboxamide
 N-(3-methoxy-4-trifluoromethylphenyl)-3-(3-chloro-4-trifluoromethylphenyl)-4-(3-methylthiopropyl)-4-methyl-4,5-dihydro-1H-pyrazole-1-carboxamide
 N-(3-methoxy-4-trifluoromethylphenyl)-3-(3-chloro-4-trifluoromethylphenyl)-4-carboethoxy-4-methyl-4,5-dihydro-1H-pyrazole-1-carboxamide
 30 N-(3-methoxy-4-trifluoromethylphenyl)-3-(3-chloro-4-trifluoromethylphenyl)-4-phenyl-4-methyl-4,5-dihydro-1H-pyrazole-1-carboxamide
 N-(3-methoxy-4-trifluoromethylphenyl)-3-(4-chlorophenyl)-4-(3-methylthiopropyl)-4-methyl-4,5-dihydro-1H-pyrazole-1-carboxamide
 35 N-(3-methoxy-4-trifluoromethylphenyl)-3-(4-chlorophenyl)-4-carboethoxy-4-methyl-4,5-dihydro-1H-pyrazole-1-carboxamide
 N-(3-methoxy-4-trifluoromethylphenyl)-3-(4-chlorophenyl)-4-phenyl-4-methyl-4,5-dihydro-1H-pyrazole-1-carboxamide
 N-(3-methyl-4-trifluoromethylphenyl)-3-(3-chloro-4-trifluoromethylphenyl)-4-(3-methylthiopropyl)-4-methyl-4,5-dihydro-1H-pyrazole-1-carboxamide
 40 N-(3-methyl-4-trifluoromethylphenyl)-3-(3-chloro-4-trifluoromethylphenyl)-4-carboethoxy-4-methyl-4,5-dihydro-1H-pyrazole-1-carboxamide
 N-(3-methyl-4-trifluoromethylphenyl)-3-(3-chloro-4-trifluoromethylphenyl)-4-phenyl-4-methyl-4,5-dihydro-1H-pyrazole-1-carboxamide
 45 N-(3-methyl-4-trifluoromethylphenyl)-3-(4-chlorophenyl)-4-(3-methylthiopropyl)-4-methyl-4,5-dihydro-1H-pyrazole-1-carboxamide
 N-(3-methyl-4-trifluoromethylphenyl)-3-(4-chlorophenyl)-4-carboethoxy-4-methyl-4,5-dihydro-1H-pyrazole-1-carboxamide
 N-(3-methyl-4-trifluoromethylphenyl)-3-(4-chlorophenyl)-4-phenyl-4-methyl-4,5-dihydro-1H-pyrazole-1-carboxamide
 50 N-(3-methylsulfonyl-4-trifluoromethylphenyl)-3-(3-chloro-4-trifluoromethylphenyl)-4-(3-methylthiopropyl)-4-methyl-4,5-dihydro-1H-pyrazole-1-carboxamide
 N-(3-methylsulfonyl-4-trifluoromethylphenyl)-3-(3-chloro-4-trifluoromethylphenyl)-4-carboethoxy-4-methyl-4,5-dihydro-1H-pyrazole-1-carboxamide
 55 N-(3-methylsulfonyl-4-trifluoromethylphenyl)-3-(3-chloro-4-trifluoromethylphenyl)-4-phenyl-4-methyl-4,5-dihydro-1H-pyrazole-1-carboxamide
 N-(3-methylsulfonyl-4-trifluoromethylphenyl)-3-(4-chlorophenyl)-4-(3-methylthiopropyl)-4-methyl-4,5-dihydro-1H-pyrazole-1-carboxamide

[illegible]

[illegible]

- carbomethoxysulphenyl-4,5-dihydro-1H-pyrazole-1-carboxamide
 N-(4-bromophenyl)-3-(3-chloro-4-trifluoromethylphenyl)-4-(3-methylthiopropyl)-4-methyl-N-
 dimethylcarbamoyl-4,5-dihydro-1H-pyrazole-1-carboxamide
 N-(4-bromophenyl)-3-(3-chloro-4-trifluoromethylphenyl)-4-(3-methylthiopropyl)-4-methyl-N-formyl-4,5-
 5 dihydro-1H-pyrazole-1-carboxamide
 N-(4-bromophenyl)-3-(3-chloro-4-trifluoromethylphenyl)-4-(3-methylthiopropyl)-4-methyl-N-
 methoxymethyl-4,5-dihydro-1H-pyrazole-1-carboxamide
 N-(4-bromophenyl)-3-(3-chloro-4-trifluoromethylphenyl)-4-(3-methylthiopropyl)-4-methyl-N-methyl-4,5-
 dihydro-1H-pyrazole-1-carboxamide
 10 N-(4-bromophenyl)-3-(3-chloro-4-trifluoromethylphenyl)-4-(3-methylthiopropyl)-4-methyl-N-methylsulphenyl-
 4,5-dihydro-1H-pyrazole-1-carboxamide
 N-(4-bromophenyl)-3-(3-chloro-4-trifluoromethylphenyl)-4-(3-methylthiopropyl)-4-methyl-N-trifluoroacetyl-
 4,5-dihydro-1H-pyrazole-1-carboxamide
 N-(4-bromophenyl)-3-(3-chloro-4-trifluoromethylphenyl)-4-carboethoxy-4-(2-chloroallyl)-4,5-dihydro-1H-
 15 pyrazole-1-carboxamide
 N-(4-bromophenyl)-3-(3-chloro-4-trifluoromethylphenyl)-4-carboethoxy-4-(2-methylthioethyl)-4,5-dihydro-
 1H-pyrazole-1-carboxamide
 N-(4-bromophenyl)-3-(3-chloro-4-trifluoromethylphenyl)-4-carboethoxy-4-(3-cyanopropyl)-4,5-dihydro-1H-
 pyrazole-1-carboxamide
 20 N-(4-bromophenyl)-3-(3-chloro-4-trifluoromethylphenyl)-4-carboethoxy-4-(4-chlorophenyl)-4,5-dihydro-1H-
 pyrazole-1-carboxamide
 N-(4-bromophenyl)-3-(3-chloro-4-trifluoromethylphenyl)-4-carboethoxy-4-(4-difluoromethoxyphenyl)-4,5-
 dihydro-1H-pyrazole-1-carboxamide
 N-(4-bromophenyl)-3-(3-chloro-4-trifluoromethylphenyl)-4-carboethoxy-4-(4-trifluoromethoxyphenyl)-4,5-
 25 dihydro-1H-pyrazole-1-carboxamide
 N-(4-bromophenyl)-3-(3-chloro-4-trifluoromethylphenyl)-4-carboethoxy-4-(4-trifluoromethylphenyl)-4,5-
 dihydro-1H-pyrazole-1-carboxamide
 N-(4-bromophenyl)-3-(3-chloro-4-trifluoromethylphenyl)-4-carboethoxy-4-acetyl-4,5-dihydro-1H-pyrazole-
 1-carboxamide
 30 N-(4-bromophenyl)-3-(3-chloro-4-trifluoromethylphenyl)-4-carboethoxy-4-allyl-4,5-dihydro-1H-pyrazole-1-
 carboxamide
 N-(4-bromophenyl)-3-(3-chloro-4-trifluoromethylphenyl)-4-carboethoxy-4-benzyl-4,5-dihydro-1H-pyrazole-
 1-carboxamide
 N-(4-bromophenyl)-3-(3-chloro-4-trifluoromethylphenyl)-4-carboethoxy-4-carbomethoxy-4,5-dihydro-1H-
 35 pyrazole-1-carboxamide
 N-(4-bromophenyl)-3-(3-chloro-4-trifluoromethylphenyl)-4-carboethoxy-4-ethyl-4,5-dihydro-1H-pyrazole-1-
 carboxamide
 N-(4-bromophenyl)-3-(3-chloro-4-trifluoromethylphenyl)-4-carboethoxy-4-methyl-4,5-dihydro-1H-
 pyrazole-1-carboxamide
 40 N-(4-bromophenyl)-3-(3-chloro-4-trifluoromethylphenyl)-4-carboethoxy-4-methoxymethyl-4,5-dihydro-1H-
 pyrazole-1-carboxamide
 N-(4-bromophenyl)-3-(3-chloro-4-trifluoromethylphenyl)-4-carboethoxy-4-methyl-4,5-dihydro-1H-pyrazole-
 1-carboxamide
 N-(4-bromophenyl)-3-(3-chloro-4-trifluoromethylphenyl)-4-carboethoxy-4-methyl-N-(2-
 45 methoxyethylsulphenyl)-4,5-dihydro-1H-pyrazole-1-carboxamide
 N-(4-bromophenyl)-3-(3-chloro-4-trifluoromethylphenyl)-4-carboethoxy-4-methyl-N-(2-nitrophenylsulphenyl)-
 4,5-dihydro-1H-pyrazole-1-carboxamide
 N-(4-bromophenyl)-3-(3-chloro-4-trifluoromethylphenyl)-4-carboethoxy-4-methyl-N-acetyl-4,5-dihydro-1H-
 pyrazole-1-carboxamide
 50 N-(4-bromophenyl)-3-(3-chloro-4-trifluoromethylphenyl)-4-carboethoxy-4-methyl-N-carboethoxy-4,5-
 dihydro-1H-pyrazole-1-carboxamide
 N-(4-bromophenyl)-3-(3-chloro-4-trifluoromethylphenyl)-4-carboethoxy-4-methyl-N-carbomethoxy-4,5-
 dihydro-1H-pyrazole-1-carboxamide
 N-(4-bromophenyl)-3-(3-chloro-4-trifluoromethylphenyl)-4-carboethoxy-4-methyl-N-
 55 carbomethoxycarbonyl-4,5-dihydro-1H-pyrazole-1-carboxamide
 N-(4-bromophenyl)-3-(3-chloro-4-trifluoromethylphenyl)-4-carboethoxy-4-methyl-N-carbomethoxysulphenyl-
 4,5-dihydro-1H-pyrazole-1-carboxamide
 N-(4-bromophenyl)-3-(3-chloro-4-trifluoromethylphenyl)-4-carboethoxy-4-methyl-N-dimethylcarbamoyl-

[illegible]

- dihydro-1H-pyrazole-1-carboxamide
 N-(4-bromophenyl)-3-(3-chloro-4-trifluoromethylphenyl)-4-phenyl-4-(4-trifluoromethylphenyl)-4,5-dihydro-
 1H-pyrazole-1-carboxamide
 N-(4-bromophenyl)-3-(3-chloro-4-trifluoromethylphenyl)-4-phenyl-4-acetyl-4,5-dihydro-1H-pyrazole-1-
 5 carboxamide
 N-(4-bromophenyl)-3-(3-chloro-4-trifluoromethylphenyl)-4-phenyl-4-allyl-4,5-dihydro-1H-pyrazole-1-
 carboxamide
 N-(4-bromophenyl)-3-(3-chloro-4-trifluoromethylphenyl)-4-phenyl-4-benzyl-4,5-dihydro-1H-pyrazole-1-
 carboxamide
 10 N-(4-bromophenyl)-3-(3-chloro-4-trifluoromethylphenyl)-4-phenyl-4-carbomethoxy-4,5-dihydro-1H-
 pyrazole-1-carboxamide
 N-(4-bromophenyl)-3-(3-chloro-4-trifluoromethylphenyl)-4-phenyl-4-ethyl-4,5-dihydro-1H-pyrazole-1-
 carboxamide
 N-(4-bromophenyl)-3-(3-chloro-4-trifluoromethylphenyl)-4-phenyl-4-methyl-4,5-dihydro-1H-pyrazole-1-
 15 carboxamide
 N-(4-bromophenyl)-3-(3-chloro-4-trifluoromethylphenyl)-4-phenyl-4-methoxymethyl-4,5-dihydro-1H-
 pyrazole-1-carboxamide
 N-(4-bromophenyl)-3-(3-chloro-4-trifluoromethylphenyl)-4-phenyl-4-methyl-4,5-dihydro-1H-pyrazole-1-
 carboxamide
 20 N-(4-bromophenyl)-3-(3-chloro-4-trifluoromethylphenyl)-4-phenyl-4-methyl-N-(2-methoxyethylsulfenyl)-
 4,5-dihydro-1H-pyrazole-1-carboxamide
 N-(4-bromophenyl)-3-(3-chloro-4-trifluoromethylphenyl)-4-phenyl-4-methyl-N-(2-nitrophenylsulfenyl)-4,5-
 dihydro-1H-pyrazole-1-carboxamide
 N-(4-bromophenyl)-3-(3-chloro-4-trifluoromethylphenyl)-4-phenyl-4-methyl-N-acetyl-4,5-dihydro-1H-
 25 pyrazole-1-carboxamide
 N-(4-bromophenyl)-3-(3-chloro-4-trifluoromethylphenyl)-4-phenyl-4-methyl-N-carboethoxy-4,5-dihydro-1H-
 pyrazole-1-carboxamide
 N-(4-bromophenyl)-3-(3-chloro-4-trifluoromethylphenyl)-4-phenyl-4-methyl-N-carbomethoxy-4,5-dihydro-
 1H-pyrazole-1-carboxamide
 30 N-(4-bromophenyl)-3-(3-chloro-4-trifluoromethylphenyl)-4-phenyl-4-methyl-N-carbomethoxycarbonyl-4,5-
 dihydro-1H-pyrazole-1-carboxamide
 N-(4-bromophenyl)-3-(3-chloro-4-trifluoromethylphenyl)-4-phenyl-4-methyl-N-carbomethoxysulfenyl-4,5-
 dihydro-1H-pyrazole-1-carboxamide
 N-(4-bromophenyl)-3-(3-chloro-4-trifluoromethylphenyl)-4-phenyl-4-methyl-N-dimethylcarbamoyl-4,5-
 35 dihydro-1H-pyrazole-1-carboxamide
 N-(4-bromophenyl)-3-(3-chloro-4-trifluoromethylphenyl)-4-phenyl-4-methyl-N-formyl-4,5-dihydro-1H-
 pyrazole-1-carboxamide
 N-(4-bromophenyl)-3-(3-chloro-4-trifluoromethylphenyl)-4-phenyl-4-methyl-N-methoxymethyl-4,5-dihydro-
 1H-pyrazole-1-carboxamide
 40 N-(4-bromophenyl)-3-(3-chloro-4-trifluoromethylphenyl)-4-phenyl-4-methyl-N-methyl-4,5-dihydro-1H-
 pyrazole-1-carboxamide
 N-(4-bromophenyl)-3-(3-chloro-4-trifluoromethylphenyl)-4-phenyl-4-methyl-N-methylsulfenyl-4,5-dihydro-
 1H-pyrazole-1-carboxamide
 N-(4-bromophenyl)-3-(3-chloro-4-trifluoromethylphenyl)-4-phenyl-4-methyl-N-trifluoroacetyl-4,5-dihydro-
 45 1H-pyrazole-1-carboxamide
 N-(4-bromophenyl)-3-(3-chloro-4-trifluoromethylphenyl)-4-phenyl-4-methylthiomethyl-4,5-dihydro-1H-
 pyrazole-1-carboxamide
 N-(4-bromophenyl)-3-(4-chlorophenyl)-4-(3-methylthiopropyl)-4-acetyl-4,5-dihydro-1H-pyrazole-1-
 carboxamide
 50 N-(4-bromophenyl)-3-(4-chlorophenyl)-4-(3-methylthiopropyl)-4-carbomethoxy-4,5-dihydro-1H-pyrazole-1-
 carboxamide
 N-(4-bromophenyl)-3-(4-chlorophenyl)-4-(3-methylthiopropyl)-4-ethyl-4,5-dihydro-1H-pyrazole-1-
 carboxamide
 N-(4-bromophenyl)-3-(4-chlorophenyl)-4-(3-methylthiopropyl)-4-methyl-4,5-dihydro-1H-pyrazole-1-
 55 carboxamide
 N-(4-bromophenyl)-3-(4-chlorophenyl)-4-(3-methylthiopropyl)-4-methyl-N-(2-methoxyethylsulfenyl)-4,5-
 dihydro-1H-pyrazole-1-carboxamide
 N-(4-bromophenyl)-3-(4-chlorophenyl)-4-(3-methylthiopropyl)-4-methyl-N-(2-nitrophenylsulfenyl)-4,5-

- 1-carboxamide
 N-(4-bromophenyl)-3-(4-chlorophenyl)-4-carboethoxy-4-methyl-N-carbomethoxycarbonyl-4,5-dihydro-1H-pyrazole-1-carboxamide
 N-(4-bromophenyl)-3-(4-chlorophenyl)-4-carboethoxy-4-methyl-N-carbomethoxysulfenyl-4,5-dihydro-1H-pyrazole-1-carboxamide
 5 N-(4-bromophenyl)-3-(4-chlorophenyl)-4-carboethoxy-4-methyl-N-dimethylcarbamoyl-4,5-dihydro-1H-pyrazole-1-carboxamide
 N-(4-bromophenyl)-3-(4-chlorophenyl)-4-carboethoxy-4-methyl-N-formyl-4,5-dihydro-1H-pyrazole-1-carboxamide
 10 N-(4-bromophenyl)-3-(4-chlorophenyl)-4-carboethoxy-4-methyl-N-methoxymethyl-4,5-dihydro-1H-pyrazole-1-carboxamide
 N-(4-bromophenyl)-3-(4-chlorophenyl)-4-carboethoxy-4-methyl-N-methyl-4,5-dihydro-1H-pyrazole-1-carboxamide
 N-(4-bromophenyl)-3-(4-chlorophenyl)-4-carboethoxy-4-methyl-N-methylsulfenyl-4,5-dihydro-1H-pyrazole-1-carboxamide
 15 N-(4-bromophenyl)-3-(4-chlorophenyl)-4-carboethoxy-4-methyl-N-trifluoroacetyl-4,5-dihydro-1H-pyrazole-1-carboxamide
 N-(4-bromophenyl)-3-(4-chlorophenyl)-4-carboethoxy-4-methylthiomethyl-4,5-dihydro-1H-pyrazole-1-carboxamide
 20 N-(4-bromophenyl)-3-(4-chlorophenyl)-4-carboethoxy-4-phenyl-4,5-dihydro-1H-pyrazole-1-carboxamide
 N-(4-bromophenyl)-3-(4-chlorophenyl)-4-carbomethoxy-4-methyl-4,5-dihydro-1H-pyrazole-1-carboxamide
 N-(4-bromophenyl)-3-(4-chlorophenyl)-4-methyl-4-(2-chloroallyl)-4,5-dihydro-1H-pyrazole-1-carboxamide
 N-(4-bromophenyl)-3-(4-chlorophenyl)-4-methyl-4-(2-methylthioethyl)-4,5-dihydro-1H-pyrazole-1-carboxamide
 25 N-(4-bromophenyl)-3-(4-chlorophenyl)-4-methyl-4-(3-cyanopropyl)-4,5-dihydro-1H-pyrazole-1-carboxamide
 N-(4-bromophenyl)-3-(4-chlorophenyl)-4-methyl-4-(4-chlorophenyl)-4,5-dihydro-1H-pyrazole-1-carboxamide
 N-(4-bromophenyl)-3-(4-chlorophenyl)-4-methyl-4-(4-difluoromethoxyphenyl)-4,5-dihydro-1H-pyrazole-1-carboxamide
 30 N-(4-bromophenyl)-3-(4-chlorophenyl)-4-methyl-4-(4-trifluoromethoxyphenyl)-4,5-dihydro-1H-pyrazole-1-carboxamide
 N-(4-bromophenyl)-3-(4-chlorophenyl)-4-methyl-4-(4-trifluoromethylphenyl)-4,5-dihydro-1H-pyrazole-1-carboxamide
 35 N-(4-bromophenyl)-3-(4-chlorophenyl)-4-methyl-4-acetyl-4,5-dihydro-1H-pyrazole-1-carboxamide
 N-(4-bromophenyl)-3-(4-chlorophenyl)-4-methyl-4-allyl-4,5-dihydro-1H-pyrazole-1-carboxamide
 N-(4-bromophenyl)-3-(4-chlorophenyl)-4-methyl-4-benzyl-4,5-dihydro-1H-pyrazole-1-carboxamide
 N-(4-bromophenyl)-3-(4-chlorophenyl)-4-methyl-4-carbomethoxy-4,5-dihydro-1H-pyrazole-1-carboxamide
 N-(4-bromophenyl)-3-(4-chlorophenyl)-4-methyl-4-ethyl-4,5-dihydro-1H-pyrazole-1-carboxamide
 40 N-(4-bromophenyl)-3-(4-chlorophenyl)-4-methyl-4-methylallyl-4,5-dihydro-1H-pyrazole-1-carboxamide
 N-(4-bromophenyl)-3-(4-chlorophenyl)-4-methyl-4-methoxymethyl-4,5-dihydro-1H-pyrazole-1-carboxamide
 N-(4-bromophenyl)-3-(4-chlorophenyl)-4-methyl-4-methylthiomethyl-4,5-dihydro-1H-pyrazole-1-carboxamide
 N-(4-bromophenyl)-3-(4-chlorophenyl)-4-methyl-4-phenyl-4,5-dihydro-1H-pyrazole-1-carboxamide
 45 N-(4-bromophenyl)-3-(4-chlorophenyl)-4-phenyl-4-(2-chloroallyl)-4,5-dihydro-1H-pyrazole-1-carboxamide
 N-(4-bromophenyl)-3-(4-chlorophenyl)-4-phenyl-4-(2-methylthioethyl)-4,5-dihydro-1H-pyrazole-1-carboxamide
 N-(4-bromophenyl)-3-(4-chlorophenyl)-4-phenyl-4-(3-cyanopropyl)-4,5-dihydro-1H-pyrazole-1-carboxamide
 50 N-(4-bromophenyl)-3-(4-chlorophenyl)-4-phenyl-4-(4-chlorophenyl)-4,5-dihydro-1H-pyrazole-1-carboxamide
 N-(4-bromophenyl)-3-(4-chlorophenyl)-4-phenyl-4-(4-difluoromethoxyphenyl)-4,5-dihydro-1H-pyrazole-1-carboxamide
 N-(4-bromophenyl)-3-(4-chlorophenyl)-4-phenyl-4-(4-trifluoromethoxyphenyl)-4,5-dihydro-1H-pyrazole-1-carboxamide
 55 N-(4-bromophenyl)-3-(4-chlorophenyl)-4-phenyl-4-(4-trifluoromethylphenyl)-4,5-dihydro-1H-pyrazole-1-carboxamide
 N-(4-bromophenyl)-3-(4-chlorophenyl)-4-phenyl-4-acetyl-4,5-dihydro-1H-pyrazole-1-carboxamide

- N-(4-bromophenyl)-3-(4-chlorophenyl)-4-phenyl-4-allyl-4,5-dihydro-1H-pyrazole-1-carboxamide
 N-(4-bromophenyl)-3-(4-chlorophenyl)-4-phenyl-4-benzyl-4,5-dihydro-1H-pyrazole-1-carboxamide
 N-(4-bromophenyl)-3-(4-chlorophenyl)-4-phenyl-4-carbomethoxy-4,5-dihydro-1H-pyrazole-1-carboxamide
 N-(4-bromophenyl)-3-(4-chlorophenyl)-4-phenyl-4-ethyl-4,5-dihydro-1H-pyrazole-1-carboxamide
 5 N-(4-bromophenyl)-3-(4-chlorophenyl)-4-phenyl-4-methallyl-4,5-dihydro-1H-pyrazole-1-carboxamide
 N-(4-bromophenyl)-3-(4-chlorophenyl)-4-phenyl-4-methoxymethyl-4,5-dihydro-1H-pyrazole-1-carboxamide
 N-(4-bromophenyl)-3-(4-chlorophenyl)-4-phenyl-4-methyl-4,5-dihydro-1H-pyrazole-1-carboxamide
 N-(4-bromophenyl)-3-(4-chlorophenyl)-4-phenyl-4-methyl-N-(2-methoxyethylsulfenyl)-4,5-dihydro-1H-
 pyrazole-1-carboxamide
 10 N-(4-bromophenyl)-3-(4-chlorophenyl)-4-phenyl-4-methyl-N-(2-nitrophenylsulfenyl)-4,5-dihydro-1H-
 pyrazole-1-carboxamide
 N-(4-bromophenyl)-3-(4-chlorophenyl)-4-phenyl-4-methyl-N-acetyl-4,5-dihydro-1H-pyrazole-1-
 carboxamide
 N-(4-bromophenyl)-3-(4-chlorophenyl)-4-phenyl-4-methyl-N-carboethoxy-4,5-dihydro-1H-pyrazole-1-
 15 carboxamide
 N-(4-bromophenyl)-3-(4-chlorophenyl)-4-phenyl-4-methyl-N-carbomethoxy-4,5-dihydro-1H-pyrazole-1-
 carboxamide
 N-(4-bromophenyl)-3-(4-chlorophenyl)-4-phenyl-4-methyl-N-carbomethoxycarbonyl-4,5-dihydro-1H-
 pyrazole-1-carboxamide
 20 N-(4-bromophenyl)-3-(4-chlorophenyl)-4-phenyl-4-methyl-N-carbomethoxysulfenyl-4,5-dihydro-1H-
 pyrazole-1-carboxamide
 N-(4-bromophenyl)-3-(4-chlorophenyl)-4-phenyl-4-methyl-N-dimethylcarbamoyl-4,5-dihydro-1H-pyrazole-
 1-carboxamide
 N-(4-bromophenyl)-3-(4-chlorophenyl)-4-phenyl-4-methyl-N-formyl-4,5-dihydro-1H-pyrazole-1-
 25 carboxamide
 N-(4-bromophenyl)-3-(4-chlorophenyl)-4-phenyl-4-methyl-N-methoxymethyl-4,5-dihydro-1H-pyrazole-1-
 carboxamide
 N-(4-bromophenyl)-3-(4-chlorophenyl)-4-phenyl-4-methyl-N-methyl-4,5-dihydro-1H-pyrazole-1-
 carboxamide
 30 N-(4-bromophenyl)-3-(4-chlorophenyl)-4-phenyl-4-methyl-N-methylsulfenyl-4,5-dihydro-1H-pyrazole-1-
 carboxamide
 N-(4-bromophenyl)-3-(4-chlorophenyl)-4-phenyl-4-methyl-N-trifluoroacetyl-4,5-dihydro-1H-pyrazole-1-
 carboxamide
 N-(4-bromophenyl)-3-(4-chlorophenyl)-4-phenyl-4-methylthiomethyl-4,5-dihydro-1H-pyrazole-1-
 35 carboxamide
 N-(4-bromophenyl)-3-(4-fluorophenyl)-4-butyl-4-methyl-4,5-dihydro-1H-pyrazole-1-carboxamide
 N-(4-bromophenyl)-3-(4-fluorophenyl)-4-carbomethoxy-4-methyl-4,5-dihydro-1H-pyrazole-1-carboxamide
 N-(4-bromophenyl)-3-phenyl-4-carbomethoxy-4-methyl-4,5-dihydro-1H-pyrazole-1-carboxamide
 N-(4-carboethoxyphenyl)-3-(3-chloro-4-trifluoromethylphenyl)-4-carboethoxy-4-methyl-4,5-dihydro-1H-
 40 pyrazole-1-carboxamide
 N-(4-carboethoxyphenyl)-3-(4-chlorophenyl)-4-carboethoxy-4-methyl-4,5-dihydro-1H-pyrazole-1-
 carboxamide
 N-(4-carboethoxyphenyl)-3-(4-chlorophenyl)-4-phenyl-4-methyl-4,5-dihydro-1H-pyrazole-1-carboxamide
 N-(4-carboisopropoxyphenyl)-3-(3-chloro-4-trifluoromethylphenyl)-4-(3-methylthiopropyl)-4-methyl-4,5-
 45 dihydro-1H-pyrazole-1-carboxamide
 N-(4-carboisopropoxyphenyl)-3-(3-chloro-4-trifluoromethylphenyl)-4-carboethoxy-4-methyl-4,5-dihydro-1H-
 pyrazole-1-carboxamide
 N-(4-carboisopropoxyphenyl)-3-(3-chloro-4-trifluoromethylphenyl)-4-phenyl-4-methyl-4,5-dihydro-1H-
 pyrazole-1-carboxamide
 50 N-(4-carboisopropoxyphenyl)-3-(4-chlorophenyl)-4-(3-methylthiopropyl)-4-methyl-4,5-dihydro-1H-pyrazole-
 1-carboxamide
 N-(4-carboisopropoxyphenyl)-3-(4-chlorophenyl)-4-carboethoxy-4-methyl-4,5-dihydro-1H-pyrazole-1-
 carboxamide
 N-(4-carboisopropoxyphenyl)-3-(4-chlorophenyl)-4-phenyl-4-methyl-4,5-dihydro-1H-pyrazole-1-
 55 carboxamide
 N-(4-carbomethoxyphenyl)-3-(3-chloro-4-trifluoromethylphenyl)-4-(3-methylthiopropyl)-4-methyl-4,5-
 dihydro-1H-pyrazole-1-carboxamide
 N-(4-carbomethoxyphenyl)-3-(3-chloro-4-trifluoromethylphenyl)-4-carboethoxy-4-methyl-4,5-dihydro-1H-

- pyrazole-1-carboxamide
 N-(4-carbomethoxyphenyl)-3-(3-chloro-4-trifluoromethylphenyl)-4-phenyl-4-methyl-4,5-dihydro-1H-pyrazole-1-carboxamide
 N-(4-carbomethoxyphenyl)-3-(4-chlorophenyl)-4-(3-methylthiopropyl)-4-methyl-4,5-dihydro-1H-pyrazole-1-carboxamide
 N-(4-carbomethoxyphenyl)-3-(4-chlorophenyl)-4-carboethoxy-4-methyl-4,5-dihydro-1H-pyrazole-1-carboxamide
 N-(4-carbomethoxyphenyl)-3-(4-chlorophenyl)-4-phenyl-4-methyl-4,5-dihydro-1H-pyrazole-1-carboxamide
 N-(4-bromo-3-methylphenyl)-3-(4-chlorophenyl)-4-carbomethoxy-4-methyl-4,5-dihydro-1H-pyrazole-1-carboxamide
 N-(4-chloro-3-trifluoromethylphenyl)-3-(4-chlorophenyl)-4-carbomethoxy-4-methyl-4,5-dihydro-1H-pyrazole-1-carboxamide
 N-(4-chlorophenyl)-3-(3,4-dichlorophenyl)-4-phenyl-4-methyl-4,5-dihydro-1H-pyrazole-1-carboxamide
 N-(4-chlorophenyl)-3-(4-bromophenyl)-4-butyl-4-methyl-4,5-dihydro-1H-pyrazole-1-carboxamide
 N-(4-chlorophenyl)-3-(4-bromophenyl)-4-butyl-4-methyl-N-(1-methylethyl)-4,5-dihydro-1H-pyrazole-1-carboxamide
 N-(4-chlorophenyl)-3-(4-bromophenyl)-4-carbomethoxy-4-methyl-4,5-dihydro-1H-pyrazole-1-carboxamide
 N-(4-chlorophenyl)-3-(4-fluorophenyl)-4-butyl-4-methyl-4,5-dihydro-1H-pyrazole-1-carboxamide
 N-(4-chlorophenyl)-3-(4-fluorophenyl)-4-carbomethoxy-4-methyl-4,5-dihydro-1H-pyrazole-1-carboxamide
 N-(4-chlorophenyl)-3-(4-methylphenyl)-4-carbomethoxy-4-methyl-4,5-dihydro-1H-pyrazole-1-carboxamide
 N-(4-chlorophenyl)-3-(4-methoxyphenyl)-4-carbomethoxy-4-methyl-4,5-dihydro-1H-pyrazole-1-carboxamide
 N-(4-chlorophenyl)-3-(4-methylsulfonylphenyl)-4-carbomethoxy-4-methyl-4,5-dihydro-1H-pyrazole-1-carboxamide
 N-(4-chlorophenyl)-3-(4-methylthiophenyl)-4-carbomethoxy-4-methyl-4,5-dihydro-1H-pyrazole-1-carboxamide
 N-(4-chlorophenyl)-3-(4-trifluoromethylphenyl)-4-carbomethoxy-4-methyl-4,5-dihydro-1H-pyrazole-1-carboxamide
 N-(4-chlorophenyl)-3-phenyl-4-carboethoxy-4-methyl-4,5-dihydro-1H-pyrazole-1-carboxamide
 N-(4-chlorophenyl)-3-phenyl-4-carbomethoxy-4-methyl-4,5-dihydro-1H-pyrazole-1-carboxamide
 N-(4-chlorophenyl)-3-phenyl-4-dimethylcarboxamido-4-methyl-4,5-dihydro-1H-pyrazole-1-carboxamide
 N-(4-chlorophenyl)-3-phenyl-N,4-bis-carbomethoxy-4-methyl-4,5-dihydro-1H-pyrazole-1-carboxamide
 N-(4-chlorophenyl)-4-methyl-3,4-diphenyl-4,5-dihydro-1H-pyrazole-1-carboxamide
 N-(4-difluoromethoxyphenyl)-3-(3-chloro-4-trifluoromethylphenyl)-4-(3-methylthiopropyl)-4-methyl-4,5-dihydro-1H-pyrazole-1-carboxamide
 N-(4-difluoromethoxyphenyl)-3-(3-chloro-4-trifluoromethylphenyl)-4-carboethoxy-4-methyl-4,5-dihydro-1H-pyrazole-1-carboxamide
 N-(4-difluoromethoxyphenyl)-3-(3-chloro-4-trifluoromethylphenyl)-4-phenyl-4-methyl-4,5-dihydro-1H-pyrazole-1-carboxamide
 N-(4-difluoromethoxyphenyl)-3-(4-chlorophenyl)-4-(3-methylthiopropyl)-4-methyl-4,5-dihydro-1H-pyrazole-1-carboxamide
 N-(4-difluoromethoxyphenyl)-3-(4-chlorophenyl)-4-carboethoxy-4-methyl-4,5-dihydro-1H-pyrazole-1-carboxamide
 N-(4-difluoromethoxyphenyl)-3-(4-chlorophenyl)-4-phenyl-4-methyl-4,5-dihydro-1H-pyrazole-1-carboxamide
 N-(4-dimethylaminoxiphenyl)-3-(4-chlorophenyl)-4-carbomethoxy-4-methyl-4,5-dihydro-1H-pyrazole-1-carboxamide
 N-(4-dimethylsulfonamidophenyl)-3-(3-chloro-4-trifluoromethylphenyl)-4-(3-methylthiopropyl)-4-methyl-4,5-dihydro-1H-pyrazole-1-carboxamide
 N-(4-dimethylsulfonamidophenyl)-3-(3-chloro-4-trifluoromethylphenyl)-4-carboethoxy-4-methyl-4,5-dihydro-1H-pyrazole-1-carboxamide
 N-(4-dimethylsulfonamidophenyl)-3-(3-chloro-4-trifluoromethylphenyl)-4-phenyl-4-methyl-4,5-dihydro-1H-pyrazole-1-carboxamide
 N-(4-dimethylsulfonamidophenyl)-3-(4-chlorophenyl)-4-(3-methylthiopropyl)-4-methyl-4,5-dihydro-1H-pyrazole-1-carboxamide
 N-(4-dimethylsulfonamidophenyl)-3-(4-chlorophenyl)-4-carboethoxy-4-methyl-4,5-dihydro-1H-pyrazole-1-carboxamide
 N-(4-dimethylsulfonamidophenyl)-3-(4-chlorophenyl)-4-phenyl-4-methyl-4,5-dihydro-1H-pyrazole-1-

carboxamide

N-(4-fluorophenyl)-3-(4-bromophenyl)-4-carbomethoxy-4-methyl-4,5-dihydro-1H-pyrazole-1-carboxamide

N-(4-fluorophenyl)-3-(4-chlorophenyl)-4-carbomethoxy-4-methyl-4,5-dihydro-1H-pyrazole-1-carboxamide

N-(4-fluorophenyl)-3-(4-fluorophenyl)-4-carbomethoxy-4-methyl-4,5-dihydro-1H-pyrazole-1-carboxamide

5 N-(4-fluorophenyl)-3-phenyl-4-carbomethoxy-4-methyl-4,5-dihydro-1H-pyrazole-1-carboxamide

N-(4-iodophenyl)-3-(4-chlorophenyl)-4-carbomethoxy-4-methyl-4,5-dihydro-1H-pyrazole-1-carboxamide

N-(4-methoxyphenyl)-3-(4-chlorophenyl)-4-carbomethoxy-4-methyl-4,5-dihydro-1H-pyrazole-1-carboxamide

N-(4-methylphenyl)-3-(4-chlorophenyl)-4-carbomethoxy-4-methyl-4,5-dihydro-1H-pyrazole-1-carboxamide

10 N-(4-methylsulfonylphenyl)-3-(3-chloro-4-trifluoromethylphenyl)-4-(3-methylthiopropyl)-4-methyl-4,5-dihydro-1H-pyrazole-1-carboxamide

N-(4-methylsulfonylphenyl)-3-(3-chloro-4-trifluoromethylphenyl)-4-carboethoxy-4-methyl-4,5-dihydro-1H-pyrazole-1-carboxamide

N-(4-methylsulfonylphenyl)-3-(3-chloro-4-trifluoromethylphenyl)-4-phenyl-4-methyl-4,5-dihydro-1H-pyrazole-1-carboxamide

15 N-(4-methylsulfonylphenyl)-3-(4-chlorophenyl)-4-(3-methylthiopropyl)-4-methyl-4,5-dihydro-1H-pyrazole-1-carboxamide

N-(4-methylsulfonylphenyl)-3-(4-chlorophenyl)-4-carboethoxy-4-methyl-4,5-dihydro-1H-pyrazole-1-carboxamide

20 N-(4-methylsulfonylphenyl)-3-(4-chlorophenyl)-4-carbomethoxy-4-methyl-4,5-dihydro-1H-pyrazole-1-carboxamide

N-(4-methylsulfonylphenyl)-3-(4-chlorophenyl)-4-phenyl-4-methyl-4,5-dihydro-1H-pyrazole-1-carboxamide

N-(4-methylsulfonylphenyl)-3-(4-chlorophenyl)-4-carbomethoxy-4-methyl-4,5-dihydro-1H-pyrazole-1-carboxamide

25 N-(4-methylthiophenyl)-3-(3-chloro-4-trifluoromethylphenyl)-4-(3-methylthiopropyl)-4-methyl-4,5-dihydro-1H-pyrazole-1-carboxamide

N-(4-methylthiophenyl)-3-(3-chloro-4-trifluoromethylphenyl)-4-carboethoxy-4-methyl-4,5-dihydro-1H-pyrazole-1-carboxamide

N-(4-methylthiophenyl)-3-(3-chloro-4-trifluoromethylphenyl)-4-phenyl-4-methyl-4,5-dihydro-1H-pyrazole-1-carboxamide

30 N-(4-methylthiophenyl)-3-(4-chlorophenyl)-4-(3-methylthiopropyl)-4-methyl-4,5-dihydro-1H-pyrazole-1-carboxamide

N-(4-methylthiophenyl)-3-(4-chlorophenyl)-4-carboethoxy-4-methyl-4,5-dihydro-1H-pyrazole-1-carboxamide

35 N-(4-methylthiophenyl)-3-(4-chlorophenyl)-4-carbomethoxy-4-methyl-4,5-dihydro-1H-pyrazole-1-carboxamide

N-(4-methylthiophenyl)-3-(4-chlorophenyl)-4-phenyl-4-methyl-4,5-dihydro-1H-pyrazole-1-carboxamide

N-(4-nitrophenyl)-3-(3-chloro-4-trifluoromethylphenyl)-4-(3-methylthiopropyl)-4-methyl-4,5-dihydro-1H-pyrazole-1-carboxamide

0 N-(4-nitrophenyl)-3-(3-chloro-4-trifluoromethylphenyl)-4-carboethoxy-4-methyl-4,5-dihydro-1H-pyrazole-1-carboxamide

N-(4-nitrophenyl)-3-(3-chloro-4-trifluoromethylphenyl)-4-phenyl-4-methyl-4,5-dihydro-1H-pyrazole-1-carboxamide

N-(4-nitrophenyl)-3-(4-chlorophenyl)-4-(3-methylthiopropyl)-4-methyl-4,5-dihydro-1H-pyrazole-1-carboxamide

45 N-(4-nitrophenyl)-3-(4-chlorophenyl)-4-carboethoxy-4-methyl-4,5-dihydro-1H-pyrazole-1-carboxamide

N-(4-nitrophenyl)-3-(4-chlorophenyl)-4-carbomethoxy-4,5-dihydro-1H-pyrazole-1-carboxamide

N-(4-nitrophenyl)-3-(4-chlorophenyl)-4-phenyl-4-methyl-4,5-dihydro-1H-pyrazole-1-carboxamide

N-(4-phenylphenyl)-3-(3-chloro-4-trifluoromethylphenyl)-4-phenyl-4-methyl-4,5-dihydro-1H-pyrazole-1-carboxamide

50 N-(4-phenylphenyl)-3-(4-chlorophenyl)-4-phenyl-4-methyl-4,5-dihydro-1H-pyrazole-1-carboxamide

N-(4-trifluoromethoxyphenyl)-3-(3-chloro-4-trifluoromethylphenyl)-4-(3-methylthiopropyl)-4-methyl-4,5-dihydro-1H-pyrazole-1-carboxamide

N-(4-trifluoromethoxyphenyl)-3-(3-chloro-4-trifluoromethylphenyl)-4-carboethoxy-4-methyl-4,5-dihydro-1H-pyrazole-1-carboxamide

55 N-(4-trifluoromethoxyphenyl)-3-(3-chloro-4-trifluoromethylphenyl)-4-phenyl-4-methyl-4,5-dihydro-1H-pyrazole-1-carboxamide

N-(4-trifluoromethoxyphenyl)-3-(4-chlorophenyl)-4-(3-methylthiopropyl)-4-methyl-4,5-dihydro-1H-pyrazole-

[illegible]

pyrazole-1-carboxamide
 N-(4-trifluoromethylphenyl)-3-(3-chloro-4-trifluoromethylphenyl)-4-carboethoxy-4-allyl-4,5-dihydro-1H-
 pyrazole-1-carboxamide
 N-(4-trifluoromethylphenyl)-3-(3-chloro-4-trifluoromethylphenyl)-4-carboethoxy-4-benzyl-4,5-dihydro-1H-
 5 pyrazole-1-carboxamide
 N-(4-trifluoromethylphenyl)-3-(3-chloro-4-trifluoromethylphenyl)-4-carboethoxy-4-carbomethoxy-4,5-
 dihydro-1H-pyrazole-1-carboxamide
 N-(4-trifluoromethylphenyl)-3-(3-chloro-4-trifluoromethylphenyl)-4-carboethoxy-4-ethyl-4,5-dihydro-1H-
 pyrazole-1-carboxamide
 10 N-(4-trifluoromethylphenyl)-3-(3-chloro-4-trifluoromethylphenyl)-4-carboethoxy-4-methyl-4,5-dihydro-1H-
 pyrazole-1-carboxamide
 N-(4-trifluoromethylphenyl)-3-(3-chloro-4-trifluoromethylphenyl)-4-carboethoxy-4-methoxymethyl-4,5-
 dihydro-1H-pyrazole-1-carboxamide
 N-(4-trifluoromethylphenyl)-3-(3-chloro-4-trifluoromethylphenyl)-4-carboethoxy-4-methyl-4,5-dihydro-1H-
 15 pyrazole-1-carboxamide
 N-(4-trifluoromethylphenyl)-3-(3-chloro-4-trifluoromethylphenyl)-4-carboethoxy-4-methyl-N-(2-
 methoxyethylsulfenyl)-4,5-dihydro-1H-pyrazole-1-carboxamide
 N-(4-trifluoromethylphenyl)-3-(3-chloro-4-trifluoromethylphenyl)-4-carboethoxy-4-methyl-N-(2-
 nitrophenylsulfenyl)-4,5-dihydro-1H-pyrazole-1-carboxamide
 20 N-(4-trifluoromethylphenyl)-3-(3-chloro-4-trifluoromethylphenyl)-4-carboethoxy-4-methyl-N-acetyl-4,5-
 dihydro-1H-pyrazole-1-carboxamide
 N-(4-trifluoromethylphenyl)-3-(3-chloro-4-trifluoromethylphenyl)-4-carboethoxy-4-methyl-N-carboethoxy-
 4,5-dihydro-1H-pyrazole-1-carboxamide
 N-(4-trifluoromethylphenyl)-3-(3-chloro-4-trifluoromethylphenyl)-4-carboethoxy-4-methyl-N-carbomethoxy-
 25 4,5-dihydro-1H-pyrazole-1-carboxamide
 N-(4-trifluoromethylphenyl)-3-(3-chloro-4-trifluoromethylphenyl)-4-carboethoxy-4-methyl-N-
 carbomethoxycarbonyl-4,5-dihydro-1H-pyrazole-1-carboxamide
 N-(4-trifluoromethylphenyl)-3-(3-chloro-4-trifluoromethylphenyl)-4-carboethoxy-4-methyl-N-
 carbomethoxysulfenyl-4,5-dihydro-1H-pyrazole-1-carboxamide
 30 N-(4-trifluoromethylphenyl)-3-(3-chloro-4-trifluoromethylphenyl)-4-carboethoxy-4-methyl-N-
 dimethylcarbamoyl-4,5-dihydro-1H-pyrazole-1-carboxamide
 N-(4-trifluoromethylphenyl)-3-(3-chloro-4-trifluoromethylphenyl)-4-carboethoxy-4-methyl-N-formyl-4,5-
 dihydro-1H-pyrazole-1-carboxamide
 N-(4-trifluoromethylphenyl)-3-(3-chloro-4-trifluoromethylphenyl)-4-carboethoxy-4-methyl-N-
 35 methoxymethyl-4,5-dihydro-1H-pyrazole-1-carboxamide
 N-(4-trifluoromethylphenyl)-3-(3-chloro-4-trifluoromethylphenyl)-4-carboethoxy-4-methyl-N-methyl-4,5-
 dihydro-1H-pyrazole-1-carboxamide
 N-(4-trifluoromethylphenyl)-3-(3-chloro-4-trifluoromethylphenyl)-4-carboethoxy-4-methyl-N-methylsulfenyl-
 4,5-dihydro-1H-pyrazole-1-carboxamide
 N-(4-trifluoromethylphenyl)-3-(3-chloro-4-trifluoromethylphenyl)-4-carboethoxy-4-methyl-N-trifluoroacetyl-
 4,5-dihydro-1H-pyrazole-1-carboxamide
 N-(4-trifluoromethylphenyl)-3-(3-chloro-4-trifluoromethylphenyl)-4-carboethoxy-4-methylthiomethyl-4,5-
 dihydro-1H-pyrazole-1-carboxamide
 N-(4-trifluoromethylphenyl)-3-(3-chloro-4-trifluoromethylphenyl)-4-carboethoxy-4-phenyl-4,5-dihydro-1H-
 45 pyrazole-1-carboxamide
 N-(4-trifluoromethylphenyl)-3-(3-chloro-4-trifluoromethylphenyl)-4-methyl-4-(2-chloroallyl)-4,5-dihydro-1H-
 pyrazole-1-carboxamide
 N-(4-trifluoromethylphenyl)-3-(3-chloro-4-trifluoromethylphenyl)-4-methyl-4-(2-methylthioethyl)-4,5-
 dihydro-1H-pyrazole-1-carboxamide
 50 N-(4-trifluoromethylphenyl)-3-(3-chloro-4-trifluoromethylphenyl)-4-methyl-4-(3-cyanopropyl)-4,5-dihydro-
 1H-pyrazole-1-carboxamide
 N-(4-trifluoromethylphenyl)-3-(3-chloro-4-trifluoromethylphenyl)-4-methyl-4-(4-chlorophenyl)-4,5-dihydro-
 1H-pyrazole-1-carboxamide
 N-(4-trifluoromethylphenyl)-3-(3-chloro-4-trifluoromethylphenyl)-4-methyl-4-(4-difluoromethoxyphenyl)-4,5-
 dihydro-1H-pyrazole-1-carboxamide
 55 N-(4-trifluoromethylphenyl)-3-(3-chloro-4-trifluoromethylphenyl)-4-methyl-4-(4-trifluoromethoxyphenyl)-4,5-
 dihydro-1H-pyrazole-1-carboxamide
 N-(4-trifluoromethylphenyl)-3-(3-chloro-4-trifluoromethylphenyl)-4-methyl-4-(4-trifluoromethylphenyl)-4,5-

- dihydro-1H-pyrazole-1-carboxamide
 N-(4-trifluoromethylphenyl)-3-(3-chloro-4-trifluoromethylphenyl)-4-methyl-4-acetyl-4,5-dihydro-1H-pyrazole-1-carboxamide
 N-(4-trifluoromethylphenyl)-3-(3-chloro-4-trifluoromethylphenyl)-4-methyl-4-allyl-4,5-dihydro-1H-pyrazole-1-carboxamide
 5 N-(4-trifluoromethylphenyl)-3-(3-chloro-4-trifluoromethylphenyl)-4-methyl-4-benzyl-4,5-dihydro-1H-pyrazole-1-carboxamide
 N-(4-trifluoromethylphenyl)-3-(3-chloro-4-trifluoromethylphenyl)-4-methyl-4-carbomethoxy-4,5-dihydro-1H-pyrazole-1-carboxamide
 10 N-(4-trifluoromethylphenyl)-3-(3-chloro-4-trifluoromethylphenyl)-4-methyl-4-ethyl-4,5-dihydro-1H-pyrazole-1-carboxamide
 N-(4-trifluoromethylphenyl)-3-(3-chloro-4-trifluoromethylphenyl)-4-methyl-4-methallyl-4,5-dihydro-1H-pyrazole-1-carboxamide
 N-(4-trifluoromethylphenyl)-3-(3-chloro-4-trifluoromethylphenyl)-4-methyl-4-methoxymethyl-4,5-dihydro-1H-pyrazole-1-carboxamide
 15 N-(4-trifluoromethylphenyl)-3-(3-chloro-4-trifluoromethylphenyl)-4-methyl-4-methylthiomethyl-4,5-dihydro-1H-pyrazole-1-carboxamide
 N-(4-trifluoromethylphenyl)-3-(3-chloro-4-trifluoromethylphenyl)-4-methyl-4-phenyl-4,5-dihydro-1H-pyrazole-1-carboxamide
 20 N-(4-trifluoromethylphenyl)-3-(3-chloro-4-trifluoromethylphenyl)-4-phenyl-4-(2-chloroallyl)-4,5-dihydro-1H-pyrazole-1-carboxamide
 N-(4-trifluoromethylphenyl)-3-(3-chloro-4-trifluoromethylphenyl)-4-phenyl-4-(2-methylthioethyl)-4,5-dihydro-1H-pyrazole-1-carboxamide
 N-(4-trifluoromethylphenyl)-3-(3-chloro-4-trifluoromethylphenyl)-4-phenyl-4-(3-cyanopropyl)-4,5-dihydro-1H-pyrazole-1-carboxamide
 25 N-(4-trifluoromethylphenyl)-3-(3-chloro-4-trifluoromethylphenyl)-4-phenyl-4-(4-chlorophenyl)-4,5-dihydro-1H-pyrazole-1-carboxamide
 N-(4-trifluoromethylphenyl)-3-(3-chloro-4-trifluoromethylphenyl)-4-phenyl-4-(4-difluoromethoxyphenyl)-4,5-dihydro-1H-pyrazole-1-carboxamide
 30 N-(4-trifluoromethylphenyl)-3-(3-chloro-4-trifluoromethylphenyl)-4-phenyl-4-(4-trifluoromethoxyphenyl)-4,5-dihydro-1H-pyrazole-1-carboxamide
 N-(4-trifluoromethylphenyl)-3-(3-chloro-4-trifluoromethylphenyl)-4-phenyl-4-(4-trifluoromethylphenyl)-4,5-dihydro-1H-pyrazole-1-carboxamide
 N-(4-trifluoromethylphenyl)-3-(3-chloro-4-trifluoromethylphenyl)-4-phenyl-4-acetyl-4,5-dihydro-1H-pyrazole-1-carboxamide
 35 N-(4-trifluoromethylphenyl)-3-(3-chloro-4-trifluoromethylphenyl)-4-phenyl-4-allyl-4,5-dihydro-1H-pyrazole-1-carboxamide
 N-(4-trifluoromethylphenyl)-3-(3-chloro-4-trifluoromethylphenyl)-4-phenyl-4-benzyl-4,5-dihydro-1H-pyrazole-1-carboxamide
 40 N-(4-trifluoromethylphenyl)-3-(3-chloro-4-trifluoromethylphenyl)-4-phenyl-4-carbomethoxy-4,5-dihydro-1H-pyrazole-1-carboxamide
 N-(4-trifluoromethylphenyl)-3-(3-chloro-4-trifluoromethylphenyl)-4-phenyl-4-ethyl-4,5-dihydro-1H-pyrazole-1-carboxamide
 N-(4-trifluoromethylphenyl)-3-(3-chloro-4-trifluoromethylphenyl)-4-phenyl-4-methallyl-4,5-dihydro-1H-pyrazole-1-carboxamide
 45 N-(4-trifluoromethylphenyl)-3-(3-chloro-4-trifluoromethylphenyl)-4-phenyl-4-methoxymethyl-4,5-dihydro-1H-pyrazole-1-carboxamide
 N-(4-trifluoromethylphenyl)-3-(3-chloro-4-trifluoromethylphenyl)-4-phenyl-4-methyl-4,5-dihydro-1H-pyrazole-1-carboxamide
 50 N-(4-trifluoromethylphenyl)-3-(3-chloro-4-trifluoromethylphenyl)-4-phenyl-4-methyl-N-(2-methoxyethylsulfenyl)-4,5-dihydro-1H-pyrazole-1-carboxamide
 N-(4-trifluoromethylphenyl)-3-(3-chloro-4-trifluoromethylphenyl)-4-phenyl-4-methyl-N-(2-nitrophenylsulfenyl)-4,5-dihydro-1H-pyrazole-1-carboxamide
 N-(4-trifluoromethylphenyl)-3-(3-chloro-4-trifluoromethylphenyl)-4-phenyl-4-methyl-N-acetyl-4,5-dihydro-1H-pyrazole-1-carboxamide
 55 N-(4-trifluoromethylphenyl)-3-(3-chloro-4-trifluoromethylphenyl)-4-phenyl-4-methyl-N-carboethoxy-4,5-dihydro-1H-pyrazole-1-carboxamide
 N-(4-trifluoromethylphenyl)-3-(3-chloro-4-trifluoromethylphenyl)-4-phenyl-4-methyl-N-carbomethoxy-4,5-

- carboxamide
- N-(4-trifluoromethylphenyl)-3-(4-chlorophenyl)-4-methyl-4-(2-chloroallyl)-4,5-dihydro-1H-pyrazole-1-carboxamide
- 5 N-(4-trifluoromethylphenyl)-3-(4-chlorophenyl)-4-methyl-4-(2-methylthioethyl)-4,5-dihydro-1H-pyrazole-1-carboxamide
- N-(4-trifluoromethylphenyl)-3-(4-chlorophenyl)-4-methyl-4-(3-cyanopropyl)-4,5-dihydro-1H-pyrazole-1-carboxamide
- 10 N-(4-trifluoromethylphenyl)-3-(4-chlorophenyl)-4-methyl-4-(4-chlorophenyl)-4,5-dihydro-1H-pyrazole-1-carboxamide
- N-(4-trifluoromethylphenyl)-3-(4-chlorophenyl)-4-methyl-4-(4-difluoromethoxyphenyl)-4,5-dihydro-1H-pyrazole-1-carboxamide
- N-(4-trifluoromethylphenyl)-3-(4-chlorophenyl)-4-methyl-4-(4-trifluoromethoxyphenyl)-4,5-dihydro-1H-pyrazole-1-carboxamide
- 15 N-(4-trifluoromethylphenyl)-3-(4-chlorophenyl)-4-methyl-4-(4-trifluoromethylphenyl)-4,5-dihydro-1H-pyrazole-1-carboxamide
- N-(4-trifluoromethylphenyl)-3-(4-chlorophenyl)-4-methyl-4-acetyl-4,5-dihydro-1H-pyrazole-1-carboxamide
- N-(4-trifluoromethylphenyl)-3-(4-chlorophenyl)-4-methyl-4-allyl-4,5-dihydro-1H-pyrazole-1-carboxamide
- N-(4-trifluoromethylphenyl)-3-(4-chlorophenyl)-4-methyl-4-benzyl-4,5-dihydro-1H-pyrazole-1-carboxamide
- 20 N-(4-trifluoromethylphenyl)-3-(4-chlorophenyl)-4-methyl-4-carbomethoxy-4,5-dihydro-1H-pyrazole-1-carboxamide
- N-(4-trifluoromethylphenyl)-3-(4-chlorophenyl)-4-methyl-4-ethyl-4,5-dihydro-1H-pyrazole-1-carboxamide
- N-(4-trifluoromethylphenyl)-3-(4-chlorophenyl)-4-methyl-4-methallyl-4,5-dihydro-1H-pyrazole-1-carboxamide
- N-(4-trifluoromethylphenyl)-3-(4-chlorophenyl)-4-methyl-4-methoxymethyl-4,5-dihydro-1H-pyrazole-1-carboxamide
- 25 N-(4-trifluoromethylphenyl)-3-(4-chlorophenyl)-4-methyl-4-methylthiomethyl-4,5-dihydro-1H-pyrazole-1-carboxamide
- N-(4-trifluoromethylphenyl)-3-(4-chlorophenyl)-4-methyl-4-phenyl-4,5-dihydro-1H-pyrazole-1-carboxamide
- N-(4-trifluoromethylphenyl)-3-(4-chlorophenyl)-4-phenyl-4-(2-chloroallyl)-4,5-dihydro-1H-pyrazole-1-carboxamide
- 30 N-(4-trifluoromethylphenyl)-3-(4-chlorophenyl)-4-phenyl-4-(2-methylthioethyl)-4,5-dihydro-1H-pyrazole-1-carboxamide
- N-(4-trifluoromethylphenyl)-3-(4-chlorophenyl)-4-phenyl-4-(3-cyanopropyl)-4,5-dihydro-1H-pyrazole-1-carboxamide
- 35 N-(4-trifluoromethylphenyl)-3-(4-chlorophenyl)-4-phenyl-4-(4-chlorophenyl)-4,5-dihydro-1H-pyrazole-1-carboxamide
- N-(4-trifluoromethylphenyl)-3-(4-chlorophenyl)-4-phenyl-4-(4-difluoromethoxyphenyl)-4,5-dihydro-1H-pyrazole-1-carboxamide
- N-(4-trifluoromethylphenyl)-3-(4-chlorophenyl)-4-phenyl-4-(4-trifluoromethoxyphenyl)-4,5-dihydro-1H-pyrazole-1-carboxamide
- 40 N-(4-trifluoromethylphenyl)-3-(4-chlorophenyl)-4-phenyl-4-(4-trifluoromethylphenyl)-4,5-dihydro-1H-pyrazole-1-carboxamide
- N-(4-trifluoromethylphenyl)-3-(4-chlorophenyl)-4-phenyl-4-acetyl-4,5-dihydro-1H-pyrazole-1-carboxamide
- N-(4-trifluoromethylphenyl)-3-(4-chlorophenyl)-4-phenyl-4-allyl-4,5-dihydro-1H-pyrazole-1-carboxamide
- 45 N-(4-trifluoromethylphenyl)-3-(4-chlorophenyl)-4-phenyl-4-benzyl-4,5-dihydro-1H-pyrazole-1-carboxamide
- N-(4-trifluoromethylphenyl)-3-(4-chlorophenyl)-4-phenyl-4-carbomethoxy-4,5-dihydro-1H-pyrazole-1-carboxamide
- N-(4-trifluoromethylphenyl)-3-(4-chlorophenyl)-4-phenyl-4-ethyl-4,5-dihydro-1H-pyrazole-1-carboxamide
- N-(4-trifluoromethylphenyl)-3-(4-chlorophenyl)-4-phenyl-4-methallyl-4,5-dihydro-1H-pyrazole-1-carboxamide
- 50 N-(4-trifluoromethylphenyl)-3-(4-chlorophenyl)-4-phenyl-4-methoxymethyl-4,5-dihydro-1H-pyrazole-1-carboxamide
- N-(4-trifluoromethylphenyl)-3-(4-chlorophenyl)-4-phenyl-4-methyl-4,5-dihydro-1H-pyrazole-1-carboxamide
- N-(4-trifluoromethylphenyl)-3-(4-chlorophenyl)-4-phenyl-4-methyl-N-(2-methoxyethylsulfenyl)-4,5-dihydro-1H-pyrazole-1-carboxamide
- 55 N-(4-trifluoromethylphenyl)-3-(4-chlorophenyl)-4-phenyl-4-methyl-N-(2-nitrophenylsulfenyl)-4,5-dihydro-1H-pyrazole-1-carboxamide
- N-(4-trifluoromethylphenyl)-3-(4-chlorophenyl)-4-phenyl-4-methyl-N-acetyl-4,5-dihydro-1H-pyrazole-1-

carboxamide

- N-(4-trifluoromethylphenyl)-3-(4-chlorophenyl)-4-phenyl-4-methyl-N-carboethoxy-4,5-dihydro-1H-pyrazole-1-carboxamide
- 5 N-(4-trifluoromethylphenyl)-3-(4-chlorophenyl)-4-phenyl-4-methyl-N-carbomethoxy-4,5-dihydro-1H-pyrazole-1-carboxamide
- N-(4-trifluoromethylphenyl)-3-(4-chlorophenyl)-4-phenyl-4-methyl-N-carbomethoxycarbonyl-4,5-dihydro-1H-pyrazole-1-carboxamide
- N-(4-trifluoromethylphenyl)-3-(4-chlorophenyl)-4-phenyl-4-methyl-N-carbomethoxysulfonyl-4,5-dihydro-1H-pyrazole-1-carboxamide
- 10 N-(4-trifluoromethylphenyl)-3-(4-chlorophenyl)-4-phenyl-4-methyl-N-dimethylcarbamoyl-4,5-dihydro-1H-pyrazole-1-carboxamide
- N-(4-trifluoromethylphenyl)-3-(4-chlorophenyl)-4-phenyl-4-methyl-N-formyl-4,5-dihydro-1H-pyrazole-1-carboxamide
- N-(4-trifluoromethylphenyl)-3-(4-chlorophenyl)-4-phenyl-4-methyl-N-methoxymethyl-4,5-dihydro-1H-pyrazole-1-carboxamide
- 15 N-(4-trifluoromethylphenyl)-3-(4-chlorophenyl)-4-phenyl-4-methyl-N-methyl-4,5-dihydro-1H-pyrazole-1-carboxamide
- N-(4-trifluoromethylphenyl)-3-(4-chlorophenyl)-4-phenyl-4-methyl-N-methylsulfonyl-4,5-dihydro-1H-pyrazole-1-carboxamide
- 20 N-(4-trifluoromethylphenyl)-3-(4-chlorophenyl)-4-phenyl-4-methyl-N-trifluoroacetyl-4,5-dihydro-1H-pyrazole-1-carboxamide
- N-(4-trifluoromethylphenyl)-3-(4-chlorophenyl)-4-phenyl-4-methylthiomethyl-4,5-dihydro-1H-pyrazole-1-carboxamide
- N-(4-trifluoromethylphenyl)-3-phenyl-4-carboethoxy-4,5-dihydro-1H-pyrazole-1-carboxamide
- 25 N-(4-trifluoromethylphenyl)-3-phenyl-4-carbomethoxy-4-methyl-4,5-dihydro-1H-pyrazole-1-carboxamide
- N-(4-trifluoromethylphenyl)-3-phenyl-4-dimethylcarbamoyl-4,5-dihydro-1H-pyrazole-1-carboxamide
- N-phenyl-3-(3-chloro-4-trifluoromethylphenyl)-4-(3-methylthiopropyl)-4-methyl-4,5-dihydro-1H-pyrazole-1-carboxamide
- N-phenyl-3-(3-chloro-4-trifluoromethylphenyl)-4-carboethoxy-4-methyl-4,5-dihydro-1H-pyrazole-1-carboxamide
- 30 N-phenyl-3-(3-chloro-4-trifluoromethylphenyl)-4-phenyl-4-methyl-4,5-dihydro-1H-pyrazole-1-carboxamide
- N-phenyl-3-(4-chlorophenyl)-4-(3-methylthiopropyl)-4-methyl-4,5-dihydro-1H-pyrazole-1-carboxamide
- N-phenyl-3-(4-chlorophenyl)-4-carboethoxy-4-methyl-4,5-dihydro-1H-pyrazole-1-carboxamide
- N-phenyl-3-(4-chlorophenyl)-4-carbomethoxy-4-methyl-4,5-dihydro-1H-pyrazole-1-carboxamide
- 35 N-phenyl-3-(4-chlorophenyl)-4-phenyl-4-methyl-4,5-dihydro-1H-pyrazole-1-carboxamide

GROUP B

- N-(3,4-dichlorophenyl)-3-(4-chlorophenyl)-4-carbomethoxy-4-methyl-4,5-dihydro-1H-pyrazole
- 40 N-(3,4-dichlorophenyl)-3-phenyl-4-carbomethoxy-4-methyl-4,5-dihydro-1H-pyrazole-1-carboxamide
- N,3-bis-(4-bromophenyl)-4-carbomethoxy-4-methyl-4,5-dihydro-1H-pyrazole-1-carboxamide
- N,3-bis-(4-chlorophenyl)-4-(4-chlorobenzoyl)-4-methyl-4,5-dihydro-1H-pyrazole-1-carboxamide
- N,3-bis-(4-chlorophenyl)-4-acetyl-4-methyl-4,5-dihydro-1H-pyrazole-1-carboxamide
- N,3-bis-(4-chlorophenyl)-4-acetyl-4-phenyl-4,5-dihydro-1H-pyrazole-1-carboxamide
- 45 N,3-bis-(4-chlorophenyl)-4-benzoyl-4-methyl-4,5-dihydro-1H-pyrazole-1-carboxamide
- N,3-bis-(4-chlorophenyl)-4-carbo(2-dimethylaminoethoxy)-4-methyl-4,5-dihydro-1H-pyrazole-1-carboxamide
- N,3-bis-(4-chlorophenyl)-4-carbo(2-dimethylaminoethoxy)-4-methyl-4,5-dihydro-1H-pyrazole-1-carboxamide hydrochloride salt
- 50 N,3-bis-(4-chlorophenyl)-4-carbo(2-methylsulfonylethoxy)-4-methyl-4,5-dihydro-1H-pyrazole-1-carboxamide
- N,3-bis-(4-chlorophenyl)-4-carbo(2-methylthioethoxy)-4-methyl-4,5-dihydro-1H-pyrazole-1-carboxamide
- N,3-bis-(4-chlorophenyl)-4-carbobutoxy-4-methyl-4,5-dihydro-1H-pyrazole-1-carboxamide
- N,3-bis-(4-chlorophenyl)-4-carboethoxy-4,5-dihydro-1H-pyrazole-1-carboxamide
- 55 N,3-bis-(4-chlorophenyl)-4-carboethoxy-4-methyl-4,5-dihydro-1H-pyrazole-1-carboxamide
- N,3-bis-(4-chlorophenyl)-4-carboisopropoxy-4-methyl-4,5-dihydro-1H-pyrazole-1-carboxamide
- N,3-bis-(4-chlorophenyl)-4-carbomethoxy-4-methyl-4,5-dihydro-1H-pyrazole-1-carboxamide
- N,3-bis-(4-chlorophenyl)-4-carbomethoxy-4,5-dihydro-1H-pyrazole-1-carboxamide

- N,3-bis-(4-chlorophenyl)-4-carbomethoxy-4-ethyl-4,5-dihydro-1H-pyrazole-1-carboxamide
 N,3-bis-(4-chlorophenyl)-4-carbomethoxy-4-methyl-4,5-dihydro-1H-pyrazole-1-carboxamide
 N,3-bis-(4-chlorophenyl)-4-carbomethoxy-4-methyl-4,5-dihydro-1H-pyrazole-1-carboxthioamide
 N,3-bis-(4-chlorophenyl)-4-carbomethoxy-4-methyl-N-acetyl-4,5-dihydro-1H-pyrazole-1-carboxamide
 5 N,3-bis-(4-chlorophenyl)-4-carbomethoxy-4-phenyl-4,5-dihydro-1H-pyrazole-1-carboxamide
 N,3-bis-(4-chlorophenyl)-4-carbomethoxy-N,4-dimethyl-4,5-dihydro-1H-pyrazole-1-carboxamide
 N,3-bis-(4-chlorophenyl)-4-carbomethoxy-N-(1-carbomethoxy-prop-2-yl-thio)-4-methyl-4,5-dihydro-1H-pyrazole-1-carboxamide
 N,3-bis-(4-chlorophenyl)-4-carbomethoxy-N-(2-nitrophenylsulfenyl)-4-methyl-4,5-dihydro-1H-pyrazole-1-
 10 carboxamide
 N,3-bis-(4-chlorophenyl)-4-carbomethoxy-N-(3-cyanopropylthio)-4-methyl-4,5-dihydro-1H-pyrazole-1-carboxamide
 N,3-bis-(4-chlorophenyl)-4-carbomethoxy-N-acetyl-4-methyl-4,5-dihydro-1H-pyrazole-1-carboxthioamide
 N,3-bis-(4-chlorophenyl)-4-carbomethoxy-N-carboethoxy-4-methyl-4,5-dihydro-1H-pyrazole-1-
 15 carboxamide
 N,3-bis-(4-chlorophenyl)-4-carbomethoxy-N-carbomethoxythio-4-methyl-4,5-dihydro-1H-pyrazole-1-carboxamide
 N,3-bis-(4-chlorophenyl)-4-carbomethoxy-N-carbophenoxy-4-methyl-4,5-dihydro-1H-pyrazole-1-carboxamide
 N,3-bis-(4-chlorophenyl)-4-carbomethoxy-N-carbovinyl-4-methyl-4,5-dihydro-1H-pyrazole-1-
 20 carboxamide
 N,3-bis-(4-chlorophenyl)-4-carbomethoxy-N-dimethylcarbamoyl-4-methyl-4,5-dihydro-1H-pyrazole-1-carboxamide
 N,3-bis-(4-chlorophenyl)-4-carbomethoxy-N-formyl-4-methyl-4,5-dihydro-1H-pyrazole-1-carboxamide
 25 N,3-bis-(4-chlorophenyl)-4-carbomethoxy-N-methoxymethyl-4-methyl-4,5-dihydro-1H-pyrazole-1-carboxamide
 N,3-bis-(4-chlorophenyl)-4-carbomethoxy-N-methyloxallyl-4-methyl-4,5-dihydro-1H-pyrazole-1-carboxamide
 N,3-bis-(4-chlorophenyl)-4-carbomethoxy-N-methylthio-4-methyl-4,5-dihydro-1H-pyrazole-1-carboxamide
 30 N,3-bis-(4-chlorophenyl)-4-carbomethoxy-N-phenylthio-4-methyl-4,5-dihydro-1H-pyrazole-1-carboxamide
 N,3-bis-(4-chlorophenyl)-4-carbomethoxy-N-propylthio-4-methyl-4,5-dihydro-1H-pyrazole-1-carboxamide
 N,3-bis-(4-chlorophenyl)-4-carbomethoxy-N-trifluoroacetyl-4-methyl-4,5-dihydro-1H-pyrazole-1-carboxamide
 N,3-bis-(4-chlorophenyl)-4-carbomethylthiomethoxy-4-methyl-4,5-dihydro-1H-pyrazole-1-carboxamide
 35 N,3-bis-(4-chlorophenyl)-4-carbopropoxy-4-methyl-4,5-dihydro-1H-pyrazole-1-carboxamide
 N,3-bis-(4-chlorophenyl)-4-carboxy-4,5-dihydro-1H-pyrazole-1-carboxamide
 N,3-bis-(4-chlorophenyl)-4-carboxy-4-methyl-4,5-dihydro-1H-pyrazole-1-carboxamide
 N,3-bis-(4-chlorophenyl)-4-carboxy-4-methyl-4,5-dihydro-1H-pyrazole-1-carboxamide sodium salt
 N,3-bis-(4-chlorophenyl)-4-carboxy-4-phenyl-4,5-dihydro-1H-pyrazole-1-carboxamide
 40 N,3-bis-(4-chlorophenyl)-4-diethylcarboxamido-4-methyl-4,5-dihydro-1H-pyrazole-1-carboxamide
 N,3-bis-(4-chlorophenyl)-4-dimethylcarbamoyl-4,5-dihydro-1H-pyrazole-1-carboxamide
 N,3-bis-(4-chlorophenyl)-4-dimethylcarboxamido-4-methyl-4,5-dihydro-1H-pyrazole-1-carboxamide
 N,3-bis-(4-chlorophenyl)-4-dimethylthiocarbamoyl-4-methyl-4,5-dihydro-1H-pyrazole-1-carboxamide
 N,3-bis-(4-chlorophenyl)-4-isobutyryl-4-methyl-4,5-dihydro-1H-pyrazole-1-carboxamide
 45 N,3-bis-(4-chlorophenyl)-4-methylthiothiocarbonyl-4-methyl-4,5-dihydro-1H-pyrazole-1-carboxamide
 N,3-bis-(4-chlorophenyl)-4-pivaloyl-4-methyl-4,5-dihydro-1H-pyrazole-1-carboxamide
 N,3-bis-(4-chlorophenyl)-4-propionyl-4-methyl-4,5-dihydro-1H-pyrazole-1-carboxamide
 N,3-bis-(4-trifluoromethylphenyl)-4-carbomethoxy-4-methyl-4,5-dihydro-1H-pyrazole-1-carboxamide
 N-(1-naphthyl)-3-(4-chlorophenyl)-4-carbomethoxy-4,5-dihydro-1H-pyrazole-1-carboxamide
 50 N-(2,4-dinitrophenyl)-3-(4-chlorophenyl)-4-carbomethoxy-4,5-dihydro-1H-pyrazole-1-carboxamide
 N-(2-fluoro-4-trifluoromethylphenyl)-3-(3-chloro-4-trifluoromethylphenyl)-4-carboethoxy-4-methyl-4,5-dihydro-1H-pyrazole-1-carboxamide
 N-(2-fluoro-4-trifluoromethylphenyl)-3-(4-chlorophenyl)-4-carboethoxy-4-methyl-4,5-dihydro-1H-pyrazole-1-carboxamide
 55 N-(2-methyl-4-trifluoromethylphenyl)-3-(3-chloro-4-trifluoromethylphenyl)-4-carboethoxy-4-methyl-4,5-dihydro-1H-pyrazole-1-carboxamide
 N-(2-methyl-4-trifluoromethylphenyl)-3-(4-chlorophenyl)-4-carboethoxy-4-methyl-4,5-dihydro-1H-pyrazole-1-carboxamide

[illegible]

- N-(3-methylsulfonylphenyl)-3-(3-chloro-4-trifluoromethylphenyl)-4-carboethoxy-4-methyl-4,5-dihydro-1H-pyrazole-1-carboxamide
- N-(3-methylsulfonylphenyl)-3-(4-chlorophenyl)-4-carboethoxy-4-methyl-4,5-dihydro-1H-pyrazole-1-carboxamide
- 5 N-(3-methylsulfonylphenyl)-3-(4-chlorophenyl)-4-carbomethoxy-4-methyl-4,5-dihydro-1H-pyrazole-1-carboxamide
- N-(3-methylthio-4-trifluoromethylphenyl)-3-(3-chloro-4-trifluoromethylphenyl)-4-carboethoxy-4-methyl-4,5-dihydro-1H-pyrazole-1-carboxamide
- 10 N-(3-methylthio-4-trifluoromethylphenyl)-3-(4-chlorophenyl)-4-carboethoxy-4-methyl-4,5-dihydro-1H-pyrazole-1-carboxamide
- N-(3-methylthiophenyl)-3-(3-chloro-4-trifluoromethylphenyl)-4-carboethoxy-4-methyl-4,5-dihydro-1H-pyrazole-1-carboxamide
- N-(3-methylthiophenyl)-3-(4-chlorophenyl)-4-carboethoxy-4-methyl-4,5-dihydro-1H-pyrazole-1-carboxamide
- 15 N-(3-nitro-4-trifluoromethylphenyl)-3-(3-chloro-4-trifluoromethylphenyl)-4-carboethoxy-4-methyl-4,5-dihydro-1H-pyrazole-1-carboxamide
- N-(3-nitro-4-trifluoromethylphenyl)-3-(4-chlorophenyl)-4-carboethoxy-4-methyl-4,5-dihydro-1H-pyrazole-1-carboxamide
- N-(3-trifluoromethoxy-4-trifluoromethylphenyl)-3-(3-chloro-4-trifluoromethylphenyl)-4-carboethoxy-4-methyl-4,5-dihydro-1H-pyrazole-1-carboxamide
- 20 N-(3-trifluoromethoxy-4-trifluoromethylphenyl)-3-(4-chlorophenyl)-4-carboethoxy-4-methyl-4,5-dihydro-1H-pyrazole-1-carboxamide
- N-(3-trifluoromethoxyphenyl)-3-(3-chloro-4-trifluoromethylphenyl)-4-carboethoxy-4-methyl-4,5-dihydro-1H-pyrazole-1-carboxamide
- 25 N-(3-trifluoromethoxyphenyl)-3-(4-chlorophenyl)-4-carboethoxy-4-methyl-4,5-dihydro-1H-pyrazole-1-carboxamide
- N-(3-trifluoromethylphenyl)-3-(3-chloro-4-trifluoromethylphenyl)-4-carboethoxy-4-methyl-4,5-dihydro-1H-pyrazole-1-carboxamide
- N-(3-trifluoromethylphenyl)-3-(4-chlorophenyl)-4-carboethoxy-4-methyl-4,5-dihydro-1H-pyrazole-1-carboxamide
- 30 N-(3-trifluoromethylphenyl)-3-(4-chlorophenyl)-4-carbomethoxy-4-methyl-4,5-dihydro-1H-pyrazole-1-carboxamide
- N-(4-bromo-3-methylphenyl)-3-(4-chlorophenyl)-4-carbomethoxy-4-methyl-4,5-dihydro-1H-pyrazole-1-carboxamide
- 35 N-(4-bromophenyl)-3-(3-chloro-4-trifluoromethylphenyl)-4-(3-methylthiopropyl)-4-acetyl-4,5-dihydro-1H-pyrazole-1-carboxamide
- N-(4-bromophenyl)-3-(3-chloro-4-trifluoromethylphenyl)-4-(3-methylthiopropyl)-4-carbomethoxy-4,5-dihydro-1H-pyrazole-1-carboxamide
- N-(4-bromophenyl)-3-(3-chloro-4-trifluoromethylphenyl)-4-carboethoxy-4-(2-chloroallyl)-4,5-dihydro-1H-pyrazole-1-carboxamide
- 40 N-(4-bromophenyl)-3-(3-chloro-4-trifluoromethylphenyl)-4-carboethoxy-4-(2-methylthioethyl)-4,5-dihydro-1H-pyrazole-1-carboxamide
- N-(4-bromophenyl)-3-(3-chloro-4-trifluoromethylphenyl)-4-carboethoxy-4-(3-cyanopropyl)-4,5-dihydro-1H-pyrazole-1-carboxamide
- 45 N-(4-bromophenyl)-3-(3-chloro-4-trifluoromethylphenyl)-4-carboethoxy-4-(4-chlorophenyl)-4,5-dihydro-1H-pyrazole-1-carboxamide
- N-(4-bromophenyl)-3-(3-chloro-4-trifluoromethylphenyl)-4-carboethoxy-4-(4-difluoromethoxyphenyl)-4,5-dihydro-1H-pyrazole-1-carboxamide
- 50 N-(4-bromophenyl)-3-(3-chloro-4-trifluoromethylphenyl)-4-carboethoxy-4-(4-trifluoromethoxyphenyl)-4,5-dihydro-1H-pyrazole-1-carboxamide
- N-(4-bromophenyl)-3-(3-chloro-4-trifluoromethylphenyl)-4-carboethoxy-4-acetyl-4,5-dihydro-1H-pyrazole-1-carboxamide
- 55 N-(4-bromophenyl)-3-(3-chloro-4-trifluoromethylphenyl)-4-carboethoxy-4-allyl-4,5-dihydro-1H-pyrazole-1-carboxamide
- N-(4-bromophenyl)-3-(3-chloro-4-trifluoromethylphenyl)-4-carboethoxy-4-benzyl-4,5-dihydro-1H-pyrazole-1-carboxamide

- N-(4-bromophenyl)-3-(3-chloro-4-trifluoromethylphenyl)-4-carboethoxy-4-carbomethoxy-4,5-dihydro-1H-pyrazole-1-carboxamide
- N-(4-bromophenyl)-3-(3-chloro-4-trifluoromethylphenyl)-4-carboethoxy-4-ethyl-4,5-dihydro-1H-pyrazole-1-carboxamide
- 5 N-(4-bromophenyl)-3-(3-chloro-4-trifluoromethylphenyl)-4-carboethoxy-4-methyl-4,5-dihydro-1H-pyrazole-1-carboxamide
- N-(4-bromophenyl)-3-(3-chloro-4-trifluoromethylphenyl)-4-carboethoxy-4-methoxymethyl-4,5-dihydro-1H-pyrazole-1-carboxamide
- 10 N-(4-bromophenyl)-3-(3-chloro-4-trifluoromethylphenyl)-4-carboethoxy-4-methyl-4,5-dihydro-1H-pyrazole-1-carboxamide
- N-(4-bromophenyl)-3-(3-chloro-4-trifluoromethylphenyl)-4-carboethoxy-4-methyl-N-(2-methoxyethylsulfenyl)-4,5-dihydro-1H-pyrazole-1-carboxamide
- N-(4-bromophenyl)-3-(3-chloro-4-trifluoromethylphenyl)-4-carboethoxy-4-methyl-N-(2-nitrophenylsulfenyl)-4,5-dihydro-1H-pyrazole-1-carboxamide
- 15 N-(4-bromophenyl)-3-(3-chloro-4-trifluoromethylphenyl)-4-carboethoxy-4-methyl-N-acetyl-4,5-dihydro-1H-pyrazole-1-carboxamide
- N-(4-bromophenyl)-3-(3-chloro-4-trifluoromethylphenyl)-4-carboethoxy-4-methyl-N-carboethoxy-4,5-dihydro-1H-pyrazole-1-carboxamide
- N-(4-bromophenyl)-3-(3-chloro-4-trifluoromethylphenyl)-4-carboethoxy-4-methyl-N-carbomethoxy-4,5-dihydro-1H-pyrazole-1-carboxamide
- 20 N-(4-bromophenyl)-3-(3-chloro-4-trifluoromethylphenyl)-4-carboethoxy-4-methyl-N-carbomethoxycarbonyl-4,5-dihydro-1H-pyrazole-1-carboxamide
- N-(4-bromophenyl)-3-(3-chloro-4-trifluoromethylphenyl)-4-carboethoxy-4-methyl-N-carbomethoxysulfenyl-4,5-dihydro-1H-pyrazole-1-carboxamide
- 25 N-(4-bromophenyl)-3-(3-chloro-4-trifluoromethylphenyl)-4-carboethoxy-4-methyl-N-dimethylcarbamoyl-4,5-dihydro-1H-pyrazole-1-carboxamide
- N-(4-bromophenyl)-3-(3-chloro-4-trifluoromethylphenyl)-4-carboethoxy-4-methyl-N-formyl-4,5-dihydro-1H-pyrazole-1-carboxamide
- N-(4-bromophenyl)-3-(3-chloro-4-trifluoromethylphenyl)-4-carboethoxy-4-methyl-N-methoxymethyl-4,5-dihydro-1H-pyrazole-1-carboxamide
- 30 N-(4-bromophenyl)-3-(3-chloro-4-trifluoromethylphenyl)-4-carboethoxy-4-methyl-N-methyl-4,5-dihydro-1H-pyrazole-1-carboxamide
- N-(4-bromophenyl)-3-(3-chloro-4-trifluoromethylphenyl)-4-carboethoxy-4-methyl-N-methylsulfenyl-4,5-dihydro-1H-pyrazole-1-carboxamide
- 35 N-(4-bromophenyl)-3-(3-chloro-4-trifluoromethylphenyl)-4-carboethoxy-4-methyl-N-trifluoroacetyl-4,5-dihydro-1H-pyrazole-1-carboxamide
- N-(4-bromophenyl)-3-(3-chloro-4-trifluoromethylphenyl)-4-carboethoxy-4-methylthiomethyl-4,5-dihydro-1H-pyrazole-1-carboxamide
- N-(4-bromophenyl)-3-(3-chloro-4-trifluoromethylphenyl)-4-carboethoxy-4-phenyl-4,5-dihydro-1H-pyrazole-1-carboxamide
- 40 N-(4-bromophenyl)-3-(3-chloro-4-trifluoromethylphenyl)-4-methyl-4-acetyl-4,5-dihydro-1H-pyrazole-1-carboxamide
- N-(4-bromophenyl)-3-(3-chloro-4-trifluoromethylphenyl)-4-methyl-4-carbomethoxy-4,5-dihydro-1H-pyrazole-1-carboxamide
- 45 N-(4-bromophenyl)-3-(3-chloro-4-trifluoromethylphenyl)-4-phenyl-4-acetyl-4,5-dihydro-1H-pyrazole-1-carboxamide
- N-(4-bromophenyl)-3-(3-chloro-4-trifluoromethylphenyl)-4-phenyl-4-carbomethoxy-4,5-dihydro-1H-pyrazole-1-carboxamide
- N-(4-bromophenyl)-3-(4-chlorophenyl)-4-(3-methylthiopropyl)-4-acetyl-4,5-dihydro-1H-pyrazole-1-carboxamide
- 50 N-(4-bromophenyl)-3-(4-chlorophenyl)-4-(3-methylthiopropyl)-4-carbomethoxy-4,5-dihydro-1H-pyrazole-1-carboxamide
- N-(4-bromophenyl)-3-(4-chlorophenyl)-4-carboethoxy-4-(2-chloroallyl)-4,5-dihydro-1H-pyrazole-1-carboxamide
- 55 N-(4-bromophenyl)-3-(4-chlorophenyl)-4-carboethoxy-4-(2-methylthioethyl)-4,5-dihydro-1H-pyrazole-1-carboxamide
- N-(4-bromophenyl)-3-(4-chlorophenyl)-4-carboethoxy-4-(3-cyanopropyl)-4,5-dihydro-1H-pyrazole-1-carboxamide

	N-(4-bromophenyl)-3-(4-chlorophenyl)-4-carboethoxy-4-(4-chlorophenyl)-4,5-dihydro-1H-pyrazole-1-carboxamide	
	N-(4-bromophenyl)-3-(4-chlorophenyl)-4-carboethoxy-4-(4-difluoromethoxyphenyl)-4,5-dihydro-1H-pyrazole-1-carboxamide	
5	N-(4-bromophenyl)-3-(4-chlorophenyl)-4-carboethoxy-4-(4-trifluoromethoxyphenyl)-4,5-dihydro-1H-pyrazole-1-carboxamide	5
	N-(4-bromophenyl)-3-(4-chlorophenyl)-4-carboethoxy-4-(4-trifluoromethylphenyl)-4,5-dihydro-1H-pyrazole-1-carboxamide	
10	N-(4-bromophenyl)-3-(4-chlorophenyl)-4-carboethoxy-4-acetyl-4,5-dihydro-1H-pyrazole-1-carboxamide	10
	N-(4-bromophenyl)-3-(4-chlorophenyl)-4-carboethoxy-4-allyl-4,5-dihydro-1H-pyrazole-1-carboxamide	
	N-(4-bromophenyl)-3-(4-chlorophenyl)-4-carboethoxy-4-benzyl-4,5-dihydro-1H-pyrazole-1-carboxamide	
	N-(4-bromophenyl)-3-(4-chlorophenyl)-4-carboethoxy-4-carbomethoxy-4,5-dihydro-1H-pyrazole-1-carboxamide	
15	N-(4-bromophenyl)-3-(4-chlorophenyl)-4-carboethoxy-4-ethyl-4,5-dihydro-1H-pyrazole-1-carboxamide	15
	N-(4-bromophenyl)-3-(4-chlorophenyl)-4-carboethoxy-4-methallyl-4,5-dihydro-1H-pyrazole-1-carboxamide	
	N-(4-bromophenyl)-3-(4-chlorophenyl)-4-carboethoxy-4-methoxymethyl-4,5-dihydro-1H-pyrazole-1-carboxamide	
20	N-(4-bromophenyl)-3-(4-chlorophenyl)-4-carboethoxy-4-methyl-4,5-dihydro-1H-pyrazole-1-carboxamide	20
	N-(4-bromophenyl)-3-(4-chlorophenyl)-4-carboethoxy-4-methyl-N-(2-methoxyethylsulfenyl)-4,5-dihydro-1H-pyrazole-1-carboxamide	
	N-(4-bromophenyl)-3-(4-chlorophenyl)-4-carboethoxy-4-methyl-N-(2-nitrophenylsulfenyl)-4,5-dihydro-1H-pyrazole-1-carboxamide	
	N-(4-bromophenyl)-3-(4-chlorophenyl)-4-carboethoxy-4-methyl-N-acetyl-4,5-dihydro-1H-pyrazole-1-carboxamide	
25	N-(4-bromophenyl)-3-(4-chlorophenyl)-4-carboethoxy-4-methyl-N-carboethoxy-4,5-dihydro-1H-pyrazole-1-carboxamide	25
	N-(4-bromophenyl)-3-(4-chlorophenyl)-4-carboethoxy-4-methyl-N-carbomethoxy-4,5-dihydro-1H-pyrazole-1-carboxamide	
30	N-(4-bromophenyl)-3-(4-chlorophenyl)-4-carboethoxy-4-methyl-N-carbomethoxycarbonyl-4,5-dihydro-1H-pyrazole-1-carboxamide	30
	N-(4-bromophenyl)-3-(4-chlorophenyl)-4-carboethoxy-4-methyl-N-carbomethoxysulfenyl-4,5-dihydro-1H-pyrazole-1-carboxamide	
	N-(4-bromophenyl)-3-(4-chlorophenyl)-4-carboethoxy-4-methyl-N-dimethylcarbonyl-4,5-dihydro-1H-pyrazole-1-carboxamide	
35	N-(4-bromophenyl)-3-(4-chlorophenyl)-4-carboethoxy-4-methyl-N-formyl-4,5-dihydro-1H-pyrazole-1-carboxamide	35
	N-(4-bromophenyl)-3-(4-chlorophenyl)-4-carboethoxy-4-methyl-N-methoxymethyl-4,5-dihydro-1H-pyrazole-1-carboxamide	
	N-(4-bromophenyl)-3-(4-chlorophenyl)-4-carboethoxy-4-methyl-N-methyl-4,5-dihydro-1H-pyrazole-1-carboxamide	
40	N-(4-bromophenyl)-3-(4-chlorophenyl)-4-carboethoxy-4-methyl-N-methylsulfenyl-4,5-dihydro-1H-pyrazole-1-carboxamide	40
	N-(4-bromophenyl)-3-(4-chlorophenyl)-4-carboethoxy-4-methyl-N-trifluoroacetyl-4,5-dihydro-1H-pyrazole-1-carboxamide	
45	N-(4-bromophenyl)-3-(4-chlorophenyl)-4-carboethoxy-4-methylthiomethyl-4,5-dihydro-1H-pyrazole-1-carboxamide	45
	N-(4-bromophenyl)-3-(4-chlorophenyl)-4-carboethoxy-4-phenyl-4,5-dihydro-1H-pyrazole-1-carboxamide	
	N-(4-bromophenyl)-3-(4-chlorophenyl)-4-carbomethoxy-4-methyl-4,5-dihydro-1H-pyrazole-1-carboxamide	
50	N-(4-bromophenyl)-3-(4-chlorophenyl)-4-methyl-4-acetyl-4,5-dihydro-1H-pyrazole-1-carboxamide	50
	N-(4-bromophenyl)-3-(4-chlorophenyl)-4-methyl-4-carbomethoxy-4,5-dihydro-1H-pyrazole-1-carboxamide	
	N-(4-bromophenyl)-3-(4-chlorophenyl)-4-phenyl-4-acetyl-4,5-dihydro-1H-pyrazole-1-carboxamide	
	N-(4-bromophenyl)-3-(4-chlorophenyl)-4-phenyl-4-carbomethoxy-4,5-dihydro-1H-pyrazole-1-carboxamide	
	N-(4-bromophenyl)-3-(4-fluorophenyl)-4-carbomethoxy-4-methyl-4,5-dihydro-1H-pyrazole-1-carboxamide	
55	N-(4-carboethoxyphenyl)-3-(3-chloro-4-trifluoromethylphenyl)-4-carboethoxy-4-methyl-4,5-dihydro-1H-pyrazole-1-carboxamide	55
	N-(4-carboethoxyphenyl)-3-(4-chlorophenyl)-4-carboethoxy-4-methyl-4,5-dihydro-1H-pyrazole-1-carboxamide	

[illegible]

- carboxamide
- N-(4-methylphenyl)-3-(4-chlorophenyl)-4-carbomethoxy-4-methyl-4,5-dihydro-1H-pyrazole-1-carboxamide
- N-(4-methylsulfonylphenyl)-3-(3-chloro-4-trifluoromethylphenyl)-4-carboethoxy-4-methyl-4,5-dihydro-1H-pyrazole-1-carboxamide
- 5 N-(4-methylsulfonylphenyl)-3-(4-chlorophenyl)-4-carboethoxy-4-methyl-4,5-dihydro-1H-pyrazole-1-carboxamide
- N-(4-methylsulfonylphenyl)-3-(4-chlorophenyl)-4-carbomethoxy-4-methyl-4,5-dihydro-1H-pyrazole-1-carboxamide
- 10 N-(4-methylsulfoxylphenyl)-3-(4-chlorophenyl)-4-carbomethoxy-4-methyl-4,5-dihydro-1H-pyrazole-1-carboxamide
- N-(4-methylthiophenyl)-3-(3-chloro-4-trifluoromethylphenyl)-4-carboethoxy-4-methyl-4,5-dihydro-1H-pyrazole-1-carboxamide
- N-(4-methylthiophenyl)-3-(4-chlorophenyl)-4-carboethoxy-4-methyl-4,5-dihydro-1H-pyrazole-1-carboxamide
- 15 N-(4-methylthiophenyl)-3-(4-chlorophenyl)-4-carbomethoxy-4-methyl-4,5-dihydro-1H-pyrazole-1-carboxamide
- N-(4-nitrophenyl)-3-(3-chloro-4-trifluoromethylphenyl)-4-carboethoxy-4-methyl-4,5-dihydro-1H-pyrazole-1-carboxamide
- N-(4-nitrophenyl)-3-(4-chlorophenyl)-4-carboethoxy-4-methyl-4,5-dihydro-1H-pyrazole-1-carboxamide
- 20 N-(4-nitrophenyl)-3-(4-chlorophenyl)-4-carbomethoxy-4,5-dihydro-1H-pyrazole-1-carboxamide
- N-(4-trifluoromethoxyphenyl)-3-(3-chloro-4-trifluoromethylphenyl)-4-carboethoxy-4-methyl-4,5-dihydro-1H-pyrazole-1-carboxamide
- N-(4-trifluoromethoxyphenyl)-3-(4-chlorophenyl)-4-carboethoxy-4-methyl-4,5-dihydro-1H-pyrazole-1-carboxamide
- 25 N-(4-trimethylammoniumphenyl)-3-(4-chlorophenyl)-4-carbomethoxy-4-methyl-4,5-dihydro-1H-pyrazole-1-carboxamide iodide
- N-(4-trifluoromethylphenyl)-3-(4-chlorophenyl)-4-dimethylcarbamoyl-4-methyl-4,5-dihydro-1H-pyrazole-1-carboxamide
- N-(4-trifluoromethoxyphenyl)-3-(4-chlorophenyl)-4-carbomethoxy-4-methyl-4,5-dihydro-1H-pyrazole-1-carboxamide
- 30 N-(4-trifluoromethylphenyl)-3-(3-chloro-4-trifluoromethylphenyl)-4-(3-methylthiopropyl)-4-acetyl-4,5-dihydro-1H-pyrazole-1-carboxamide
- N-(4-trifluoromethylphenyl)-3-(3-chloro-4-trifluoromethylphenyl)-4-(3-methylthiopropyl)-4-carbomethoxy-4,5-dihydro-1H-pyrazole-1-carboxamide
- 35 N-(4-trifluoromethylphenyl)-3-(3-chloro-4-trifluoromethylphenyl)-4-carboethoxy-4-(2-chloroallyl)-4,5-dihydro-1H-pyrazole-1-carboxamide
- N-(4-trifluoromethylphenyl)-3-(3-chloro-4-trifluoromethylphenyl)-4-carboethoxy-4-(2-methylthioethyl)-4,5-dihydro-1H-pyrazole-1-carboxamide
- 40 N-(4-trifluoromethylphenyl)-3-(3-chloro-4-trifluoromethylphenyl)-4-carboethoxy-4-(3-cyanopropyl)-4,5-dihydro-1H-pyrazole-1-carboxamide
- N-(4-trifluoromethylphenyl)-3-(3-chloro-4-trifluoromethylphenyl)-4-carboethoxy-4-(4-chlorophenyl)-4,5-dihydro-1H-pyrazole-1-carboxamide
- N-(4-trifluoromethylphenyl)-3-(3-chloro-4-trifluoromethylphenyl)-4-carboethoxy-4-(4-difluoromethoxyphenyl)-4,5-dihydro-1H-pyrazole-1-carboxamide
- 45 N-(4-trifluoromethylphenyl)-3-(3-chloro-4-trifluoromethylphenyl)-4-carboethoxy-4-(4-trifluoromethoxyphenyl)-4,5-dihydro-1H-pyrazole-1-carboxamide
- N-(4-trifluoromethylphenyl)-3-(3-chloro-4-trifluoromethylphenyl)-4-carboethoxy-4-(4-trifluoromethylphenyl)-4,5-dihydro-1H-pyrazole-1-carboxamide
- N-(4-trifluoromethylphenyl)-3-(3-chloro-4-trifluoromethylphenyl)-4-carboethoxy-4-acetyl-4,5-dihydro-1H-pyrazole-1-carboxamide
- 50 N-(4-trifluoromethylphenyl)-3-(3-chloro-4-trifluoromethylphenyl)-4-carboethoxy-4-allyl-4,5-dihydro-1H-pyrazole-1-carboxamide
- N-(4-trifluoromethylphenyl)-3-(3-chloro-4-trifluoromethylphenyl)-4-carboethoxy-4-benzyl-4,5-dihydro-1H-pyrazole-1-carboxamide
- 55 N-(4-trifluoromethylphenyl)-3-(13-chloro-4-trifluoromethylphenyl)-4-carboethoxy-4-carbomethoxy-4,5-dihydro-1H-pyrazole-1-carboxamide
- N-(4-trifluoromethylphenyl)-3-(3-chloro-4-trifluoromethylphenyl)-4-carboethoxy-4-ethyl-4,5-dihydro-1H-pyrazole-1-carboxamide

- N-(4-trifluoromethylphenyl)-3-(3-chloro-4-trifluoromethylphenyl)-4-carboethoxy-4-methallyl-4,5-dihydro-1H-pyrazole-1-carboxamide
- N-(4-trifluoromethylphenyl)-3-(3-chloro-4-trifluoromethylphenyl)-4-carboethoxy-4-methoxymethyl-4,5-dihydro-1H-pyrazole-1-carboxamide
- 5 N-(4-trifluoromethylphenyl)-3-(3-chloro-4-trifluoromethylphenyl)-4-carboethoxy-4-methyl-4,5-dihydro-1H-pyrazole-1-carboxamide
- N-(4-trifluoromethylphenyl)-3-(3-chloro-4-trifluoromethylphenyl)-4-carboethoxy-4-methyl-N-(2-methoxyethylsulfenyl)-4,5-dihydro-1H-pyrazole-1-carboxamide
- 10 N-(4-trifluoromethylphenyl)-3-(3-chloro-4-trifluoromethylphenyl)-4-carboethoxy-4-methyl-N-(2-nitrophenylsulfenyl)-4,5-dihydro-1H-pyrazole-1-carboxamide
- N-(4-trifluoromethylphenyl)-3-(3-chloro-4-trifluoromethylphenyl)-4-carboethoxy-4-methyl-N-acetyl-4,5-dihydro-1H-pyrazole-1-carboxamide
- N-(4-trifluoromethylphenyl)-3-(3-chloro-4-trifluoromethylphenyl)-4-carboethoxy-4-methyl-N-carboethoxy-4,5-dihydro-1H-pyrazole-1-carboxamide
- 15 N-(4-trifluoromethylphenyl)-3-(3-chloro-4-trifluoromethylphenyl)-4-carboethoxy-4-methyl-N-carbomethoxy-4,5-dihydro-1H-pyrazole-1-carboxamide
- N-(4-trifluoromethylphenyl)-3-(3-chloro-4-trifluoromethylphenyl)-4-carboethoxy-4-methyl-N-carbomethoxycarbonyl-4,5-dihydro-1H-pyrazole-1-carboxamide
- N-(4-trifluoromethylphenyl)-3-(3-chloro-4-trifluoromethylphenyl)-4-carboethoxy-4-methyl-N-carbomethoxysulfenyl-4,5-dihydro-1H-pyrazole-1-carboxamide
- 20 N-(4-trifluoromethylphenyl)-3-(3-chloro-4-trifluoromethylphenyl)-4-carboethoxy-4-methyl-N-dimethylcarbamoyl-4,5-dihydro-1H-pyrazole-1-carboxamide
- N-(4-trifluoromethylphenyl)-3-(3-chloro-4-trifluoromethylphenyl)-4-carboethoxy-4-methyl-N-formyl-4,5-dihydro-1H-pyrazole-1-carboxamide
- 25 N-(4-trifluoromethylphenyl)-3-(3-chloro-4-trifluoromethylphenyl)-4-carboethoxy-4-methyl-N-methoxymethyl-4,5-dihydro-1H-pyrazole-1-carboxamide
- N-(4-trifluoromethylphenyl)-3-(3-chloro-4-trifluoromethylphenyl)-4-carboethoxy-4-methyl-N-methyl-4,5-dihydro-1H-pyrazole-1-carboxamide
- N-(4-trifluoromethylphenyl)-3-(3-chloro-4-trifluoromethylphenyl)-4-carboethoxy-4-methyl-N-methylsulfenyl-4,5-dihydro-1H-pyrazole-1-carboxamide
- 30 N-(4-trifluoromethylphenyl)-3-(3-chloro-4-trifluoromethylphenyl)-4-carboethoxy-4-methyl-N-trifluoroacetyl-4,5-dihydro-1H-pyrazole-1-carboxamide
- N-(4-trifluoromethylphenyl)-3-(3-chloro-4-trifluoromethylphenyl)-4-carboethoxy-4-methylthiomethyl-4,5-dihydro-1H-pyrazole-1-carboxamide
- 35 N-(4-trifluoromethylphenyl)-3-(3-chloro-4-trifluoromethylphenyl)-4-carboethoxy-4-phenyl-4,5-dihydro-1H-pyrazole-1-carboxamide
- N-(4-trifluoromethylphenyl)-3-(3-chloro-4-trifluoromethylphenyl)-4-methyl-4-acetyl-4,5-dihydro-1H-pyrazole-1-carboxamide
- N-(4-trifluoromethylphenyl)-3-(3-chloro-4-trifluoromethylphenyl)-4-methyl-4-carbomethoxy-4,5-dihydro-1H-pyrazole-1-carboxamide
- 40 N-(4-trifluoromethylphenyl)-3-(3-chloro-4-trifluoromethylphenyl)-4-phenyl-4-acetyl-4,5-dihydro-1H-pyrazole-1-carboxamide
- N-(4-trifluoromethylphenyl)-3-(3-chloro-4-trifluoromethylphenyl)-4-phenyl-4-carbomethoxy-4,5-dihydro-1H-pyrazole-1-carboxamide
- 45 N-(4-trifluoromethylphenyl)-3-(4-chlorophenyl)-4-(3-methylthiopropyl)-4-acetyl-4,5-dihydro-1H-pyrazole-1-carboxamide
- N-(4-trifluoromethylphenyl)-3-(4-chlorophenyl)-4-(3-methylthiopropyl)-4-carbomethoxy-4,5-dihydro-1H-pyrazole-1-carboxamide
- N-(4-trifluoromethylphenyl)-3-(4-chlorophenyl)-4-carboethoxy-4-(2-chloroallyl)-4,5-dihydro-1H-pyrazole-1-carboxamide
- 50 N-(4-trifluoromethylphenyl)-3-(4-chlorophenyl)-4-carboethoxy-4-(2-methylthioethyl)-4,5-dihydro-1H-pyrazole-1-carboxamide
- N-(4-trifluoromethylphenyl)-3-(4-chlorophenyl)-4-carboethoxy-4-(3-cyanopropyl)-4,5-dihydro-1H-pyrazole-1-carboxamide
- 55 N-(4-trifluoromethylphenyl)-3-(4-chlorophenyl)-4-carboethoxy-4-(4-chlorophenyl)-4,5-dihydro-1H-pyrazole-1-carboxamide
- N-(4-trifluoromethylphenyl)-3-(4-chlorophenyl)-4-carboethoxy-4-(4-difluoromethoxyphenyl)-4,5-dihydro-1H-pyrazole-1-carboxamide

- N-(4-trifluoromethylphenyl)-3-(4-chlorophenyl)-4-carboethoxy-4-(4-trifluoromethoxyphenyl)-4,5-dihydro-1H-pyrazole-1-carboxamide
- N-(4-trifluoromethylphenyl)-3-(4-chlorophenyl)-4-carboethoxy-4-(4-trifluoromethylphenyl)-4,5-dihydro-1H-pyrazole-1-carboxamide
- 5 N-(4-trifluoromethylphenyl)-3-(4-chlorophenyl)-4-carboethoxy-4-acetyl-4,5-dihydro-1H-pyrazole-1-carboxamide
- N-(4-trifluoromethylphenyl)-3-(4-chlorophenyl)-4-carboethoxy-4-allyl-4,5-dihydro-1H-pyrazole-1-carboxamide
- 10 N-(4-trifluoromethylphenyl)-3-(4-chlorophenyl)-4-carboethoxy-4-benzyl-4,5-dihydro-1H-pyrazole-1-carboxamide
- N-(4-trifluoromethylphenyl)-3-(4-chlorophenyl)-4-carboethoxy-4-carbomethoxy-4,5-dihydro-1H-pyrazole-1-carboxamide
- N-(4-trifluoromethylphenyl)-3-(4-chlorophenyl)-4-carboethoxy-4-ethyl-4,5-dihydro-1H-pyrazole-1-carboxamide
- 15 N-(4-trifluoromethylphenyl)-3-(4-chlorophenyl)-4-carboethoxy-4-methallyl-4,5-dihydro-1H-pyrazole-1-carboxamide
- N-(4-trifluoromethylphenyl)-3-(4-chlorophenyl)-4-carboethoxy-4-methoxymethyl-4,5-dihydro-1H-pyrazole-1-carboxamide
- 20 N-(4-trifluoromethylphenyl)-3-(4-chlorophenyl)-4-carboethoxy-4-methyl-4,5-dihydro-1H-pyrazole-1-carboxamide
- N-(4-trifluoromethylphenyl)-3-(4-chlorophenyl)-4-carboethoxy-4-methyl-N-(2-methoxyethylsulfenyl)-4,5-dihydro-1H-pyrazole-1-carboxamide
- N-(4-trifluoromethylphenyl)-3-(4-chlorophenyl)-4-carboethoxy-4-methyl-N-(2-nitrophenylsulfenyl)-4,5-dihydro-1H-pyrazole-1-carboxamide
- 25 N-(4-trifluoromethylphenyl)-3-(4-chlorophenyl)-4-carboethoxy-4-methyl-N-acetyl-4,5-dihydro-1H-pyrazole-1-carboxamide
- N-(4-trifluoromethylphenyl)-3-(4-chlorophenyl)-4-carboethoxy-4-methyl-N-carboethoxy-4,5-dihydro-1H-pyrazole-1-carboxamide
- N-(4-trifluoromethylphenyl)-3-(4-chlorophenyl)-4-carboethoxy-4-methyl-N-carbomethoxy-4,5-dihydro-1H-pyrazole-1-carboxamide
- 30 N-(4-trifluoromethylphenyl)-3-(4-chlorophenyl)-4-carboethoxy-4-methyl-N-carbomethoxycarbonyl-4,5-dihydro-1H-pyrazole-1-carboxamide
- N-(4-trifluoromethylphenyl)-3-(4-chlorophenyl)-4-carboethoxy-4-methyl-N-carbomethoxysulfenyl-4,5-dihydro-1H-pyrazole-1-carboxamide
- 35 N-(4-trifluoromethylphenyl)-3-(4-chlorophenyl)-4-carboethoxy-4-methyl-N-dimethylcarbamoyl-4,5-dihydro-1H-pyrazole-1-carboxamide
- N-(4-trifluoromethylphenyl)-3-(4-chlorophenyl)-4-carboethoxy-4-methyl-N-formyl-4,5-dihydro-1H-pyrazole-1-carboxamide
- 40 N-(4-trifluoromethylphenyl)-3-(4-chlorophenyl)-4-carboethoxy-4-methyl-N-methoxymethyl-4,5-dihydro-1H-pyrazole-1-carboxamide
- N-(4-trifluoromethylphenyl)-3-(4-chlorophenyl)-4-carboethoxy-4-methyl-N-methyl-4,5-dihydro-1H-pyrazole-1-carboxamide
- N-(4-trifluoromethylphenyl)-3-(4-chlorophenyl)-4-carboethoxy-4-methyl-N-methylsulfenyl-4,5-dihydro-1H-pyrazole-1-carboxamide
- 45 N-(4-trifluoromethylphenyl)-3-(4-chlorophenyl)-4-carboethoxy-4-methyl-N-trifluoroacetyl-4,5-dihydro-1H-pyrazole-1-carboxamide
- N-(4-trifluoromethylphenyl)-3-(4-chlorophenyl)-4-carboethoxy-4-methylthiomethyl-4,5-dihydro-1H-pyrazole-1-carboxamide
- N-(4-trifluoromethylphenyl)-3-(4-chlorophenyl)-4-carboethoxy-4-phenyl-4,5-dihydro-1H-pyrazole-1-carboxamide
- 50 N-(4-trifluoromethylphenyl)-3-(4-chlorophenyl)-4-carbomethoxy-4-methyl-4,5-dihydro-1H-pyrazole-1-carboxamide
- N-(4-trifluoromethylphenyl)-3-(4-chlorophenyl)-4-methyl-4-acetyl-4,5-dihydro-1H-pyrazole-1-carboxamide
- N-(4-trifluoromethylphenyl)-3-(4-chlorophenyl)-4-methyl-4-carbomethoxy-4,5-dihydro-1H-pyrazole-1-carboxamide
- 55 N-(4-trifluoromethylphenyl)-3-(4-chlorophenyl)-4-phenyl-4-acetyl-4,5-dihydro-1H-pyrazole-1-carboxamide
- N-(4-trifluoromethylphenyl)-3-(4-chlorophenyl)-4-phenyl-4-carbomethoxy-4,5-dihydro-1H-pyrazole-1-carboxamide
- N-(4-trifluoromethylphenyl)-3-phenyl-4-carboethoxy-4,5-dihydro-1H-pyrazole-1-carboxamide

N-(4-trifluoromethylphenyl)-3-phenyl-4-carbomethoxy-4-methyl-4,5-dihydro-1H-pyrazole-1-carboxamide
 N-(4-trifluoromethylphenyl)-3-phenyl-4-dimethylcarbamoxy-4,5-dihydro-1H-pyrazole-1-carboxamide
 N-phenyl-3-(3-chloro-4-trifluoromethylphenyl)-4-carboethoxy-4-methyl-4,5-dihydro-1H-pyrazole-1-carboxamide

- 5 N-phenyl-3-(4-chlorophenyl)-4-carboethoxy-4-methyl-4,5-dihydro-1H-pyrazole-1-carboxamide
 N-phenyl-3-(4-chlorophenyl)-4-carbomethoxy-4-methyl-4,5-dihydro-1H-pyrazole-1-carboxamide

The present invention includes unique processes for preparing 1-substituted-4-substituted-4,5-dihydro-1H-pyrazoles. One of these processes comprises dissolving a 1-substituted-4,5-dihydro-1H-pyrazole in an aprotic solvent, mixing a strong base with the resultant solution, allowing deprotonation to take place at the
 10 4 position of the pyrazole ring, and then adding an alkylating or acylating agent, wherein the 1-substituted-4,5-dihydro-1H-pyrazole dissolved in the aprotic solvent must be a 1-substituted-4-monosubstituted-4,5-dihydro-1H-pyrazole when the desired end product is a 1-substituted-4,4-disubstituted-4,5-dihydro-1H-pyrazole. Processes for making 1-substituted-4-monosubstituted-4,5-dihydro-1H-pyrazole and 1-substituted-4-unsubstituted-4,5-dihydro-1H-pyrazole are known to those skilled in the art (See, e.g., U.S. Patent No.
 15 4,156,007) and are described in Examples A through J.

In carrying out the process, the 1-substituted-4,5-dihydro-1H-pyrazole which is dissolved in the aprotic solvent may be added to the base or the base may be added to the 1-substituted-4,5-dihydro-1H-pyrazole which has been dissolved in the aprotic solvent. Any 1-substituted-4,5-dihydro-1H-pyrazole may be dissolved in the aprotic solvent. Examples of 1-substituted-4,5-dihydro-1H-pyrazoles which may be employed in the process of this invention include, but are not limited to:

- 20 N,3,4-tris-(4-chlorophenyl)-4,5-dihydro-1H-pyrazole-1-carboxamide
 N,3-bis-(3,4-dichlorophenyl)-4-phenyl-4,5-dihydro-1H-pyrazole-1-carboxamide
 N,3-bis-(4-chlorophenyl)-4-methyl-4,5-dihydro-1H-pyrazole-1-carboxamide
 N,3-bis-(4-chlorophenyl)-4-phenyl-4,5-dihydro-1H-pyrazole-1-carboxamide
 25 N,3-bis-(4-chlorophenyl)-4-(2-methylethyl)-4,5-dihydro-1H-pyrazole-1-carboxamide
 N,3-bis-(4-chlorophenyl)-4-(2-methylpropyl)-4,5-dihydro-1H-pyrazole-1-carboxamide
 N,3-bis-(4-chlorophenyl)-4-(4-chlorobutyl)-4,5-dihydro-1H-pyrazole-1-carboxamide
 N,3-bis-(4-chlorophenyl)-4-cyclohexyl-4,5-dihydro-1H-pyrazole-1-carboxamide
 N,3-bis-(4-chlorophenyl)-4-ethyl-4,5-dihydro-1H-pyrazole-1-carboxamide
 30 N,3-bis-(4-chlorophenyl)-4-phenyl-4,5-dihydro-1H-pyrazole-1-thiocarboxamide
 N-(3-chlorophenyl)-3-(4-chlorophenyl)-4-phenyl-4,5-dihydro-1H-pyrazole-1-carboxamide
 N-(4-bromophenyl)-3-(4-fluorophenyl)-4-methyl-4,5-dihydro-1H-pyrazole-1-carboxamide
 N-(4-carboethoxyphenyl)-3-(4-chlorophenyl)-4-phenyl-4,5-dihydro-1H-pyrazole-1-carboxamide
 N-(4-carboisopropoxyphenyl)-3-(4-chlorophenyl)-4-phenyl-4,5-dihydro-1H-pyrazole-1-carboxamide
 35 N-(2,4-dichlorophenyl)-3-(4-chlorophenyl)-4-phenyl-4,5-dihydro-1H-pyrazole-1-carboxamide
 N-(2-pyridyl)-3-(4-chlorophenyl)-4-phenyl-4,5-dihydro-1H-pyrazole-1-carboxamide
 N-(3,4-dichlorophenyl)-3,4-bis-(4-chlorophenyl)-4,5-dihydro-1H-pyrazole-1-carboxamide
 N-(3,4-dichlorophenyl)-3-(4-difluoromethoxyphenyl)-4-phenyl-4,5-dihydro-1H-pyrazole-1-carboxamide
 N-(3,5-dichlorophenyl)-3-(4-chlorophenyl)-4-phenyl-4,5-dihydro-1H-pyrazole-1-carboxamide
 40 N-(3-chlorophenyl)-3-(4-chlorophenyl)-4-phenyl-4,5-dihydro-1H-pyrazole-1-carboxamide
 N-(3-cyanophenyl)-3-(4-chlorophenyl)-4-phenyl-4,5-dihydro-1H-pyrazole-1-carboxamide
 N-(3-phenoxyphenyl)-3-(4-chlorophenyl)-4-phenyl-4,5-dihydro-1H-pyrazole-1-carboxamide
 N-(3-pyridyl)-3-(4-chlorophenyl)-4-phenyl-4,5-dihydro-1H-pyrazole-1-carboxamide
 N-(3-trifluoromethylphenyl)-3-(4-chlorophenyl)-4-phenyl-4,5-dihydro-1H-pyrazole-1-carboxamide
 45 N-(4-trifluoromethylphenyl)-3-(4-chlorophenyl)-4-phenyl-4,5-dihydro-1H-pyrazole-1-carboxamide
 N,3-bis-(4-trifluoromethylphenyl)-4-phenyl-4,5-dihydro-1H-pyrazole-1-carboxamide
 N-(4-trifluoromethylphenyl)-3-(4-chlorophenyl)-4-methyl-4,5-dihydro-1H-pyrazole-1-carboxamide
 N,3-bis-(4-trifluoromethylphenyl)-4-methyl-4,5-dihydro-1H-pyrazole-1-carboxamide
 N-(4-bromophenyl)-3-(4-chlorophenyl)-4-methyl-4,5-dihydro-1H-pyrazole-1-carboxamide
 50 N-(4-bromophenyl)-3-(4-chlorophenyl)-4-phenyl-4,5-dihydro-1H-pyrazole-1-carboxamide
 N-(4-carboethoxyphenyl)-3,4-diphenyl-4,5-dihydro-1H-pyrazole-1-carboxamide
 N-(4-carboethoxyphenyl)-3-(4-chlorophenyl)-4-phenyl-4,5-dihydro-1H-pyrazole-1-carboxamide
 N-(4-carboisopropoxyphenyl)-3,4-diphenyl-4,5-dihydro-1H-pyrazole-1-carboxamide
 N-(4-carboisopropoxyphenyl)-3-(4-chlorophenyl)-4-phenyl-4,5-dihydro-1H-pyrazole-1-carboxamide
 55 N-(4-carbomethoxyphenyl)-3-(4-chlorophenyl)-4-phenyl-4,5-dihydro-1H-pyrazole-1-carboxamide
 N-(4-chlorophenyl)-3,4-diphenyl-4,5-dihydro-1H-pyrazole-1-carboxamide
 N-(4-chlorophenyl)-3-(3,4-dichlorophenyl)-4-phenyl-4,5-dihydro-1H-pyrazole-1-carboxamide
 N-(4-chlorophenyl)-3-(4-bromophenyl)-4-methyl-4,5-dihydro-1H-pyrazole-1-carboxamide

N-(4-chlorophenyl)-3-(4-difluoromethoxyphenyl)-4-phenyl-4,5-dihydro-1H-pyrazole-1-carboxamide
 N-(4-chlorophenyl)-3-(4-fluorophenyl)-4-methyl-4,5-dihydro-1H-pyrazole-1-carboxamide
 N-(4-chlorophenyl)-3-phenyl-4-methyl-4,5-dihydro-1H-pyrazole-1-carboxamide
 N-(4-difluoromethoxyphenyl)-3-(4-chlorophenyl)-4-phenyl-4,5-dihydro-1H-pyrazole-1-carboxamide
 5 N-(4-fluorophenyl)-3-(4-chlorophenyl)-4-phenyl-4,5-dihydro-1H-pyrazole-1-carboxamide
 N-(4-nitrophenyl)-3-(4-chlorophenyl)-4-phenyl-4,5-dihydro-1H-pyrazole-1-carboxamide
 N-(4-phenoxyphenyl)-3-(4-chlorophenyl)-4-phenyl-4,5-dihydro-1H-pyrazole-1-carboxamide
 N-(4-phenyl)-3-(4-chlorophenyl)-4-phenyl-4,5-dihydro-1H-pyrazole-1-carboxamide
 N-(4-pyridyl)-3-(4-chlorophenyl)-4-phenyl-4,5-dihydro-1H-pyrazole-1-carboxamide

10 Preferably, the base used is a strong base; that is, a base having sufficient strength to deprotonate the 4,5-dihydro-1H-pyrazole at the 4-position of the pyrazole ring. Therefore, a base, the conjugate acid of which has a pKa of at least about 10, is required.

Suitable bases for use in this process include, but are not limited to, alkali metal hydroxides, alkaline earth hydroxides, alkali metal alkoxides, alkaline earth alkoxides, alkali metal hydrides, alkaline earth hydrides, alkali metal oxides, alkaline earth oxides, alkali metal amides, alkaline earth amides, alkali metal alkyl, alkali metal aryl, alkaline earth metal alkyl, alkaline earth metal aryl alkyl lithiums, aryl lithiums or such other strong bases as are known to those skilled in the art. The preferred bases are alkali metal amides. The most preferred base is lithium diisopropylamide.

The reaction must be carried out in the presence of an aprotic solvent. Suitable aprotic solvents are those not significantly deprotonated under reaction conditions. Aprotic solvents that are useful in carrying out the invention include, but are not limited to, dialkyl ethers, tetrahydrofuran, aliphatic hydrocarbons, aromatic hydrocarbons, aliphatic alcohols, amines, ammonia, dialkyl amides, dialkyl sulfoxides, dialkyl sulfones, polyalkyl phosphoric amides, and such other solvents that are known by those skilled in the art. Preferred solvents are dialkyl ethers, ammonia, tetrahydrofuran, and amines. The most preferred solvent is tetrahydrofuran.

Alkylating and/or acylating agents that are useful in carrying out the process of this invention vary with the particular compound being synthesized. For example, to effect a methylation, appropriate alkylating agents would include, but are not limited to, methyl chloride, methyl bromide, methyl iodide, methyl arylsulfonates, methyl alkylsulfonates, methyl sulfate, trimethyl oxonium salts, methyl halosulfonates, and such other methylating agents as are known to those skilled in the art. A preferred alkylating agent is allyl chloride. Preferred methylating agents are methyl chloride, methyl bromide, methyl iodide, and methyl sulfate. The most preferred methylating agent is methyl iodide. Examples of acylating agents include but are not limited to: alkanoyl chlorides, aroyl chlorides, alkyl chloroformates, aryl chloroformates, alkyl carbonates, aryl carbonates, alkyl isocyanates, aryl isocyanates, alkyl isothiocyanates, aryl isothiocyanates, dialkyl carbamoyl chlorides, alkyl chlorothioformates, aryl chlorothioformates, dialkyl carbodiimides, alkyl aryl carbodiimides, diaryl carbodiimides, carbon dioxide, and carbon disulfide. Those skilled in the art will be able to choose other appropriate alkylating and/or acylating agents to introduce other Y groups.

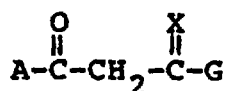
The reaction temperature can be varied within a substantial range. In general, the reaction is carried out at from about -120°C to about 200°C, preferable at from about -78°C to about 100°C. The process is preferably carried out over a time period of 1 second to 48 hours and most preferably over a time period from 1 minute to 1 hour. The reaction is allowed to take place under normal pressure. The most preferred temperature is -10°C. Yields may be improved by carrying out the reaction at temperatures from -80°C to -30°C when using acylating agents.

To carry out the process, the materials are preferably employed in stoichiometric amounts. An excess of one or the other component produces no significant advantages. After completion of the reaction, acetic acid is added to neutralize the reaction.

A second process for preparing compounds of the present invention where Y is a group having the formula

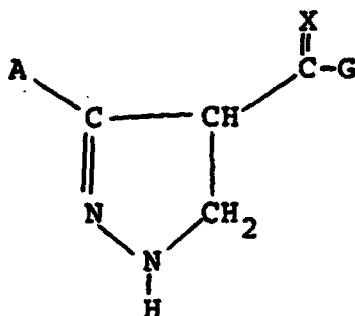


(Group B) comprises treating a beta-dicarbonyl compound of the Formula II



II

where A, X and G are as defined above for Formula I with a mixture of hydrazine and formaldehyde to produce a 3-aryl-4-monosubstituted-4,5-dihydropyrazole having the formula



III

Where A, X, and G are as defined above for Formula I. Treatment of the dihydropyrazole of Formula III with an aryl isocyanate gives the N-aryl-3-aryl-4-monosubstituted-4,5-dihydropyrazole-1-carboxamides of this invention.

Further treatment of this 1-substituted-4-monosubstituted-4,5-dihydropyrazole-1-carboxamide with a base, followed by an alkylating agent or acylating agent will yield the N-aryl-3-aryl-4,4-disubstituted-4,5-dihydropyrazole-1-carboxamides of this invention.

In carrying out the process, to produce a 3-aryl-4-monosubstituted-4,5-dihydropyrazole having the Formula III, any beta-dicarbonyl compound of Formula II may be used. Examples of beta-dicarbonyl compounds which may be employed in this process of the invention include, but are not limited to:

- 2-endo-norbornyl 3-(3-chloro-4-difluoromethylphenyl)-3-oxo-propanoate;
- 2-endo-norbornyl 3-(4-chlorophenyl)-3-oxo-propanoate;
- 2-methylthioethyl 3-(3-methyl-4-trifluoromethylphenyl)-3-oxo-propanoate;
- 2-methylthioethyl 3-(4-chlorophenyl)-3-oxo-propanoate;
- 3'-trifluoromethylbenzyl 3-(3-chloro-4-difluoromethoxyphenyl)-3-oxo-propanoate;
- 3'-trifluoromethylbenzyl 3-(4-chlorophenyl)-3-oxo-propanoate;
- 3-(3-methyl-4-trifluoromethylphenyl)-3-oxo-propanamide;
- N,N-diethyl 3-(3-fluoro-4-trifluoromethylphenyl)-3-oxo-propanamide;
- N,N-dimethyl 3-(3-chloro-4-trifluoromethylphenyl)-3-oxo-propanamide;
- N-cyclopentyl 3-(4-chloro-3-trifluoromethylphenyl)-3-oxo-propanamide;
- N-ethyl-N-methyl 3-(3-chloro-4-difluoromethylphenyl)-3-oxo-propanamide;
- N-methyl-N-phenyl 3-(3-chloro-4-trifluoromethoxyphenyl)-3-oxo-propanamide;
- N-phenyl 3-(2-chloro-4-trifluoromethylphenyl)-3-oxo-propanamide;
- N-propyl 3-(3-bromo-4-trifluoromethylphenyl)-3-oxo-propanamide; allyl 3-(3-chloro-4-trifluoromethylphenyl)-3-oxo-propanoate;
- allyl 3-(4-chlorophenyl)-3-oxo-propanoate;
- cyclopentyl 3-(4-chloro-3-trifluoromethylphenyl)-3-oxo-propanoate;
- cyclopentyl 3-(4-chlorophenyl)-3-oxo-propanoate;
- ethyl 3-(3-fluoro-4-trifluoromethylphenyl)-3-oxo-dithiopropanoate;
- ethyl 3-(3-fluoro-4-trifluoromethylphenyl)-3-oxo-propanoate;
- ethyl 3-(4-chlorophenyl)-3-oxo-propanoate;
- methyl 3-(3-chloro-4-trifluoromethylphenyl)-3-oxo-dithiopropanoate;
- methyl 3-(3-chloro-4-trifluoromethylphenyl)-3-oxo-propanoate;
- methyl 3-(4-chlorophenyl)-3-oxo-propanoate;
- phenyl 3-(2-chloro-4-trifluoromethylphenyl)-3-oxo-dithiopropanoate;
- phenyl 3-(2-chloro-4-trifluoromethylphenyl)-3-oxo-propanoate;
- phenyl 3-(4-chlorophenyl)-3-oxo-propanoate;

propyl 3-(3-bromo-4-trifluoromethylphenyl)-3-oxo-dithiopropionate;
 propyl 3-(3-bromo-4-trifluoromethylphenyl)-3-oxo-propionate;
 propyl 3-(4-chlorophenyl)-3-oxo-propionate;
 t-butyl 3-(3-chloro-4-trifluoromethoxyphenyl)-3-oxo-propionate; or
 t-butyl 3-(4-chlorophenyl)-3-oxo-propionate.

Preferably, a substantially equimolar mixture of hydrazine and formaldehyde is used.

The reaction may be carried out in the presence or absence of a solvent. Suitable solvents are those that afford some solubility to the components of the reaction mixture. Suitable solvents that are useful in carrying out the invention include, but are not limited to, water, dialkyl ethers, tetrahydrofuran, aliphatic hydrocarbons, aromatic hydrocarbons, aliphatic alcohols, tertiary amines, dialkyl amides, dialkyl sulfoxides, dialkyl sulfones, polyalkyl phosphoric amides, and such other solvents that are known by those skilled in the art. Preferred solvents are aliphatic alcohols, tetrahydrofuran, and tertiary amines. The most preferred solvent is methanol.

Because of the basic nature of hydrazine, the reaction can be carried out in the presence or absence of additional base. Suitable additional bases for use in this process include, but are not limited to, alkali metal hydroxide, alkaline earth hydroxide, alkali metal alkoxide, alkaline earth alkoxide, alkali metal oxide, alkaline earth oxide, tertiary amines, amidines, guanidines, and such other bases that are known to those skilled in the art.

The reaction temperature can be varied within a substantial range. In general, the reaction is carried out at from about -120°C to about 200°C , preferably at from about -78°C to about 100°C . The reaction is allowed to take place under normal pressure. The most preferred temperature is about 20°C .

Treatment of the dihydropyrazole of Formula III with an aryl isocyanate gives the N-aryl-3-aryl-4-monosubstituted-4,5-dihydropyrazole-1-carboxamides of this invention.

In carrying out the process, to produce a 3-aryl-4-monosubstituted-4,5-dihydropyrazole-1-carboxamide of this invention, any aryl isocyanate of the formula



IV

where B is as defined in Formula I may be used. Examples of aryl isocyanates which may be employed in this process of this invention include, but are not limited to:

3,4-dichlorophenyl isocyanate;
 3-bromo-4-dimethylaminophenyl isocyanate;
 3-bromo-4-methylphenyl isocyanate;
 3-bromo-4-methylphenyl isothiocyanate;
 3-bromo-4-trifluoromethylphenyl isocyanate;
 3-bromodifluoromethoxyphenyl isocyanate;
 3-bromodifluorothiomethoxyphenyl isocyanate;
 3-bromophenyl isocyanate;
 3-carboethoxyphenyl isocyanate;
 3-carboisopropoxyphenyl isocyanate;
 3-carbomethoxyphenyl isocyanate;
 3-chloro-4-bromodifluoromethoxyphenyl isocyanate;
 3-chloro-4-bromodifluorothiomethoxyphenyl isocyanate;
 3-chloro-4-bromophenyl isocyanate;
 3-chloro-4-carboethoxyphenyl isocyanate;
 3-chloro-4-carboisopropoxyphenyl isocyanate;
 3-chloro-4-carbomethoxyphenyl isocyanate;
 3-chloro-4-cyanophenyl isocyanate;
 3-chloro-4-difluoromethoxyphenyl isocyanate;
 3-chloro-4-dimethylaminophenyl isocyanate;
 3-chloro-4-fluorophenyl isocyanate;
 3-chloro-4-iodophenyl isocyanate;
 3-chloro-4-methylphenyl isocyanate;
 3-chloro-4-methylsulfinylphenyl isocyanate;
 3-chloro-4-methylsulfonylphenyl isocyanate;
 3-chloro-4-methylthiophenyl isocyanate;
 3-chloro-4-nitrophenyl isocyanate;

- 3-chloro-4-trifluoromethoxyphenyl isocyanate;
- 3-chloro-4-trifluoromethylphenyl isocyanate;
- 3-chlorophenyl isocyanate;
- 3-cyano-4-carbomethoxyphenyl isocyanate;
- 5 3-cyano-4-carbomethoxyphenyl isothiocyanate;
- 3-cyanophenyl isocyanate;
- 3-difluoromethoxy-4-methylthiophenyl isocyanate;
- 3-difluoromethoxyphenyl isocyanate;
- 3-dimethylaminophenyl isocyanate;
- 10 3-fluoro-4-bromophenyl isocyanate;
- 3-fluoro-4-carboethoxyphenyl isocyanate;
- 3-fluoro-4-carboethoxyphenyl isothiocyanate;
- 3-fluoro-4-cyanophenyl isocyanate;
- 3-fluoro-4-cyanophenyl isothiocyanate;
- 15 3-fluorophenyl isocyanate;
- 3-iodo-4-difluoromethoxyphenyl isocyanate;
- 3-iodo-4-fluorophenyl isocyanate;
- 3-iodophenyl isocyanate;
- 3-methyl-4-trifluoromethoxyphenyl isocyanate;
- 20 3-methylphenyl isocyanate;
- 3-methylsulfinylphenyl isocyanate;
- 3-methylsulfonylphenyl isocyanate;
- 3-methylthio-4-methylsulfinylphenyl isocyanate;
- 3-methylthiophenyl isocyanate;
- 25 3-methylthio-4-bromodifluoromethoxyphenyl isocyanate;
- 3-nitro-4-bromodifluorothiomethoxyphenyl isocyanate;
- 3-nitro-4-bromodifluorothiomethoxyphenyl isothiocyanate;
- 3-nitrophenyl isocyanate;
- 3-trifluoromethoxy-4-methylsulfonylphenyl isocyanate;
- 30 3-trifluoromethoxy-4-nitrophenyl isocyanate;
- 3-trifluoromethoxy-4-nitrophenyl isothiocyanate;
- 3-trifluoromethoxyphenyl isocyanate;
- 3-trifluoromethyl-4-carboisopropoxyphenyl isocyanate;
- 3-trifluoromethyl-4-carboisothiopropoxyphenyl isothiocyanate;
- 35 3-trifluoromethyl-4-iodophenyl isocyanate;
- 3-trifluoromethylphenyl isocyanate;
- 4-bromodifluoromethoxyphenyl isocyanate;
- 4-bromodifluorothiomethoxyphenyl isocyanate;
- 4-bromophenyl isocyanate;
- 40 4-bromophenyl isothiocyanate;
- 4-carboethoxyphenyl isocyanate;
- 4-carboisopropoxyphenyl isocyanate;
- 4-carbomethoxyphenyl isocyanate;
- 4-chlorophenyl isocyanate;
- 45 4-chlorophenyl isothiocyanate;
- 4-cyanophenyl isocyanate;
- 4-difluoromethoxyphenyl isocyanate;
- 4-difluoromethoxyphenyl isothiocyanate;
- 4-dimethylaminophenyl isocyanate;
- 50 4-fluorophenyl isocyanate;
- 4-iodophenyl isocyanate;
- 4-methylphenyl isocyanate;
- 4-methylsulfinylphenyl isocyanate;
- 4-methylsulfonylphenyl isocyanate;
- 55 4-methylthiophenyl isocyanate;
- 4-nitrophenyl isocyanate;
- 4-pentafluorosulfuranylphenyl isocyanate;
- 4-trifluoromethoxyphenyl isocyanate;

4-trifluoromethoxyphenyl isothiocyanate;
 4-trifluoromethylphenyl isocyanate;
 4-trifluoromethylphenyl isothiocyanate; or phenyl isocyanate.

The reaction may be carried out in the presence or absence of a solvent. Suitable solvents are those that afford some solubility to the components of the reaction mixture, and do not react with the aryl isocyanate at an appreciable rate. Suitable solvents that are useful in carrying out the invention include, but are not limited to, dialkyl ethers, chlorinated hydrocarbons, tetrahydro furan, aliphatic hydrocarbons, aromatic hydrocarbons, aliphatic alcohols, tertiary amines, dialkyl amides, dialkyl sulfoxides, dialkyl sulfones, polyalkyl phosphoric amides, and such other solvents that are known by those skilled in the art. Preferred solvents are chlorinated hydrocarbons, tetrahydrofuran, and tertiary amines. The most preferred solvent is methylene chloride. The reaction temperature can be varied within a substantial range. In general, the reaction is carried out at from about -120°C to about 200°C , preferably at from about -78°C to about 100°C . The reaction is allowed to take place under normal pressure. The most preferred temperature is about 45°C .

Further treatment of this 1-substituted-4-monosubstituted-4,5-dihydropyrazole-1-carboxamide with a base, followed by an alkylating agent or acylating agent will yield the N-aryl-3-aryl-4,4-disubstituted-4,5-dihydropyrazole-1-carboxamides of this invention.

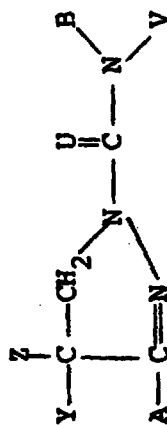
The methods for effecting this reaction have been described above and are exemplified below in Example 77, Method C.

After preparing compounds embraced by Formula I by either of the above processes, the salts of the invention can be prepared by any convenient art-recognized method, such as by reacting a metal hydroxide, a metal hydride or an amine or ammonium salt, such as a halide, hydroxide or alkoxide with the free acid, or reacting a quaternary ammonium salt, such as chloride, a bromide, nitrate or the like with a metal salt of the invention in a suitable solvent. When metal hydroxides are used as reagents, useful solvents include water, glyme, dioxane, tetrahydrofuran, methanol, ethanol, isopropanol and the like. When metal hydrides are used as reagents, useful solvents include nonhydroxylic solvents such as dioxane, glyme, tetrahydrofuran, diethyl ether, hydrocarbons such as toluene, xylene, hexane, pentane, heptane, and octane, dimethylformamide, and the like. When amines are used as reagents, useful solvents include alcohols, such as methanol or ethanol, hydrocarbons, such as toluene, xylene, hexane and the like, tetrahydrofuran, glyme, dioxane, or water. When ammonium salts are used as reagents, useful solvents include water, alcohols, such as methanol or ethanol, glyme, tetrahydrofuran, or the like. When the ammonium salt is other than a hydroxide or alkoxide, an additional base, such as potassium or sodium hydroxide, hydride, or alkoxide is generally used. The particular choice of solvent will depend on the relative solubilities of the starting materials and the resultant salts, and slurries rather than solutions of certain reagents may be used to obtain the salts. Generally, equivalent amounts of the starting reagents are used and the salt-forming reaction is carried out at about 0°C to about 100°C , preferably at about room temperature.

The acid addition salts of the present invention can be prepared by any convenient art-recognized method such as by reacting hydrochloric, hydrobromic, sulfuric, nitric, phosphoric, acetic, propionic, benzoic or other suitable acid with a compound of the present invention having a basic functionality in a suitable solvent. Useful solvents include water, alcohols, ethers, ester, ketones, haloalkanes and the like. The particular choice of solvent will depend on the relative solubilities of the starting materials and the resulting salts, and slurries rather than solutions of certain reagents may be used to obtain the salts. Generally, equivalent molar amounts of starting materials are used and the salt-forming reaction is carried out at from about -100°C to about 100°C , preferably at about room temperature.

The following examples will further illustrate this invention. In Table I, typical 1-substituted-4-substituted-4,5-dihydro-1H-pyrazoles of the present invention are listed. Structures were confirmed by NMR and in some cases by IR and/or elemental analysis. After Table I, preparation of representative precursors or intermediates are described as Examples A through J. Following Examples A through J, specific illustrative preparations of compounds of Examples 2, 5, 34, 51, 61, 74 (see Method C, Example 77), 77, 92, 95, 98, 115, 130, 138, 145, 147, 150 and 160 are described. It will be appreciated by those skilled in the art that except for those compounds where Z is hydrogen, the Y and Z substituents can be interchanged without departing from the spirit or scope of the present invention.

TABLE I



Example No.	A					B					Y					Z					V					Melting Point °C	
1	$-C_6H_4Cl-4$					$-C_6H_4Cl-4$					$-CO_2CH_2CH_2SCH_3$					CH_3					H					O Solid	
2	$-C_6H_4Cl-4$					$-C_6H_4Cl-4$					C_6H_5					CH_3					H					O 151-153	
3	$-C_6H_4Cl-4$					$-C_6H_4Cl-4$					$-CH_2CH(CH_3)$					CH_3					H					O 128-130	
4	$-C_6H_4Cl-4$					$-C_6H_4Cl-4$					$-CH_2CH_3$					CH_3					H					O 134-136	
5	$-C_6H_4Cl-4$					$-C_6H_4Cl-4$					CH_3					$-CH_2C_6H_5$					H					O Oil	
6	$-C_6H_4Cl-4$					$-C_6H_4Cl-4$					$-CH_2CH_3$					C_6H_5					H					O Solid	
7	$-C_6H_4Cl-4$					$-C_6H_4Cl-4$					$-CH_2CH_2CH_3$					C_6H_5					H					O Solid	
8	$-C_6H_4Cl-4$					$-C_6H_4Cl-4$					$-CH(CH_3)_2$					C_6H_5					H					O Solid	
9	$-C_6H_4Cl-4$					$-C_6H_4Cl-4$					$-CH_2CH(CH_3)_2$					C_6H_5					H					O Solid	
10	$-C_6H_4Cl-4$					$-C_6H_4Cl-4$					C_6H_5					$-CH_2C_6H_5$					H					O Solid	
11	$-C_6H_4Cl-4$					$-C_6H_4Cl-4$					$-CH(CH_3)CH_2CH_3$					C_6H_5					H					O Foam	
12	$-C_6H_4Cl-4$					$-C_6H_4Cl-4$					C_6H_5					$-CH_2CH_2CH_2CH_2Cl$					H					O Solid	

TABLE I (cont'd)

Example No.	A	B	Y	Z	V	U	Melting Point °C
13	-C ₆ H ₄ Cl-4	-C ₆ H ₄ Cl-4	-CH ₂ CH ₂ CH ₂ CH ₃	C ₆ H ₅	H	O	Solid
14	-C ₆ H ₄ Cl-4	-C ₆ H ₄ Cl-4	-CH ₂ CH ₂ CH ₃	CH ₃	H	O	Foam
15	-C ₆ H ₄ Cl-4	-C ₆ H ₄ Cl-4	-CH(CH ₃) ₂	CH ₃	H	O	Foam
16	-C ₆ H ₄ Cl-4	-C ₆ H ₄ Cl-4	-CH ₂ CH ₂ CH ₂ CH ₃	CH ₃	H	O	89-92
17	-C ₆ H ₄ Cl-4	-C ₆ H ₄ Cl-4	-CH(CH ₃)CH ₂ CH ₃	CH ₃	H	O	Oil
18	-C ₆ H ₄ Cl-4	-C ₆ H ₄ Cl-4	-CH ₂ CH ₂ CH ₂ CH ₂ Cl	CH ₃	H	O	Oil
19	-C ₆ H ₄ Cl-4	-C ₆ H ₄ Cl-4	C ₆ H ₅	-CH ₂ CH=CH ₂	H	O	161-165
20	-C ₆ H ₄ Cl-4	-C ₆ H ₄ Cl-4	C ₆ H ₅	-CH ₂ CO ₂ CH ₂ CH ₃	H	O	138-142
21	-C ₆ H ₄ Cl-4	-C ₆ H ₄ Cl-4	C ₆ H ₅	-CH ₂ CN	H	O	156-158
22	-C ₆ H ₄ Cl-4	-C ₆ H ₄ Cl-4	C ₆ H ₅	-CH ₂ SCH ₃	H	O	69-71
23	-C ₆ H ₄ Cl-4	-C ₆ H ₄ Cl-4	C ₆ H ₅	-CH ₂ OCH ₃	H	O	88-93
24	-C ₆ H ₄ Cl-4	-C ₆ H ₄ Cl-4	-CH(CH ₂ CH ₃) ₂	C ₆ H ₅	H	O	130-135
25	-C ₆ H ₄ Br-4	-C ₆ H ₄ Cl-4	-CH ₂ CH ₂ CH ₂ CH ₃	CH ₃	-CH(CH ₃) ₂	O	Oil
26	-C ₆ H ₄ Br-4	-C ₆ H ₄ Cl-4	-CH ₂ CH ₂ CH ₂ CH ₃	CH ₃	H	O	Oil
27	-C ₆ H ₄ Cl-4	-C ₆ H ₄ Cl-4	-CH ₂ CH ₂ CH ₂ CH ₂ CH ₃	CH ₃	H	O	Semisolid

TABLE I (cont'd)

Example No.	A	B	Y	Z	V	U	Melting Point °C
28	$-C_6H_4Cl-4$	$-C_6H_4Cl-4$	$-CH_2CH_2CH_2CH_2CH_2CH_3$	CH_3	H	O	Oil
29	$-C_6H_4Cl-4$	$-C_6H_4Cl-4$	CH_3	$-CH_2CH=CH_2$	H	O	Solid
30	$-C_6H_4Cl-4$	$-C_6H_4Cl-4$	$-CH(CH_2CH_3)_2$	CH_3	H	O	Oil
31	$-C_6H_4Cl-4$	$-C_6H_4Cl-4$	$-CH_2SCH_3$	CH_3	H	O	Foam
32	$-C_6H_4Cl-4$	$-C_6H_4Cl-4$	$-CH_2OCH_3$	CH_3	H	O	Oil
33	$-C_6H_4F-4$	$-C_6H_4Cl-4$	$-CH_2CH_2CH_2CH_3$	CH_3	H	O	Oil
34	$-C_6H_4F-4$	$-C_6H_4Br-4$	$-CH_2CH_2CH_2CH_3$	CH_3	H	O	Solid
35	$-C_6H_4F-4$	$-C_6H_4F-4$	$-CH_2CH_2CH_2CH_3$	CH_3	H	O	Solid
36	$-C_6H_4Cl-4$	$-C_6H_4Cl-4$	CH_3	$-CH_2CH_2OCH_3$	H	O	Oil
37	$-C_6H_4Cl-4$	$-C_6H_4Cl-4$	$-CH_2CH_2CH_2CH_2OCH_3$	CH_3	H	O	Oil
38	$-C_6H_4Cl-4$	$-C_6H_4Cl-4$	$-CH_2CH_2CH_2CN$	CH_3	H	O	Solid
39	$-C_6H_4Cl-4$	$-C_6H_4Cl-4$	CH_3	$-CH_2CH_2CH=CH_2$	H	O	Oil
40	$-C_6H_4Cl-4$	$-C_6H_4Cl-4$	$-CH_2CH_2OCOCH_3$	CH_3	H	O	60-65
41	$-C_6H_4Cl-4$	$-C_6H_4Cl-4$	$-CH_2OCH_2CH_2OCH_3$	CH_3	H	O	Solid
42	$-C_6H_4Cl-4$	$-C_6H_4Cl-4$	CH_3	$-CH_2CH_2CH_2CH=CH_2$	H	O	125-128
43	$-C_6H_4Cl-4$	$-C_6H_4Cl-4$	CH_3	$-CH_2CH_2SC_6H_5$	H	O	Solid

TABLE I (cont'd)

Example No.	A	B	Y	Z	V	U	Melting Point °C
44	$-C_6H_4Cl-4$	$-C_6H_4Cl-4$	$-COCH_3$	CH_3	H	O	Solid
45	$-C_6H_4Cl-4$	$-C_6H_4Cl-4$	CH_3	$-CH(OH)CH_3$	H	O	---
46	$-C_6H_4Cl-4$	$-C_6H_4Cl-4$	$-C_6H_4Cl-4$	CH_3	H	O	Solid
47	$-C_6H_4Cl-4$	$-C_6H_4Cl-4$	$-CH_2CH_2CH_2CH_3$	$-C_6H_4Cl-4$	H	O	Solid
48	$-C_6H_4Cl-4$	$C_6H_3Cl_2-2,4$	C_6H_5	CH_3	H	O	179-181
49	$-C_6H_3Cl_2-3,4$	$-C_6H_4Cl-4$	C_6H_5	CH_3	H	O	110-114
50	$-C_6H_4Cl-4$	$-C_6H_4Cl-4$	CH_3	C_6H_{11}	H	O	162-164
51	$-C_6H_4Cl-4$	$-C_6H_4Cl-4$	C_6H_5	CH_3	CH_3	O	132-135
52	$-C_6H_4Cl-4$	$-C_6H_4Cl-4$	$-CH(OH)CH_3$	C_6H_5	H	O	Foam
53	$-C_6H_4Cl-4$	$-C_6H_4Cl-4$	$-COCH_3$	C_6H_5	H	O	Foam
54	$-C_6H_4Cl-4$	$-C_6H_4Cl-4$	$-CH_2CH(CH_3)_2$	CH_3	CH_3	O	Oil
55	$-C_6H_4Cl-4$	$C_6H_3Cl_2-3,4$	C_6H_5	CH_3	H	O	Solid
56	$-C_6H_4Cl-4$	$-C_6H_3Cl_2-3,5$	C_6H_5	CH_3	H	O	Solid
57	$-C_6H_4Cl-4$	$-C_6H_4Cl-3$	C_6H_5	CH_3	H	O	Solid
58	$-C_6H_4Cl-4$	$-C_6H_4Cl-4$	$-C_6H_4Cl-4$	CH_3	CH_3	O	Solid
59	$-C_6H_4Cl-4$	$C_6H_3Cl_2-3,5$	$-C_6H_4Cl-4$	CH_3	H	O	Solid

TABLE I (cont'd)

Example No.	A	B	Y	Z	V	U	Melting Point °C
60	$-C_6H_3Cl_2-3,4$	$C_6H_3Cl_2-3,5$	CH_3	C_6H_5	H	O	Solid
61	$-C_6H_3Cl_2-3,4$	$-C_6H_3Cl_2-3,4$	C_6H_5	CH_3	H	O	Solid
62	$-C_6H_3Cl_2-3,4$	$-C_6H_3Cl_2-3,5$	C_6H_5	CH_3	H	O	Solid
63	$-C_6H_4Cl-4$	$-C_6H_4Cl-4$	CH_3	$-CH_2CH_2CH_2CH_3$	CH_3	O	Oil
64	$-C_6H_4Cl-4$	$-C_6H_4Cl-4$	$-CH_2OH$	C_6H_5	H	O	140-147
65	$-C_6H_4Cl-4$	$-C_6H_4Cl-4$	$-CH_2OCOCH_3$	C_6H_5	H	O	146-150
66	$-C_6H_4Cl-4$	$-C_6H_4Cl-4$	$-CH_2CH_2CH_2Cl$	CH_3	H	O	Solid
67	$-C_6H_4Cl-4$	$-C_6H_4Cl-4$	$-CO_2H$	C_6H_5	H	O	Solid
68	$-C_6H_4Cl-4$	$-C_6H_4Cl-4$	$-CO_2H$	CH_3	H	O	Solid
69	$-C_6H_4Cl-4$	$-C_6H_4Cl-4$	$-CO_2Na$	CH_3	H	O	Solid
70	$-C_6H_4Cl-4$	$-C_6H_4Cl-4$	$-CH_2CH_2SCH_3$	CH_3	H	O	Oil
71	$-C_6H_4Cl-4$	$-C_6H_4Cl-4$	CH_3	$-CH_2CH(OH)CH_3$	H	O	Solid
72	$-C_6H_4Cl-4$	$-C_6H_4Cl-4$	$-CH_2CH_2SCH_2CH_3$	CH_3	H	O	Oil
73	$-C_6H_4Cl-4$	$-C_6H_4Cl-4$	CH_3	$-CH_2CH_2CH_2N_3$	H	O	Oil
74	$-C_6H_4Cl-4$	$-C_6H_4Cl-4$	$-CO_2CH_3$	H	H	O	138-150
75	$-C_6H_4Cl-4$	$-C_6H_4Cl-4$	$-CO_2H$	H	H	O	Solid

TABLE I (cont'd)

Example No.	A	B	Y	Z	V	U	Melting Point °C
76	$-C_6H_4Cl-4$	$-C_6H_4Cl-4$	C_6H_5	$-CH_2CO_2CH_3$	H	O	Solid
77	$-C_6H_4Cl-4$	$-C_6H_4Cl-4$	$-CO_2CH_3$	CH_3	H	O	125.5-126.5
78	$-C_6H_4Cl-4$	$-C_6H_4Cl-4$	$-CO_2CH_3$	C_6H_5	H	O	Solid
79	$-C_6H_4Cl-4$	$-C_6H_4Cl-4$	$-CH_2CO_2H$	C_6H_5	H	O	Solid
80	$-C_6H_4Cl-4$	$-C_6H_4Cl-4$	C_6H_5	CH_3	-CN	O	Solid
81	$-C_6H_4Cl-4$	$-C_6H_4Cl-4$	CH_3	$-CH_2CH_2SO_2CH_3$	H	O	Solid
82	$-C_6H_4Cl-4$	$-C_6H_4Cl-4$	$-CH_2CH_3$	$-CH_2CH_3$	H	O	Solid
83	$-C_6H_4Cl-4$	$-C_6H_4Cl-4$	$-CH_2CH_2SOCH_3$	CH_3	H	O	Solid
84	$-C_6H_4Cl-4$	$-C_6H_4Cl-4$	$-CO_2CH_2CH_3$	CH_3	H	O	Solid
85	C_6H_5	$-C_6H_4Cl-4$	C_6H_5	CH_3	H	O	175-176
86	$-C_6H_4Cl-4$	$-C_6H_4Cl-4$	$-CH_2CO_2CH_3$	CH_3	H	O	Oil
87	$-C_6H_4Cl-4$	$-C_6H_4Cl-4$	C_6H_5	CH_3	$-COCH_3$	O	Foam
88	$-C_6H_4Cl-4$	$-C_6H_4Cl-4$	CH_3	$-SCH_3$	H	O	Oil
89	$-C_6H_4Cl-4$	$-C_6H_4Cl-4$	$-CO_2CH_2SCH_3$	CH_3	H	O	Oil
90	$-C_6H_4Cl-4$	$-C_6H_4Cl-4$	$-COCH_2CH_3$	CH_3	H	O	Solid
91	$-C_6H_4Cl-4$	$-C_6H_4(CO_2CH_2CH_3)-4$	C_6H_5	CH_3	H	O	81-83
92	$-C_6H_4Cl-4$	$-C_6H_4Cl-4$	$-CON(CH_3)_2$	CH_3	H	O	194-197

TABLE I (cont'd)

Example No.	A	B	Y	Z	V	U	Melting Point °C
93	$-C_6H_4Cl-4$	$-C_6H_4Cl-4$	CH_3	$-CN$	H	O	—
94	$-C_6H_4Cl-4$	$-C_6H_4Cl-4$	$-CH_2CH_2OH$	CH_3	H	O	Solid
95	$-C_6H_4Cl-4$	$-C_6H_4Cl-4$	$-CO_2CH_2CH_3$	H	H	O	Solid
96	$-C_6H_4Cl-4$	$-C_6H_4Cl-4$	C_6H_5	CH_3	$-CH_2OCH_3$	O	Oil
97	$-C_6H_4Cl-4$	$-C_6H_4Cl-4$	$-CO_2CH_3$	CH_3	CH_3	O	117-120
98	$-C_6H_4Cl-4$	$-C_6H_4Cl-4$	$-CS_2CH_3$	CH_3	H	O	Solid
99	$-C_6H_4Cl-4$	$-C_6H_4(CO_2CH(CH_3)_2)-4$	C_6H_5	CH_3	H	O	Foam
100	$-C_6H_4Cl-4$	$-C_6H_4Cl-4$	$-CO_2CH_2CH_2CH_2CH_3$	CH_3	H	O	Solid
101	$-C_6H_4Cl-4$	$-C_6H_4Cl-4$	$-CO_2CH_2CH_2CH_2CH_3$	CH_3	H	O	Solid
102	$-C_6H_4Cl-4$	$-C_6H_4Cl-4$	$-CO_2CH(CH_3)_2$	CH_3	H	O	Solid
103	$-C_6H_4Cl-4$	$-C_6H_4Cl-4$	$-CO_2CH_2CH_2N(CH_3)_2$	CH_3	H	O	Solid
104	$-C_6H_4Cl-4$	$-C_6H_4Cl-4$	$-CO_2CH_2CH_2N(CH_3)HCl$	CH	H	O	Solid
105	$-C_6H_4Cl-4$	$-C_6H_4Cl-4$	$-CO_2CH_3$	CH_3	$-CO_2CH_3$	O	100-103
106	$-C_6H_4Cl-4$	$-C_6H_4Cl-4$	$-CH_2CHBrCH_2Br$	CH_3	H	O	Solid
107	C_6H_5	$-C_6H_4Cl-4$	$-CO_2CH_3$	CH_3	H	O	Oil

TABLE I (cont'd)

Example No.	A	B	Y	Z	V	U	Melting Point °C
108	-C ₆ H ₄ Cl-4	-C ₆ H ₄ Cl-4	-CO ₂ CH ₂ CH ₂ SO ₂ CH ₃	CH ₃	H	O	Foam
109	-C ₆ H ₄ Cl-4	-C ₆ H ₄ Cl-4	-COC ₆ H ₄ Cl-4	CH ₃	H	O	Foam
110	-C ₆ H ₄ Cl-4	-C ₆ H ₄ Cl-4	CH ₃	-CH ₂ CHClCH ₂ Cl	H	O	Solid
111	-C ₆ H ₄ Cl-4	-C ₆ H ₄ Cl-4	-COCH ₂ CH ₂ CH ₃	CH ₃	H	O	Solid
112	-C ₆ H ₄ Cl-4	-C ₆ H ₄ Cl-4	-COC ₆ H ₅	CH ₃	H	O	Foam
113	-C ₆ H ₄ Cl-4	-C ₆ H ₄ Cl-4	-CON(CH ₂ CH ₃) ₂	CH ₃	H	O	Solid
114	-C ₆ H ₄ Cl-4	-C ₆ H ₄ Cl-4	-CO ₂ CH ₃	CH ₃	-COCH ₃	O	147-149
115	-C ₆ H ₄ Cl-4	-C ₆ H ₄ Cl-4	-CON(CH ₃) ₂	CH ₃	-COCH ₃	O	Oil
116	C ₆ H ₅	-C ₆ H ₄ Cl-4	-CO ₂ CH ₂ CH ₃	CH ₃	H	O	Oil
117	C ₆ H ₅	-C ₆ H ₄ Cl-4	-CON(CH ₃) ₂	CH ₃	H	O	Solid
118	-C ₆ H ₄ Cl-4	-C ₆ H ₄ Cl-4	C ₆ H ₅	CH ₃	-COCH ₂ CH ₃	O	Solid
119	-C ₆ H ₄ Cl-4	-C ₆ H ₄ Cl-4	C ₆ H ₅	CH ₃	-COC(CH ₃) ₃	O	Solid
120	-C ₆ H ₄ Cl-4	-C ₆ H ₄ Cl-4	C ₆ H ₅	CH ₃	-CO ₂ CH ₃	O	Solid
121	-C ₆ H ₄ Cl-4	-C ₆ H ₄ Cl-4	-CON(CH ₃) ₂	H	H	O	Solid
122	-C ₆ H ₄ Cl-4	-C ₆ H ₄ Cl-4	C ₆ H ₅	CH ₃	-COC ₆ H ₅	O	Solid
123	-C ₆ H ₄ Cl-4	-C ₆ H ₄ Cl-4	-CO ₂ CH ₃	CH ₃	-COCF ₃	O	Oil
124	-C ₆ H ₄ Cl-4	-C ₆ H ₄ Cl-4	-CO ₂ CH ₃	CH ₃	-CHO	O	—

TABLE I (cont'd)

Example No.	A	B	Y	Z	V	U	Melting Point °C
125	$-C_6H_4Cl-4$	$-C_6H_4Cl-4$	$-CO_2CH_3$	CH_3	$-CH_2OCH_3$	O	Solid
126	$-C_6H_4Cl-4$	$-C_6H_4Cl-4$	$-CO_2CH_3$	CH_3	$-CO_2CH_2CH_3$	O	Solid
127	$-C_6H_4Cl-4$	$-C_6H_4Cl-4$	$-CO_2CH_3$	CH_3	$-CO_2CH=CH_2$	O	Solid
128	$-C_6H_4Cl-4$	$-C_6H_4Cl-4$	$-CO_2CH_3$	CH_3	$-CO_2C_6H_5$	O	Solid
129	$-C_6H_4Cl-4$	$-C_6H_4Cl-4$	$-CSN(CH_3)_2$	CH_3	H	O	Solid
130	$-C_6H_4Cl-4$	$-C_6H_4Cl-4$	$-CO_2CH_3$	CH_3	H	S	69-78
131	$-C_6H_4Cl-4$	$-C_6H_4Cl-4$	$-CO_2CH_3$	CH_3	$-COCH_3$	S	138-141
132	C_6H_5	$-C_6H_4F-4$	$-CO_2CH_3$	CH_3	H	O	115-119
133	C_6H_5	$-C_6H_4Br-4$	$-CO_2CH_3$	CH_3	H	O	130-136
134	$-C_6H_4F-4$	$-C_6H_4Cl-4$	$-CO_2CH_3$	CH_3	H	O	168-173
135	$-C_6H_4F-4$	$-C_6H_4Br-4$	$-CO_2CH_3$	CH_3	H	O	154-158
136	$-C_6H_4F-4$	$-C_6H_4F-4$	$-CO_2CH_3$	CH_3	H	O	143-145
137	$-C_6H_4Cl-4$	$-C_6H_4Cl-4$	$-CO_2CH_3$	CH_3	$-CO_2CH_3$	O	100-103
138	$-C_6H_4Cl-4$	$-C_6H_4Cl-4$	$-CO_2CH_3$	CH_3	$-CON(CH_3)_2$	O	Solid
139	C_6H_5	$-C_6H_4Cl-4$	$-CO_2CH_3$	CH_3	$-CO_2CH_3$	O	Solid
140	$-C_6H_4Br-4$	$-C_6H_4F-4$	$-CO_2CH_3$	CH_3	H	O	Oil
141	$-C_6H_4Cl-4$	$-C_6H_4Cl-4$	$-CO_2CH_3$	CH_3	$-COCO_2CH_3$	O	78-87

TABLE I (cont'd)

Example No.	A	B	Y	Z	V	U	Melting Point °C
142	$-C_6H_4Cl-4$	$-C_6H_4F-4$	$-CO_2CH_3$	CH_3	H	O	148-151
143	$-C_6H_4Cl-4$	$-C_6H_4Br-4$	$-CO_2CH_3$	CH_3	H	O	105-110
144	$-C_6H_4Cl-4$	$-C_6H_4Cl-4$	C_6H_5	CH_3	$-SCO_2CH_3$	O	Foam
145	$-C_6H_4Cl-4$	$-C_6H_4Cl-4$	$-CO_2CH_3$	CH_3	$-SCO_2CH_3$	O	Foam
146	$-C_6H_4Br-4$	$-C_6H_4Cl-4$	$-CO_2CH_3$	CH_3	H	O	Oil
147	$-C_6H_4Br-4$	$-C_6H_4Br-4$	$-CO_2CH_3$	CH_3	H	O	114-117
148	$-C_6H_4CF_3-4$	$-C_6H_4Cl-4$	$-CO_2CH_3$	CH_3	H	O	145-149
149	$-C_6H_4Cl-4$	$-C_6H_4CF_3-4$	$-CO_2CH_3$	CH_3	H	O	143-146
150	$-C_6H_4Cl-4$	$-C_6H_4Cl-4$	$-CO_2CH_3$	CH_3	$-SC_6H_4NO_2-2$	O	—
151	$-C_6H_4Cl-4$	$-C_6H_4Cl-4$	$-CO_2CH_3$	CH_3	$-SCH_2CH_2CH_3$	O	Oil
152	$-C_6H_4CF_3-4$	$-C_6H_4CF_3-4$	$-CO_2CH_3$	CH_3	H	O	165-167
153	$-C_6H_4Cl-4$	$-C_6H_4(CH(CH_3)_2)-4$	$-CO_2CH_3$	CH_3	H	O	58-60
154	$-C_6H_4Cl-4$	$-C_6H_4OCH_3-4$	$-CO_2CH_3$	CH_3	H	O	120-122
155	$-C_6H_4Cl-4$	$-C_6H_4SCH_3-4$	$-CO_2CH_3$	CH_3	H	O	114-116

TABLE I (cont'd)

Example No.	A	B	Y	Z	V	U	Melting Point °C
156	$-C_6H_4Cl-4$	$-C_6H_4SO_2CH_3-4$	$-CO_2CH_3$	CH_3	H	O	179-182
157	$-C_6H_4Cl-4$	$-C_6H_4CH_3-4$	$-CO_2CH_3$	CH_3	H	O	122-125
158	$-C_6H_4Cl-4$	$-C_6H_4Cl-4$	$-CO_2CH_3$	CH_3	$-SC_6H_5$	O	Solid
159	$-C_6H_4Cl-4$	$-C_6H_4Cl-4$	$-CO_2CH_3$	CH_3	$-SCH_2CH_2CH_2CN$	O	Oil
160	$-C_6H_4Cl-4$	$-C_6H_4Cl-4$	$-CO_2CH_3$	CH_3	$\begin{array}{c} CH_3 \\ \\ -SCH \\ \\ CH_2CO_2CH_3 \end{array}$	O	---
161	$-C_6H_4Cl-4$	$-C_6H_4Cl-4$	$-CO_2CH_3$	CH_3	$-SCH_3$	O	---
162	$-C_6H_4Cl-4$	$-C_6H_4SOCH_3-4$	$-CO_2CH_3$	CH_3	H	O	---
163	$-C_6H_4Cl-4$	$-C_6H_4I-4$	$-CO_2CH_3$	CH_3	H	O	Oil
164	$-C_6H_4Cl-4$	$-C_6H_4N(CH_3)_2-4$	$-CO_2CH_3$	CH_3	H	O	120-123
165	$-C_6H_4Cl-4$	$-C_6H_4Cl-4$	$-COCH(CH_3)_2$	CH_3	H	O	145-146
166	$-C_6H_4Cl-4$	$-C_6H_4Cl-4$	$-COCH(CH_3)_3$	CH_3	H	O	73-75
167	$-C_6H_4Cl-4$	$-C_6H_4(N(CH_3)_3I^+)^{-4}$	$-CO_2CH_3$	CH_3	H	O	211-212
168	$-C_6H_4Cl-4$	$-C_6H_4(N(CH_3)_2O)^{-4}$	$-CO_2CH_3$	CH_3	H	O	Oil
169	$-C_6H_4Cl-4$	$-C_6H_4CF_3-3$	$-CO_2CH_3$	CH_3	H	O	Solid
170	$-C_6H_4Cl-4$	$-C_6H_4Cl-3$	$-CO_2CH_3$	CH_3	H	O	---

TABLE I (cont'd)

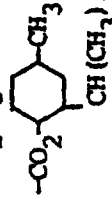
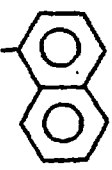
Example No.	A	B	Y	Z	V	U	Melting Point °C
171	$-C_6H_4Cl-4$	$-C_6H_4SCH_3-3$	$-CO_2CH_3$	CH_3	H	O	Solid
172	$-C_6H_4Cl-4$	$-C_6H_4SO_2CH_3-3$	$-CO_2CH_3$	CH_3	H	O	Foam
173	$-C_6H_4Cl-4$	$-C_6H_4Cl-4$	CH_3	$-CHOHC_6H_4F-4$	H	O	186-187
174	$-C_6H_4CH_3-4$	$-C_6H_4Cl-4$	$-CO_2CH_3$	CH_3	H	O	127-128
175	$-C_6H_4OCH_3-4$	$-C_6H_4Cl-4$	$-CO_2CH_3$	CH_3	H	O	148-149
176	$-C_6H_4Cl-4$	$-C_6H_4Cl-4$	$-CO_2CH_3$	$-CH_2CH_3$	H	O	141-143
177	$-C_6H_4Cl-4$	$-C_6H_4CF_3-4$	$-CON(CH_3)_2$	CH_3	H	O	152-155
178	$-C_6H_4SCH_3-4$	$-C_6H_4Cl-4$	$-CO_2CH_3$	CH_3	H	O	131-133
179	C_6H_5	$-C_6H_4CF_3-4$	$-CO_2CH_3$	CH_3	H	O	133-135
180	C_6H_5	$-C_6H_3Cl_2-3,4$	$-CO_2CH_3$	CH_3	H	O	127-130
181	$-C_6H_4SO_2CH_3-4$	$-C_6H_4Cl-4$	$-CO_2CH_3$	CH_3	H	O	205-207
182	$-C_6H_4Cl-4$	C_6H_5	$-CO_2CH_3$	CH_3	H	O	116-119
183	$-C_6H_4Cl-4$	$-C_6H_3Cl_2-3,4$	$-CO_2CH_3$	CH_3	H	O	132-134
184	$-C_6H_4Cl-4$	$-C_6H_4Cl-4$	$-CO_2$ 	CH_3	H	O	176-178
185	$-C_6H_4Cl-4$	$-C_6H_4CF_3-4$	$-CO_2CH_2CH_3$	CH_3	H	O	122-124
186	$-C_6H_4Cl-4$	$-C_6H_4OCF_3-4$	$-CO_2CH_3$	CH_3	H	O	47-49

TABLE I (cont'd)

Example No.	A	B	Y	Z	V	U	Melting Point °C
187	$-C_6H_4Cl-4$	$-C_6H_3CF_3-3,Cl-4$	$-CO_2CH_3$	CH_3	H	O	154-155
188	$-C_6H_4Cl-4$	$-C_6H_3CH_3-3,Br-4$	$-CO_2CH_3$	CH_3	H	O	122-130
189	$-C_6H_4Cl-4$	$-C_6H_4CO_2CH_2CH_3-4$	$-CO_2CH_3$	H	H	O	138-140
190	$-C_6H_4Cl-4$	$-C_6H_4CO_2CH_3-4$	$-CO_2CH_3$	H	H	O	138-141
191	$-C_6H_4Cl-4$		$-CO_2CH_3$	CH_3	H	O	188-190
192	C_6H_5	$-C_6H_4CF_3-4$	$-CO_2CH_2CH_3$	CH_3	H	O	149-150
193	$-C_6H_4Cl-4$	$-C_6H_3(NO_2)_2-2,4$	$-CO_2CH_3$	CH_3	H	O	196-198
194	$-C_6H_4Cl-4$	$-C_6H_4NO_2-4$	$-CO_2CH_3$	CH_3	H	O	135-140
195	C_6H_5	$-C_6H_4CF_3-4$	$-CON(CH_3)_2$	CH_3	H	O	186-188
196	$-C_6H_4Cl-4$	$-C_6H_4Cl-4$	CH_3	$-COH(CH_3)_2$	H	O	Oil

Example APreparation of 4-chlorophenyl benzyl ketone

To a 2 liter 4 necked flask equipped with a mechanical stirrer thermometer, and reflux condensor was added 155 g (1.0 mole) of phenyl acetyl chloride and 500 ml (4.9 mole) of chlorobenzene. A total of 145 g (1.08 mole) of anhydrous aluminum chloride was added portionwise over 10 minutes. The mixture self warmed to 55° C and evolved HCl gas over the course of the next 30 minutes. The mixture was stirred at about 50° C for an additional 30 minutes and then poured onto about 500 g of ice and 110 ml of concentrated aqueous HCl. The organic layer (lower) was separated and the aqueous layer was washed with ethyl ether. The combined organic layers were washed with water, dilute aqueous NaOH, and water and then concentrated in vacuo. The resulting crude solid was recrystallized from 2200 ml of hexane yielding 132 g of 4-chlorophenyl benzyl ketone, mp 85-90° C.

Example BPreparation of 2-phenyl 4'-chlorophenyl acrylophenone

In a 1000 ml round bottomed flask equipped with a reflux condensor was placed 100g 4-chlorophenyl benzyl ketone (0.43 mole), 400 ml of methanol, 50 ml of 37% formalin (0.67 mole), 5 g of piperidine, and 5 g of acetic acid. The resulting mixture was refluxed for 2 hours, concentrated in vacuo, partitioned between ethyl ether and water, washed with water, dried over anhydrous magnesium sulfate and concentrated in vacuo to yield 98 g of 2-phenyl 4'-chlorophenyl acrylophenone, an oil.

Example CPreparation of 3-(4-chlorophenyl)-4-phenyl-4,5-dihydro-1H-pyrazole

In a 500 ml round bottomed flask equipped with a reflux condensor was mixed 98 g of 2-phenyl 4'-chlorophenyl acrylophenone (0.40 mole), 200 ml n-propanol, and 50 ml hydrazine monohydrate (1.0 mole). The mixture was refluxed for 1 hour, cooled slightly and 100 ml of methanol added. The resulting solution was cooled in an ice bath and the resulting solid filtered and washed twice with cold ethyl ether yielding 55 g of a white solid. mp 156-162° C.

Example DPreparation of N,3-bis-(4-chlorophenyl)-4-phenyl-4,5-dihydro-1H-pyrazole-1-carboxamide

In a 500 ml round bottomed flask was suspended 55 g of 3-(4-chlorophenyl)-4-phenyl-4,5-dihydro-1H-pyrazole in 250 ml of diethyl ether. The suspension was warmed to reflux and 33 g of 4-chlorophenyl isocyanate was added at a rate to maintain reflux. After cooling and standing overnight the precipitated product was filtered yielding 78 g of white solid. mp 173-175° C.

Example EPreparation of 3-dimethylamino-2-methyl-4'-chloropropiophenone

In a 500 ml round bottomed flask equipped with a reflux condensor was mired 84 a of 4-chloropropiophenone (0.50 mole), 50 g of dimethylamine hydrochloride (0.61 mole), 20 a of paraformaldehyde (0.67 mole), 50 ml of ethanol, and 10 ml of concentrated aqueous hydrochloric acid. The mixture was refluxed for 18 hours, cooled and partitioned between ethyl ether and water. The ether layer was discarded and the aqueous layer was basified with sodium hydroxide and the resulting mixture extracted twice with fresh ethyl ether. The combined organic layers were washed with brine, dried over magnesium sulfate and concentrated in vacuo to yield 105 g of 3-dimethylamino-2-methyl-4'-chloropropiophenone, an oil.

Example F

Preparation of 3-(4-chlorophenyl)-4-methyl-4,5-dihydro-1H-pyrazole

In a 500 ml round bottomed flask equipped with a reflux condensor was placed 100 g of 3-dimethylamino-2-methyl-4'-chloropropiophenone (0.47 mole), 200 ml of n-propanol, 48 g of hydrazine monohydrate (0.96 mole), and 5 g of 50% aqueous sodium hydroxide. The mixture was refluxed for 2 hours. The solvent was removed in vacuo and the product was partitioned between methylene chloride and water. The organic layer was washed 3 times with water and dried over anhydrous magnesium sulfate. The organic layer contains 82 g (0.42 mole) of 3-(4-chlorophenyl)-4-methyl-4,5-dihydro-1H-pyrazole an air sensitive solid.

Example G

Preparation of N,3-bis-(4-chlorophenyl)-4-methyl-4,5-dihydro-1H-pyrazole-1-carboxamide

In a 500 ml round bottomed flask was placed 82 g (0.42 mole) of 3-(4-chlorophenyl)-4-methyl-4,5-dihydro-1H-pyrazole dissolved in 300 ml of methylene chloride and the solution was brought to boiling. A solution of 64.5 g of 4-chlorophenyl isocyanate (0.42 mole) in 100 ml of methylene chloride was added at a rate to maintain reflux. After stirring for an additional 30 minutes the solvent was removed in vacuo and the resulting oil was crystallized from ethyl ether yielding 140 g of N,3-bis-(4-chlorophenyl)-4-methyl-4,5-dihydro-1H-pyrazole-1-carboxamide. mp 139-140 °C.

Example H

Preparation of 3,4-dichlorophenyl benzyl carbinol

Into a 1000 ml three necked flask equipped with a reflux condenser and an addition funnel was placed 8.8 g of magnesium turnings (0.36 mole) and 400 ml of diethyl ether. After activation of the magnesium with 0.02 g of iodine, the mixture was heated to reflux and a solution of 44 g (0.35 mole) of benzyl chloride in ethyl ether was added at a rate to maintain the reflux. When the reaction had subsided, a solution of 50 g (0.29 mole) of 3,4-dichlorobenzaldehyde in 75 ml of diethyl ether was added at a rate to maintain reflux. After 15 minutes, the reaction was quenched with water and acidified with dilute hydrochloric acid. The organic layer was washed with brine, dried, and concentrated in vacuo yielding 75 g of 3,4-dichlorophenyl benzyl carbinol which was used without further purification.

Example I

Preparation of 3,4-dichlorophenyl benzyl ketone

In a 500 ml round bottomed flask was placed 75 g of crude 3,4-dichlorophenyl benzyl carbinol and 300

ml of acetone. The reaction mixture was cooled to 0° C and a solution of 20 g of chromic anhydride and 17.25 ml of concentrated sulfuric acid in 60 ml of water was added at a rate to keep the internal temperature below 5° C. After stirring an additional 15 minutes, the reaction was quenched with 10 ml of isopropanol and partitioned between ethyl ether and water. The organic layer was washed with brine, dried, and concentrated. The resulting crude ketone was crystallized from hexane yielding 51 g of 3,4-dichlorophenyl benzyl ketone.

Example J

Preparation of Methyl 3-(4-chlorophenyl)-3-keto-propanoate

Into a 1000 ml three necked flask equipped with an addition funnel, and condenser was added 15` 4 g of 60% sodium hydride (0.63 mole). The sodium hydride was washed twice with hexane and then suspended in 300 ml of tetrahydrofuran and 29 g of dimethyl carbonate (0.32 mole). The reaction mixture was brought to reflux and a solution of 50 g (0.32 mole) of 4-chloroacetophenone in 50 ml of tetrahydrofuran was added over 30 minutes. After hydrogen evolution had ceased the reaction was cooled and poured onto ice. The aqueous layer was acidified with hydrochloric acid and extracted with ethyl ether. The organic layer was dried, concentrated, and distilled at 15 torr bp 180-205° C to give 40 g of Methyl 3-(4-chlorophenyl)-3-keto-propanoate.

Example 2

Preparation of N,3-bis-(4-chlorophenyl)-4-methyl-4-phenyl-4,5-dihydro-1H-pyrazole-1-carboxamide

To 2.1 g of diisopropylamine dissolved in 15 ml of tetrahydrofuran and cooled in an ice salt bath was added 8.0 ml of a 2.7 molar solution of n-butyllithium in hexane. After stirring for 5 minutes a solution of 4.2 g of N,3-bis-(4-chlorophenyl)-4-phenyl-4,5-dihydro-1H-pyrazole-1-carboxamide (Example D) in 15 ml of tetrahydrofuran was added and the resulting solution stirred for 15 minutes. To this solution was added 1.0 ml of iodomethane and, after 15 minutes 1.0 ml of acetic acid was added. The reaction mixture was partitioned between diethyl ether and water and the organic layer was dried over anhydrous magnesium sulfate. The resulting solution was filtered evaporated in vacuo to give 4.3 g of N,3-bis-(4-chlorophenyl)-4-phenyl-4-methyl-4,5-dihydro-1H-pyrazole-1-carboxamide, melting point 151-158° C. NMR and IR data were consistent with the structure.

Example 5

Preparation of N,3-bis-(4-chlorophenyl)-4-benzyl-4-methyl-4,5-dihydro-1H-pyrazole-1-carboxamide

To 2.1 g of diisopropylamine dissolved in 15 ml of tetrahydrofuran and cooled in an ice salt bath was added 8.0 ml of a 2.7 molar solution of n-butyllithium in hexane. After stirring for 5 minutes a solution of 3.4 g of N,3-bis-(4-chlorophenyl)-4-methyl-4,5-dihydro-1H-pyrazole-1-carboxamide (Example G) in 15 ml of tetrahydrofuran was added and the resulting solution stirred for 15 minutes. To this solution was added 1.5 ml of benzyl bromide and, after 5 minutes 1.5 ml of acetic acid was added. The reaction mixture was partitioned between diethyl ether and water and the organic layer was dried over anhydrous magnesium sulfate. The resulting solution was filtered evaporated in vacuo to give 3.90 g of N,3-bis-(4-chlorophenyl)-4-benzyl-4-methyl-4,5-dihydro-1H-pyrazole-1-carboxamide, an oil. NMR and IR data were consistent with the structure.

Example 34

Preparation of N-(4-bromophenyl)-3-(4-fluorophenyl)-4-butyl-4-methyl-4,5-dihydro-1H-pyrazole-1-carboxamide

To 2.1 g of diisopropylamine dissolved in 15 ml of tetrahydrofuran and cooled in an ice salt bath was added 8.0 ml of a 2.7 molar solution of n-butyllithium in hexane. After stirring for 5 minutes a solution of 3.7 g of N-(4-bromophenyl)-3-(4-fluorophenyl)-4-methyl-4,5-dihydro-1H-pyrazole-1-carboxamide (prepared from 4-fluoropropiophenone and 4-bromophenyl isocyanate by a method analogous to that described above in Examples E, F, and G) in 15 ml of tetrahydrofuran was added and the resulting solution stirred for 15 minutes. To this solution was added 1.5 ml of 1-iodobutane and, after 15 minutes 1.5 ml of acetic acid was added. The reaction mixture was partitioned between diethyl ether and water and the organic layer was dried over anhydrous magnesium sulfate. The resulting solution was filtered evaporated in vacuo and chromatographed to give 2.9 g of N-(4-bromophenyl)-3-(4-fluorophenyl)-4-butyl-4-methyl-4,5-dihydro-1H-pyrazole-1-carboxamide an oil that solidified on long standing. NMR and IR data were consistent with the structure.

Example 51

Preparation of N,3-bis-(4-chlorophenyl)-N,4-dimethyl-4-phenyl-4,5-dihydro-1H-pyrazole-1-carboxamide

To a 100 ml round bottomed flask was added 0.40 g (0.01 mole) of 60% sodium hydride. The sodium hydride was washed twice with hexane and 10 ml of dimethylformamide was added. Then, 2.1 g (0.05 mole) N,3-bis-(4-chlorophenyl)-4-methyl-4-phenyl-4,5-dihydro-1H-pyrazole-1-carboxamide (Example 2) was added portionwise. After hydrogen evolution ceased 1 ml of iodomethane was added and the mixture was stirred for 1 hour. The reaction mixture was partitioned between ether and water and the organic layer dried, filtered, concentrated, and chromatographed yielding 1.5 g of N,3-bis-(4-chlorophenyl)-N,4-dimethyl-4-phenyl-4,5-dihydro-1H-pyrazole-1-carboxamide. Mp 132-135° C. NMR and IR data were consistent with the structure.

Example 61

Preparation of N,3-bis-(3,4-dichlorophenyl)-4-methyl-4-phenyl-4,5-dihydro-1H-pyrazole-1-carboxamide

3,4-dichlorophenyl benzyl ketone was used, by substantially following the procedures given in Examples B, C, and D, to prepare N,3-bis-(3,4-dichlorophenyl)-4-phenyl-4,5-dihydro-1H-pyrazole-1-carboxamide, which was used, by substantially following the procedures given in Example 2, to prepare N,3-bis-(3,4-dichlorophenyl)-4-methyl-4-phenyl-4,5-dihydro-1H-pyrazole-1-carboxamide, an oil that solidified on long standing. NMR and IR data were consistent with the structure.

Example 77

Preparation of N,3-bis-4-(4-chlorophenyl)-4-carbomethoxy-4-methyl-4,5-dihydro-1H-pyrazole-1-carboxamide

Method A

To 2.1 ml of diisopropylamine dissolved in 15 ml of tetrahydrofuran and cooled in an ice salt bath was added 8.0 ml of a 2.7 molar solution of n-butyllithium in hexane. After stirring for 5 minutes a solution of 3.4 g of N,3-bis-(4-chlorophenyl)-4-methyl-4,5-dihydro-1H-pyrazole-1-carboxamide in 7 ml of tetrahydrofuran was added and the resulting solution stirred for 15 minutes. To this solution was added 1.5 ml of dimethylcarbonate and, after 15 minutes 1.5 ml of acetic acid was added. The reaction mixture was partitioned between diethyl ether and water and the organic layer was dried over anhydrous magnesium sulfate. The resulting solution was filtered evaporated in vacuo to give 3.0 g of N,3-bis(4-chlorophenyl)-4-

carbomethoxy-4-methyl-4,5-dihydro-1H-pyrazole-1-carboxamide, mp 122° C. NMR and IR data were consistent with the structure.

5 Method B

To 3.4 g of N,3-bis-(4-chlorophenyl)-4-methyl-4,5-dihydro-1H-pyrazole-1-carboxamide and 1.1 g of diisopropylamine dissolved in 20 ml of tetrahydrofuran and cooled in an acetone bath maintained at -20° C, was added 8.0 ml of a 2.7 molar solution of butyllithium in hexane. The resulting solution was stirred for 20 minutes and then cooled to -70° C. To this solution was added 0.9 ml of methyl chloroformate. The reaction was allowed to stir for 10 minutes and then allowed to warm to room temperature over 10 minutes. The reaction was quenched with 1.0 ml of acetic acid and the reaction mixture was partitioned between diethyl ether and water and the organic layer was dried over anhydrous magnesium sulfate. The resulting solution was filtered evaporated in vacuo to give 2.9 g of N,3-bis-(4-chlorophenyl)-4-carbomethoxy-4-methyl-4,5-dihydro-1H-pyrazole-1-carboxamide. NMR and IR data were consistent with the structure.

Method C

To 20.0 g of methyl 3-(4-chlorophenyl)-3-keto-propanoate in 100 ml of methanol was added a mixture of 4.7 g of hydrazine monohydrate and 7.6 g of 37% formalin in 50 ml of methanol. The reaction was stirred at room temperature for 18 hrs. The methanol was then removed in vacuo and the product was dissolved in 400 ml of methylene chloride and washed 5 times with 100 ml portions of water. The methylene chloride layer was dried over anhydrous magnesium sulfate and evaporated in vacuo to yield 22 g of 3-(4-chlorophenyl)-4-carbomethoxy-4,5-dihydro-1H-pyrazole-1-carboxamide which was used without further purification in the next reaction.

To 22 g of 3-(4-chlorophenyl)-4-carbomethoxy-4,5-dihydro-1H-pyrazole obtained from the previous reaction was added 200 ml of methylene chloride and the resulting solution was brought to reflux, whereon 14.5 g of 4-chlorophenyl isocyanate in 25 ml of methylene chloride was added at a rate to maintain a controlled reflux. After refluxing a further 15 minutes the mixture was cooled, filtered and evaporated in vacuo yielding 14 g of N,3-bis-(4-chlorophenyl)-4-carbomethoxy-4,5-dihydro-1H-pyrazole-1-carboxamide (Example 74) which was purified by column chromatography. NMR and IR data were consistent with the structure.

To 0.9 ml of diisopropylamine in 10 ml of tetrahydrofuran under a nitrogen atmosphere and cooled to -30° C was added 2.4 ml of a 2.6 molar solution of n-butyllithium in hexane. To this reaction mixture was added 1.0 g of 3-(4-chlorophenyl)-4-carbomethoxy-4,5-dihydro-1H-pyrazole in 5 ml of tetrahydrofuran. After stirring for 15 minutes, 0.6 ml of iodomethane was added and the mixture was warmed to room temperature and stirred for 1 hr. Quenching with 1.4 ml of 10% aqueous acetic acid and 5 ml of water and standard ether water workup gave 1.1 g of N,3-bis-(4-chlorophenyl)-4-carbomethoxy-4-methyl-4,5-dihydro-1H-pyrazole-1-carboxamide, melting point 138-150° C. NMR and IR data were consistent with the structure.

Example 92

45 Preparation of N,3-bis-(4-chlorophenyl)-4-dimethylcarbamoyl-4-methyl-4,5-dihydro-1H-pyrazole-1-carboxamide

Into a 3000 ml three necked flask equipped with a mechanical stirrer, thermometer, and addition funnel was placed 65 ml of diisopropylamine (0.47 mole), 155 g (0.45 mole) of N,3-bis-(4-chlorophenyl)-4-methyl-4,5-dihydro-1H-pyrazole-1-carboxamide and 1000 ml of tetrahydrofuran. The atmosphere was exchanged for nitrogen and the mixture was cooled to -20° C internal. Then 375 ml of 2.6 M n-butyllithium in hexane (0.97 mole) was added at a rate to maintain the internal temperature below -10° C. The mixture was stirred for an additional 30 minutes at -20° C and then cooled to -60° C whereon 45 ml of dimethyl carbamoyl chloride (0.49 mole) was added in one portion. After stirring for 15 minutes the reaction was quenched with 35 ml of acetic acid and 100 ml of water. After warming to room temperature, the organic layer was separated, dried over magnesium sulfate and concentrated in vacuo. Crystallization from ethyl ether gave 125 g of N,3-bis-(4-chlorophenyl)-4-dimethylcarbamoyl-4-methyl-4,5-dihydro-1H-pyrazole-1-carboxamide.

Mp 194-197° C. NMR and IR data were consistent with the structure.

Example 95

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Preparation of N,3-bis-4-(4-chlorophenyl)-4-carboethoxy-4,5-dihydro-1H-pyrazole-1-carboxamide

To 3.2 g of N,3-bis-(4-chlorophenyl)-4,5-dihydro-1H-pyrazole-1-carboxamide dissolved in 20 ml of tetrahydrofuran and cooled in an acetone bath maintained at -20° C, was added 1.5 ml of diisopropyl amine and 8.0 ml of a 2.7 molar solution of butyllithium in hexane. The resulting solution was stirred for 20 minutes and then cooled to -70° C. To this solution was added 0.5 ml of ethyl chloroformate. The reaction was allowed to stir for 10 minutes and then allowed to warm to room temperature over 10 minutes. The reaction was quenched with 1.0 ml of acetic acid and the reaction mixture was partitioned between diethyl ether and water and the organic layer was dried over anhydrous magnesium sulfate. The resulting solution was filtered evaporated in vacuo to give 3.3 g of N,3-bis-(4-chlorophenyl)-4-carbo-ethoxy-4,5-dihydro-1H-pyrazole-1-carboxamide. NMR and IR data were consistent with the structure.

Example 98

Preparation of N,3-bis-4-(4-chlorophenyl)-4-dithiocarbomethoxy-4-methyl-4,5-dihydro-1H-pyrazole-1-carboxamide

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To 2.3 g of diisopropylamine dissolved in 15 ml of tetrahydrofuran and cooled in an ice salt bath was added 8.0 ml of a 2.7 molar solution of n-butyllithium in hexane. After stirring for 5 minutes a solution of 3.4 g of N,3-bis-(4-chlorophenyl)-4-methyl-4,5-dihydro-1H-pyrazole-1-carboxamide in 7 ml of tetrahydrofuran was added and the resulting solution stirred for 15 minutes. To this solution was added 1.5 ml of carbon disulfide and, after 15 minutes, 1.5 ml of methyl iodide was added. Stirring was continued for 1 hour. The reaction mixture was partitioned between diethyl ether and water and the organic layer was dried over anhydrous magnesium sulfate. The resulting solution was filtered and evaporated in vacuo to give 2.7 g of N,3-bis-(4-chlorophenyl)-4-dithiocarbomethoxy-4-methyl-4,5-dihydro-1H-pyrazole-1-carboxamide. NMR and IR data were consistent with the structure.

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Example 115

Preparation of N,3-bis-(4-chlorophenyl)-4-dimethylcarbamoyl-4-methyl-N-acetyl-4,5-dihydro-1H-pyrazole-1-carboxamide

In a 50 ml round bottomed flask was placed 0.45 g of 60% sodium hydride (0.011 mole). The sodium hydride was washed twice with hexane and suspended in 15 ml of tetrahydrofuran. A solution of 2.0 g (0.005 mole) of N,3-bis-(4-chlorophenyl)-4-dimethylcarbamoyl-4-methyl-4,5-dihydro-1H-pyrazole-1-carboxamide in 5 ml of tetrahydrofuran was added slowly. When hydrogen evolution ceased, 1 ml of acetic anhydride was added and the mixture was stirred for 5 minutes. The reaction was partitioned between ethyl ether and brine, dried, concentrated, and chromatographed yielding 1.6 g of N,3-bis-(4-chlorophenyl)-4-dimethylcarbamoyl-4-methyl-N-acetyl-4,5-dihydro-1H-pyrazole-1-carboxamide, an oil. NMR and IR data were consistent with the structure.

Example 130

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Preparation of N,3-bis-(4-chlorophenyl)-4-carbomethoxy-4-methyl-4,5-dihydro-1H-pyrazole-1-thiocarboxamide

4-chlorophenyl isothiocyanate and 3-(4-chlorophenyl)-4-methyl-4,5-dihydro-1H-pyrazole were used, by substantially following the procedures given in Example G, to prepare N,3-bis-(4-chlorophenyl)-4-methyl-4,5-dihydro-1H-pyrazole-1-thiocarboxamide, which was used, by substantially following the procedures given in Example 77 Method A, to prepare N,3-bis-(4-chlorophenyl)-4-carbomethoxy-4-methyl-4,5-dihydro-1H-pyrazole-1-thiocarboxamide, Mp 69-78 °C. NMR and IR data were consistent with the structure.

Example 138

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Preparation of N,3-bis-(4-chlorophenyl)-4-carbomethoxy-4-methyl-N-dimethylcarbamoyl-4,5-dihydro-1H-pyrazole-1-carboxamide

N,3-bis-(4-chlorophenyl)-4-carbomethoxy-4-methyl-4,5-dihydro-1H-pyrazole-1-carboxamide was treated with dimethyl carbamoyl chloride by substantially following the procedure given in Example 115 yielding N,3-bis-(4-chlorophenyl)-4-carbomethoxy-4-methyl-N-dimethylcarbamoyl-4,5-dihydro-1H-pyrazole-1-carboxamide, an oil which solidified on long standing. NMR and IR data were consistent with the structure.

Example 145

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Preparation of N,3-bis-(4-chlorophenyl)-4-carbomethoxy-4-methyl-N-carbomethoxythio-4,5-dihydro-1H-pyrazole-1-carboxamide

N,3-bis-(4-chlorophenyl)-4-carbomethoxy-4-methyl-4,5-dihydro-1H-pyrazole-1-carboxamide was treated with carbomethoxysulfenyl chloride by substantially following the procedure given in Example 115 yielding N,3-bis-(4-chlorophenyl)-4-carbomethoxy-4-methyl-N-carbomethoxythio-4,5-dihydro-1H-pyrazole-1-carboxamide, a foam. NMR and IR data were consistent with the structure.

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Example 149

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Preparation of N-(4-trifluoromethyl)-3-(4-chlorophenyl)-4-carbomethoxy-4-methyl-4,5-dihydro-1H-pyrazole-1-carboxamide

4-trifluoromethylphenyl isocyanate and 3-(4-chlorophenyl)-4-methyl-4,5-dihydro-1H-pyrazole were used, by substantially following the procedures given in Example G, to prepare N-(4-trifluoromethyl)-3-(4-chlorophenyl)-4-methyl-4,5-dihydro-1H-pyrazole-1-carboxamide which was used, by substantially following the procedures given in Example 77 Method A except that methyl chloroformate was used as the acylating agent, to prepare N-(4-trifluoromethyl)-3-(4-chlorophenyl)-4-carbomethoxy-4-methyl-4,5-dihydro-1H-pyrazole-1-carboxamide, Mp 143-146 °C. NMR and IR data were consistent with the structure.

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Example 150

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Preparation of N,3-bis-(4-chlorophenyl)-4-carbomethoxy-4-methyl-N-(2-nitrophenylsulfenyl)-4,5-dihydro-1H-pyrazole-1-carboxamide

N,3-bis-(4-chlorophenyl)-4-carbomethoxy-4-methyl-4,5-dihydro-1H-pyrazole-1-carboxamide was treated with 2-nitrophenylsulfenyl chloride by substantially following the procedure given in Example 115 yielding N,3-bis-(4-chlorophenyl)-4-carbomethoxy-4-methyl-N-(2-nitrophenylsulfenyl)-4,5-dihydro-1H-pyrazole-1-carboxamide. NMR and IR data were consistent with the structure.

Example 160

Preparation of N,3-bis-(4-chlorophenyl)-4-carbomethoxy-4-methyl-N-(1-carbomethoxy-prop-2-yl-thio)-4,5-dihydro-1H-pyrazole-1-carboxamide

N,3-bis-(4-chlorophenyl)-4-carbomethoxy-4-methyl-4,5-dihydro-1H-pyrazole-1-carboxamide was treated with (1-carbomethoxy-prop-2-yl) disulfide by substantially following the procedure given in Example 115 yielding N,3-bis-(4-chlorophenyl)-4-carbomethoxy-4-methyl-N-(1-carbomethoxy-prop-2-yl-thio)-4,5-dihydro-1H-pyrazole-1-carboxamide. NMR and IR data were consistent with the structure.

Surprisingly, many of the compounds of the present invention exhibit better pesticidal activity than the known dihydropyrazoles. Accordingly, compounds of the present invention represent a genuine enrichment of the art.

Certain of the 1-substituted-4-substituted-4,5-dihydro-1H-pyrazoles of the present invention show, for example, activity at a concentration of from about 2 ppm to about 15 ppm against Southern Armyworm; from about 0.1 ppm to about 10 ppm against Mexican Bean Beetle; and from about 1 ppm to about 10 ppm against Boll Weevil.

On the basis of their strong initial pesticidal activity and excellent residual pesticidal activity, compounds according to the invention may be used in low dosages in controlling pests. The amount of dosage depends on a variety of factors, for example, the substance used, the kind of pest, the formulation used, the state of the crop infected with the pest and the prevailing weather conditions. In general, for the control of pests in agriculture and horticulture, a dosage corresponding to from about 0.1 grams to about 1000 grams of the active substance per hectare may be used and from about 5 grams to about 200 grams per hectare of the active substance is preferred.

Representative pests which can be controlled by the compounds of the present invention include:

American Cockroach (Periplanta americana)
 Bean Leaf Beetle (Cerotoma trifurcata)
 Bean Leaf Roller (Urbanus proteus)
 Black Carpenter Ant (Camponotus Pennsylvanicus)
 Black Cutworm (Agrotis ipsilon)
 Boll Weevil (Anthonomus grandis grandis)
 Colorado Potato Beetle (Lepitotarsa decemlineata)
 Fall Armyworm (Spodoptera frugiperda)
 German Cockroach (Blatella germanica)
 Green June Beetle (Cotinis nitida)
 House Cricket (Ancheta domesticus)
 Housefly (Musca domestica)
 Mexican Bean Beetle (Epilachna varivestis)
 Potato Leaf Hopper (Empoasca fabae)
 Red Harvester Ant (Pogonomyrmex barbatus)
 Red Imported Fire Ant (Solenopsis invicta)
 Redlegged Grasshopper (Melanopus femurrubrum)
 Southern Armyworm (Spodoptera eridania)
 Southern Corn Rootworm (Diabrotica undecimpunctata howardi)
 Tobacco Budworm (Heliothis virescens)

The compounds of the present invention, for practical applications, can be utilized in the form of compositions or formulations. In these compositions and formulations, the active substance is mixed with conventional inert (i.e., plant compatible and/or pesticidally inert) pesticide diluents or extenders such as solid carrier material or liquid carrier material, of the type usable in conventional pesticide compositions or formulations. If desired, adjuvants such as surfactants, stabilizers, antifoam agents and antidrift agents may also be combined.

Examples of compositions and formulations according to the invention are aqueous solutions and dispersions, oily solutions and oil dispersions, pastes, dusting powders, wettable powders, emulsifiable concentrates, flowables, granules, baits, invert emulsions, aerosol compositions and fumigating candles.

Wettable powders, pastes, flowables and emulsifiable concentrates are concentrated preparations which are diluted with water before or during use.

Baits are preparations generally comprising a food or other substance attractive to insects, that includes at least one lethal or non-lethal toxicant. Lethal toxicants kill insects upon ingesting the bait while non-lethal toxicants change the behavior and physiology of the insect for the purpose of control.

The invert emulsions are mainly used for air application, where large areas are treated with a comparatively small amount of preparation. The invert emulsion may be prepared in the spraying apparatus

shortly before, or even during, the spraying operation by emulsifying water in an oil solution or an oil dispersion of the active substance.

Compositions and formulations are prepared in a known manner, for instance by extending the active compounds with conventional pesticide dispersible liquid diluent carriers and/or dispersible solid carriers optionally with the use of carrier vehicle assistants, e.g., conventional pesticide surface-active agents, including emulsifying agents and/or dispersing agents, whereby, for example, in the case where water is used as diluent, organic solvents may be added as auxiliary solvents. The following may be chiefly considered for use as conventional carrier vehicles for this purpose: aerosol propellants which are gaseous at normal temperatures and pressures, such as halogenated hydrocarbons, e.g., dichlorodifluoromethane and trifluorochloromethane, as well as butane, propane, nitrogen and carbon dioxide; inert dispersible liquid diluent carriers, including inert organic solvents, such as aromatic hydrocarbons (e.g., benzene, toluene, xylene, alkyl naphthalenes, etc.), halogenated, especially chlorinated, aromatic hydrocarbons (e.g., chlorobenzenes, etc.), cycloalkanes, (e.g., cyclohexane, etc.), paraffins (e.g., petroleum or mineral oil fractions), chlorinated aliphatic hydrocarbons (e.g., methylene chloride, chloroethylenes, etc.), vegetable oils (e.g., soybean oil, cotton seed oil, corn oil, etc.), alcohols (e.g., methanol, ethanol, propanol, butanol, glycol, etc.) as well as ethers and esters thereof (e.g., glycol monomethyl ether, etc.), amines (e.g., ethanolamine, etc.), amides (e.g., dimethyl formamide, etc.), sulfoxides (e.g., dimethyl sulfoxide, etc.), acetonitrile, ketones (e.g., acetone, methyl ethyl ketone, methyl isobutyl ketone, cyclohexanone, etc.), and/or water; solid carriers including ground natural minerals, such as kaolins, clays, talc, chalk, quartz, attapulgite, montmorillonite or diatomaceous earth, and ground synthetic minerals, such as highly-dispersed silicic acid, alumina and silicates; solid carriers for granules include crushed and fractionated natural rocks such as calcite, marble, pumice, sepiolite and dolomite, as well as synthetic granules of inorganic and organic meals, and granules of organic material such as sawdust, coconut shells, corn cobs and tobacco stalks. The following may be chiefly considered for use as conventional carrier vehicle assistants: emulsifying agents, such as cationic and/or non-ionic and/or anionic emulsifying agents (e.g., polyethylene oxide esters of fatty acids, polyethylene oxide ethers of fatty alcohols, alkyl sulfates, alkyl sulfonates, aryl sulfonates, albumin hydrolyzates, etc., and especially alkyl arylpolyglycol ethers, magnesium stearate, sodium oleate, etc.); and/or dispersing agents, such as lignin, sulfite waste liquors, methyl cellulose, etc.

Adhesives such as carboxymethylcellulose and natural and synthetic polymers in the form of powders, granules or latices, such as gum arabic, polyvinyl alcohol and polyvinyl acetate, can be used in the formulations.

If desired, it is possible to use colorants in compositions and formulations containing compounds of the present invention such as inorganic pigments, for example, iron oxide, titanium oxide and Prussian Blue, and organic dyestuffs, such as alizarin dyestuffs, azo dyestuffs and metal phthalocyanine dyestuffs, and trace nutrients such as salts of iron, manganese, boron, copper, cobalt, molybdenum and zinc.

The active compounds of the present invention may be employed alone or in the form of mixtures with one another and/or with such solid and/or liquid dispersible carrier vehicles and/or with other known compatible active agents, especially plant protection agents, such as other arthropodicides, nematocides, fungicides, bactericides, rodenticides, herbicides, fertilizers, growth-regulating agents, synergists, etc., if desired, or in the form of particular dosage preparations for specific application made therefrom, such as solutions, emulsions, suspensions, powders, pastes, and granules which are thus ready for use.

As concerns commercially marketed preparations, these generally contemplate carrier composition mixtures in which the active compound is present in an amount substantially between about 0.001-99% by weight, and preferably between about 0.005-90% by weight, of the mixture. Carrier composition mixtures suitable for direct application or field application generally contemplate those in which the active compound is present in an amount substantially between about 0.00001-95%, preferably 0.00005-90%, by weight of the mixture. Thus the present invention contemplates overall compositions which comprise mixtures of a conventional dispersible carrier such as (1) a dispersible inert finely divided carrier solid, and/or (2) a dispersible carrier liquid such as an inert organic solvent and/or water, preferably including a surface-active effective amount of a carrier vehicle assistant, (e.g., a surface-active agent, such as an emulsifying agent and/or a dispersing agent), and an amount of the active compound which is effective for the purpose in question.

The active compounds can be applied as insecticide sprays by methods commonly employed, such as conventional high-gallonage hydraulic sprays, low gallonage sprays, ultra-low-volume sprays, airblast spray, aerial sprays, and dusts. If low volume applications are desired, a solution of the compound is usually used. In ultra-low-volume applications, a liquid composition containing the active compound is usually applied as a spray (e.g., mist) by means of atomizing equipment in finely divided form (average particle size of from about 50 to about 100 microns or less) using airplane crop spraying techniques. Typically only a few liters

per hectare are needed and often amounts up to about 15 to 1000 g/hectare, preferably about 40 to 600 g/hectare are sufficient. With ultra-low-volume, it is possible to use highly concentrated liquid compositions with said liquid carrier vehicles containing from about 20 to about 95% by weight of the active compound.

Furthermore, the present invention contemplates methods of selectively killing, combating or controlling pests, which comprise applying to at least one of (a) such pests and (b) the corresponding habitat thereof (i.e., the locus to be protected, for example, to a growing crop or to an area where a crop is to be grown) a correspondingly combative or toxic amount (i.e., a pesticidally effective amount) of the particular active compound of the invention alone or together with a carrier vehicle as noted above. The instant formulations or compositions are applied in the usual manner, for instance by spraying, atomizing, vaporizing, scattering, dusting, watering, squirting, sprinkling, pouring, fumigating, dry dressing, moist dressing, wet dressing, slurry dressing, encrusting and the like.

It will be realized, of course, that the concentration of the particular active compound utilized in admixture with the carrier vehicle will depend upon such factors as the type of equipment employed, method of application, area to be treated, types of pests to be controlled and degree of infestation. Therefore, in special cases it is possible to go above or below the aforementioned concentration ranges.

Granular preparations are produced for example, by taking up the active substance in a solvent and by using the resulting solution, as the case may be in the presence of a binder, to impregnate a granular carrier material, such as porous granules (for example pumice and attaclay), or mineral non-porous granules (for example dried coffee grounds and chopped tobacco stems).

A granular preparation (frequently termed a "pellet") may alternatively be produced by compressing the active substance together with powdered minerals in the presence of lubricants and binders and by disintegrating and straining the composite to the desired grain size.

Dusts are obtainable by intimately mixing the active substance with an inert solid carrier material in a concentration of from about 1 to about 50% by weight. Examples of suitable solid carrier materials are talc, kaolin, pipe clay, diatomaceous earth, dolomite, gypsum, chalk, bentonite, attapulgit and colloidal SiO_2 or mixtures of these and similar substances. Alternatively organic carrier materials such, for example, as ground walnut shells may be used.

Wettable powders and flowables are produced by mixing from about 10 to about 99 parts by weight of a solid inert carrier such, for example, as the aforementioned carrier materials with from about 1 to about 80 parts by weight of the active substance, from about 1 to about 5 parts by weight of a dispersing agent such, for example, as the lignosulfonates or alkylnaphthalene sulfonates known for this purpose and preferably also from about 0.5 to about 5 parts by weight of a wetting agent, such as fatty alcohol sulfates, or alkylarylsulfonates of fatty acid condensation products.

To produce emulsifiable concentrates the active compound is dissolved or finely divided in a suitable solvent which preferably is poorly miscible with water, an emulsifier being added to the resulting solution. Examples of suitable solvents are xylene, toluene, high-boiling aromatic petroleum distillates, for example solvent naphtha, distilled tar oil and mixtures of these liquids. Examples of suitable emulsifiers are alkylphenoxypolyglycol ethers, polyoxyethylene sorbitan esters of fatty acids or polyoxyethylene sorbitol esters of fatty acids. The concentration of the active compound in these emulsifiable concentrates is not restricted within narrow limits and may vary between about 2% and about 50% by weight. A suitable liquid highly concentrated primary composition other than an emulsifiable concentrate is a solution of the active substance in a liquid which is readily miscible with water, for example, acetone, to which solution a dispersant and, as the case may be, a wetting agent are added. When such a primary composition is diluted with water shortly before or during the spraying operation an aqueous dispersion of the active substance is obtained.

An aerosol preparation according to the invention is obtained in the usual manner by incorporating the active substance or a solution thereof in a suitable solvent in a volatile liquid suitable for use as a propellant such, for example, as a mixture of chlorine and fluorine derivatives of methane and ethane.

Fumigating candles or fumigating powders, i.e. preparations which when burning are capable of emitting a pesticidal smoke, are obtained by taking up the active substance in a combustible mixture which may, for example, comprise a sugar or a wood, preferably in the ground form, as a fuel, a substance to sustain combustion such, for example, as ammonium nitrate or potassium chlorate, and furthermore a substance for retarding combustion, for example kaolin, bentonite and/or colloidal silicic acid.

A bait preparation comprises a food or other substance attractive to pests, a carrier, the toxicant and may optionally include other substances commonly used in preparations of this kind, such as, a preservative to inhibit bacterial and fungal growth, a waterproofing agent to prevent disintegration under wet conditions and dyes or colorants as described above.

In addition to the aforementioned ingredients the preparations according to the invention may also

contain other substances commonly used in preparations of this kind.

For example, a lubricant, such as calcium stearate or magnesium stearate, may be added to a wettable powder or to a mixture to be granulated. Furthermore there may, for example, be added "adhesives" such as polyvinylalcoholcellulose derivatives or other colloidal materials, such as casein, to improve the adherence of the pesticide to the surface to be protected.

Representative illustrative preparations of compositions and formulations including the compounds of the present invention are set forth below as Examples K through S.

Example K

Granular

<u>Ingredient</u>	<u>%/wt.</u>
Toxicant	0.25
Triton [®] X-305 (binder)	0.25
Agisorb [®] 24/48 (diluent)	99.50

Preparation: The toxicant and Triton[®] X-305 are dissolved into methylene chloride and the mixture is added to the Agisorb[®] with continuous mixing. The methylene chloride is then allowed to evaporate.

Example L

Dust

<u>Ingredient</u>	<u>%/wt.</u>
Toxicant	1.0
Talc	99.0

Preparation: Toxicant is dissolved in excess acetone and the mixture is impregnated onto the Talc. The acetone is then permitted to evaporate.

Example M

Wettable Powder

<u>Ingredient</u>	<u>%/wt.</u>
Toxicant	25.0
Toxicant impurities	6.3
Duponal [®] WA Dry (wetter)	2.0
Reax [®] 45A (dispersant)	5.0
Barden clay (diluent)	31.7
HiSil [®] 233 (diluent)	30.0

Preparation: The toxicant is absorbed onto the Barden clay and HiSil[®] carriers. The Duponal[®] and Reax[®] are then added and the entire dry mixture blended until homogeneous. The composition is then micronized to a fine particle size.

Example NEmulsifiable Concentrate

<u>Ingredient</u>	<u>%/wt.</u>
Toxicant	13.5
Toxicant impurities	1.5
Sponto [®] 232T (emulsifier)	6.0
Sponto [®] 234T (emulsifier)	4.0
Cyclohexanone (solvent)	22.5
Tenneco [®] 500-100 (solvent)	52.5

Preparation: All ingredients are mixed together with continuous agitation until a homogeneous clear solution is obtained.

Example OAerosol

<u>Ingredient</u>	<u>%/wt.</u>
Toxicant	0.5
Freon 12	99.5

Preparation: The components are mixed and packaged under pressure in a suitable container equipped with a release spray valve.

Example PFumigating Candle or Fumigating Powder

<u>Ingredient</u>	<u>%/wt.</u>
Toxicant	1.0
Wood dust	96.0
Starch	3.0

Preparation: Toxicant, wood dust, and starch are blended together and then molded into a candle using a small amount of water to activate the starch.

Example QBaitMethod A

<u>Ingredient</u>	<u>%/wt.</u>
Toxicant	1.00
Wheat Bran (carrier and attractant)	89.95
Corn Syrup (attractant)	7.00
Corn Oil (attractant)	2.00
Kathon [®] 4200 (preservative)	0.05

Preparation: The corn oil and corn syrup are added to the wheat bran with adequate mixing. The toxicant and Kathon® are premixed with excess acetone and this solution is added to the wheat bran base with continued mixing. The acetone is then permitted to evaporate.

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Method B

<u>Ingredient</u>	<u>%/wt.</u>
Toxicant	0.06
Granulated Sugar (carrier and attractant)	99.94

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15 Example RPellet

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Same as Example Q, Method A, with this addition: the bait composition is formed into 1/4" diameter by 3/8" long pellets using a suitable die and press apparatus.

Example SFlowable

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<u>Ingredient</u>	<u>%/wt.</u>
Toxicant	25.0
Toxicant impurities	6.3
Duponal® WA Dry (wetter)	2.0
Reax® 45A (dispersant)	5.0
HiSil® 233 (diluent)	30.0
Kelzan® (thickener)	0.5
Water	31.2

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Preparation: The toxicant is absorbed onto the HiSil® carrier. The Duponal® and Reax® are then added and the entire dry mixture blended until homogeneous. The composition is then micronized to a fine particle size. The resulting powder is suspended in water and the Kelzan® added.

Compositions and formulations according to the present invention may also include known pesticidal compounds. This expands the spectrum of activity of the preparation and may give rise to synergism.

The following known insecticidal, fungicidal and acaricidal compounds are suitable for use in such a combined preparation.

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Insecticides such as:

1. Chlorinated hydrocarbons, for example, 2,2-bis(p-chlorophenyl)-1,1,1-trichloroethane and hexachlorocyclopentadiene;
2. Carbamates, for example N-methyl-1-naphthylcarbamate;
3. Dinitrophenols, for example 2-methyl-4,6-dinitrophenyl and (2-(2-butyl)-4,6-dinitrophenyl)-3,3-dimethylacrylate;
4. Organic phosphorus compounds, such as dimethyl-2-methoxy-carbonyl-1-methylvinyl phosphate, O,O-diethyl-O-p-nitrophenylphosphorus thioate; N-monomethylamide of O,O-dimethyldithiophosphorylacetic acid;
5. Diphenylsulfides, for example p-chlorobenzyl or p-chlorophenyl sulfide and 2,4,4'-5-tetrachlorodiphenyl-sulfide;
6. Diphenylsulfonates, for example p-chlorophenylbenzenesulfonate;
7. Methylocabins, for example, 4,4-dichloro-1-trichloromethylbenzhydrol;

50

55

8. Quinoxaline compounds, such as methylquinoxaline dithiocarbonate;
 9. Amidines such as N'-(4-chloro-O-tolyl) N,N-dimethylformamidine;
 10. Pyrethroids such as Allethrin;
 11. Biologicals such as Bacillus thuringiensis preparations;
 12. Organic tin compounds such as tricyclohexyltin hydroxide;
 Fungicides such as:
 13. Organic mercury compounds, for example phenylmercuryacetate and methylmercurycyanoguanide;
 14. Organic tin compounds, for example triphenyltin hydroxide and triphenyltinacetate;
 15. Alkylenebisdithiocarbamates, for example, zincethylenebisdithiocarbamate and man-
 ganoethylenebisdithiocarbamate; and furthermore
 16. 2,4-dinitro-6-(2-octyl-phenylcrotonate), 1-bis(dimethylamino)phosphoryl-3-phenyl-5-amino-1,2,4-
 triazole, 6-methylquinoxaline-2,3-dithiocarbonate, 1,4-dithioantraquinone-2,3-dicarbonitrile, N-trich-
 loromethylthiophthalimide, N-trichloromethylthiotetrahydrophthalimide, N-(1,1,2,2-tetrachloroethylthio)-
 tetrahydrophthalimide, N-dichlorofluoromethylthio-N-phenyl-N'-dimethylsulfonyldiamide and tetrach-
 loroisophthalonitrile.

Biological Activity

It has been found by biological evaluation examination that the compounds according to the invention have pesticidal activity and are capable of controlling larvae and adult forms of pests, especially the Mexican Bean Beetle, Southern Armyworm and Boll Weevils. In addition, compounds of the present invention were found active against pyrethroid resistant pests such as the Colorado Potato Beetle and Housefly.

In evaluating the pesticidal activity of the compounds of this invention, the following test procedures were employed.

Evaluations were made on the following insects:

<u>Common Name</u>	<u>Latin Name</u>
Mexican Bean Beetle	<u>Epilachna varivestis</u>
Southern Armyworm	<u>Spodoptera eridania</u>
Boll Weevil	<u>Anthonomus grandis grandis</u>

A test solution containing 600 parts per million (ppm) was made by dissolving the test compound in a solvent (acetone: methanol, 1:1), adding a surfactant and then water to give an acetone:methanol:water system of 10:10:80. A 1:1 mixture of an alkylaryl polyetheralcohol (sold under the trademark Triton® X-155) and a modified phthalic glycerol alkyl resin (sold under the trademark Triton® B-1956) was utilized at the equivalent of 1 ounce per 100 gal. of test solution as a surfactant.

Analogous solutions are made by serially diluting the 600 ppm test solution with water and surfactant to give concentrations of 150, 38, 10, 2.5, 0.6, 0.15, and 0.038 ppm. Not all compounds are tested at each of the several concentrations stated above. Particular concentrations of a particular compound tested are predicated upon responses obtained in a less definite range-finding assay. Test concentrations of a compound are selected as those most likely to differentiate dose response of a particular compound toward a particular test insect.

For the Mexican Bean Beetle and Southern Armyworm test, lima bean (Phaseolus limensis var. Woods' Prolific) seedlings in 3-inch pots were sprayed to runoff with the test solutions using a DeVilbiss atomizer at 20 psig. When dry, each plant was placed in a plastic box (7.5" long x 5.25" wide x 3.75" deep). Each box was then infested with 10 third instar larvae of either the Mexican Bean Beetle or the Southern Armyworm. The box was then sealed with a lid equipped with screened ventilation holes.

For the Boll Weevil, cotton (Gossypium hirsutum var. Acala) seedlings are treated in like manner. Ten young adult Boll Weevils are placed in each plastic box containing the treated plant that has been allowed to dry. The boxes are then sealed as noted above.

All treatments are maintained under continuous fluorescent light at 80 ± 5° F on open shelves for the course of the exposure period. Plants are watered as needed and replaced with untreated plants if they have been totally consumed as would be the case with ineffective treatments or untreated checks or

controls.

Six days after treatment, the percent mortality is determined for each test species and spray concentration. The following table (Table II) gives the mortality data reported as percentage killed at the stated concentration for representative compounds of the present invention.

TABLE II
Biological Evaluation

Example No.	Test Insect					
	Mexican		Southern		Boll Weevil	
	Bean Beetle		Armyworm			
	10 ppm	2.5 ppm	38 ppm	10 ppm	38 ppm	10 ppm
2	100	70	100	100	100	100
16	60	40	90	0	100	90
66	100	10	100	100	100	80
77	100	90	-- ^a	100	100	100
84	90	80	100	90	90	20
92	--	100	100	20	100	90
105	100	100	100	90	100	100
114	100	100	100	80	100	100
123	100	80	--	70	100	100
124	100	100	100 ^b	100 ^b	100	100
141	--	100	100	100	100	100
143	--	100	--	100	--	100
149	--	100	--	100	--	-- ^c
152	--	100	100	100	100	100
186	--	100	--	100	100	90

a Not tested at the stated concentration.

b The maximum concentration originally applied was 2.5 ppm and failed to elicit kill. The Southern Armyworm assay was repeated giving the results shown and again gave 0% kill at 2.5 ppm.

c The maximum concentration applied was 2.5 ppm and elicited 100% kill.

Claims

1. A compound of the formula

controls.

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Biological Evaluation

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2	100	70	100	100	100	100
16	60	40	90	0	100	90
66	100	10	100	100	100	80
77	100	90	-- ^a	100	100	100
84	90	80	100	90	90	20
92	--	100	100	20	100	90
105	100	100	100	90	100	100
114	100	100	100	80	100	100
123	100	80	--	70	100	100
124	100	100	100 ^b	100 ^b	100	100
141	--	100	100	100	100	100
143	--	100	--	100	--	100
149	--	100	--	100	--	-- ^c
152	--	100	100	100	100	100
186	--	100	--	100	100	90

a Not tested at the stated concentration.

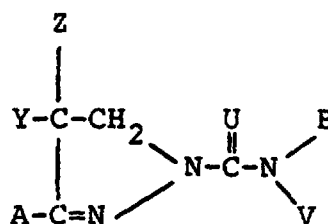
b The maximum concentration originally applied was 2.5 ppm and failed to elicit kill. The Southern Armyworm assay was repeated giving the results shown and again gave 0% kill at 2.5 ppm.

c The maximum concentration applied was 2.5 ppm and elicited 100% kill.

Claims

1. A compound of the formula





A

B

u

is O, S or N-Q;

Y

is hydrogen, (C₃-C₆)cycloalkyl, aryl or R⁴-Q;

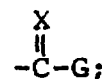
Y

is lower (C₁-C₆) straight or branched chain unsubstituted or substituted alkyl, aryl, or a group having the formula


$$Z$$

where X is O, S or N-Q:

is hydrogen, (C₃-C₆)cycloalkyl, aryl or R⁴-Q; provided that when Z is hydrogen, Y is



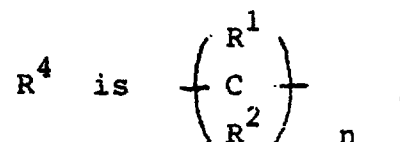
Q

and provided that Z is not methyl when Y is methyl;

is hydrogen, halogen, cyano, nitro, OR¹, R⁴OR¹, CO₂R¹, OR⁴OR¹, CR¹R²R³, CONR¹R², NR¹R², NR¹COR², N(COR¹)COR², CSR¹, SR¹, SOR¹, SO₂R¹, NR¹SOR², R⁴SR¹, OR⁴SR¹, SR⁴SR¹, SNHSR¹, SNHSO₂R¹, CONHSR¹, OCOR¹, R¹, C(=NR¹)R², COR¹, N₃, OSO₂R¹, NR¹SO₂R², NR¹CSR², alkenyl (CR¹=CR²R³), alkynyl (C≡CR¹), or aryl;

R¹, R² and R³

are, independently, hydrogen, halogen, cyano, nitro, hydroxy, an alkoxy group (OR) having up to four carbon atoms, an amino group (NH₂), an alkylamino group (NHR) having up to six carbon atoms, a dialkylamino group (NR₂) having, independently, up to six carbon atoms in each alkyl moiety, a carboxy group (CO₂H), a carbalkoxy group (CO₂R) having up to six carbon atoms, an alkylcarbonyl group (COR) having up to six carbon atoms, an alkanoyloxy group (OCOR) having up to six carbon atoms, a carboxamide group (CONH₂, CONHR or CONR₂) having independently, up to six carbon atoms in each alkyl moiety, a carbamoyloxy group (OCONH₂, OCONHR or OCONR₂) having, independently, up to six carbon atoms in each alkyl moiety, a sulfhydryl, a sulfinyl group (-SOR) having up to six carbon atoms, a sulfonyl group (-SO₂R) having up to six carbon atoms, a sulfonate group (-OSO₂R) having up to six carbon atoms, an alkylthio group (SR) having up to six carbon atoms, a sulfonamide (SO₂NH₂, SO₂NHR or SO₂NR₂) having, independently, up to six carbon atoms in each alkyl moiety, an amido group (NRCOR) having, independently, up to six carbon atoms in each alkyl moiety, an alkylsulfonamide (NRSO₂R) having, independently, up to six carbon atoms in each alkyl moiety, an alkylthiocarbonyl group (CSR) having up to six carbon atoms, a thioamido group (NRCSR) having, independently, up to six carbon atoms in each alkyl moiety, an alkylsulfonamide (NRSOR) having, independently, up to six carbon atoms in each alkyl moiety, an imido group (N(COR)COR) having, independently, up to six carbon atoms in each alkyl moiety, an unsubstituted or substituted straight or branched chain lower (C₁-C₆)alkyl, (C₃-C₆)cyclo alkyl or aryl;



G

is (C₃-C₆)cycloalkyl, aryl or R⁴-Q; and

n

is an integer from 0 to 10;

where, when substituted, the substituent on the alkyl moiety can be one or more of the same or different hydroxy, halogen, cyano, nitro, or an alkoxy group (OR) having up to four carbon atoms, an amino group (NH₂), an alkylamino group (NHR) having up to six carbon atoms, a dialkylamino group (NR₂) having, independently, up to six carbon atoms in each alkyl moiety, a carboxy group (CO₂H), a carbalkoxy group (CO₂R) having up to six carbon atoms, an alkylcarbonyl group (COR) having up to six carbon atoms, an alkanoyloxy group (OCOR) having up to six carbon atoms, a carboxamide group (CONH₂, CONHR or CONR₂) having independently, up to six carbon atoms in each alkyl moiety, a carbamoyloxy group (OCONH₂, OCONHR or OCONR₂) having, independently, up to six carbon atoms in each alkyl moiety, a sulfhydryl, a sulfinyl group (-SOR) having up to six carbon atoms, a sulfonyl group (-SO₂R) having up to six carbon atoms, a sulfonate group (-OSO₂R) having up to six carbon atoms, an alkylthio group (SR) having up to six carbon atoms, a sulfonamide (SO₂NH₂, SO₂NHR or SO₂NR₂) having, independently, up to six carbon atoms in each alkyl moiety, an amido group (NRCOR) having, independently, up to six carbon atoms in each alkyl moiety, an alkylsulfonamide (NRSO₂R) having, independently, up to six carbon atoms in each alkyl moiety, an alkylthiocarbonyl group (CSR) having up to six carbon atoms, a thioamido group (NRCSR) having, independently, up to six carbon atoms in each alkyl moiety, an alkylsulfonamide (NRSOR) having, independently, up to six carbon atoms in each alkyl moiety, an imido group (N(COR)COR) having, independently, up to six carbon atoms in each alkyl moiety, or an aryl group, where R is an alkyl group having the stated number of carbon atoms; and where aryl is phenyl, optionally substituted with 1-5 substituents independently chosen from W; naphthyl, optionally substituted with 1-7 substituents independently chosen from W; a 5 membered heterocycle containing up to 2 nitrogen atoms, up to 2 oxygen atoms, up to 2 sulfur atoms and up to 4 nuclear carbon atoms, optionally substituted with 1-4 substituents independently chosen from W; or a 6 membered heterocycle containing up to 3 nitrogen atoms, up to 2 oxygen atoms, up to 2 sulfur atoms and 1-5 nuclear carbon atoms optionally substituted with 1-4 substituents independently chosen from W; W is halogen, cyano, nitro, R¹, CO₂R¹, CONR¹R², CR¹=CR²R³, C=CR¹, SR¹, OR¹, NR¹R², SOR¹, SO₂R¹, OSO₂R¹, NR¹COR², SF₅, CF₃, OCF₃, OCF₂H, SCF₃, OCF₂Br, SCF₂Br, SCF₂Cl, SCF₂H, NR¹SO₂R² or N(COR¹)COR²; and agronomically acceptable salts thereof.

2. A compound according to claim 1 wherein A, B, U, V, Q, R, R¹, R², R³, R⁴, G and n are as defined in claim 1 and

Y is a group having the formula



where X is O, S or N-Q; and

Z is hydrogen, (C₃-C₆)cycloalkyl, unsubstituted or substituted aryl or R⁴-Q; and agronomically acceptable salts thereof.

3. A compound according to claim 2 wherein R, R¹, R², R³ and R⁴, G, Q and n are as defined in claim 2 and

A is unsubstituted or substituted phenyl;

B is unsubstituted or substituted phenyl;

U is O or S;

V is hydrogen, (C₃-C₆)cycloalkyl, unsubstituted or substituted phenyl or R⁴-Q;



Y is a group having the formula



where X is O or S; and

Z is hydrogen, (C₃-C₆)cycloalkyl, unsubstituted or substituted phenyl or R⁴-Q;
and agronomically acceptable salts thereof.

4. A compound according to claim 3 wherein A, U, Y, Z, Q, R, R¹, R², R³, R⁴, G and n are as defined in claim 3 and

B is substituted phenyl; and

V is hydrogen, unsubstituted or substituted phenyl or R⁴-Q;
and agronomically acceptable salts thereof.

5. A compound according to claim 4 wherein U, Y, Q, R, R¹, R², R³, R⁴, G and n are as defined in claim 4 and

A is unsubstituted or monosubstituted or disubstituted phenyl;

B is monosubstituted or disubstituted phenyl;

V is hydrogen or R⁴-Q; and

Z is hydrogen, unsubstituted or substituted phenyl, or R⁴-Q;
and agronomically acceptable salts thereof.

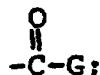
6. A compound according to claim 5 wherein V, Z, Q, R, R¹, R², R³, R⁴, G and n are as defined in claim 5 and

A is monosubstituted phenyl;

B is monosubstituted phenyl;

U is O; and

Y is



and agronomically acceptable salts thereof.

7. A compound according to claim 6 wherein

A is monosubstituted phenyl where the substituent is fluoro, chloro, bromo, trifluoromethyl, trifluoromethoxy, difluoromethoxy or methyl;

B is monosubstituted phenyl where the substituent is fluoro, chloro, bromo, trifluoromethyl, trifluoromethoxy, difluoromethoxy, carbomethoxy, carboethoxy, carboisopropoxy, methylthio or methylsulfonyl;

U is O;

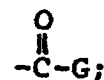
V is hydrogen, lower (C₁-C₆) straight or branched chain unsubstituted or substituted alkyl, lower (C₁-C₆)alkoxy, lower (C₁-C₆)alkylsulfonyl, unsubstituted or substituted arylsulfonyl,



where X is O or S and R¹ is as defined in claim 6, cyano, lower (C₁-C₆)alkylheteroalkyl, wherein the substituent or the alkyl moiety is lower (C₁-C₄)alkoxy, lower (C₁-C₄)alkylsulfonyl, unsubstituted or substituted phenylsulfonyl, lower (C₁-C₄)carboalkoxy, cyano or lower (C₁-C₄)alkylheteroalkyl;



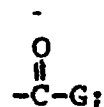
Y is



Z is hydrogen, lower (C₁-C₄)alkyl, or unsubstituted or substituted phenyl; and
 G is hydroxy, lower (C₁-C₄)alkyl, lower (C₁-C₄)-alkoxy, lower (C₁-C₄)alkylamino, lower dialkylamino having independently one to four carbon atoms in each alkyl moiety, or phenyl, and agronomically acceptable salts thereof.

8. A compound according to claim 7 wherein

A is 4-chlorophenyl, 4-bromophenyl, 4-trifluoromethylphenyl, 4-trifluoromethoxyphenyl or 4-difluoromethoxyphenyl;
 B is 4-chlorophenyl, 4-bromophenyl, 4-carbomethoxyphenyl, 4-carboethoxyphenyl, 4-carboisopropoxyphenyl, 4-difluoromethoxyphenyl, 4-trifluoromethoxyphenyl, 4-trifluoromethylphenyl, 4-methylthiophenyl or 4-methylsulfonylphenyl;
 U is O;
 V is hydrogen, methyl, methylsulfonyl, 2-nitrophenylsulfonyl, carbomethoxy, acetyl, trifluoroacetyl, formyl or methoxalyl;
 Y is



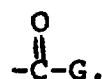
Z is hydrogen, methyl, phenyl, 4-chlorophenyl, 4-trifluoromethylphenyl, 4-trifluoromethoxyphenyl, 4-trifluorothiomethoxyphenyl, 4-difluoromethoxyphenyl or 4-difluorobromothiomethoxyphenyl; and
 G is hydroxy, methyl, ethyl, methoxy, ethoxy, dimethylamino or phenyl; and agronomically acceptable salts thereof.

9. A compound according to claim 8 wherein

A is 4-chlorophenyl,
 B is 4-chlorophenyl,
 U is O,
 V is hydrogen,
 Y is



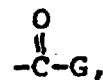
Z is methyl, and
 G is methoxy; or
 A is 4-chlorophenyl,
 B is 4-chlorophenyl,
 U is O,
 V is hydrogen,
 Y is



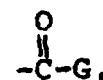
Z is methyl, and
 G is ethoxy; or



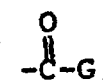
A is 4-chlorophenyl,
 B is 4-chlorophenyl,
 U is O,
 V is hydrogen,
 Y is



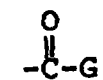
Z is methyl, and
 G is dimethylamino; or
 A is 4-chlorophenyl,
 B is 4-chlorophenyl,
 U is O,
 V is carbomethoxy,
 Y is



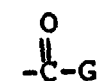
Z is methyl, and
 G is methoxy; or
 A is 4-chlorophenyl,
 B is 4-chlorophenyl,
 U is O,
 V is acetyl,
 Y is



Z is methyl, and
 G is methoxy; or
 A is 4-chlorophenyl,
 B is 4-chlorophenyl,
 U is O,
 V is trifluoroacetyl,
 Y is

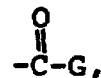


Z is methyl, and
 G is methoxy; or
 A is 4-chlorophenyl,
 B is 4-chlorophenyl,
 U is O,
 V is formyl,
 Y is



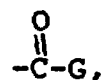
5 Z is methyl, and
 G is methoxy; or
 A is 4-chlorophenyl,
 B is 4-chlorophenyl,
 U is O,
 V is methoxyalyl,
 Y is

10



15 Z is methyl, and
 G is methoxy; or
 A is 4-chlorophenyl,
 B is 4-bromophenyl,
 U is O,
 V is hydrogen,
 Y is

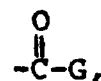
20



25 Z is methyl, and
 G is methoxy; or
 A is 4-chlorophenyl,
 B is 4-trifluoromethylphenyl,
 U is O,
 V is hydrogen,
 Y is

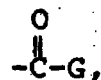
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35



40 Z is methyl, and
 G is methoxy; or
 A is 4-trifluoromethylphenyl,
 B is 4-trifluoromethylphenyl,
 U is O,
 V is hydrogen,
 Y is

45

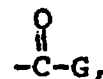


50 Z is methyl, and
 G is methoxy; or
 A is 4-chlorophenyl,
 B is 4-trifluoromethoxyphenyl,
 U is O,
 V is hydrogen.

55



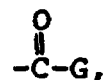
Y is



5

- Z is methyl, and
 G is methoxy; or
 A is 4-bromophenyl,
 10 B is 4-trifluoromethylphenyl,
 U is O,
 V is hydrogen,
 Y is

15



- 20 Z is methyl, and
 G is methoxy;
 and agronomically acceptable salts thereof.

10. A compound according to claim 1 wherein A, B, U, V, Q, R, R¹, R², R³, R⁴ and n are as defined in claim 1 and

- 25 Y is lower (C₁-C₆) straight or branched chain unsubstituted or substituted alkyl or unsubstituted or substituted aryl; and
 Z is (C₃-C₆)cycloalkyl, unsubstituted or substituted aryl or R⁴-Q provided that Z is not hydrogen and Z is not methyl when Y is methyl;
 and agronomically acceptable salts thereof.

30

11. A compound according to claim 10 wherein V, Y, Z, Q, R, R¹, R², R³, R⁴ and n are as defined in claim 10 and

- 35 A is unsubstituted or substituted phenyl;
 B is unsubstituted or substituted phenyl; and
 U is O or S;
 and agronomically acceptable salts thereof.

12. A compound according to claim 11 wherein U, Y, Q, R, R¹, R², R³, R⁴ and n are as defined in claim 11 and

- 40 A is substituted phenyl;
 B is substituted phenyl;
 V is unsubstituted or substituted phenyl or R⁴-Q; and
 Z is unsubstituted or substituted phenyl or R⁴-Q, provided that Z is not hydrogen and Z is not methyl when Y is methyl;
 45 and agronomically acceptable salts thereof.

13. A compound according to claim 12 wherein U, Y, Z, Q, R, R¹, R², R³, R⁴ and n are as defined in claim 12 and

- 50 A is monosubstituted or disubstituted phenyl;
 B is monosubstituted or disubstituted phenyl; and
 V is hydrogen or R⁴-Q;
 and agronomically acceptable salts thereof.

14. A compound according to claim 13 wherein V, Y, Q, R, R¹, R², R³, R⁴ and n are as defined in claim 13 and

- 55 A is monosubstituted phenyl;
 B is monosubstituted phenyl;
 U is O; and



- Z is unsubstituted or monosubstituted phenyl or R⁴-Q, provided that Z is not hydrogen and Z is not methyl when y is methyl;
and agronomically acceptable salts thereof.

- 5 15. A compound according to claim 14 wherein U, Q, R, R¹, R², R³, R⁴ and n are as defined in claim 14,
A is monosubstituted phenyl where the substituent is fluoro, chloro, bromo, trifluoromethyl, trifluoromethoxy, difluoromethoxy or methyl;
B is monosubstituted phenyl where the substituent is fluoro, chloro, bromo, trifluoromethyl, trifluoromethoxy, difluoromethoxy, carbomethoxy, carboethoxy, carboisopropoxy, methylthio or methylsulfonyl;
10 V is hydrogen, lower (C₁-C₆) straight or branched chain unsubstituted or substituted alkyl, lower (C₁-C₆)alkoxy, lower (C₁-C₆)alkylsulfenyl, unsubstituted or substituted arylsulfenyl,



where X is O or S and R¹ is as in claim 14, cyano, lower (C₁-C₆)alkylheteroalkyl, wherein the substituent or the alkyl moiety is lower (C₁-C₄)alkoxy, lower (C₁-C₄)alkylsulfenyl, unsubstituted or substituted phenylsulfenyl, lower (C₁-C₄)carboalkoxy, cyano or lower (C₁-C₄) alkylheteroalkyl;

- 20 Y is lower (C₁-C₆) straight or branched chain unsubstituted or substituted alkyl, or unsubstituted or substituted phenyl; and
Z is lower (C₁-C₄)alkyl, or unsubstituted or substituted phenyl, provided that Z is not methyl when Y is methyl.

16. A compound according to claim 15 wherein U, Q, R, R¹, R², R³, R⁴ and n are as defined in claim 14,

- A is 4-chlorophenyl, 4-bromophenyl, 4-trifluoromethylphenyl, 4-trifluoromethoxyphenyl or 4-difluoromethoxyphenyl;
30 B is 4-chlorophenyl, 4-bromophenyl, 4-carbomethoxyphenyl, 4-carboethoxyphenyl, 4-carboisopropoxyphenyl, 4-difluoromethoxyphenyl, 4-trifluoromethoxyphenyl, 4-trifluoromethylphenyl, 4-methylthiophenyl or 4-methylsulfonylphenyl;
V is hydrogen, methyl, methylsulfenyl, 2-nitrophenylsulfenyl, carbomethoxy, acetyl, trifluoroacetyl, formyl or methoxalyl;
35 y is ethyl, n-propyl, n-butyl, 3-chloropropyl, 4-bromopropyl or phenyl; and
Z is methyl, ethyl, n-propyl, n-butyl or phenyl.

17. A compound according to claim 16 wherein

- 40 A is 4-chlorophenyl,
B is 4-chlorophenyl,
U is O,
V is hydrogen,
y is phenyl, and
Z is methyl; or
45 A is 4-chlorophenyl,
B is 4-chlorophenyl,
U is O,
V is hydrogen,
Y is n-butyl, and
50 Z is methyl; or
A is 4-chlorophenyl,
B is 4-chlorophenyl,
U is O,
V is hydrogen,
55 Y is 3-chloropropyl, and
Z is methyl.

18. A method of combatting insects which comprises applying to the insects or to the loci to be freed or



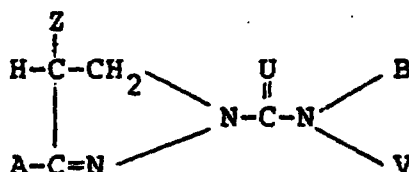
protected from attack by insects an insecticidally effective amount of a compound according to any one of the preceding claims.

19. A method according to claim 18 wherein said compound is applied at from about 0.1 to about 1000 grams per hectare, preferably about 5 to about 200 grams per hectare.

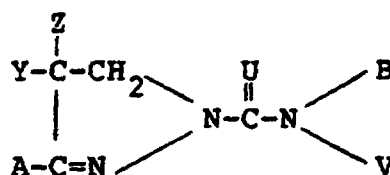
20. An insecticidal composition comprising a compound according to any one of claims 1 to 17 and an agronomically acceptable carrier or diluent therefor.

21. A composition according to claim 20 wherein said compound is present at from about 0.00001 to about 99% preferably from about 0.00005 to about 90% by weight of the composition.

22. A process for preparing a compound as claimed in claim 1 which comprises dissolving a compound of the formula:



wherein A, B, U, V and Z are as defined in claim 1 in an aprotic solvent, treating the solution with a strong base and subsequently with an appropriate alkylating agent or acylating agent to yield a compound of the formula:

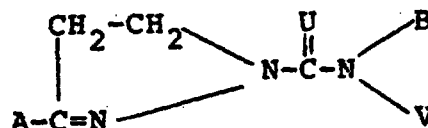


wherein A, B, U, V, Y and Z are as defined in claim 1.

23. A process for preparing a compound according to claim 1 or claim 24 wherein Y is a group having the formula



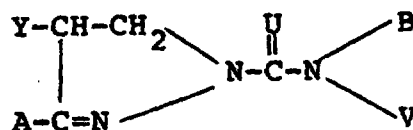
where X is O, S or N-Q; and Z is hydrogen; which comprises dissolving a compound of the formula



wherein A, B, U and V are as defined in claim 1 in an aprotic solvent treating the solution with a strong base followed by treatment with an appropriate acylating agent to yield a compound of

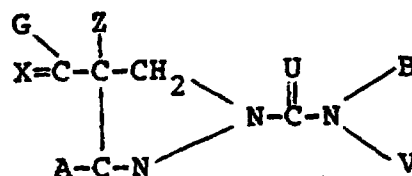


the formula:



wherein A, B, U, V and Y are as defined above and optionally isolating this product or treating it with a base and subsequently with an alkylating or acylating agent.

24. A process for preparing a compound of the formula:

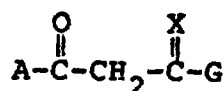


wherein

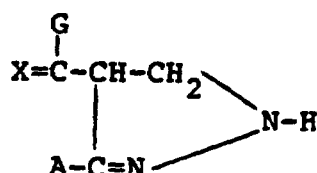
V is hydrogen;

Z is hydrogen, (C₃-C₆)cycloalkyl aryl or R⁴-Q;

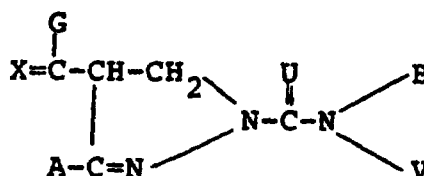
which comprises treating a compound of the formula:



with a mixture of hydrazine and formaldehyde in an appropriate solvent to obtain a compound of the formula:



which is dissolved in an appropriate solvent and treated with an aryl isocyanate to afford a compound of the formula:



which optionally, is isolated or dissolved in an aprotic solvent and further treated with a base and then with an alkylating agent or acylating agent.



25. A process according to claim 22 or, 23 wherein the strong base is selected from an alkaline earth metal hydride, alkali metal hydride, alkali metal amide, alkaline earth metal amide, alkali metal alkyl, alkali metal aryl, alkali metal hydroxide, alkaline earth metal hydroxide, alkali metal alkoxide, alkaline earth metal alkoxide, alkali metal oxide, alkaline earth metal oxide, alkyl lithiums, aryl lithiums alkaline earth metal alkyl or alkaline earth metal aryl.

26. A process according to claim 25 wherein the base is lithium diisopropylamide or butyllithium.

27. A process according to any of claims 22 to 26 wherein the aprotic solvent is selected from a dialkyl ether, aliphatic hydrocarbon, aromatic hydrocarbon, aliphatic alcohol, dialkyl amide, amine, ammonia, dialkyl sulfoxide, dialkyl sulfone, or polyalkyl phosphoric amide.

28. A process according to claim 27 wherein the aprotic solvent is tetrahydrofuran.

29. A process according to claim 22 or 24 wherein the alkylating agent is selected from methyl chloride, methyl bromide, methyl iodide, methyl sulfate, or allyl chloride.

30. A process according to claim 22, 23 or 24 wherein the acylating agent is selected from alkanoyl chloride, aroyl chloride, alkyl chloroformate, aryl chloroformate, alkyl carbonate, aryl carbonate, alkyl isocyanate, aryl isocyanate, alkyl isothiocyanate, aryl isothiocyanate, dialkyl carbamoyl chloride, alkyl chlorothioformate, aryl chlorothioformate, dialkyl carbodiimide, alkyl aryl carbodiimide, diaryl carbodiimide, carbon dioxide, or carbon disulfide.

31. A process according to claim 22, 23 or 24 wherein the alkylation or acylation reaction is carried out at a temperature of from about -120°C to about 200°C over a time period of from about 1 second to about 48 hours.

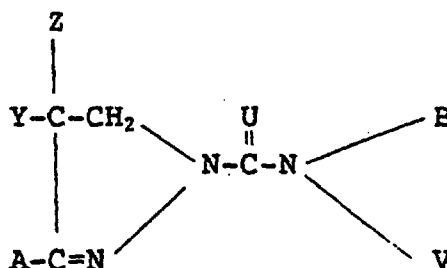
32. A process according to claim 31 wherein the reaction is carried out at a temperature of from about -78°C to about 100°C and over a time period of from about 1 minute to 1 hour.

33. A process according to claim 24 wherein the appropriate solvent for reaction with the aryl isocyanate is selected from a chlorinated hydrocarbon, tetrahydrofuran or a tertiary amine.

34. A process according to claim 33 wherein the appropriate solvent is methylene chloride.

Revendications

1. Un composé de formule :



dans laquelle :

- | | |
|---|--|
| A | est un aryle ; |
| B | est un aryle ; |
| U | est O, S ou N-Q ; |
| V | est l'hydrogène, un cycloalcoyle en $\text{C}_3\text{-C}_6$, un aryle, ou $\text{R}^4\text{-Q}$; |



Y est un alcoyle inférieur en C₁-C₆ non substitué ou substitué, à chaîne droite ou ramifiée, un aryle ou un groupe ayant la formule



dans laquelle X est O, S ou N-Q ;

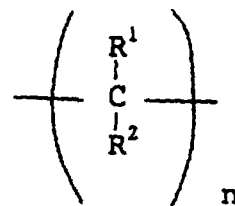
Z est l'hydrogène, un cycloalcoyle en C₃-C₆, un aryle ou R⁴-Q ; pourvu que, lorsque Z est l'hydrogène, Y soit



et pourvu que Z ne soit pas méthyl lorsque Y est méthyl ;

Q est de l'hydrogène, un halogène, cyano, nitro, OR¹, R⁴OR¹, CO₂R¹, OR⁴OR¹, CR¹R²R³, CONR¹R², NR¹COR², N(COR)COR², CSR¹, SR¹, SOR¹, SO₂R¹, NR¹SOR², R⁴SR¹, OR⁴SR¹, SR⁴SR¹, SNHSR¹, SNHSO₂R¹, CONHSR¹, OCOR¹, R¹, C(=NR¹)R², COR¹, N₃, OSO₂R¹, NR¹SO₂R², NR¹CSR², alcényle (CR¹ = CR²R³), alcoynyle (C = CR¹), ou aryle ;

R¹, R² et R³ sont, indépendamment, l'hydrogène, un halogène, cyano, nitro, hydroxy, un groupe alcoxy (OR) ayant jusqu'à quatre atomes de carbone, un groupe amino (NH₂), un groupe alcoylamino (NHR) ayant jusqu'à six atomes de carbone, un groupe dialcoylamino (NR₂) ayant, indépendamment, jusqu'à six atomes de carbone dans chaque portion alcoyle, un groupe carboxy (CO₂H), un groupe carbalcoxy (CO₂R) ayant jusqu'à six atomes de carbone, un groupe alcoylcarbonyle (COR) ayant jusqu'à six atomes de carbone, un groupe alcanoyloxy (OCOR) ayant jusqu'à six atomes de carbone, un groupe carboxamide (CONH₂, CONHR ou CONR₂) ayant, indépendamment, jusqu'à six atomes de carbone dans chaque portion alcoyle, un groupe carbamoyloxy (OCONH₂, OCONHR ou OCONR₂) ayant, indépendamment, jusqu'à six atomes de carbone dans chaque portion alcoyle, un sulfhydryle, un groupe sulfinyle (-SOR) ayant jusqu'à six atomes de carbone, un groupe sulfonyle (-SO₂R) ayant jusqu'à six atomes de carbone, un groupe sulfonate (-OSO₂R) ayant jusqu'à six atomes de carbone, un groupe alcoylthio (SR) ayant jusqu'à six atomes de carbone, une sulfonamide (SO₂NH₂, SO₂NHR ou SO₂NR₂) ayant, indépendamment, jusqu'à six atomes de carbone dans chaque portion alcoyle, un groupe amido (NRCOR) ayant, indépendamment, jusqu'à six atomes de carbone dans chaque portion alcoyle, une alcoylsulfonamide (NRSO₂R) ayant, indépendamment, jusqu'à six atomes de carbone dans chaque portion alcoyle, un groupe alcoylthiocarbonyle (CSR) ayant jusqu'à six atomes de carbone, un groupe thioamido (NRCSR) ayant, indépendamment, jusqu'à six atomes de carbone dans chaque portion alcoyle, une alcoylsulfonamide (NRSOR) ayant, indépendamment, jusqu'à six atomes de carbone dans chaque portion alcoyle, un groupe imido (N(COR)COR) ayant, indépendamment, jusqu'à six atomes de carbone dans chaque portion alcoyle, un alcoyl inférieur en C₁-C₆ à chaîne droite ou ramifiée, non substitué ou substitué, un cycloalcoyle en C₃-C₆ ou un aryle



R⁴
G
n

est

est un cycloalcoyle en C₃-C₆, un aryle ou R⁴-Q ; et

est un nombre entier de 0 à 10 ;

formule dans laquelle,

lorsqu'elle est substituée, le substituant sur la portion alcoyle peut être un ou plusieurs du même ou de différents parmi les substituants suivants :

hydroxy, halogène, cyano, nitro ou un groupe alcoxy (OR) ayant jusqu'à quatre atomes de carbone, un groupe amino (NH₂), un groupe alcoylamino (NHR) ayant jusqu'à six atomes de carbone, un groupe dialcoylamino (NR₂) ayant, indépendamment, jusqu'à six atomes de carbone dans chaque portion alcoyle, un groupe carboxy (CO₂H), un groupe carbalcoxy (CO₂R) ayant jusqu'à six atomes de carbone, un groupe alcoylcarbonyle (COR) ayant jusqu'à six atomes de carbone, un groupe alcanoyloxy (OCOR) ayant jusqu'à six atomes de carbone, un groupe carboxamide (CONH₂, CONHR ou CONR₂) ayant, indépendamment, jusqu'à six atomes de carbone dans chaque portion alcoyle, un groupe carbamoyloxy (OCONH₂, OCONHR ou OCONR₂) ayant, indépendamment, jusqu'à six atomes de carbone dans chaque portion alcoyle, un sulfhydryle, un groupe sulfynyle (-SOR) ayant jusqu'à six atomes de carbone, un groupe sulfonyle (-SO₂R) ayant jusqu'à six atomes de carbone, un groupe sulfonate (-OSO₂R) ayant jusqu'à six atomes de carbone, un groupe alcoylthio (SR) ayant jusqu'à six atomes de carbone, une sulfonamide (SO₂NH₂, SO₂NHR ou SO₂NR₂) ayant, indépendamment, jusqu'à six atomes de carbone dans chaque portion alcoyle, un groupe amido (NRCOR) ayant, indépendamment, jusqu'à six atomes de carbone dans chaque portion alcoyle, une alcoylsulfonamide (NRSO₂R) ayant, indépendamment, jusqu'à six atomes de carbone dans chaque portion alcoyle, un groupe alcoylthiocarbonyle (CSR) ayant jusqu'à six atomes de carbone, un groupe thioamido (NRCSR) ayant, indépendamment, jusqu'à six atomes de carbone dans chaque portion alcoyle, une alcoylsulfonamide (NRSOR) ayant, indépendamment, jusqu'à six atomes de carbone dans chaque portion alcoyle, un groupe imido (N(COR)COR) ayant, indépendamment, jusqu'à six atomes de carbone dans chaque portion alcoyle, ou un groupe aryle, dans lesquels R est un groupe alcoyle ayant le nombre indiqué d'atomes de carbone ; et dans laquelle aryle est phényl, éventuellement substitué par 1 à 5 substituants choisis, indépendamment, parmi W ; naphtyl, éventuellement substitué par 1 à 7 substituants choisis, indépendamment, parmi W ; un hétérocycle à 5 atomes contenant jusqu'à 2 atomes d'azote, jusqu'à 2 atomes d'oxygène, jusqu'à 2 atomes de soufre et jusqu'à 4 atomes de carbone dans le cycle, éventuellement substitué par 1 à 4 substituants choisis, indépendamment, parmi W ; ou un hétérocycle à 6 atomes contenant jusqu'à 3 atomes d'azote, jusqu'à 2 atomes d'oxygène, jusqu'à 2 atomes de soufre et 1 à 5 atomes de carbone dans le cycle, éventuellement substitué par 1 à 4 substituants choisis, indépendamment parmi W ;
W est halogène, cyano, nitro, R¹, CO₂R¹, CONR¹R², CR¹=CR²R³, C=CR¹, SR¹, OR¹, NR¹R², SOR¹, SO₂R¹, OSO₂R¹, NR¹COR², SF₅, CF₃, OCF₃, OCF₂H, SCF₃, OCF₂Br, SCF₂Br, SCF₂Cl, SCF₂H, NR¹SO₂R² ou N(COR¹)COR² ;
et les sels agronomiquement acceptables de ce composé.

2. Un composé selon la revendication 1, dans lequel A, B, U, V, Q, R, R¹, R², R³, R⁴, G et n sont tels que définis dans la revendication 1 et

Y est un groupe ayant la formule



dans laquelle X est O, S ou N-Q ; et

Z est l'hydrogène, un cycloalcoyle en C₃-C₆, un aryle non substitué ou substitué ou R⁴-Q ;
et les sels agronomiquement acceptables de celui-ci.

3. Un composé selon la revendication 2, dans lequel R, R¹, R², R³ et R⁴, G, Q et n sont tels que définis



dans la revendication 2 et

- A est un phényle non substitué ou substitué ;
 B est un phényle non substitué ou substitué ;
 U est O ou S ;
 5 V est l'hydrogène, un cycloalcoyle en C₃-C₆, un phényle non substitué ou substitué ou R⁴-Q ;
 Y est un groupe ayant la formule



10

dans laquelle X est O ou S ; et

- Z est l'hydrogène, un cycloalcoyle en C₃-C₆, un phényle non substitué ou substitué ou R⁴-Q ;
 15 et les sels agronomiquement acceptables de celui-ci.

4. Un composé selon la revendication 3, dans lequel A, U, Y, Z, Q, R, R¹, R², R³, R⁴, G et n sont tels que définis dans la revendication 3 et

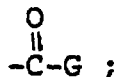
- B est un phényle non substitué ou substitué ; et
 20 V est l'hydrogène, un phényle non substitué ou substitué ou R⁴-Q ;
 et les sels agronomiquement acceptables de celui-ci.

5. Un composé selon la revendication 4, dans lequel U, Y, Q, R, R¹, R², R³, R⁴, G et n sont tels que définis dans la revendication 4 et

- A est un phényle non substitué ou monosubstitué ou disubstitué ;
 25 B est un phényle monosubstitué ou disubstitué ;
 V est l'hydrogène ou R⁴-Q ; et
 Z est l'hydrogène, un phényle non substitué ou substitué ou R⁴-Q ;
 et les sels agronomiquement acceptables de celui-ci.

- 30 6. Un composé selon la revendication 5, dans lequel V, Z, Q, R, R¹, R², R³, R⁴, G et n sont tels que définis dans la revendication 5 et

- A est un phényle monosubstitué ;
 B est un phényle monosubstitué ;
 35 U est O ;
 Y est



40

et les sels agronomiquement acceptables de celui-ci.

7. Un composé selon la revendication 6, dans lequel

- A est un phényle monosubstitué dans lequel le substituant est fluoro, chloro, bromo, trifluorométhyl, trifluorométhoxy, difluorométhoxy ou méthyl ;
 45 B est un phényle monosubstitué dans lequel le substituant est fluoro, chloro, bromo, trifluorométhyl, trifluorométhoxy, difluorométhoxy, carboéthoxy, carboisopropoxy, méthylthio ou méthylsulfonyl ;
 50 U est O ;

55



- V est l'hydrogène, un alcoyle inférieur en C₁-C₆, à chaîne droite ou ramifiée, non substitué ou substitué, alcoxy inférieur en C₁-C₆, alcoylsulfényle inférieur en C₁-C₆, arylsulfényle non substitué ou substitué,

5

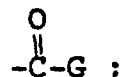


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formule dans laquelle X est O ou S et R¹ est tel que défini dans la revendication 6, cyano, alcoyl (inférieur en C₁-C₆)-hétéroalcoyl, dans lequel le substituant ou la portion alcoyle est alcoxy inférieur en C₁-C₄, alcoylsulfényle inférieur en C₁-C₄, phénylsulfényle non substitué ou substitué, carboalcoyl inférieur en C₁-C₄, cyano ou alcoyl (inférieur en C₁-C₄)-hétéroalcoyl ;

- Y est

15



20

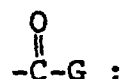
- Z est l'hydrogène, alcoyle inférieur en C₁-C₄, ou phényle non substitué ou substitué ; et
G est hydroxy, alcoyle inférieur en C₁-C₄, alcoxy inférieur en C₁-C₄, alcoylamino inférieur en C₁-C₄, dialcoylamino inférieur ayant, indépendamment, un à quatre atomes de carbone dans chaque portion alcoyle ou phényle, et les sels agronomiquement acceptables de celui-ci.

25

8. Un composé selon la revendication 7, dans lequel

- A est 4-chlorophényle, 4-bromophényle, 4-trifluorométhylphényle, 4-trifluorométhoxyphényle ou 4-difluorométhoxyphényle ;
B est 4-chlorophényle, 4-bromophényle, 4-carbométhoxyphényle, 4-carboéthoxyphényle, 4-carboisopropoxyphényle, 4-difluorométhoxyphényle, 4-trifluorométhoxyphényle, 4-trifluorométhylphényle, 4-méthyltriophényle ou 4-méthylsulfonylphényle ;
U est O ;
V est l'hydrogène, méthyle, méthylsulfényle, 2-nitrophénylsulfényle, carbométhoxy, acétyle, trifluoroacétyle, formyle ou méthoxyle ;
Y est

35



40

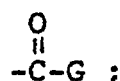
- Z est l'hydrogène, méthyle, phényle, 4-chlorophényle, 4-trifluorométhylphényle, 4-trifluorométhoxyphényle, 4-trifluorothiométhoxyphényle, 4-difluorométhoxyphényle ou 4-difluorobromothiométhoxyphényle ; et
G est hydroxy, méthyle, éthyle, méthoxy, éthoxy, diméthylamino ou phényle ; et les sels agronomiquement acceptables de celui-ci.

45

9. Un composé selon la revendication 8, dans lequel

- A est 4-chlorophényle ;
B est 4-chlorophényle ;
U est O ;
V est l'hydrogène ;
Y est

50

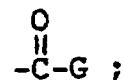


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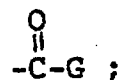
- Z est méthyle ; et
G est méthoxy ; ou



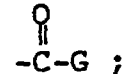
A est 4-chlorophényl ;
 B est 4-chlorophényl ;
 U est O ;
 V est l'hydrogène ;
 5 Y est



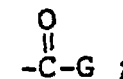
10 Z est méthyl ; et
 G est éthoxy ; ou
 A est 4-chlorophényl ;
 B est 4-chlorophényl ;
 15 U est O ;
 V est l'hydrogène ;
 Y est



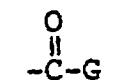
20 Z est méthyl ; et
 G est diméthylamino ; ou
 25 A est 4-chlorophényl ;
 B est 4-chlorophényl ;
 U est O ;
 V est carbométhoxy ;
 30 Y est



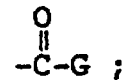
35 Z est méthyl ; et
 G est méthoxy ; ou
 A est 4-chlorophényl ;
 B est 4-chlorophényl ;
 40 U est O ;
 V est acétyl ;
 Y est



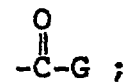
45 Z est méthyl ; et
 G est méthoxy ; ou
 50 A est 4-chlorophényl ;
 B est 4-chlorophényl ;
 U est O ;
 V est trifluoroacétyl ;
 Y est



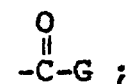
Z est méthyl ; et
 G est méthoxy ; ou
 A est 4-chlorophényl ;
 B est 4-chlorophényl ;
 U est O ;
 V est formyl ;
 Y est



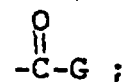
Z est méthyl ; et
 G est méthoxy ; ou
 A est 4-chlorophényl ;
 B est 4-chlorophényl ;
 U est O ;
 V est méthoxyalyl ;
 Y est



Z est méthyl ; et
 G est méthoxy ; ou
 A est 4-chlorophényl ;
 B est 4-bromophényl ;
 U est O ;
 V est hydrogène ;
 Y est



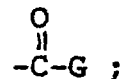
Z est méthyl ; et
 G est méthoxy ; ou
 A est 4-chlorophényl ;
 B is 4-trifluorométhylphényl ;
 U est O ;
 V est l'hydrogène ;
 Y est



Z est méthyl ; et
 G est méthoxy ; ou
 A est 4-trifluorométhylphényl ;
 B est 4-trifluorométhylphényl ;
 U est O ;
 V est l'hydrogène ;



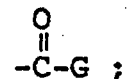
Y est



5

Z est méthyl ; et
 G est méthoxy ; ou
 A est 4-chlorophényl ;
 10 B is 4-trifluorométhoxyphényl ;
 U est O ;
 V est l'hydrogène ;
 Y est

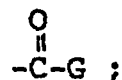
15



20

Z est méthyl ; et
 G est méthoxy ; ou
 A est 4-bromophényl ;
 B est 4-trifluorométhylphényl ;
 U est O ;
 25 V est l'hydrogène ;
 Y est

30



Z est méthyl ; et
 G est méthoxy ;
 et les sels agronomiquement acceptables de celui-ci.

35

10. Un composé selon la revendication 1, dans lequel A, B, U, V, Q, R, R¹, R², R³, R⁴ et n sont tels que définis dans la revendication 1 et

Y est alcoyle inférieur en C₁-C₆, à chaîne droite ou ramifiée, non substitué ou substitué, ou aryle non substitué ou substitué ; et

40

Z est cycloalcoyle en C₃-C₆, aryle non substitué ou substitué ou R⁴-Q, pourvu que Z ne soit pas l'hydrogène et Z ne soit pas méthyl lorsque Y est méthyl ;
 et les sels agronomiquement acceptables de celui-ci.

11. Un composé selon la revendication 10, dans lequel V, Y, Z, Q, R, R¹, R², R³, R⁴ et n sont tels que définis dans la revendication 10 et

45

A est phényle non substitué ou substitué ;
 B est phényle non substitué ou substitué ; et
 U est O ou S ;
 et les sels agronomiquement acceptables de celui-ci.

50

12. Un composé selon la revendication 11, dans lequel U, Y, Q, R, R¹, R², R³, R⁴ et n sont tels que définis dans la revendication 11 et

A est phényle substitué ;
 B est phényle substitué ;
 V est phényle non substitué ou substitué ou R⁴-Q ; et

55

Z est phényle non substitué ou substitué ou R⁴-Q, pourvu que Z ne soit pas l'hydrogène et Z ne soit pas méthyl lorsque Y est méthyl ;
 et les sels agronomiquement acceptables de celui-ci.



13. Un composé selon la revendication 12, dans lequel U, Y, Z, Q, R, R¹, R², R³, R⁴ et n sont tels que définis dans la revendication 12 et

A est phényle monosubstitué ou disubstitué ;
 B est phényle monosubstitué ou disubstitué ; et
 V est l'hydrogène ou R⁴-Q ;
 et les sels agronomiquement acceptables de celui-ci.

14. Un composé selon la revendication 13, dans lequel V, Y, Q, R, R¹, R², R³, R⁴ et n sont tels que définis dans la revendication 13, et

A est phényle monosubstitué ;
 B est phényle monosubstitué ;
 U est O ; et
 Z est phényle monosubstitué ou non substitué ou R⁴-Q, pourvu que Z ne soit pas l'hydrogène et que Z ne soit pas méthyl lorsque Y est méthyl ;
 et les sels agronomiquement acceptables de celui-ci.

15. Un composé selon la revendication 14, dans lequel U, Q, R, R¹, R², R³, R⁴ et n sont tels que définis dans la revendication 14 et

A est phényle monosubstitué dans lequel le substituant est fluoro, chloro, bromo, trifluorométhyl, trifluorométhoxy, difluorométhoxy ou méthyl ;
 B est phényle monosubstitué dans lequel le substituant est fluoro, chloro, bromo, trifluorométhyl, trifluorométhoxy, difluorométhoxy, carbométhoxy, carboéthoxy, carboisopropoxy, méthylthio ou méthylsulfonyl ;
 V est l'hydrogène, un alcoyle inférieur en C₁-C₆, à chaîne droite ou ramifiée, non substitué ou substitué, alcoxy inférieur en C₁-C₆, alcoylsulfényl inférieur en C₁-C₆, arylsulfényl non substitué ou substitué,



formule dans laquelle X est O ou S et R¹ est tel que défini dans la revendication 14, cyano, alcoyl (inférieur en C₁-C₆)-hétéroalcoyl, dans lequel le substituant ou la portion alcoyle est alcoxy inférieur en C₁-C₄, alcoylsulfinyl inférieur en C₁-C₄, phénylsulfényl non substitué ou substitué, carboalcoxy inférieur en C₁-C₄, cyano ou alcoyl (inférieur en C₁-C₄)-hétéroalcoyl ;
 Y est alcoyl inférieur en C₁-C₆, à chaîne droite ou ramifiée, non substitué ou substitué, ou phényle non substitué ou substitué ; et
 Z est alcoyle inférieur en C₁-C₄, phényle non substitué ou substitué, pourvu que Z ne soit pas méthyl quand Y est méthyl.

16. Un composé selon la revendication 15, dans lequel U, Q, R, R¹, R², R³, R⁴ et n sont tels que définis dans la revendication 14 et

A est 4-chlorophényl, 4-bromophényl, 4-trifluorométhylphényl, 4-trifluorométhoxyphényl ou 4-difluorométhoxyphényl ;
 B est 4-chlorophényl, 4-bromophényl, 4-carbométhoxyphényl, 4-carboéthoxyphényl, 4-carboisopropoxyphényl, 4-difluorométhoxyphényl, 4-trifluorométhoxyphényl, 4-trifluorométhylphényl, 4-méthyltriopényl ou 4-méthylsulfonylphényl ;
 V est l'hydrogène, méthyl, méthylsulfényl, 2-nitrophénylsulfényl, carbométhoxy, acétyl, trifluoroacétyl, formyl ou méthoxalyl ;
 Y est éthyl, n-propyl, n-butyl, 3-chloropropyl, 4-bromopropyl ou phényl ; et
 Z est méthyl, éthyl, n-propyl, n-butyl ou phényl.

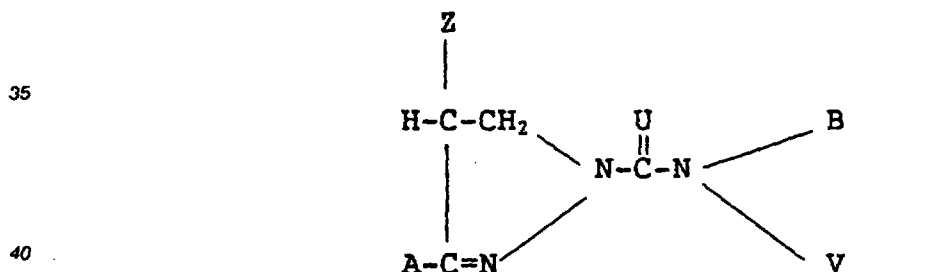
17. Un composé selon la revendication 16, dans lequel

A est 4-chlorophényl ;
 B est 4-chlorophényl ;
 U est O ;
 V est l'hydrogène ;
 Y est phényl ; et

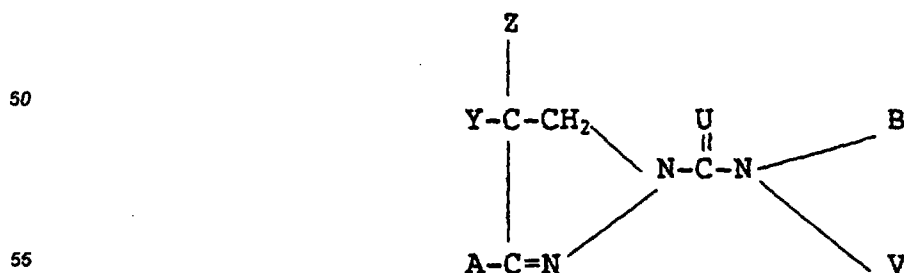


- Z est méthyl ; ou
 A est 4-chlorophényl ;
 B est 4-chlorophényl ;
 U est O ;
 5 V est l'hydrogène ;
 Y est n -butyl ; et
 Z est méthyl ; ou
 A est 4-chlorophényl ;
 B est 4-chlorophényl ;
 10 U est O ;
 V est l'hydrogène ;
 Y est 3-chloropropyl ; et
 Z est méthyl.

- 15 18. Un procédé pour combattre les insectes qui comprend l'application aux insectes ou dans les zones à libérer ou protéger de l'attaque par les insectes d'une quantité efficacement insecticide d'un composé selon l'une quelconque des revendications précédentes.
 19. Un procédé selon la revendication 18, dans lequel ledit composé est appliqué en une quantité d'environ 0,1 à environ 1000 grammes par hectare, de préférence entre environ 5 et environ 200 grammes par hectare.
 20. Une composition insecticide comprenant un composé selon l'une quelconque des revendications 1 à 17 et un support ou un diluant, agronomiquement acceptable, pour celui-ci.
 25 21. Une composition selon la revendication 20, dans laquelle ledit composé est présent entre environ 0,00001 à environ 99 %, de préférence entre environ 0,00005 et environ 90 %, en poids de la composition.
 30 22. Un procédé pour préparer un composé tel que revendiqué dans la revendication 1, qui consiste à dissoudre un composé de formule



45 dans laquelle A, B, U, V et Z sont tels que définis dans la revendication 1, dans un solvant aprotique, à traiter la solution avec une base forte et ensuite avec un agent d'alcoylation ou d'acylation approprié pour donner un composé de formule



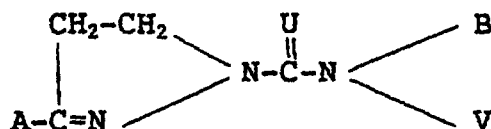
dans laquelle A, B, U, V et Z sont tels que définis dans la revendication 1.



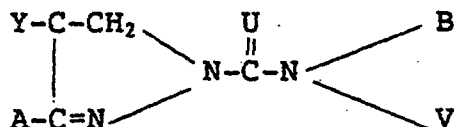
23. Un procédé pour préparer un composé selon la revendication 1 ou la revendication 24, dans lequel Y est un groupe ayant la formule



dans laquelle X est O, S ou N-Q ; et
Z est l'hydrogène ;
qui consiste à dissoudre un composé de formule

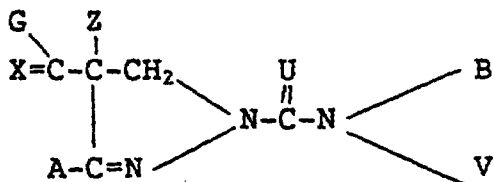


dans laquelle A, B, U et V sont tels que définis dans la revendication 1, dans un solvant aprotique, à traiter la solution avec une base forte puis à la traiter avec un agent d'acylation approprié pour donner un composé de formule



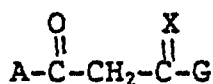
dans laquelle A, B, U, V et Y sont tels que définis ci-dessus et éventuellement à isoler ce produit ou à le traiter avec une base et ensuite avec un agent d'alcoylation ou d'acylation.

24. Un procédé pour préparer un composé de formule



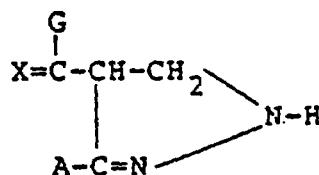
dans laquelle

V est l'hydrogène ;
Z est l'hydrogène, cycloalcoyl en C₃-C₆, aryl ou R⁴-Q ;
qui consiste à traiter un composé de formule :

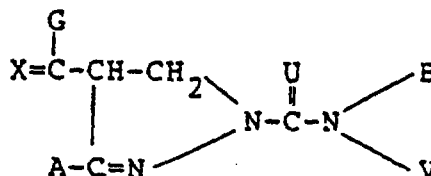


avec un mélange d'hydrazine et de formaldéhyde dans un solvant approprié pour obtenir un composé de formule :





qui est dissous dans un solvant approprié et est traité avec un isocyanate d'aryle pour donner un composé de formule :



qui éventuellement est isolé ou dissous dans un solvant aprotique et ensuite traité avec une base puis avec un agent d'alcoylation ou un agent d'acylation.

25. Un procédé selon la revendication 22 ou 23, dans lequel la base forte est choisie parmi un hydruure de métal alcalino-terreux, un hydruure de métal alcalin, une amide de métal alcalin, une amide de métal alcalino-terreux, un alcoyle de métal alcalin, un aryle de métal alcalin, un hydroxyde de métal alcalin, un hydroxyde de métal alcalino-terreux, un alcoxyde de métal alcalin, un alcoxyde de métal alcalino-terreux, un oxyde de métal alcalin, un oxyde de métal alcalino-terreux, un alcoyl-lithium, un aryl-lithium, un alcoyle de métal alcalino-terreux ou un aryle de métal alcalino-terreux.
26. Un procédé selon la revendication 25, dans lequel la base est la diisopropylamide de lithium ou le butyllithium.
27. Un procédé selon l'une quelconque des revendications 22 à 26, dans lequel le solvant aprotique est choisi parmi un dialcoyléther, un hydrocarbure aliphatique, un hydrocarbure aromatique, un alcool aliphatique, une dialcoylamide, une amine, l'ammoniac, un dialcoyl sulfoxyde, une dialcoyl sulfone ou une polyalcoylamide phosphorique.
28. Un procédé selon la revendication 27, dans lequel le solvant aprotique est le tétrahydrofuranne.
29. Un procédé selon la revendication 22 ou 24, dans lequel l'agent d'alcoylation est choisi parmi le chlorure de méthyle, le bromure de méthyle, l'iodure de méthyle, le sulfate de méthyle ou le chlorure d'allyle.
30. Un procédé selon la revendication 22, 23 ou 24, dans lequel l'agent d'acylation est choisi parmi les chlorure d'alcanoyle, un chlorure d'aroyle, un chloroformate d'alcoyle, un chloroformate d'aryle, un carbonate d'alcoyle, un carbonate d'aryle, un isocyanate d'alcoyle, un isocyanate d'aryle, un isothiocyanate d'alcoyle, un isothiocyanate d'aryle, un chlorure de dialcoyl carbamoyle, un chlorothioformate d'alcoyle, un chlorothioformate d'aryle, une carbodiimide de dialcoyle, une carbodiimide d'alcoylaryle, une carbodiimide de diaryle, le gaz carbonique ou le disulfure de carbone.
31. Un procédé selon la revendication 22, 23 ou 24, dans lequel la réaction d'alcoylation ou d'acylation est réalisée à une température comprise entre environ -120°C et environ 200°C pendant une période de temps comprise entre environ 1 seconde et environ 48 heures.
32. Un procédé selon la revendication 31, dans lequel la réaction est réalisée à une température comprise entre environ -78°C et environ 100°C et pendant une période de temps comprise entre environ 10 minutes et 1 heure.
33. Un procédé selon la revendication 24, dans lequel le solvant approprié pour la réaction avec l'isocyanate

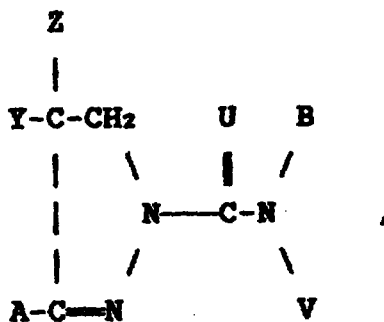


d'aryle est choisi parmi un hydrocarbure chloré, le tétrahydrofuranne ou une amine tertiaire.

34. Un procédé selon la revendication 33, dans lequel le solvant approprié est constitué par le chlorure de méthylène.

Ansprüche

1. Verbindung der Formel



wobei

A

die Bedeutung Aryl hat;

B

die Bedeutung Aryl hat;

U

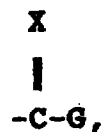
die Bedeutung O, S oder N-Q hat;

V

die Bedeutung Wasserstoff, (C₃-C₆)Cycloalkyl, Aryl oder R⁴-Q hat;

Y

bedeutet: niedriges (C₁-C₆) gerad- oder verzweigt-kettiges unsubstituiertes oder substituiertes Alkyl, Aryl, oder eine Gruppe mit der Formel

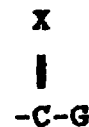


wobei X die Bedeutung O, S oder N-Q hat;

Z

bedeutet:

Wasserstoff, (C₃-C₆)Cycloalkyl, Aryl, R⁴-Q, mit der Maßgabe, daß wenn Z die Bedeutung Wasserstoff hat, Y die Bedeutung



hat; und mit der Maßgabe, daß Z nicht die Bedeutung Methyl hat, wenn Y die Bedeutung Methyl hat;

Q

bedeutet:

Wasserstoff, Halogen, Cyano, Nitro, OR¹, R⁴OR¹, CO₂R¹, OR⁴OR¹, CR¹R²R³, CONR¹R², NR¹R², NR¹COR², N(COR¹)COR², CSR¹, SR¹, SOR¹, SO₂R¹, NR¹SOR², R⁴SR¹, OR⁴SR¹, SR⁴SR¹, SNHSR¹, SNHSO₂R¹, CONHSR¹, OCOR¹, R¹, C(=NR¹)R², COR¹, N₃, OSO₂R¹, NR¹SO₂R², NR¹CSR², Alkenyl (CR¹=CR²R³), Alkynyl(C=CR¹), oder Aryl;



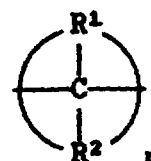
R¹, R² und R³

bedeuten:

unabhängig, Wasserstoff, Halogen, Cyano, Nitro, Hydroxy, eine Alkoxygruppe (OR) mit bis zu vier Kohlenstoffatomen, eine Aminogruppe (NH₂), eine Alkylaminogruppe (NHR) mit bis zu sechs Kohlenstoffatomen, eine Dialkylaminogruppe (NR₂) mit unabhängig bis zu sechs Kohlenstoffatomen in jedem Alkylanteil, eine Carboxygruppe (CO₂H), eine Carbalkoxygruppe (CO₂R) mit bis zu sechs Kohlenstoffatomen, eine Alkylcarbonylgruppe (COR) mit bis zu sechs Kohlenstoffatomen, eine Alkanoyloxygruppe (OCOR) mit bis zu sechs Kohlenstoffatomen, eine Carboxamidgruppe (CONH₂, CONHR oder CONR₂) mit unabhängig bis zu sechs Kohlenstoffatomen in jedem Alkylanteil, eine Carbamoylgruppe (OCONH₂, OCONHR oder OCONR₂) mit unabhängig bis zu sechs Kohlenstoffatomen in jedem Alkylanteil, ein Sulfhydryl, eine Sulfinylgruppe (-SOR) mit bis zu sechs Kohlenstoffatomen, eine Sulfonylgruppe (-SO₂R) mit bis zu sechs Kohlenstoffatomen, eine Sulfonatgruppe (-OSO₂R) mit bis zu sechs Kohlenstoffatomen, eine Alkylthiogruppe (SR) mit bis zu sechs Kohlenstoffatomen, ein Sulfonamid (SO₂NH₂, SO₂NHR oder SO₂NR₂) mit unabhängig bis zu sechs Kohlenstoffatomen in jedem Alkylanteil, eine Amidogruppe (NBCOR) mit unabhängig bis zu sechs Kohlenstoffatomen in jedem Alkylanteil, ein Alkylsulfonamid (NRSO₂R) mit unabhängig bis zu sechs Kohlenstoffatomen in jedem Alkylanteil, eine Alkylthiocarbonylgruppe (CSR) mit bis zu sechs Kohlenstoffatomen, eine Thioamidgruppe (NRCSR) mit unabhängig bis zu sechs Kohlenstoffatomen in jedem Alkylanteil, ein Alkylsulfonamid (NRSOR) mit unabhängig bis zu sechs Kohlenstoffatomen in jedem Alkylanteil, eine Imidogruppe (N(COR)COR) mit unabhängig bis zu sechs Kohlenstoffatomen in jedem Alkylanteil, ein unsubstituiertes oder substituiertes geradkettiges oder verzweigt-kettiges niedriges (C₁-C₆) Alkyl, (C₃-C₆) Cycloalkyl oder Aryl;

R⁴

die Bedeutung



hat;

G

die Bedeutung (C₃-C₆) Cycloalkyl, Aryl oder R⁴-Q hat; und

n

eine ganze Zahl von 0 bis 10 bedeutet;

wobei, bei Substitution der Substituent im Alkylanteil gleich oder unterschiedlich eins oder mehr sein kann aus Hydroxy, Halogen, Cyano, Nitro, oder eine Alkoxygruppe (OR) mit bis zu vier Kohlenstoffatomen, eine Aminogruppe (NH₂), eine Alkylaminogruppe (NHR) mit bis zu sechs Kohlenstoffatomen, eine Dialkylaminogruppe (NR₂) mit unabhängig bis zu sechs Kohlenstoffatomen in jedem Alkylanteil, eine Carboxygruppe (CO₂H), eine Carbalkoxygruppe (CO₂R) mit bis zu sechs Kohlenstoffatomen, eine Alkylcarbonylgruppe (COR) mit bis zu sechs Kohlenstoffatomen, eine Alkanoyloxygruppe (OCOR) mit bis zu sechs Kohlenstoffatomen, eine Carboxamidgruppe (CONH₂, CONHR oder CONR₂) mit unabhängig bis zu sechs Kohlenstoffatomen in jedem Alkylanteil, eine Carbamoyloxygruppe (OCONH₂, OCONHR oder OCONR₂) mit unabhängig bis sechs Kohlenstoffatomen in jedem Alkylanteil, ein Sulfhydryl, eine Sulfinylgruppe (-SOR) mit bis zu sechs Kohlenstoffatomen, eine Sulfonylgruppe (-SO₂R) mit bis zu sechs Kohlenstoffatomen, eine Sulfonatgruppe (-OSO₂R) mit bis zu sechs Kohlenstoffatomen, eine Alkylthiogruppe (SR) mit bis zu sechs Kohlenstoffatomen, ein Sulfonamid (SO₂NH₂, SO₂NHR oder SO₂NR₂) mit unabhängig bis zu sechs Kohlenstoffatomen in jedem Alkylanteil, eine Amidogruppe (NRCOR) mit unabhängig bis zu sechs Kohlenstoffatomen in jedem Alkylanteil, ein Alkylsulfonamid (NRSO₂R) mit unabhängig bis zu sechs Kohlenstoffatomen in jedem Alkylanteil, eine Alkylthiocarbonylgruppe (CSR) mit bis zu sechs Kohlenstoffatomen, eine Thioamidgruppe (NRCSR) mit unabhängig bis zu sechs Kohlenstoffatomen in jedem Alkylanteil, ein Alkylsulfonamid (NRSOR) mit unabhängig bis zu sechs Kohlenstoffatomen in jedem Alkylanteil, eine Imidogruppe (N(COR)COR) mit unabhängig bis zu sechs Kohlenstoffatomen in jedem Alkylanteil, oder eine Arylgruppe, wobei R eine Alkylgruppe mit der angegebenen Anzahl von Kohlenstoffatomen bedeutet; und wobei Aryl bedeutet:

Phenyl, wahlweise substituiert mit eins bis fünf Substituenten, die unabhängig ausgewählt sind aus W; Naphthyl, wahlweise substituiert mit eins bis sieben Substituenten, die unabhängig ausgewählt sind aus W; einen fünfgliedrigen Heterocyclus, mit bis zu zwei Stickstoffatomen, bis zu zwei Sauerstoffatomen, bis zu zwei Schwefelatomen und bis zu vier Kernkohlenstoffatomen, wahlweise substituiert mit ein bis vier Substituenten, die unabhängig aus W ausgewählt sind; oder einen sechsgliedrigen Heterocyclus bis zu drei Stickstoffatomen, bis zu zwei Sauerstoffatomen, bis zu zwei Schwefelatomen und eins bis fünf Kernkohlenstoffatomen, die wahlweise substituiert sind mit eins bis vier Substituenten, die unabhängig aus W ausgewählt sind

W

bedeutet:

Halogen, Cyano, Nitro, R¹, CO₂R¹, CONR¹R², CR¹=CR²R³, C=CR¹, SR¹, OR¹, NR¹R², SOR¹, SO₂R¹, OSO₂R¹, NR¹COR², SF₅, CF₃, OCF₃, OCF₂H, SCF₃, OCF₂Br, SCF₂Br, SCF₂Cl, SCF₂H, NR¹SO₂R² oder N(COR¹)COR²; und landwirtschaftlich vertretbare Salze davon.

2. Verbindung nach Anspruch 1, wobei A, B, U, V, Q, R, R¹, R², R³, R⁴, G und n die in Anspruch 1 definierte Bedeutung haben und

Y eine Gruppe mit der Formel



bedeutet, wobei X die Bedeutung O, S oder N-Q hat; und

Z die Bedeutung Wasserstoff, (C₃-C₆)Cycloalkyl, unsubstituiertes oder substituiertes Aryl oder R⁴-Q hat;

und landwirtschaftlich vertretbare Salze davon.

3. Verbindung nach Anspruch 2, wobei R, R¹, R², R³ und R⁴, G, Q und n die in Anspruch 2 definierte



Bedeutung haben und

- A die Bedeutung unsubstituiertes oder substituiertes Phenyl hat;
 B die Bedeutung unsubstituiertes oder substituiertes Phenyl hat;
 U die Bedeutung O oder S hat;
 5 V die Bedeutung Wasserstoff, (C₃-C₆)Cycloalkyl, unsubstituiertes oder substituiertes Phenyl oder R⁴-Q hat;
 Y eine Gruppe mit der Formel

10



15

- bedeutet, wobei X die Bedeutung O oder S hat; und
 Z die Bedeutung Wasserstoff, (C₃-C₆)Cycloalkyl, unsubstituiertes oder substituiertes Phenyl oder R⁴-Q hat;
 und landwirtschaftlich vertretbare Salze davon.

20

4. Verbindung nach Anspruch 3, wobei A, U, Y, Z, Q, R, R¹, R², R³, R⁴, G und n die in Anspruch 3 definierte Bedeutung haben und

- B die Bedeutung substituiertes Phenyl hat; und
 V die Bedeutung Wasserstoff, unsubstituiertes oder substituiertes Phenyl oder R⁴-Q hat;
 und landwirtschaftlich vertretbare Salze davon.

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5. Verbindung nach Anspruch 4, wobei U, Y, Q, R, R¹, R², R³, R⁴, G und n die in Anspruch 4 definierte Bedeutung haben

- A die Bedeutung unsubstituiertes oder monosubstituiertes oder disubstituiertes Phenyl hat;
 B die Bedeutung monosubstituiertes oder disubstituiertes Phenyl hat;
 V die Bedeutung Wasserstoff oder R⁴-Q hat;
 30 Z die Bedeutung Wasserstoff, unsubstituiertes oder substituiertes Phenyl oder R⁴-Q hat;
 und landwirtschaftlich vertretbare Salze davon.

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6. Verbindung nach Anspruch 5, wobei V, Z, Q, R, R¹, R², R³, R⁴, G und n die in Anspruch 5 definierte Bedeutung haben und

- A die Bedeutung monosubstituiertes Phenyl hat;
 B die Bedeutung monosubstituiertes Phenyl hat;
 U die Bedeutung O hat; und
 Y die Bedeutung

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hat,
 und landwirtschaftlich vertretbare Salze davon.

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7. Verbindung nach Anspruch 6, wobei

- A monosubstituiertes Phenyl bedeutet, wobei der Substituent die Bedeutung Fluor, Chlor, Brom, Trifluormethyl, Trifluormethoxy, Difluormethoxy oder Methyl hat;
 B monosubstituiertes Phenyl bedeutet, wobei der Substituent die Bedeutung Fluor, Chlor, Brom, Trifluormethyl, Trifluormethoxy, Difluormethoxy, Carbomethoxy, Carboethoxy, Carboisopropoxy, Methylthio oder Methylsulfonyl hat;
 U die Bedeutung O hat; und

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- V bedeutet:
Wasserstoff, niedriges (C_1-C_6) geradkettiges oder verzweigt-kettiges unsubstituiertes oder substituiertes Alkyl, niedriges (C_1-C_6) Alkoxy, niedriges (C_1-C_6) Alkylsulfenyl, unsubstituiertes oder substituiertes Arylsulfenyl,



- 10 wobei X die Bedeutung O oder S hat und R^1 wie in Anspruch 6 definiert ist, Cyano, niedriges (C_1-C_6) Alkylheteroalkyl, wobei der Substituent oder Alkylanteil niedriges (C_1-C_4) Alkoxy, niedriges (C_1-C_4) Alkylsulfenyl, unsubstituiertes oder substituiertes Phenylsulfenyl, niedriges (C_1-C_4) Carbalkoxy, Cyano oder niedriges (C_1-C_4)-Alkylheteroalkyl ist;
Y die Bedeutung



- 20 hat;
Z die Bedeutung Wasserstoff, niedriges (C_1-C_4) Alkyl oder unsubstituiertes oder substituiertes Phenyl hat; und
G bedeutet:
25 Wasserstoff, niedriges (C_1-C_4) Alkyl, niedriges (C_1-C_4) Alkoxy, niedriges (C_1-C_4) Alkylamino, niedriges Dialkylamino mit unabhängig eins bis vier Kohlenstoffatomen in jedem Alkylanteil, oder Phenyl;
und landwirtschaftlich vertretbare Salze davon.

30 8. Verbindung nach Anspruch 7, wobei

- A bedeutet:
4-Chlorphenyl, 4-Bromphenyl, 4-Trifluormethylphenyl, 4-Trifluormethoxyphenyl oder 4-Difluormethoxyphenyl;
B bedeutet:
35 4-Chlorphenyl, 4-Bromphenyl, 4-Carbomethoxyphenyl, 4-Carboethoxyphenyl, 4-Carboisopropoxyphenyl, 4-Difluormethoxyphenyl, 4-Trifluormethoxyphenyl, 4-Trifluormethylphenyl, 4-Methylthiophenyl oder 4-Methylsulfonylphenyl;
U die Bedeutung O hat;
V bedeutet:
Wasserstoff, Methyl, Methylsulfenyl, 2-Nitrophenylsulfenyl, Carbomethoxy, Acetyl, Trifluoracetyl, Formyl oder Methoxalyl;
Y die Bedeutung



- 45 hat;
Z bedeutet:
50 Wasserstoff, Methyl, Phenyl, 4-Chlorphenyl, 4-Trifluormethylphenyl, 4-Trifluormethoxyphenyl, 4-Trifluorthiomethoxyphenyl, 4-Difluormethoxyphenyl oder 4-Difluorbromthiomethoxyphenyl;
und
G bedeutet:
55 Hydroxy, Methyl, Ethyl, Methoxy, Ethoxy, Dimethylamino oder Phenyl;
und landwirtschaftlich vertretbare Salze davon.

9. Verbindung nach Anspruch 8, wobei

- A die Bedeutung 4-Chlorphenyl hat.



B die Bedeutung 4-Chlorphenyl hat,
 U die Bedeutung O hat,
 V die Bedeutung Wasserstoff hat,
 Y die Bedeutung

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hat,
 Z die Bedeutung Methyl hat, und
 G die Bedeutung Methoxy hat; oder
 A die Bedeutung 4-Chlorphenyl hat,
 B die Bedeutung 4-Chlorphenyl hat,
 U die Bedeutung O hat,
 V die Bedeutung Wasserstoff hat,
 Y die Bedeutung

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hat,
 Z die Bedeutung Methyl hat, und
 G die Bedeutung Ethoxy hat; oder
 A die Bedeutung 4-Chlorphenyl hat,
 B die Bedeutung 4-Chlorphenyl hat,
 U die Bedeutung O hat,
 V die Bedeutung Wasserstoff hat,
 Y die Bedeutung

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hat,
 Z die Bedeutung Methyl hat, und
 G die Bedeutung Dimethylamino hat; oder
 A die Bedeutung 4-Chlorphenyl hat,
 B die Bedeutung 4-Chlorphenyl hat,
 U die Bedeutung O hat,
 V die Bedeutung Carbomethoxy hat,
 Y die Bedeutung

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hat,
 Z die Bedeutung Methyl hat, und
 G die Bedeutung Methoxy hat; oder
 A die Bedeutung 4-Chlorphenyl hat,
 B die Bedeutung 4-Chlorphenyl hat,
 U die Bedeutung O hat,
 V die Bedeutung Acetyl hat.



Y die Bedeutung

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hat,

Z die Bedeutung Methyl hat, und
 G die Bedeutung Methoxy hat; oder
 A die Bedeutung 4-Chlorphenyl hat,
 B die Bedeutung 4-Chlorphenyl hat,
 U die Bedeutung O hat,
 V die Bedeutung Trifluoracetyl hat,
 Y die Bedeutung

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hat,

Z die Bedeutung Methyl hat, und
 G die Bedeutung Methoxy hat; oder
 A die Bedeutung 4-Chlorphenyl hat,
 B die Bedeutung 4-Chlorphenyl hat,
 U die Bedeutung O hat,
 V die Bedeutung Formyl hat,
 Y die Bedeutung

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hat,

Z die Bedeutung Methyl hat, und
 G die Bedeutung Methoxy hat; oder
 A die Bedeutung 4-Chlorphenyl hat,
 B die Bedeutung 4-Chlorphenyl hat,
 U die Bedeutung O hat,
 V die Bedeutung Methoxyalyl hat,
 Y die Bedeutung

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hat,

Z die Bedeutung Methyl hat, und
 G die Bedeutung Methoxy hat; oder
 A die Bedeutung 4-Chlorphenyl hat,
 B die Bedeutung 4-Bromphenyl hat,
 U die Bedeutung O hat,
 V die Bedeutung Wasserstoff hat,

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Y die Bedeutung

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hat,

- 10 Z die Bedeutung Methyl hat, und
 G die Bedeutung Methoxy hat; oder
 A die Bedeutung 4-Chlorphenyl hat,
 B die Bedeutung 4-Trifluormethylphenyl hat,
 U die Bedeutung O hat,
 V die Bedeutung Wasserstoff hat,
 15 Y die Bedeutung

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hat,

- 25 Z die Bedeutung Methyl hat, und
 G die Bedeutung Methoxy hat; oder
 A die Bedeutung 4-Trifluormethylphenyl hat,
 B die Bedeutung 4-Trifluormethylphenyl hat,
 U die Bedeutung O hat,
 V die Bedeutung Wasserstoff hat,
 Y die Bedeutung

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hat,

- 35 Z die Bedeutung Methyl hat, und
 G die Bedeutung Methoxy hat; oder
 A die Bedeutung 4-Chlorphenyl hat,
 B die Bedeutung 4-Trifluormethoxyphenyl hat,
 U die Bedeutung O hat,
 40 V die Bedeutung Wasserstoff hat,
 Y die Bedeutung

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hat,

- 50 Z die Bedeutung Methyl hat, und
 G die Bedeutung Methoxy hat; oder
 A die Bedeutung 4-Bromphenyl hat,
 B die Bedeutung 4-Trifluormethylphenyl hat,
 U die Bedeutung O hat,
 V die Bedeutung Wasserstoff hat,
 55



Y die Bedeutung



hat,
Z die Bedeutung Methyl hat, und
G die Bedeutung Methoxy hat;
und landwirtschaftlich vertretbare Salze davon.

10. Verbindung nach Anspruch 1, wobei A, B, U, V, Q, R, R¹, R², R³, R⁴ und n die in Anspruch 1 definierte Bedeutung haben und

Y bedeutet:
niedriges (C₁-C₆) geradkettiges oder verzweigt-kettiges unsubstituiertes oder substituiertes Alkyl oder unsubstituiertes oder substituiertes Aryl; und
Z bedeutet:
(C₃-C₆) Cycloalkyl, unsubstituiertes oder substituiertes Aryl oder R⁴-Q, mit der Maßgabe, daß Z nicht Wasserstoff bedeutet und Z nicht Methyl bedeutet, wenn Y die Bedeutung Methyl hat;
und landwirtschaftlich vertretbare Salze davon.

11. Verbindung nach Anspruch 10, wobei V, Y, Z, Q, R, R¹, R², R³, R⁴ und n die in Anspruch 10 definierte Bedeutung haben und

A die Bedeutung unsubstituiertes oder substituiertes Phenyl hat;
B die Bedeutung unsubstituiertes oder substituiertes Phenyl hat;
U die Bedeutung O oder S hat; und
und landwirtschaftlich vertretbare Salze davon.

12. Verbindung nach Anspruch 11, wobei U, Y, Q, R, R¹, R², R³, R⁴ und n die in Anspruch 11 definierte Bedeutung haben und

A die Bedeutung substituiertes Phenyl hat;
B die Bedeutung substituiertes Phenyl hat;
V die Bedeutung unsubstituiertes oder substituiertes Phenyl oder R⁴-Q hat; und
Z die Bedeutung unsubstituiertes oder substituiertes Phenyl oder R⁴-Q hat, mit der Maßgabe, daß Z nicht Wasserstoff bedeutet und Z nicht Methyl bedeutet, wenn Y die Bedeutung Methyl hat;
und landwirtschaftlich vertretbare Salze davon.

13. Verbindung nach Anspruch 12, wobei U, Y, Z, Q, R, R¹, R², R³, R⁴ und n die in Anspruch 12 definierte Bedeutung haben und

A die Bedeutung monosubstituiertes oder disubstituiertes Phenyl hat;
B die Bedeutung monosubstituiertes oder disubstituiertes Phenyl hat; und
V die Bedeutung Wasserstoff oder R⁴-Q hat;
und landwirtschaftlich vertretbare Salze davon.

14. Verbindung nach Anspruch 13, wobei V, Y, Q, R, R¹, R², R³, R⁴ und n die in Anspruch 13 definierte Bedeutung haben und

A die Bedeutung monosubstituiertes Phenyl hat;
B die Bedeutung monosubstituiertes Phenyl hat;
U die Bedeutung O hat; und
Z die Bedeutung unsubstituiertes oder substituiertes Phenyl oder R⁴-Q hat, mit der Maßgabe, daß Z nicht Wasserstoff bedeutet und Z nicht Methyl bedeutet, wenn Y die Bedeutung Methyl hat;
und landwirtschaftlich vertretbare Salze davon.

15. Verbindung nach Anspruch 14, wobei U, Q, R, R¹, R², R³, R⁴ und n die in Anspruch 14 definierte Bedeutung haben und



A die Bedeutung monosubstituiertes Phenyl hat, wobei der Substituent die Bedeutung hat Fluor, Chlor, Brom, Trifluormethyl, Trifluormethoxy, Difluormethoxy oder Methyl hat; B die Bedeutung monosubstituiertes Phenyl hat, wobei der Substituent die Bedeutung Fluor, Chlor, Brom, Trifluormethyl, Trifluormethoxy, Difluormethoxy, Carbomethoxy, Carboethoxy, Carboisopropoxy, Methylthio oder Methylsulfonyl hat;

V bedeutet:

Wasserstoff, niedriges (C_1-C_6) geradkettiges oder verzweigt-kettiges unsubstituiertes oder substituiertes Alkyl, niedriges (C_1-C_6) Alkoxy, niedriges (C_1-C_6) Alkylsulfonyl, unsubstituiertes oder substituiertes Arylsulfonyl,



wobei X die Bedeutung O oder S hat und R^1 die in Anspruch 14 gegebene Bedeutung hat, Cyano, niedriges (C_1-C_6) Alkylheteroalkyl, wobei der Substituent oder Alkylanteil die Bedeutung niedriges (C_1-C_4) Alkoxy, niedriges (C_1-C_4) Alkylsulfonyl, unsubstituiertes oder substituiertes Phenylsulfonyl, niedriges (C_1-C_4) Carboalkoxy, Cyano oder niedriges (C_1-C_4) Alkylheteroalkyl hat;

Y die Bedeutung niedriges (C_1-C_6) geradkettiges oder verzweigt-kettiges unsubstituiertes oder substituiertes Alkyl oder unsubstituiertes oder substituiertes Phenyl hat; und

Z die Bedeutung niedriges (C_1-C_4) Alkyl oder unsubstituiertes oder substituiertes Phenyl hat, mit der Maßgabe, daß Z nicht Methyl bedeutet, wenn Y die Bedeutung Methyl hat;

16. Verbindung nach Anspruch 15, wobei U, Q, R, R^1 , R^2 , R^3 , R^4 und n die in Anspruch 15 definierte Bedeutung haben und

A bedeutet:

4-Chlorphenyl, 4-Bromphenyl, 4-Trifluormethylphenyl, 4-Trifluormethoxyphenyl oder 4-Difluormethoxyphenyl;

B bedeutet:

4-Chlorphenyl, 4-Bromphenyl, 4-Carbomethoxyphenyl, 4-Carboethoxyphenyl, 4-Carboisopropoxyphenyl, 4-Difluormethoxyphenyl, 4-Trifluormethoxyphenyl, 4-Trifluormethylphenyl, 4-Methylthiophenyl oder 4-Methylsulfonylphenyl;

V bedeutet:

Wasserstoff, Methyl, Methylsulfonyl, 2-Nitrophenylsulfonyl, Carbomethoxy, Acetyl, Trifluoracetyl, Formyl oder Methoxyalyl;

Y bedeutet:

Ethyl, n-Propyl, n-Butyl, 3-Chlorpropyl, 4-Brompropyl oder Phenyl; und

Z bedeutet:

Methyl, Ethyl, n-Propyl, n-Butyl oder Phenyl.

17. Verbindung nach Anspruch 161 wobei

A die Bedeutung 4-Chlorphenyl hat,

B die Bedeutung 4-Chlorphenyl hat,

U die Bedeutung O hat,

V die Bedeutung Wasserstoff hat,

Y die Bedeutung Phenyl hat, und

Z die Bedeutung Methyl hat; oder

A die Bedeutung 4-Chlorphenyl hat,

B die Bedeutung 4-Chlorphenyl hat,

U die Bedeutung O hat,

V die Bedeutung Wasserstoff hat,

Y die Bedeutung n-Butyl hat, und

Z die Bedeutung Methyl hat; oder

A die Bedeutung 4-Chlorphenyl hat,

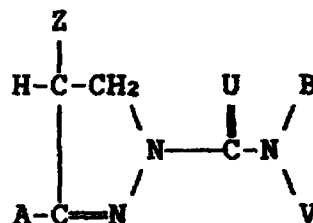
B die Bedeutung 4-Chlorphenyl hat,

U die Bedeutung O hat,

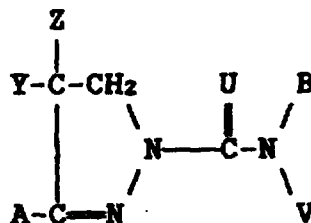


- V die Bedeutung Wasserstoff hat,
 Y die Bedeutung 3-Chlorpropyl hat, und
 Z die Bedeutung Methyl hat; oder

- 5 18. Verfahren zum Bekämpfen von Insekten, bei dem man den Insekten oder den vom Angriff der Insekten zu befreienden oder zu beschützenden Loci eine insektizid wirksame Menge einer Verbindung gemäß einem beliebigen der vorhergehenden Ansprüche zuführt.
19. Verfahren nach Anspruch 18, wobei die Verbindung mit etwa 0,1 bis etwa 1.000 g pro Hektar zugeführt
 10 wird, bevorzugt mit etwa 5 bis etwa 200 g pro Hektar.
20. Insektizide Zusammensetzung, enthaltend eine Verbindung nach einem beliebigen der Ansprüche 1 bis 17 und einen landwirtschaftlich vertretbaren Träger- oder Verdünnungsstoff dafür.
- 15 21. Zusammensetzung nach Anspruch 20, wobei die Verbindung anwesend ist mit etwa 0,00001 bis etwa 99 %, bevorzugt mit etwa 0,00005 bis etwa 90 Gew.-% der Zusammensetzung.
22. Verfahren zum Herstellen einer Verbindung nach Anspruch 1, wobei man eine Verbindung der Formel



wobei A, B, U, V und Z die in Anspruch 1 definierte Bedeutung haben, in einem aprotischen Lösemittel löst, die Lösung mit einer starken Base und nachfolgend mit einem geeigneten Alkylierungsmittel oder Acylierungsmittel zur Bildung einer Verbindung der Formel



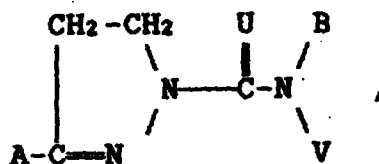
behandelt, wobei A, B, U, V, Y und Z die in Anspruch 1 definierte Bedeutung haben.

23. Verfahren zum Herstellen einer Verbindung nach Anspruch 1 oder 24, wobei
 45 Y eine Gruppe mit der Formel

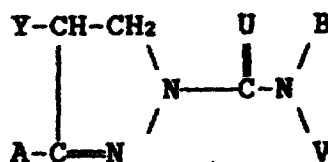


ist, wobei X die Bedeutung O, S oder N-Q hat; und
 Z die Bedeutung Wasserstoff hat;
 wobei man eine Verbindung der Formel



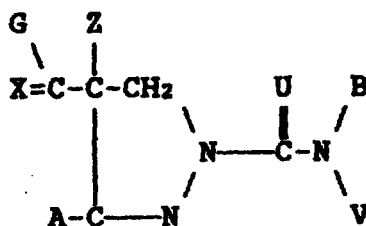


wobei A, B, U und V die in Anspruch 1 definierte Bedeutung haben, in einem aprotischen Lösemittel löst, die Lösung mit einer starken Base und nachfolgend mit einem geeigneten Acylierungsmittel zur Bildung einer Verbindung der Formel



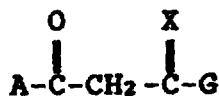
behandelt, wobei A, B, U, V und Y die oben definierte Bedeutung haben, und wobei man wahlweise dieses Produkt isoliert oder es mit einer Base und nachfolgend mit einem Alkylierungsmittel oder Acylierungsmittel behandelt.

24. Verfahren zum Herstellen einer Verbindung der Formel

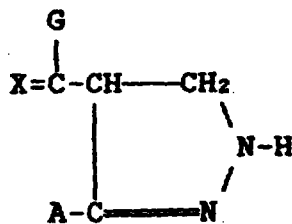


wobei

- V die Bedeutung Wasserstoff hat;
 Z die Bedeutung Wasserstoff, (C₃-C₆) Cycloalkylaryl oder R⁴-Q hat;
 wobei man eine Verbindung der Formel



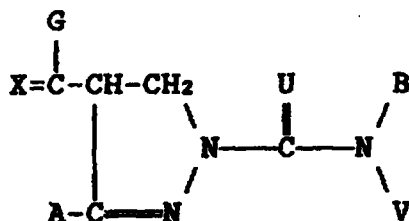
mit einem Gemisch aus Hydrazin und Formaldehyd in einem geeigneten Lösungsmittel zur Bildung einer Verbindung der Formel



behandelt, welche man in einem geeigneten Lösemittel löst und mit einem Arylisocyanat zur



Bildung einer Verbindung der Formel



behandelt, welche man wahlweise isoliert oder in einem aprotischen Lösemittel löst und weiter mit einer Base und dann mit einem Alkylierungsmittel oder Acylierungsmittel behandelt.

25. Verfahren nach Anspruch 22 oder 23, wobei man die starke Base auswählt aus einem Erdalkalimetallhydrid, Alkalimetallhydrid, Alkalimetallamid, Erdalkalimetallamid, Alkalimetallalkyl, Alkalimetallaryl, Alkalimetallhydroxid, Erdalkalimetallhydroxid, Alkalimetallalkoxid, Erdalkalimetallalkoxid, Alkalimetalloxid, Erdalkalimetalloxid, Lithiumalkyle, Lithiumaryle, Erdalkalimetallalkyl oder Erdalkalimetallaryl.
26. Verfahren nach Anspruch 25, wobei die Base Lithiumdiisopropylamid oder Butyllithium ist.
27. Verfahren nach einem der Ansprüche 22 bis 26, wobei man das aprotische Lösemittel auswählt aus einem Dialkylether, aliphatischen Kohlenwasserstoff, aromatischen Kohlenwasserstoff, aliphatischen Alkohol, Dialkylamid, Amin, Ammoniak, Dialkylsulfoxid, Dialkylsulfon oder Polyalkylphosphorsäureamid.
28. Verfahren nach Anspruch 27, wobei das aprotische Lösemittel Tetrahydrofuran ist.
29. Verfahren nach Anspruch 22 oder 24, wobei man das Alkylierungsmittel auswählt aus Methylchlorid, Methylbromid, Methyljodid, Methylsulfat oder Allylchlorid.
30. Verfahren nach Anspruch 22, 23 oder 24, wobei man das Acylierungsmittel auswählt aus Alkanoylchlorid, Aroylchlorid, Alkylchloroformat, Arylchloroformat, Alkylcarbonat, Arylcarbonat, Alkylisocyanat, Arylisocyanat, Alkylisothiocyanat, Arylisothiocyanat, Dialkylcarbamoylechlorid, Alkylchlorothioformat, Arylchlorothioformat, Dialkylcarbodiimid, Alkylarylcarbodiimid, Diarylcarbodiimid, Kohlendioxid oder Kohlenstoffdisulfid.
31. Verfahren nach Anspruch 22, 23 oder 24, wobei man die Alkylierungs- oder Acylierungsreaktion durchführt bei einer Temperatur von etwa -120 bis etwa 200 °C und über einen Zeitraum von etwa 1 Sekunde bis etwa 48 Stunden.
32. Verfahren nach Anspruch 31, wobei man die Reaktion ausführt bei einer Temperatur von etwa -78 bis etwa 100 °C und über einen Zeitraum von etwa 1 Minute bis 1 Stunde.
33. Verfahren nach Anspruch 24, wobei man das zur Reaktion mit dem Arylisocyanat geeignete Lösemittel auswählt aus einem chlorierten Kohlenwasserstoff, Tetrahydrofuran oder einem tertiären Amin.
34. Verfahren nach Anspruch 33, wobei das geeignete Lösemittel Methylenchlorid ist.

