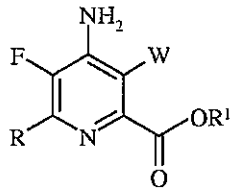
WHAT IS CLAIMED IS:

1. A process for the preparation of a 4-amino-5-fluoro-3-halo-6-(substituted)-picolinate of the Formula I



I

wherein

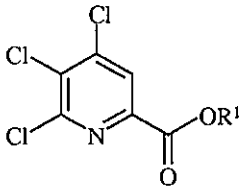
W represents Cl, Br or I;

R represents C_1-C_4 alkyl, cyclopropyl, C_2-C_4 alkenyl or phenyl substituted with from 1 to 4 substituents independently selected from halogen, C_1-C_4 alkyl, C_1-C_4 haloalkyl, C_1-C_4 alkoxy or C_1-C_4 haloalkoxy; and

R^1 represents C_1-C_{12} alkyl or an unsubstituted or substituted C_7-C_{11} arylalkyl;

which comprises the following steps:

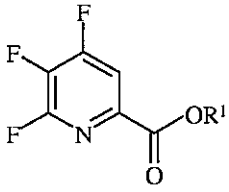
a) fluorinating the a 4,5,6-trichloropicolinate of Formula A



A

wherein R^1 is as previously defined;

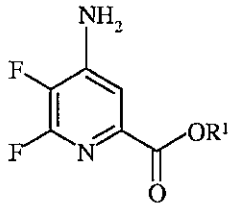
with a source of fluoride ion to produce a 4,5,6-trifluoropicolinate of Formula B



B

wherein R^1 is as previously defined;

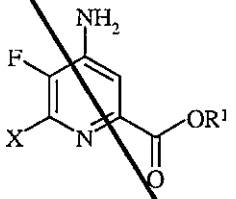
b) aminating 4,5,6-trifluoropicolinate of Formula B with ammonia to produce a 4-amino-5,6-difluoropicolinate of Formula C



C

wherein R^1 is as previously defined;

c) exchanging the fluoro substituent in the 6-position of the 4-amino-5,6-difluoro picolinate of Formula C with an iodo, bromo or chloro substituent by treating with an iodide, bromide or chloride source to produce a 4-amino-5-fluoro-6-halopicolinate of Formula D

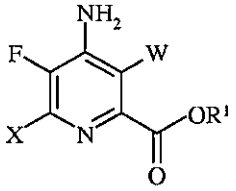


D

wherein X represents Cl, Br or I,

and R^1 is as previously defined;

d) halogenating the 4-amino-5-fluoro-6-halopicolinate of Formula D with a halogen source to produce a 4-amino-3,6-dihalo-5-fluoropicolinate of Formula E



E

wherein W and X independently represent Cl, Br or I,

and R^1 is as previously defined; and

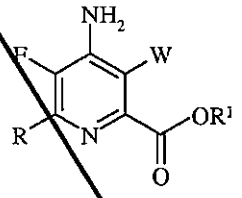
e) coupling the 4-amino-3,6-dihalo-5-fluoropicolinate of Formula E with an aryl, alkyl or alkenyl metal compound of the Formula F

R-Met F

wherein R is as previously defined and Met represents Zn-halide, Zn-R, tri-(C_1-C_4 alkyl)tin, copper, or $B(OR^2)(OR^3)$, where R^2 and R^3 are independent of one another, hydrogen, C_1-C_4 alkyl, or when taken together form an ethylene or propylene group in the presence of a transition metal catalyst to produce the 4-amino-5-fluoro-3-halo-6-(substituted)picolinate of Formula I.

2. The process of Claim 1 in which an amine-containing product or intermediate is purified by: a) protonating with an acid to form a salt, b) isolating the salt in higher purity by crystallization, precipitation or extraction, and c) neutralizing the purified salt with a base to form the purified neutral amine-containing product or intermediate.

3. A process for the preparation of a 4-amino-5-fluoro-3-halo-6-(substituted)-picolinate of the Formula I



I

wherein

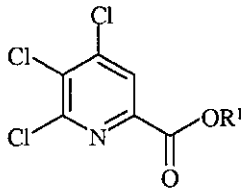
W represents Cl, Br or I;

R represents C_1-C_4 alkyl, cyclopropyl, C_2-C_4 alkenyl, or phenyl substituted with from 1 to 4 substituents independently selected from halogen, C_1-C_4 alkyl, C_1-C_4 haloalkyl, C_1-C_4 alkoxy or C_1-C_4 haloalkoxy; and

R^1 represents C_1-C_{12} alkyl or an unsubstituted or substituted C_7-C_{11} arylalkyl;

which comprises the following steps:

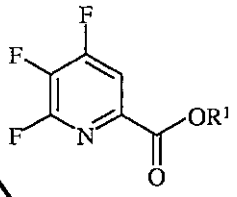
a) fluorinating a 4,5,6-trichloropicolinate of Formula A



A

wherein R^1 is as previously defined;

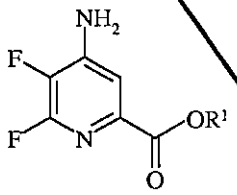
with a source of fluoride ion to produce a 4,5,6-trifluoropicolinate of Formula B



B

wherein R^1 is as previously defined;

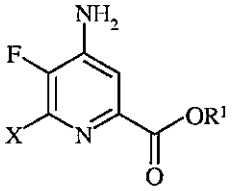
b) aminating the 4,5,6-trifluoropicolinate of Formula B with ammonia to produce a 4-amino-5,6-difluoropicolinate of Formula C



C

wherein R^1 is as previously defined;

c) exchanging the fluoro substituent in the 6-position of the 4-amino-5,6-difluoro-picolinate of Formula C with an iodo, bromo or chloro substituent by treating with an iodide, bromide or chloride source to produce a 4-amino-5-fluoro-6-halopicolinate of Formula D



D

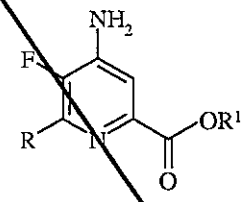
wherein X represents Cl, Br or I; and

R^1 is as previously defined;

d) coupling the 4-amino-5-fluoro-6-halopicolinate of Formula D with an aryl, alkyl or alkenyl metal compound of the Formula F

R-Met F

wherein R is as previously defined and Met represents Zn-halide, Zn-R, tri-(C_1-C_4 alkyl)tin, copper, or $B(OR^2)(OR^3)$, where R^2 and R^3 are independent of one another, hydrogen, C_1-C_4 alkyl, or when taken together form an ethylene or propylene group in the presence of a transition metal catalyst to produce the 4-amino-5-fluoro-6-(substituted)-picolinate of Formula G.



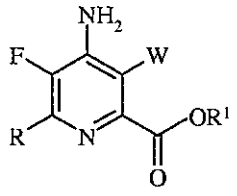
G

wherein R, R^1 are as previously defined; and

e) halogenating the 4-amino-5-fluoro-6-(substituted)picolinate of Formula G with a halogen source to produce a 4-amino-5-fluoro-3-halo-6-(substituted)picolinate of Formula I.

4. The process of Claim 3 in which an amine-containing product or intermediate is purified by: a) protonating with an acid to form a salt, b) isolating the salt in higher purity by crystallization, precipitation or extraction, and c) neutralizing the purified salt with a base to form the purified neutral amine-containing product or intermediate.

5. A process for the preparation of a 4-amino-5-fluoro-3-halo-6-(substituted)-picolinate of the Formula I



I

wherein

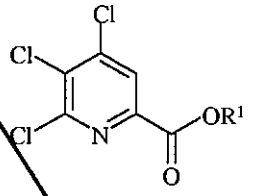
W represents Cl, Br or I;

R represents C_1-C_4 alkyl, cyclopropyl, C_2-C_4 alkenyl or phenyl substituted with from 1 to 4 substituents independently selected from halogen, C_1-C_4 alkyl, C_1-C_4 haloalkyl, C_1-C_4 alkoxy or C_1-C_4 haloalkoxy; and

R^1 represents C_1-C_{12} alkyl or an unsubstituted or substituted C_7-C_{11} arylalkyl;

which comprises the following steps:

a) coupling a 4,5,6-trichloropicolinate of Formula A



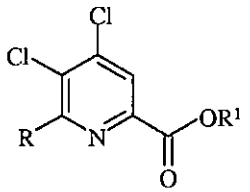
A

wherein R^1 is as previously defined;

with an aryl, alkyl or alkenyl metal compound of the Formula F

R-Met F

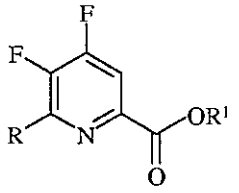
wherein R is as previously defined and Met represents Zn-halide, Zn-R, tri-(C_1-C_4 alkyl)tin, copper, or B(OR^2)(OR^3), where R^2 and R^3 are independent of one another, hydrogen, C_1-C_4 alkyl, or when taken together form an ethylene or propylene group in the presence of a transition metal catalyst to produce a 4,5-dichloro-6-(substituted)picolinate of Formula H



H

wherein R and R^1 are as previously defined;

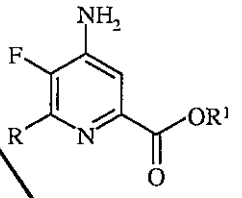
b) fluorinating the 4,5-dichloro-6-(substituted)picolinate of Formula H with a fluoride ion source to produce a 4,5-difluoro-6-(substituted)picolinate of Formula J



J

wherein R^1 is as previously defined;

c) aminating the 4,5-difluoro-6-(substituted)picolinate of Formula J with ammonia to produce a 4-amino-5-fluoro-6-(substituted)picolinate of Formula K



K

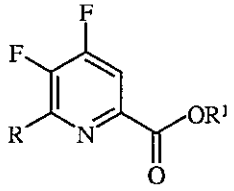
wherein R and R^1 are as previously defined; and

d) halogenating the 4-amino-5-fluoro-6-(substituted)picolinate of Formula K with a halogen source to produce the 4-amino-5-fluoro-3-halo-6-(substituted)picolinate of Formula I.

6. The process of Claim 5 in which an amine-containing product or intermediate is purified by: a) protonating with an acid to form a salt, b) isolating the salt in higher purity by crystallization, precipitation or extraction, and c) neutralizing the purified salt with a base to form the purified neutral amine-containing product or intermediate.

7. A compound selected from the group consisting of :

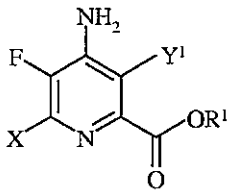
a)



wherein R represents C_1-C_4 alkyl, cyclopropyl, C_2-C_4 alkenyl or phenyl substituted with from 1 to 4 substituents independently selected from halogen, C_1-C_4 alkyl,

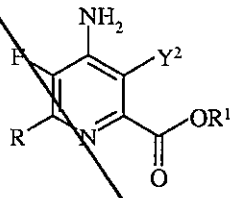
C_1-C_4 haloalkyl, C_1-C_4 alkoxy or C_1-C_4 haloalkoxy and R^1 represents C_1-C_{12} alkyl or an unsubstituted or substituted C_7-C_{11} arylalkyl;

b)



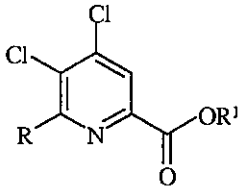
wherein X represents I, Br, Cl or F, Y^1 represents H, Cl, Br, or I with the proviso that when X is Cl, Y^1 is H, Br or I, and R^1 represents C_1-C_{12} alkyl or an unsubstituted or substituted C_7-C_{11} arylalkyl;

c)



wherein Y^2 represents H, Br or I, and R represents C_1-C_4 alkyl, cyclopropyl, C_2-C_4 alkenyl or phenyl substituted with from 1 to 4 substituents independently selected from halogen, C_1-C_4 alkyl, C_1-C_4 haloalkyl, C_1-C_4 alkoxy or C_1-C_4 haloalkoxy and R^1 represents C_1-C_{12} alkyl or an unsubstituted or substituted C_7-C_{11} arylalkyl; and

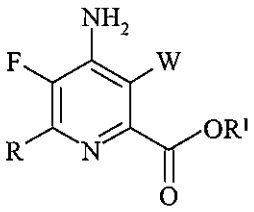
d)



wherein R represents C_1-C_4 alkyl, cyclopropyl, C_2-C_4 alkenyl, or phenyl substituted with from 1 to 4 substituents independently selected from halogen, C_1-C_4 alkyl, C_1-C_4 haloalkyl, C_1-C_4 alkoxy or C_1-C_4 haloalkoxy and R^1 represents C_1-C_{12} alkyl or an unsubstituted or substituted C_7-C_{11} arylalkyl.

CLAIMS:

1. A process for the preparation of a 4-amino-5-fluoro-3-halo-6-(substituted)-picolinate of the Formula I



I

wherein

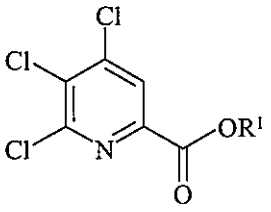
W represents Cl, Br or I;

R represents C_1-C_4 alkyl, cyclopropyl, C_2-C_4 alkenyl or phenyl substituted with from 1 to 4 substituents independently selected from halogen, C_1-C_4 alkyl, C_1-C_4 haloalkyl, C_1-C_4 alkoxy or C_1-C_4 haloalkoxy; and

R^1 represents C_1-C_{12} alkyl or an unsubstituted or substituted C_7-C_{11} arylalkyl;

which comprises the following steps:

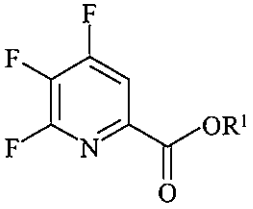
a) fluorinating the a 4,5,6-trichloropicolinate of Formula A



A

wherein R^1 is as previously defined;

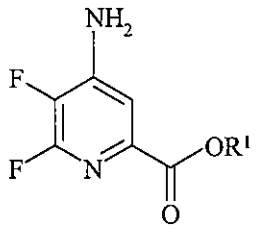
with a source of fluoride ion to produce a 4,5,6-trifluoropicolinate of Formula B



B

wherein R^1 is as previously defined;

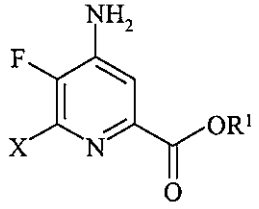
b) aminating 4,5,6-trifluoropicolinate of Formula B with ammonia to produce a 4-amino-5,6-difluoropicolinate of Formula C



C

wherein R^1 is as previously defined;

c) exchanging the fluoro substituent in the 6-position of the 4-amino-5,6-difluoro picolinate of Formula C with an iodo, bromo or chloro substituent by treating with an iodide, bromide or chloride source to produce a 4-amino-5-fluoro-6-halopicolinate of Formula D

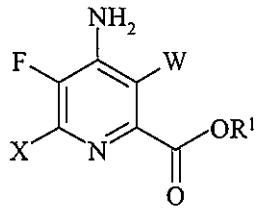


D

wherein X represents Cl, Br or I,

and R^1 is as previously defined;

d) halogenating the 4-amino-5-fluoro-6-halopicolinate of Formula D with a halogen source to produce a 4-amino-3,6-dihalo-5-fluoropicolinate of Formula E



E

wherein W and X independently represent Cl, Br or I,

and R^1 is as previously defined; and

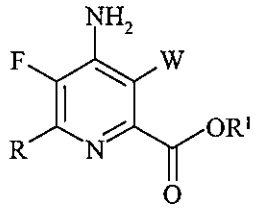
e) coupling the 4-amino-3,6-dihalo-5-fluoropicolinate of Formula E with an aryl, alkyl or alkenyl metal compound of the Formula F

R-Met F

wherein R is as previously defined and Met represents Zn-halide, Zn-R, tri-(C_1-C_4 alkyl)tin, copper, or $B(OR^2)(OR^3)$, where R^2 and R^3 are independent of one another, hydrogen, C_1-C_4 alkyl, or when taken together form an ethylene or propylene group in the presence of a transition metal catalyst to produce the 4-amino-5-fluoro-3-halo-6-(substituted)picolinate of Formula I.

2. The process of Claim 1 in which an amine-containing product or intermediate is purified by: a) protonating with an acid to form a salt, b) isolating the salt in higher purity by crystallization, precipitation or extraction, and c) neutralizing the purified salt with a base to form the purified neutral amine-containing product or intermediate.

3. A process for the preparation of a 4-amino-5-fluoro-3-halo-6-(substituted)-picolinate of the Formula I



I

wherein

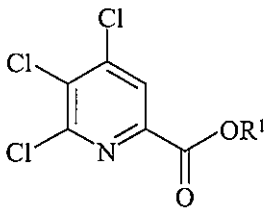
W represents Cl, Br or I;

R represents C_1-C_4 alkyl, cyclopropyl, C_2-C_4 alkenyl, or phenyl substituted with from 1 to 4 substituents independently selected from halogen, C_1-C_4 alkyl, C_1-C_4 haloalkyl, C_1-C_4 alkoxy or C_1-C_4 haloalkoxy; and

R^1 represents C_1-C_{12} alkyl or an unsubstituted or substituted C_7-C_{11} arylalkyl;

which comprises the following steps:

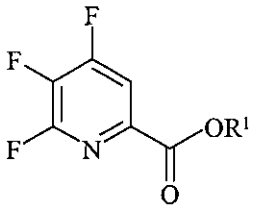
a) fluorinating a 4,5,6-trichloropicolinate of Formula A



A

wherein R^1 is as previously defined;

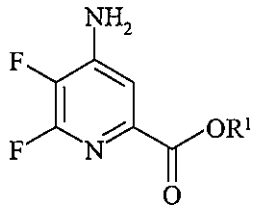
with a source of fluoride ion to produce a 4,5,6-trifluoropicolinate of Formula B



B

wherein R^1 is as previously defined;

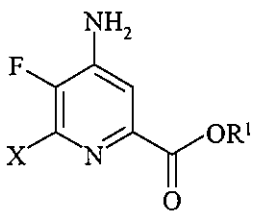
b) aminating the 4,5,6-trifluoropicolinate of Formula B with ammonia to produce a 4-amino-5,6-difluoropicolinate of Formula C



C

wherein R^1 is as previously defined;

c) exchanging the fluoro substituent in the 6-position of the 4-amino-5,6-difluoro-picolinate of Formula C with an iodo, bromo or chloro substituent by treating with an iodide, bromide or chloride source to produce a 4-amino-5-fluoro-6-halopicolinate of Formula D



D

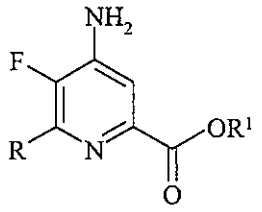
wherein X represents Cl, Br or I; and

R^1 is as previously defined;

d) coupling the 4-amino-5-fluoro-6-halopicolinate of Formula D with an aryl, alkyl or alkenyl metal compound of the Formula F

R-Met F

wherein R is as previously defined and Met represents Zn-halide, Zn-R, tri-(C_1-C_4 alkyl)tin, copper, or $B(OR^2)(OR^3)$, where R^2 and R^3 are independent of one another, hydrogen, C_1-C_4 alkyl, or when taken together form an ethylene or propylene group in the presence of a transition metal catalyst to produce the 4-amino-5-fluoro-6-(substituted)-picolinate of Formula G.



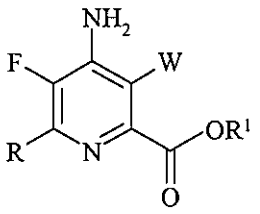
G

wherein R, R^1 are as previously defined; and

e) halogenating the 4-amino-5-fluoro-6-(substituted)picolinate of Formula G with a halogen source to produce a 4-amino-5-fluoro-3-halo-6-(substituted)picolinate of Formula I.

4. The process of Claim 3 in which an amine-containing product or intermediate is purified by: a) protonating with an acid to form a salt, b) isolating the salt in higher purity by crystallization, precipitation or extraction, and c) neutralizing the purified salt with a base to form the purified neutral amine-containing product or intermediate.

5. A process for the preparation of a 4-amino-5-fluoro-3-halo-6-(substituted)-picolinate of the Formula I



I

wherein

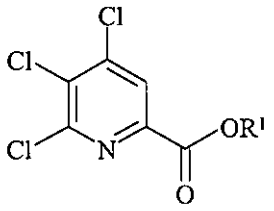
W represents Cl, Br or I;

R represents C_1-C_4 alkyl, cyclopropyl, C_2-C_4 alkenyl or phenyl substituted with from 1 to 4 substituents independently selected from halogen, C_1-C_4 alkyl, C_1-C_4 haloalkyl, C_1-C_4 alkoxy or C_1-C_4 haloalkoxy; and

R^1 represents C_1-C_{12} alkyl or an unsubstituted or substituted C_7-C_{11} arylalkyl;

which comprises the following steps:

a) coupling a 4,5,6-trichloropicolinate of Formula A



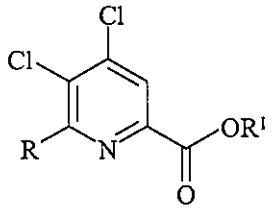
A

wherein R^1 is as previously defined;

with an aryl, alkyl or alkenyl metal compound of the Formula F

R-Met F

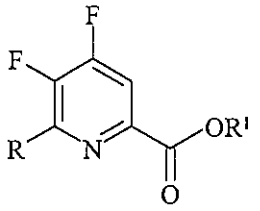
wherein R is as previously defined and Met represents Zn-halide, Zn-R, tri-(C_1-C_4 alkyl)tin, copper, or $B(OR^2)(OR^3)$, where R^2 and R^3 are independent of one another, hydrogen, C_1-C_4 alkyl, or when taken together form an ethylene or propylene group in the presence of a transition metal catalyst to produce a 4,5-dichloro-6-(substituted)picolinate of Formula H



H

wherein R and R^1 are as previously defined;

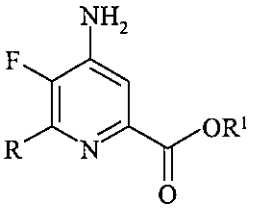
b) fluorinating the 4,5-dichloro-6-(substituted)picolinate of Formula H with a fluoride ion source to produce a 4,5-difluoro-6-(substituted)picolinate of Formula J



J

wherein R^1 is as previously defined;

c) aminating the 4,5-difluoro-6-(substituted)picolinate of Formula J with ammonia to produce a 4-amino-5-fluoro-6-(substituted)picolinate of Formula K



K

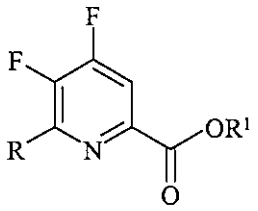
wherein R and R^I are as previously defined; and

d) halogenating the 4-amino-5-fluoro-6-(substituted)picolinate of Formula K with a halogen source to produce the 4-amino-5-fluoro-3-halo-6-(substituted)picolinate of Formula I.

6. The process of Claim 5 in which an amine-containing product or intermediate is purified by: a) protonating with an acid to form a salt, b) isolating the salt in higher purity by crystallization, precipitation or extraction, and c) neutralizing the purified salt with a base to form the purified neutral amine-containing product or intermediate.

7. A compound selected from the group consisting of :

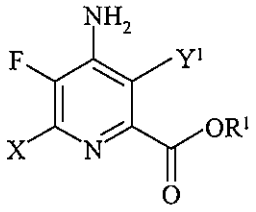
a)



wherein R represents C_1-C_4 alkyl, cyclopropyl, C_2-C_4 alkenyl or phenyl substituted with from 1 to 4 substituents independently selected from halogen, C_1-C_4 alkyl,

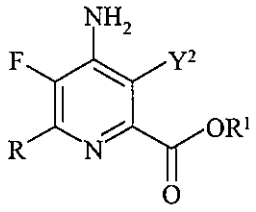
C_1-C_4 haloalkyl, C_1-C_4 alkoxy or C_1-C_4 haloalkoxy and R^1 represents C_1-C_{12} alkyl or an unsubstituted or substituted C_7-C_{11} arylalkyl;

b)



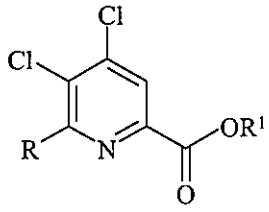
wherein X represents I, Br, Cl or F, Y^1 represents H, with the proviso that when X is Cl, R^1 represents C_1-C_{12} alkyl or an unsubstituted or substituted C_7-C_{11} arylalkyl;

c)



wherein Y^2 represents H, and R represents C_1-C_4 alkyl, cyclopropyl, C_2-C_4 alkenyl or phenyl substituted with from 1 to 4 substituents independently selected from halogen, C_1-C_4 alkyl, C_1-C_4 haloalkyl, C_1-C_4 alkoxy or C_1-C_4 haloalkoxy and R^1 represents C_1-C_{12} alkyl or an unsubstituted or substituted C_7-C_{11} arylalkyl; and

d)



wherein R represents C_1-C_4 alkyl, cyclopropyl, C_2-C_4 alkenyl, or phenyl substituted with from 1 to 4 substituents independently selected from halogen, C_1-C_4 alkyl, C_1-C_4 haloalkyl, C_1-C_4 alkoxy or C_1-C_4 haloalkoxy and R^1 represents C_1-C_{12} alkyl or an unsubstituted or substituted C_7-C_{11} arylalkyl.