MCH ANTAGONISTS AND THEIR USE IN THE TREATMENT OF OBESITY

This application claims the benefit of U.S. Provisional Application No. 60/277,584, filed March 21, 2001.

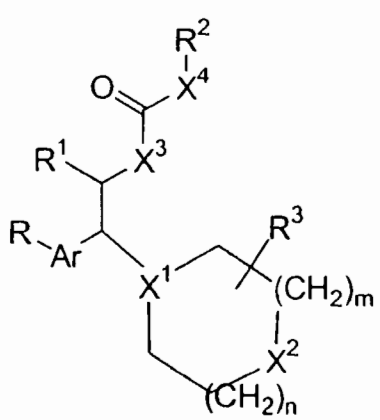
BACKGROUND OF THE INVENTION

This invention relates to antagonists for melanin-concentrating hormone (MCH) and their use in the treatment of metabolic and eating disorders.

MCH, a cyclic peptide, was first identified over a decade ago in teleost fish where it appears to regulate color change. More recently, MCH has been the subject of investigation for its possible role as a regulator of eating behavior in mammals. As reported by Shimada et al., *Nature*, Vol. 396 (17 Dec. 1998), pp. 670-673, MCH-deficient mice have reduced body weight and leanness due to hypophagia (reduced feeding). In view of their findings, it was suggested that antagonists of MCH action may be effective for the treatment of obesity. U.S. Patent No. 5,908,830 discloses a combination therapy for the treatment of diabetes or obesity involving the administration of a metabolic rate increasing agent and a feeding behavior modifying agent, an example of the latter being an MCH antagonist.

SUMMARY OF THE INVENTION

In one embodiment, this invention provides novel compounds having MCH antagonist activity. These compounds are represented by structural formula I:



I

or a pharmaceutically acceptable salt , solvate or prodrug thereof, wherein

m is a number from 0 to 3;

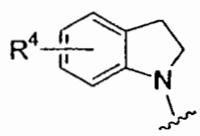
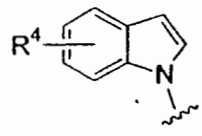
n is a number from 0 to 3;

m and n maybe the same or different;

X^1 is CH, N, or C-(C_1-C_3)alkyl;

X^2 is N-R^5, CH_2, O, S, SO, SO_2, CH-((C_1-C_6)alkyl), or CH-(CH_2O-(C_1-C_3)alkyl);

X^3 is O or N-R^6;

X^4 is a single bond, O, N, NH, N-R^7 or when X^4 is N, R^2 and X^4 can join together to form a heterocycloalkyl group such as piperidine, pyrrolidine, morpholine, piperazine, thiomorpholine or   where the N of X^4 is the heteroatom of said heterocycloalkyl group, wherein said heterocycloalkyl groups can be optionally substituted with one or more alkyl, aryl, aralkyl, or cycloalkylalkyl;

Ar is an arylene or heteroarylene group;

R is R^4-phenyl, R^4-pyridyl, R^4-pyridyl-N-oxide, R^4-pyrazyl or R^4-pyrimidyl;

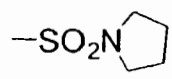
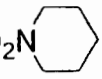
R^1 is hydrogen, or (C_1-C_3)alkyl;

R^2 is alkyl, arylalkyl, substituted arylalkyl, cycloalkyl, cycloalkylalkyl (i.e. cyclopropylmethyl), R^8-phenyl, R^8-pyridyl, R^8-pyridyl-N-oxide;

R^3 is hydrogen, OH, -O(C_1-C_3)alkyl, or non-substituted or halosubstituted (C_1-C_3)alkyl;

R^4 and R^8 maybe the same or different, may number 0 to 3, each being independently selected from the group consisting of hydrogen, -(C_1-C_6)alkyl, -(C_3-C_7)cycloalkyl, halo, -CN, (C_1-C_6)alkoxy,-CF_3, -OCF_3, -$CONH_2$, -CONH(C_1-C_6)alkyl, -CON(C_1-C_6)alkyl (C_1-C_6)alkyl, -NH_2, -NHC(O)(C_1-C_6)alkyl, -NHC(O)NH(C_1-C_6)alkyl, -NHC(O)N((C_1-C_6)alkyl)((C_1-C_6)alkyl), -$NHSO_2$(C_1-C_6)alkyl, -S(C_1-C_6)alkyl, -SO(C_1-C_6)alkyl, -SO_2(C_1-C_6)alkyl, -SO_2NH (C_1-C_6)alkyl, -O(C_1-C_3)alkyleneO- , and NO_2 or two adjacent R^4 or two adjacent R^8 groups together may form a methylenedioxy, propylenedioxy or ethylenedioxy group;

R^5 is hydrogen, nonsubstituted or halosubstituted -(C_1-C_6)alkyl, nonsubstituted or halosubstituted (C_3-C_7)cycloalkyl, nonsubstituted or halosubstituted (C_3-C_7)cycloalkyl(C_1-C_6)alkyl, nonsubstituted or halosubstituted -(C_1-C_6) alkylene(C_1-

C_6)alkoxy, nonsubstituted or halosubstituted alkoxycarbonyl, nonsubstituted or halosubstituted aryl, nonsubstituted or halosubstituted heterocycloalkyl, nonsubstituted or halosubstituted heteroaryl, nonsubstituted or halosubstituted aralkyl, nonsubstituted or halosubstituted (C_1-C_6)alkylbenzimidazole, nonsubstituted or halosubstituted heteroaralkyl, nonsubstituted or halosubstituted C(O)NH(C_1-C_3)alkylene $N(R^9)_2$, - SO_2(C_1-C_6)alkyl or wherein R^5 is independently selected from, - SO_2NH_2, -SO_2NHalkyl, -SO_2N$alkyl_2$,  and ;

R^6 and R^7 may be the same or different, each being independently selected from hydrogen, nonsubstituted or halosubstituted (C_1-C_3)alkyl; or R^6 and R^7 can be joined together to form a 4 to 7-membered ring;

and

R^9 is hydrogen, (C_1-C_6) alkyl, (C_3-C_7)cycloalkyl, (C_3-C_7)cycloalkylmethyl, aralkyl or heteroaralkyl, or the moiety –$N(R^9)_2$ may represent a pyrrolidine, piperazine or piperidine wherein the N of $N(R^9)_2$ is the N of said pyrrolidine, piperazine or piperidine.

One group of preferred compounds is that of formula I wherein X^1 is CH or N;

X^2 is N-R^5;

X^3 is O or N-R^6;

X^4 is O, or N-R^7, preferably N-R^7;

Ar is 1,4-phenylene;

R is R^4-phenyl, or R^4-pyridyl, preferably when R^4 numbers 1 and substitutes at the *meta* position of said phenyl or pyridyl;

R^1 is hydrogen;

R^2 is R^8-phenyl, where R^8 is preferably 1-3 substituents which may be the same or different, each being independently selected from halogen, CF_3-, or (C_1-C_3)alkoxy-;

R^3 is hydrogen or methyl;

R^4 is 1 to 3 substituents which may be the same or different, each being independently selected from hydrogen, halogen, or CN;

R^5 is hydrogen, nonsubstituted or halosubstituted (C_1-C_6)alkyl, cyclopropylmethyl, CH_2-aryl, CH_2-heteroaryl, CH_2-CH_2-O-(C_1-C_6)alkyl, or SO_2-(C_1-C_6)alkyl;

R^6 and R^7 are hydrogen;

and

m and n are the same or different and are equal to 0 or 1.

Another preferred group of compounds are compounds of formula I wherein X^2 and R^1 are as defined above, X^3 is O or NH; X^4 is NH; R is R^4-phenyl or R^4-pyridyl and R^4 is 1 and substitutes at the *meta* position of said phenyl or pyridyl; R^2 is R^8-phenyl, where R^8 is preferably 1-3 substituents which may be same or different, each being independently selected from halogen, CF_3, or $(C_1$-$C_3)$alkyl-O-; R^3 is hydrogen or methyl; R^4 is 1 to 3 substituents which may be the same or different, each being independently selected from hydrogen, halogen or CN; R^5 is hydrogen, nonsubstituted or halosubstituted $(C_1$-$C_6)$alkyl, cyclopropylmethyl, CH_2-aryl, CH_2-heteroaryl, CH_2-CH_2-O-$(C_1$-$C_6)$alkyl, or SO_2-$(C_1$-$C_6)$alkyl; R^6 and R^7 are hydrogen; and m and n are the same or different and are equal to 0 or 1.

A further preferred compound is a compound of formula I wherein X^2 and R^1 are as defined above, Ar is 1,4-arylene, R^1 is H, R^3 is H, X^1 is CH, X^2 is N-R^5, X^3 is O or NH, X^4 is NH, n is 1 and m is 1, R^5 is $(C_1$-$C_3)$ alkyl, $(C_3$-$C_7)$ cycloalkyl, cyclopropylmethyl, 4-morpholinyl, or 2-methoxyethyl; R is 3-cyanophenyl or 3-pyridyl and R^2 is 3,5-dichlorophenyl, 3-chloro-4-fluorophenyl,3,4-difluorophenyl, 3,5-difluorophenyl, 3,5-dichloro-4-pyridyl, 3-trifluoromethyl-4-fluorophenyl, or 3-fluoro-4-trifluoromethylphenyl.

A further preferred compound is a compound of formula I wherein X^2 and R^1 are as defined above Ar is 1,4-arylene, R^1 is H, R^3 is H, X^1 is CH, X^2 is N-R^5 , X^3 is O or NH, X^4 is NH, n is 1 and m is 1, R^5 is selected from the group of CH_3, cyclopropylmethyl, cyclopentyl or cyclohexyl; R is 3-cyanophenyl or 3-pyridyl, R^2 is 3,5-dichlorophenyl, 3-chloro-4-fluorophenyl,3,4-difluorophenyl, 3,5-difluorophenyl, 3,5-dichloro-4-pyridyl, 3-trifluoromethyl-4-fluorophenyl, or 3-fluoro-4-trifluoromethylphenyl.

An even further preferred group of compounds are those listed below in the Detailed Description in Table 1.

This invention is also directed to pharmaceutical compositions for the treatment of metabolic disorders such as obesity and eating disorders such as hyperphagia. In particular, this invention is also directed to pharmaceutical compositions for the treatment of obesity which comprise an obesity treating amount of a compound of formula, I, a prodrug thereof, or a pharmaceutically acceptable salt of said compound or of said prodrug and a pharmaceutically acceptable carrier therefor.

DETAILED DESCRIPTION

The present invention relates to compounds, that are MCH antagonists, represented by structural formula I, or a pharmaceutically acceptable salt or solvate thereof, wherein the various moieties are as described above.

The present antagonists of formula I can be administered as racemic mixtures or enantiomerically pure compounds.

Except where stated otherwise, the following definitions apply throughout the present specification and claims. These definitions apply regardless of whether a term is used by itself or in combination with other terms. Hence the definition of "alkyl" applies to "alkyl" as well as to the "alkyl" portions of "alkoxy", "alkylamino" etc.

As used above, and throughout the specification, the following terms, unless otherwise indicated, shall be understood to have the following meanings:

"Patient" includes both human and other mammals.

"Mammal" means humans and other animals.

"Alkyl" means an aliphatic hydrocarbon group, which may be straight or branched and comprising about 1 to about 20 carbon atoms in the chain. Preferred alkyl groups contain about 1 to about 12 carbon atoms in the chain. More preferred alkyl groups contain about 1 to about 6 carbon atoms in the chain. Branched means that one or more lower alkyl groups such as methyl, ethyl or propyl, are attached to a linear alkyl chain. "Lower alkyl" means a group having about 1 to about 6 carbon atoms in the chain, which may be straight or branched. The term "substituted alkyl" means that the alkyl group may be substituted by one or more substituents which may be the same or different, each substituent being independently selected from the group consisting of halo, alkyl, aryl, cycloalkyl, cyano, hydroxy, alkoxy, alkylthio, amino, -NH(alkyl), -NH(cycloalkyl), -N(alkyl)$_2$, carboxy and –C(O)O-alkyl. Non-limiting examples of suitable alkyl groups include methyl, ethyl, n-propyl, isopropyl, n-butyl, and t-butyl.

"Alkenyl" means an aliphatic hydrocarbon group containing at least one carbon-carbon double bond and which may be straight or branched and comprising about 2 to about 15 carbon atoms in the chain. Preferred alkenyl groups have about 2 to about 12 carbon atoms in the chain; and more preferably about 2 to about 6 carbon

atoms in the chain. Branched means that one or more lower alkyl groups such as methyl, ethyl or propyl, are attached to a linear alkenyl chain. "Lower alkenyl" means about 2 to about 6 carbon atoms in the chain, which may be straight or branched. The term "substituted alkenyl" means that the alkenyl group may be substituted by one or more substituents which may be the same or different, each substituent being independently selected from the group consisting of halo, alkyl. aryl, cycloalkyl, cyano, and alkoxy. Non-limiting examples of suitable alkenyl groups include ethenyl, propenyl, n-butenyl, and 3-methylbut-2-enyl.

"Alkynyl" means an aliphatic hydrocarbon group containing at least one carbon-carbon triple bond and which may be straight or branched and comprising about 2 to about 15 carbon atoms in the chain. Preferred alkynyl groups have about 2 to about 12 carbon atoms in the chain; and more preferably about 2 to about 4 carbon atoms in the chain. Branched means that one or more lower alkyl groups such as methyl, ethyl or propyl, are attached to a linear alkynyl chain. "Lower alkynyl" means about 2 to about 6 carbon atoms in the chain, which may be straight or branched. Non-limiting examples of suitable alkynyl groups include ethynyl, propynyl, and 2-butynyl,. The term "substituted alkynyl" means that the alkynyl group may be substituted by one or more substituents which may be the same or different, each substituent being independently selected from the group consisting of alkyl. aryl and cycloalkyl.

"Alkylene" means an alkanediyl group commonly having free valencies on two carbon atoms. Non-limiting examples include methylene, ethylene, propylene and the like.

"Aryl" means an aromatic monocyclic or multicyclic ring system comprising about 6 to about 14 carbon atoms, preferably about 6 to about 10 carbon atoms. The aryl group can be unsubstituted or optionally substituted on the ring with one or more substituents which may be the same or different, each being independently selected from the group consisting of alkyl, aryl, OCF_3, OCOalkyl, OCOaryl, CF_3, heteroaryl, aralkyl, alkylaryl, heteroaralkyl, alkylheteroaryl, hydroxy, hydroxyalkyl, alkoxy, aryloxy, aralkoxy, acyl, aroyl, halo, haloalkyl, haloalkoxy, nitro, cyano, carboxy, alkoxycarbonyl, aryloxycarbonyl, aralkoxycarbonyl, alkylsulfonyl, arylsulfonyl, heteroarylsulfonyl, alkylsulfinyl, arylsulfinyl, heteroarylsulfinyl, alkylthio, arylthio, heteroarylthio, aralkylthio, heteroaralkylthio, cycloalkyl, heterocyclyl, heterocyclenyl, Y_1Y_2N-, Y_1Y_2N-alkyl-, $Y_1Y_2NC(O)$- and $Y_1Y_2NSO_2$-, wherein Y_1 and Y_2 may be the same or different

each being independently selected from the group consisting of hydrogen, alkyl, aryl, and aralkyl. Non-limiting examples of suitable aryl groups include phenyl and naphthyl. The "aryl" group can also be substituted by linking two adjacent carbons on its aromatic ring via a combination of one or more carbon atoms and one or more oxygen atoms such as, for example, methylenedioxy, ethylenedioxy, and the like.

"Arylene" means a bivalent group derived from an aromatic hydrocarbon by removal of a hydrogen atom from two ring carbon atoms. Non-limiting examples include phenylene and the like.

"Heteroaryl" means an aromatic monocyclic or multicyclic ring system comprising about 5 to about 14 ring atoms, preferably about 5 to about 10 ring atoms, in which one or more of the ring atoms is an element other than carbon, for example nitrogen, oxygen or sulfur, alone or in combination. Preferred heteroaryls contain about 5 to about 6 ring atoms. The "heteroaryl" can be optionally substituted on the ring by replacing an available hydrogen on the ring by one or more substituents which may be the same or different, each being independently selected from the group consisting of alkyl, aryl, heteroaryl, aralkyl, alkylaryl, aralkenyl, heteroaralkyl, alkylheteroaryl, heteroaralkenyl, hydroxy, hydroxyalkyl, alkoxy, aryloxy, aralkoxy, acyl, aroyl, halo, nitro, cyano, carboxy, alkoxycarbonyl, aryloxycarbonyl, aralkoxycarbonyl, alkylsulfonyl, arylsulfonyl, heteroarylsulfonyl, alkylsulfinyl, arylsulfinyl, heteroarylsulfinyl, alkylthio, arylthio, heteroarylthio, aralkylthio, heteroaralkylthio, cycloalkyl, cycloalkenyl, heterocyclyl, heterocyclenyl, Y_1Y_2N-, Y_1Y_2N-alkyl-, $Y_1Y_2NC(O)$- and $Y_1Y_2NSO_2$-, wherein Y_1 and Y_2 may be the same or different, each being independently selected from the group consisting of hydrogen, alkyl, aryl, and aralkyl. The prefix aza, oxa or thia before the heteroaryl root name means that at least a nitrogen, oxygen or sulfur atom respectively, is present as a ring atom. A nitrogen atom of a heteroaryl can be optionally oxidized to the corresponding N-oxide. Non-limiting examples of suitable heteroaryls include pyridyl, pyrazinyl, furanyl, thienyl, pyrimidinyl, isoxazolyl, isothiazolyl, oxazolyl, thiazolyl, pyrrolyl, triazolyl, and the like.

"Heteroarylene" means a bivalent group derived from a heterocyclic aromatic compound by removal of a hydrogen atom from two ring carbon atoms such as, for example, the bivalent group derived from pyridine, pyrrole and the like.

"Aralkyl" means an aryl-alkyl- group in which the aryl and alkyl are as previously described. Preferred aralkyls comprise a lower alkyl group. Non-limiting

examples of suitable aralkyl groups include benzyl, 2-phenethyl and naphthlenylmethyl. The bond to the parent moiety is through the alkyl.

"Alkylaryl" means an alkyl-aryl- group in which the alkyl and aryl are as previously described. Preferred alkylaryls comprise a lower alkyl group. Non-limiting examples of suitable alkylaryl groups include o-tolyl, p-tolyl and xylyl. The bond to the parent moiety is through the aryl.

"Cycloalkyl" means a non-aromatic mono- or multicyclic ring system comprising about 3 to about 10 carbon atoms, preferably about 5 to about 10 carbon atoms. Preferred cycloalkyl rings contain about 5 to about 7 ring atoms. The cycloalkyl can be optionally substituted on the ring by replacing an available hydrogen on the ring by one or more substituents which may be the same or different, each being independently selected from the group consisting of alkyl, aryl, heteroaryl, aralkyl, alkylaryl, aralkenyl, heteroaralkyl, alkylheteroaryl, heteroaralkenyl, hydroxy, hydroxyalkyl, alkoxy, aryloxy, aralkoxy, acyl, aroyl, halo, nitro, cyano, carboxy, alkoxycarbonyl, aryloxycarbonyl, aralkoxycarbonyl, alkylsulfonyl, arylsulfonyl, heteroarylsulfonyl, alkylsulfinyl, arylsulfinyl, heteroarylsulfinyl, alkylthio, arylthio, heteroarylthio, aralkylthio, heteroaralkylthio, cycloalkyl, cycloalkenyl, heterocyclyl, heterocyclenyl, Y_1Y_2N-, Y_1Y_2N-alkyl-, $Y_1Y_2NC(O)$- and $Y_1Y_2NSO_2$-, wherein Y_1 and Y_2 may be the same or different each being independently selected from the group consisting of hydrogen, alkyl, aryl, and aralkyl. Non-limiting examples of suitable monocyclic cycloalkyls include cyclopropyl, cyclopentyl, cyclohexyl, cycloheptyl and the like. Non-limiting examples of suitable multicyclic cycloalkyls include 1-decalinyl, norbornyl, adamantyl and the like.

"Halo" means fluoro, chloro, bromo, or iodo groups. Preferred are fluoro, chloro or bromo, and more preferred are fluoro and chloro.

"Halogen" means fluorine, chlorine, bromine, or iodine. Preferred are fluorine, chlorine or bromine, and more preferred are fluorine and chlorine.

"Haloalkyl" means an alkyl as defined above wherein one or more hydrogen atoms on the alkyl is replaced by a halo group defined above.

"Cycloalkenyl" means a non-aromatic mono or multicyclic ring system comprising about 3 to about 10 carbon atoms, preferably about 5 to about 10 carbon atoms which contains at least one carbon-carbon double bond. Preferred cycloalkenyl rings contain about 5 to about 7 ring atoms. The cycloalkenyl can be optionally

substituted on the ring by replacing an available hydrogen on the ring by one or more substituents which may be the same or different, each being independently selected from the group consisting of alkyl, aryl, heteroaryl, aralkyl, alkylaryl, aralkenyl, heteroaralkyl, alkylheteroaryl, heteroaralkenyl, hydroxy, hydroxyalkyl, alkoxy, aryloxy, aralkoxy, acyl, aroyl, halo, nitro, cyano, carboxy, alkoxycarbonyl, aryloxycarbonyl, aralkoxycarbonyl, alkylsulfonyl, arylsulfonyl, heteroarylsulfonyl, alkylsulfinyl, arylsulfinyl, heteroarylsulfinyl, alkylthio, arylthio, heteroarylthio, aralkylthio, heteroaralkylthio, cycloalkyl, cycloalkenyl, heterocyclyl, heterocyclenyl, Y_1Y_2N-, Y_1Y_2N-alkyl-, $Y_1Y_2NC(O)$- and $Y_1Y_2NSO_2$-, wherein Y_1 and Y_2 may be the same or different each being independently selected from the group consisting of hydrogen, alkyl, aryl, and aralkyl. Non-limiting examples of suitable monocyclic cycloalkenyls include cyclopentenyl, cyclohexenyl, cycloheptenyl, and the like. Non-limiting example of a suitable multicyclic cycloalkenyl is norbornylenyl.

"Heterocyclenyl" means a non-aromatic monocyclic or multicyclic ring system comprising about 3 to about 10 ring atoms, preferably about 5 to about 10 ring atoms, in which one or more of the atoms in the ring system is an element other than carbon, for example nitrogen, oxygen or sulfur atom, alone or in combination, and which contains at least one carbon-carbon double bond or carbon-nitrogen double bond. There are no adjacent oxygen and/or sulfur atoms present in the ring system. Preferred heterocyclenyl rings contain about 5 to about 6 ring atoms. The prefix aza, oxa or thia before the heterocyclenyl root name means that at least a nitrogen, oxygen or sulfur atom respectively is present as a ring atom. The heterocyclenyl can be optionally substituted on the ring by replacing an available hydrogen on the ring by one or more substituents which may be the same or different, each being independently selected from the group consisting of alkyl, aryl, heteroaryl, aralkyl, alkylaryl, aralkenyl, heteroaralkyl, alkylheteroaryl, heteroaralkenyl, hydroxy, hydroxyalkyl, alkoxy, aryloxy, aralkoxy, acyl, aroyl, halo, nitro, cyano, carboxy, alkoxycarbonyl, aryloxycarbonyl, aralkoxycarbonyl, alkylsulfonyl, arylsulfonyl, heteroarylsulfonyl, alkylsulfinyl, arylsulfinyl, heteroarylsulfinyl, alkylthio, arylthio, heteroarylthio, aralkylthio, heteroaralkylthio, cycloalkyl, cycloalkenyl, heterocyclyl, heterocyclenyl, Y_1Y_2N-, Y_1Y_2N-alkyl-, $Y_1Y_2NC(O)$- and $Y_1Y_2NSO_2$-, wherein Y_1 and Y_2 may be the same or different each being independently selected from the group consisting of hydrogen, alkyl, aryl, and aralkyl. The nitrogen or sulfur atom of the

heterocyclenyl can be optionally oxidized to the corresponding N-oxide, S-oxide or S,S-dioxide. Non-limiting examples of suitable monocyclic azaheterocyclenyl groups include 1,2-dihydropyridyl, 1,4-dihydropyridyl, 1,2,3,6-tetrahydropyridyl and the like. Non-limiting examples of suitable oxaheterocyclenyl groups include 3,4-dihydro-2H-pyran, dihydrofuranyl, and the like. Non-limiting example of a suitable multicyclic oxaheterocyclenyl group is 7-oxabicyclo[2.2.1]heptenyl. Non-limiting examples of suitable monocyclic thiaheterocyclenyl rings include dihydrothiophenyl, dihydrothiopyranyl, and the like.

"Heterocyclyl" means a non-aromatic saturated monocyclic or multicyclic ring system comprising about 3 to about 10 ring atoms, preferably about 5 to about 10 ring atoms, in which one or more of the atoms in the ring system is an element other than carbon, for example nitrogen, oxygen or sulfur, alone or in combination. There are no adjacent oxygen and/or sulfur atoms present in the ring system. Preferred heterocyclyls contain about 5 to about 6 ring atoms. The prefix aza, oxa or thia before the heterocyclyl root name means that at least a nitrogen, oxygen or sulfur atom respectively is present as a ring atom. The heterocyclyl can be optionally substituted on the ring by replacing an available hydrogen on the ring by one or more substituents which may be the same or different, each being independently selected from the group consisting of alkyl, aryl, heteroaryl, aralkyl, alkylaryl, aralkenyl, heteroaralkyl, alkylheteroaryl, heteroaralkenyl, hydroxy, hydroxyalkyl, alkoxy, aryloxy, aralkoxy, acyl, aroyl, halo, nitro, cyano, carboxy, alkoxycarbonyl, aryloxycarbonyl, aralkoxycarbonyl, alkylsulfonyl, arylsulfonyl, heteroarylsulfonyl, alkylsulfinyl, arylsulfinyl, heteroarylsulfinyl, alkylthio, arylthio, heteroarylthio, aralkylthio, heteroaralkylthio, cycloalkyl, cycloalkenyl, heterocyclyl, heterocyclenyl, Y_1Y_2N-, Y_1Y_2N-alkyl-, $Y_1Y_2NC(O)$- and $Y_1Y_2NSO_2$-, wherein Y_1 and Y_2 may be the same or different each being independently selected from the group consisting of hydrogen, alkyl, aryl, and aralkyl. The nitrogen or sulfur atom of the heterocyclyl can be optionally oxidized to the corresponding N-oxide, S-oxide or S,S-dioxide. Non-limiting examples of suitable monocyclic heterocyclyl rings include piperidyl, pyrrolidinyl, piperazinyl, morpholinyl and the like.

"Arylcycloalkenyl" means a group derived from a fused aryl and cycloalkenyl as defined herein by removal of a hydrogen atom from the cycloalkenyl portion. Preferred arylcycloalkenyls are those wherein aryl is phenyl and the cycloalkenyl consists of

about 5 to about 6 ring atoms. The arylcycloalkenyl can be optionally substituted on the ring by replacing an available hydrogen on the ring by one or more substituents which may be the same or different, each being independently selected from the group consisting of alkyl, aryl, heteroaryl, aralkyl, alkylaryl, aralkenyl, heteroaralkyl, alkylheteroaryl, heteroaralkenyl, hydroxy, hydroxyalkyl, alkoxy, aryloxy, aralkoxy, acyl, aroyl, halo, nitro, cyano, carboxy, alkoxycarbonyl, aryloxycarbonyl, aralkoxycarbonyl, alkylsulfonyl, arylsulfonyl, heteroarylsulfonyl, alkylsulfinyl, arylsulfinyl, heteroarylsulfinyl, alkylthio, arylthio, heteroarylthio, aralkylthio, heteroaralkylthio, cycloalkyl, cycloalkenyl, heterocyclyl, heterocyclenyl, Y_1Y_2N-, Y_1Y_2N-alkyl-, $Y_1Y_2NC(O)$- and $Y_1Y_2NSO_2$-, wherein Y_1 and Y_2 may be the same or different each being independently selected from the group consisting of hydrogen, alkyl, aryl, and aralkyl. Non-limiting examples of suitable arylcycloalkenyls include 1,2-dihydronaphthalene, indene, and the like. The bond to the parent moiety is through a non-aromatic carbon atom.

"Cycloalkenylaryl" means a group derived from a fused arylcycloalkenyl as defined herein by removal of hydrogen atom from the aryl portion. Non-limiting examples of suitable cycloalkenylaryls are as described herein for a arylcycloalkenyl, except that the bond to the parent moiety is through an aromatic carbon atom.

"Arylcycloalkyl" means a group derived from a fused aryl and cycloalkyl as defined herein by removal of a hydrogen atom from the cycloalkyl portion. Preferred arylcycloalkyls are those wherein aryl is phenyl and the cycloalkyl consists of about 5 to about 6 ring atoms. The arylcycloalkyl can be optionally substituted on the ring by replacing an available hydrogen on the ring by one or more substituents which may be the same or different, each being independently selected from the group consisting of alkyl, aryl, heteroaryl, aralkyl, alkylaryl, aralkenyl, heteroaralkyl, alkylheteroaryl, heteroaralkenyl, hydroxy, hydroxyalkyl, alkoxy, aryloxy, aralkoxy, acyl, aroyl, halo, nitro, cyano, carboxy, alkoxycarbonyl, aryloxycarbonyl, aralkoxycarbonyl, alkylsulfonyl, arylsulfonyl, heteroarylsulfonyl, alkylsulfinyl, arylsulfinyl, heteroarylsulfinyl, alkylthio, arylthio, heteroarylthio, aralkylthio, heteroaralkylthio, cycloalkyl, cycloalkenyl, heterocyclyl, heterocyclenyl, Y_1Y_2N-, Y_1Y_2N-alkyl-, $Y_1Y_2NC(O)$- and $Y_1Y_2NSO_2$-, wherein Y_1 and Y_2 may be the same or different each being independently selected from the group consisting of hydrogen, alkyl, aryl, and aralkyl. Non-limiting examples

of suitable arylcycloalkyls include 1,2,3,4-tetrahydronaphthyl, and the like. The bond to the parent moiety is through a non-aromatic carbon atom.

"Cycloalkylaryl" means a group derived from a fused arylcycloalkyl as defined herein by removal of a hydrogen atom from the aryl portion. Non-limiting examples of suitable cycloalkylaryls are as described herein for an arylcycloalkyl group, except that the bond to the parent moiety is through an aromatic carbon atom.

"Heteroarylcycloalkyl" means a group derived from a fused heteroaryl and cycloalkyl as defined herein by removal of a hydrogen atom from the cycloalkyl portion. Preferred heteroarylcycloalkyls are those wherein the heteroaryl thereof consists of about 5 to about 6 ring atoms and the cycloalkyl consists of about 5 to about 6 ring atoms. The prefix aza, oxa or thia before heteroaryl means that at least a nitrogen, oxygen or sulfur atom is present respectively as a ring atom. The heteroarylcycloalkyl can be optionally substituted on the ring by replacing an available hydrogen on the ring by one or more substituents which may be the same or different, each being independently selected from the group consisting of alkyl, aryl, heteroaryl, aralkyl, alkylaryl, aralkenyl, heteroaralkyl, alkylheteroaryl, heteroaralkenyl, hydroxy, hydroxyalkyl, alkoxy, aryloxy, aralkoxy, acyl, aroyl, halo, nitro, cyano, carboxy, alkoxycarbonyl, aryloxycarbonyl, aralkoxycarbonyl, alkylsulfonyl, arylsulfonyl, heteroarylsulfonyl, alkylsulfinyl, arylsulfinyl, heteroarylsulfinyl, alkylthio, arylthio, heteroarylthio, aralkylthio, heteroaralkylthio, cycloalkyl, cycloalkenyl, heterocyclyl, heterocyclenyl, Y_1Y_2N-, Y_1Y_2N-alkyl-, $Y_1Y_2NC(O)$- and $Y_1Y_2NSO_2$-, wherein Y_1 and Y_2 may be the same or different each being independently selected from the group consisting of hydrogen, alkyl, aryl, and aralkyl. The nitrogen atom of the heteroaryl portion of the heteroarylcycloalkyl can be optionally oxidized to the corresponding N-oxide. Non-limiting examples of suitable heteroarylcycloalkyls include 5,6,7,8-tetrahydroquinolinyl, 4,5,6,7-tetrahydro-1H- benzimidazolyl, and the like. The bond to the parent moiety is through a non-aromatic carbon atom.

"Cycloalkylheteroaryl" means a group derived from a fused heteroarylcycloalkyl as defined herein by removal of a hydrogen atom from the heteroaryl portion. Non-limiting examples of suitable cycloalkylheteroaryls are as described herein for heteroarylcycloalkyl, except that the bond to the parent moiety is through an aromatic carbon atom.

"Aralkenyl" means an aryl-alkenyl- group in which the aryl and alkenyl are as previously described. Preferred aralkenyls contain a lower alkenyl group. Non-limiting examples of suitable aralkenyl groups include 2-phenethenyl and 2-naphthylethenyl. The bond to the parent moiety is through the alkenyl.

"Heteroaralkyl" means a heteroaryl-alkyl- group in which the heteroaryl and alkyl are as previously described. Preferred heteroaralkyls contain a lower alkyl group. Non-limiting examples of suitable aralkyl groups include pyridylmethyl, 2-(furan-3-yl)ethyl and quinolin-3-ylmethyl. The bond to the parent moiety is through the alkyl.

"Heteroaralkenyl" means an heteroaryl-alkenyl- group in which the heteroaryl and alkenyl are as previously described. Preferred heteroaralkenyls contain a lower alkenyl group. Non-limiting examples of suitable heteroaralkenyl groups include 2-(pyrid-3-yl)ethenyl and 2-(quinolin-3-yl)ethenyl. The bond to the parent moiety is through the alkenyl.

"Hydroxyalkyl" means a HO-alkyl- group in which alkyl is as previously defined. Preferred hydroxyalkyls contain lower alkyl. Non-limiting examples of suitable hydroxyalkyl groups include hydroxymethyl and 2-hydroxyethyl.

"Acyl" means an H-C(O)-, alkyl-C(O)-, alkenyl-C(O)-, Alkynyl-C(O)-, cycloalkyl-C(O)-, cycloalkenyl-C(O)-, or cycloalkynyl-C(O)- group in which the various groups are as previously described. The bond to the parent moiety is through the carbonyl. Preferred acyls contain a lower alkyl. Non-limiting examples of suitable acyl groups include formyl, acetyl, propanoyl, 2-methylpropanoyl, and cyclohexanoyl.

"Aroyl" means an aryl-C(O)- group in which the aryl group is as previously described. The bond to the parent moiety is through the carbonyl. Non-limiting examples of suitable groups include benzoyl and 1- and 2-naphthoyl.

"Heteroaroyl" means a heteroaryl-C(O)- group in which the heteroaryl group is as previously described. Non-limiting examples of suitable groups include nicotinoyl and pyrrol-2-ylcarbonyl. The bond to the parent moiety is through the carbonyl.

"Alkoxy" means an alkyl-O- group in which the alkyl group is as previously described. Non-limiting examples of suitable alkoxy groups include methoxy, ethoxy, n-propoxy and isopropoxy. The alkyl group is linked to an adjacent moiety through the ether oxygen.

"Aryloxy" means an aryl-O- group in which the aryl group is as previously described. Non-limiting examples of suitable aryloxy groups include phenoxy and naphthoxy. The bond to the parent moiety is through the ether oxygen.

"Aralkyloxy" means an aralkyl-O- group in which the aralkyl groups is as previously described. Non-limiting examples of suitable aralkyloxy groups include benzyloxy and 1- or 2-naphthalenemethoxy. The bond to the parent moiety is through the ether oxygen.

"Alkylamino" means an $-NH_2$ or $-NH_3^+$ group in which one or more of the hydrogen atoms on the nitrogen is replaced by an alkyl group as defined above.

"Arylamino" means an $-NH_2$ or $-NH_3^+$ group in which one or more of the hydrogen atoms on the nitrogen is replaced by an aryl group as defined above.

"Alkylthio" means an alkyl-S- group in which the alkyl group is as previously described. Non-limiting examples of suitable alkylthio groups include methylthio, ethylthio, i-propylthio and heptylthio. The bond to the parent moiety is through the sulfur.

"Arylthio" means an aryl-S- group in which the aryl group is as previously described. Non-limiting examples of suitable arylthio groups include phenylthio and naphthylthio. The bond to the parent moiety is through the sulfur.

"Aralkylthio" means an aralkyl-S- group in which the aralkyl group is as previously described. Non-limiting example of a suitable aralkylthio group is benzylthio. The bond to the parent moiety is through the sulfur.

"Alkoxycarbonyl" means an alkoxy group defined earlier linked to an adjacent moiety through a carbonyl. Non-limiting examples of alkoxycarbonyl groups include $-C(O)-CH_3$, $-C(O)-CH_2CH_3$ and the like.

"Aryloxycarbonyl" means an aryl-O-C(O)- group. Non-limiting examples of suitable aryloxycarbonyl groups include phenoxycarbonyl and naphthoxycarbonyl. The bond to the parent moiety is through the carbonyl.

"Aralkoxycarbonyl" means an aralkyl-O-C(O)- group. Non-limiting example of a suitable aralkoxycarbonyl group is benzyloxycarbonyl. The bond to the parent moiety is through the carbonyl.

"Alkylsulfonyl" means an alkyl-$S(O_2)$- group. Preferred groups are those in which the alkyl group is lower alkyl. The bond to the parent moiety is through the sulfonyl.

"Alkylsulfinyl" means an alkyl-S(O)- group. Preferred groups are those in which the alkyl group is lower alkyl. The bond to the parent moiety is through the sulfinyl.

"Arylsulfonyl" means an aryl-S(O_2)- group. The bond to the parent moiety is through the sulfonyl.

"Arylsulfinyl" means an aryl-S(O)- group. The bond to the parent moiety is through the sulfinyl.

The term "optionally substituted" means optional substitution with the specified groups, radicals or moieties.

As used herein, the term "composition" is intended to encompass a product comprising the specified ingredients in the specified amounts, as well as any product which results, directly or indirectly, from combination of the specified ingredients in the specified amounts.

Prodrugs and solvates of the compounds of the invention are also contemplated herein. The term "prodrug", as employed herein, denotes a compound that is a drug precursor, which, upon administration to a subject, undergoes chemical conversion by metabolic or chemical processes to yield a compound of formula I or a salt and/or solvate thereof. A discussion of prodrugs is provided in T. Higuchi and V. Stella, *Pro-drugs as Novel Delivery Systems* (1987) Volume 14 of the A.C.S. Symposium Series, and in *Bioreversible Carriers in Drug Design,* (1987) Edward B. Roche, ed., American Pharmaceutical Association and Pergamon Press, both of which are incorporated herein by reference thereto.

"Solvate" means a physical association of a compound of this invention with one or more solvent molecules. This physical association involves varying degrees of ionic and covalent bonding, including hydrogen bonding. In certain instances the solvate will be capable of isolation, for example when one or more solvent molecules are incorporated in the crystal lattice of the crystalline solid. "Solvate" encompasses both solution-phase and isolatable solvates. Non-limiting examples of suitable solvates include ethanolates, methanolates, and the like. "Hydrate" is a solvate wherein the solvent molecule is H_2O.

"Effective amount" or "therapeutically effective amount" is meant to describe an amount of compound of the present invention effective to treat a mammal (e.g., human) having a disease or condition mediated by MCH, and thus producing the desired therapeutic effect.

Prodrugs and solvates of the compounds of the invention are also contemplated herein. The term "prodrug", as employed herein, denotes a compound that is a drug precursor, which, upon administration to a subject, undergoes chemical conversion by metabolic or chemical processes to yield a compound of formula I or a salt and/or solvate thereof. A discussion of prodrugs is provided in T. Higuchi and V. Stella, *Pro-drugs as Novel Delivery Systems* (1987) Volume 14 of the A.C.S. Symposium Series, and in *Bioreversible Carriers in Drug Design,* (1987) Edward B. Roche, ed., American Pharmaceutical Association and Pergamon Press, both of which are incorporated herein by reference thereto.

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The compounds of formula I form salts which are also within the scope of this invention. Reference to a compound of formula I herein is understood to include reference to salts thereof, unless otherwise indicated. The term "salt(s)", as employed herein, denotes acidic salts formed with inorganic and/or organic acids, as well as basic salts formed with inorganic and/or organic bases. In addition, when a compound of formula I contains both a basic moiety, such as, but not limited to a pyridine or imidazole, and an acidic moiety, such as, but not limited to a carboxylic acid, zwitterions ("inner salts") may be formed and are included within the term "salt(s)" as used herein. Pharmaceutically acceptable (i.e., non-toxic, physiologically acceptable) salts are preferred, although other salts are also useful. Salts of the compounds of the formula I may be formed, for example, by reacting a compound of formula I with an amount of acid or base, such as an equivalent amount, in a medium such as one in which the salt precipitates or in an aqueous medium followed by lyophilization.

Exemplary acid addition salts include acetates, adipates, alginates, ascorbates, aspartates, benzoates, benzenesulforiates, bisulfates, borates, butyrates, citrates, camphorates, camphorsulfonates, cyclopentanepropionates, digluconates,

dodecylsulfates, ethanesulfonates, fumarates, glucoheptanoates, glycerophosphates, hemisulfates, heptanoates, hexanoates, hydrochlorides, hydrobromides, hydroiodides, 2-hydroxyethanesulfonates, lactates, maleates, methanesulfonates, 2-naphthalenesulfonates, nicotinates, nitrates, oxalates, pectinates, persulfates, 3-phenylpropionates, phosphates, picrates, pivalates, propionates, salicylates, succinates, sulfates, sulfonates (such as those mentioned herein), tartarates, thiocyanates, toluenesulfonates (also known as tosylates,) undecanoates, and the like. Additionally, acids which are generally considered suitable for the formation of pharmaceutically useful salts from basic pharmaceutical compounds are discussed, for example, by S. Berge *et al*, *Journal of Pharmaceutical Sciences* (1977) 66(1) 1-19; P. Gould, *International J. of Pharmaceutics* (1986) 33 201-217; Anderson *et al*, *The Practice of Medicinal Chemistry* (1996), Academic Press, New York; and in *The Orange Book* (Food & Drug Administration, Washington, D.C. on their website). These disclosures are incorporated herein by reference thereto.

Exemplary basic salts include ammonium salts, alkali metal salts such as sodium, lithium, and potassium salts, alkaline earth metal salts such as calcium and magnesium salts, salts with organic bases (for example, organic amines) such as benzathines, dicyclohexylamines, hydrabamines (formed with N,N-bis(dehydroabietyl)ethylenediamine), N-methyl-D-glucamines, N-methyl-D-glucamides, t-butyl amines, and salts with amino acids such as arginine, lysine and the like. Basic nitrogen-containing groups may be quarternized with agents such as lower alkyl halides (e.g. methyl, ethyl, propyl, and butyl chlorides, bromides and iodides), dialkyl sulfates (e.g. dimethyl, diethyl, dibutyl, and diamyl sulfates), long chain halides (e.g. decyl, lauryl, myristyl and stearyl chlorides, bromides and iodides), aralkyl halides (e.g. benzyl and phenethyl bromides), and others.

All such acid salts and base salts are intended to be pharmaceutically acceptable salts within the scope of the invention and all acid and base salts are considered equivalent to the free forms of the corresponding compounds for purposes of the invention.

Compounds of formula I, and salts, solvates and prodrugs thereof, may exist in their tautomeric form (for example, as an amide or imino ether). All such tautomeric forms are contemplated herein as part of the present invention.

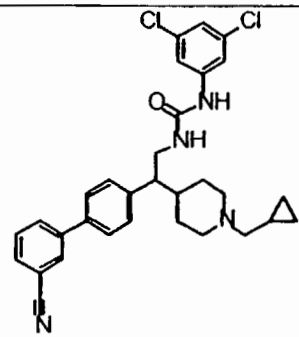
All stereoisomers (for example, geometric isomers, optical isomers and the like) of the present compounds (including those of the salts, solvates and prodrugs of the compounds as well as the salts and solvates of the prodrugs), such as those which may exist due to asymmetric carbons on various substituents, including enantiomeric forms (which may exist even in the absence of asymmetric carbons), rotameric forms, atropisomers, and diastereomeric forms, are contemplated within the scope of this invention. Individual stereoisomers of the compounds of the invention may, for example, be substantially free of other isomers, or may be admixed, for example, as racemates or with all other, or other selected, stereoisomers. The chiral centers of the present invention can have the S or R configuration as defined by the *IUPAC* 1974 Recommendations. The use of the terms "salt", "solvate" "prodrug" and the like, is intended to equally apply to the salt, solvate and prodrug of enantiomers, stereoisomers, rotamers, tautomers, racemates or prodrugs of the inventive compounds.

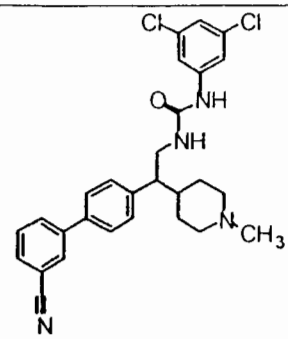
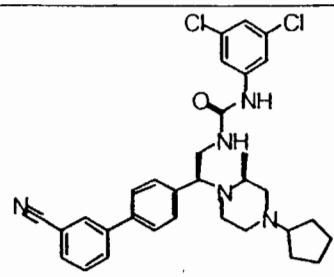
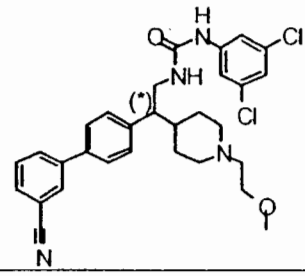
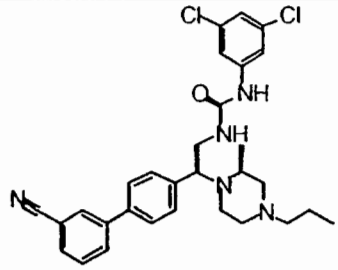
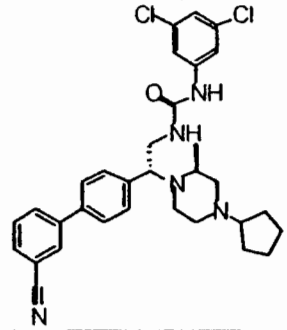
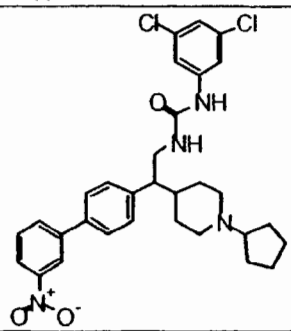
When any variable (e.g., aryl, heterocycle, R_1, etc.) occurs more than one time in any constituent or in Formula I, its definition on each occurrence is independent of its definition at every other occurrence. Also, combinations of substituents and/or variables are permissible only if such combinations result in stable compounds.

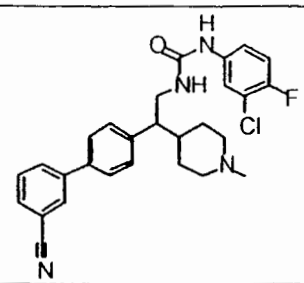
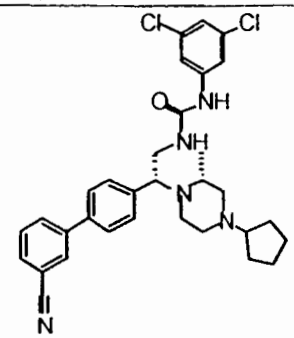
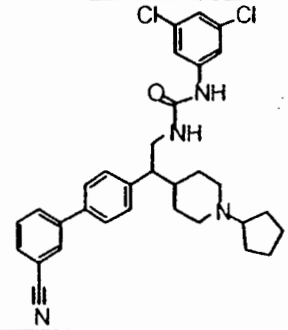
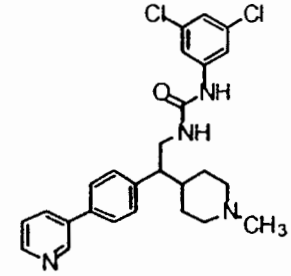
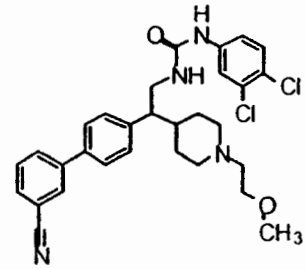
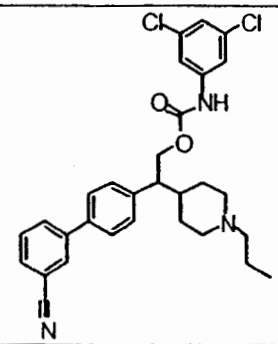
N-oxides can form on a tertiary nitrogen present in an X^1, R or R^2 substituent, or on =N- in a heteroaryl ring substituent and are included in the compounds of formula I.

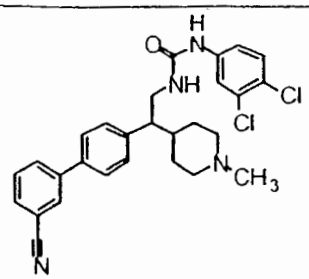
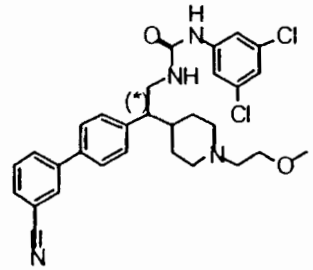
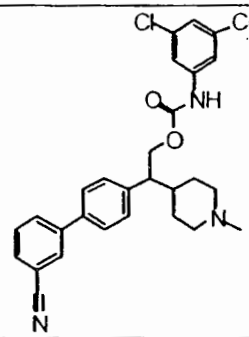
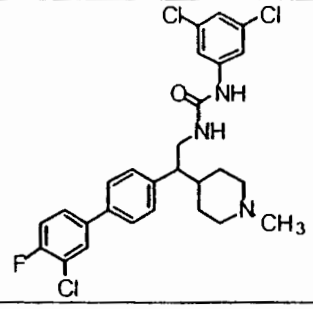
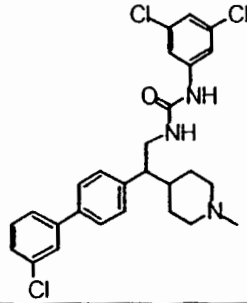
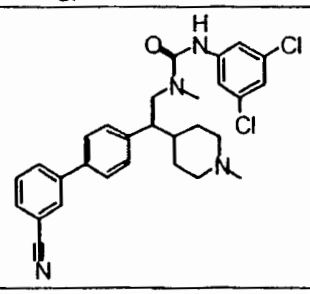
An preferred group of compounds are those listed below in Table 1.

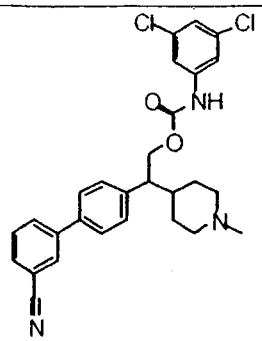
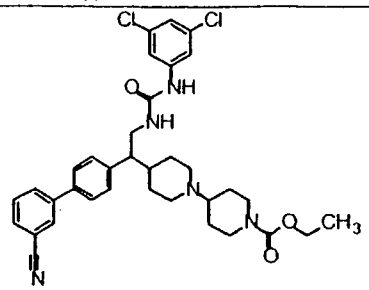
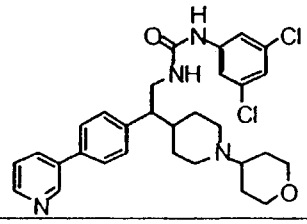
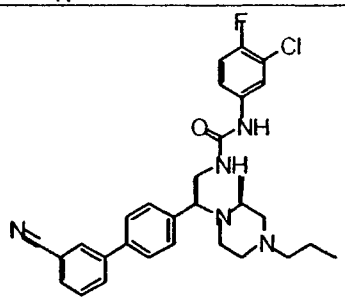
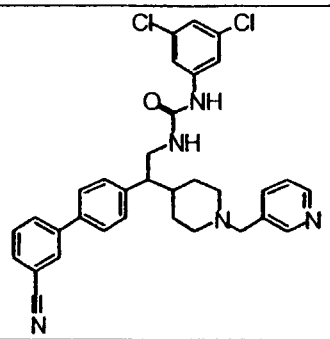
Table 1

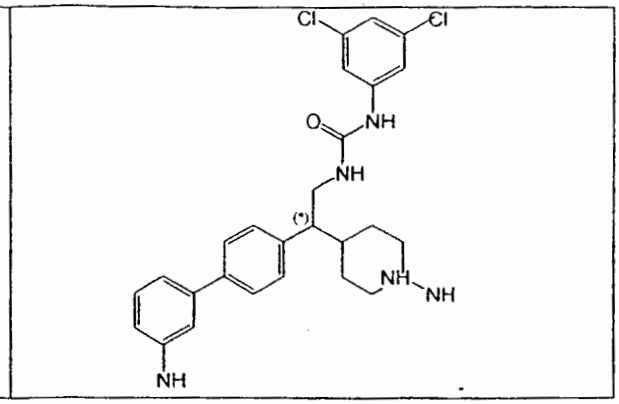
Compound	Structure
26	

17	
75	
66	
87	
74	
9	

60	
83	
12	
31	
56	
3	

55	
69	
1	
32	
30	
112	

6	
14	
45	
88	
27	

64	

Another aspect of this invention is a method of treating a mammal (*e.g.*, human) having a disease or condition mediated by MCH by administering a therapeutically effective amount of at least one compound of formula I, a prodrug thereof, or a pharmaceutically acceptable salt of said compound or of said prodrug to the mammal.

A preferred dosage is about 0.001 to 100 mg/kg/day of the formula I compound or a prodrug thereof. An especially preferred dosage is about 0.01 to 25 mg/kg/day of a compound of formula I, a prodrug thereof, or a pharmaceutically acceptable salt of said compound or of said prodrug.

Another aspect of this invention is directed to a method of treating obesity comprising administering to a mammal in need of such treatment a therapeutically effective amount of at least one compound of formula I or a prodrug thereof, or a pharmaceutically acceptable salt of said compound or of said prodrug.

Another aspect of this invention is directed to a method for treating eating and metabolic disorders such as bulimia and anorexia comprising administering to a mammal a therapeutically effective amount of at least one compound of formula I, a prodrug thereof, or a pharmaceutically acceptable salt of said compound or of said prodrug.

Another aspect of this invention is directed to a method for treating hyperlipidemia comprising administering to a mammal a therapeutically effective amount of at least one compound of formula I, a prodrug thereof, or a pharmaceutically acceptable salt of said compound or of said prodrug.

Another aspect of this invention is directed to a method for treating cellulite and fat accumulation comprising administering to a mammal a therapeutically effective amount of at least one compound of formula I, a prodrug thereof, or a

pharmaceutically acceptable salt of said compound or of said prodrug.

Another aspect of this invention is directed to a method for treating type II diabetes comprising administering to a mammal a therapeutically effective amount of at least one compound of formula I, a prodrug thereof, or a pharmaceutically acceptable salt of said compound or of said prodrug.

In addition to the "direct" effect of the compounds of this invention on the MCH subtype, there are diseases and conditions that will benefit from the weight loss such as insulin resistance, impaired glucose tolerance, Type II Diabetes, hypertension, hyperlipidemia, cardiovascular disease, gall stones, certain cancers, and sleep apnea.

This invention is also directed to pharmaceutical compositions which comprise at least one compound of formula I, a prodrug thereof, or a pharmaceutically acceptable salt of said compound or of said prodrug and at least one pharmaceutically acceptable carrier therefor.

This invention is also directed to pharmaceutical compositions for the treatment of obesity which comprise an obesity treating amount of at least one compound of formula, I, a prodrug thereof, or a pharmaceutically acceptable salt of said compound or of said prodrug and at least one pharmaceutically acceptable carrier therefor.

Compounds of formula I can be produced by processes known to those skilled in the art using either solution phase or solid phase synthesis as shown in the following reaction schemes, in the preparations and examples below, and by using the methods described in WO 98/05292, the disclosing of which is incorporated herein by reference.

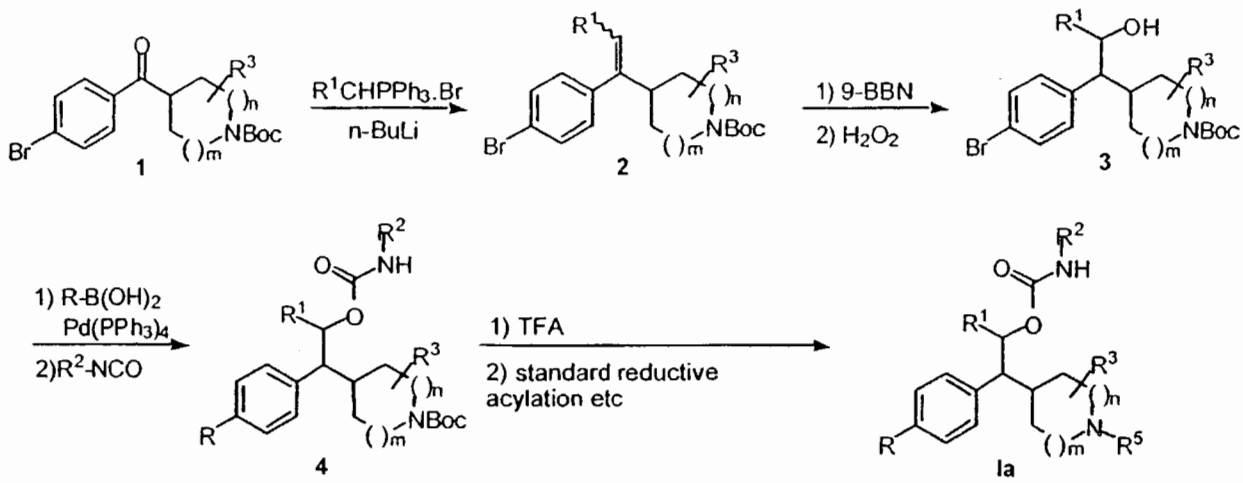
The following solvents and reagents may be referred to by their abbreviations in parenthesis:

Thin layer chromatography (TLC);
diethyl ether (Et_2O);
dichloromethane (CH_2Cl_2);
1,2-dichloroethane (DCE);
ethyl acetate (AcOEt or EtOAc);
tetrahydrofuran (THF);
1,2-dimethoxyethane (DME);
methanol (MeOH);
ethanol (EtOH);

acetonitrile (CH_3CN);
N,N-dimethylformamide (DMF);
acetic acid (AcOH);
trifluoroacetic acid (TFA);
trifluoroacetic anhydride (TFAA);
sulfuric acid (H_2SO_4);
1-hydroxybenzotriazole (HOBt);
1-(3-dimethylaminopropyl)-3-ethyl carbodiimide hydrochloride (EDCI);
m-chloroperbenzoic acid (MCPBA);
ammonium hydroxide (NH_4OH);
triethylamine (Et_3N);
4-dimethylaminopyridine (DMAP);
tert-butoxycarbonyl (Boc or t-Boc);
High Performance Liquid Chromatography (HPLC);
melting point (M.pt.);
nuclear magnetic resonance spectroscopy (NMR);
mass spectral analysis (MS);
milliliters (mL);
grams (g);
room temperature (ambient) about 25°C (rt);
(+)-(1R, 2R)-trans-1, 2,3,4-tetrahydro-1- (methylamino) 2-naphthalenol hemitartrate (MAT); and
9-borabicyclo[3.3.1]nonane (9-BBN).

Compounds of formula Ia wherein X^1 is CH, X^3 is O, and Ar is 1,4-phenylene are prepared according to the method described in scheme 1:

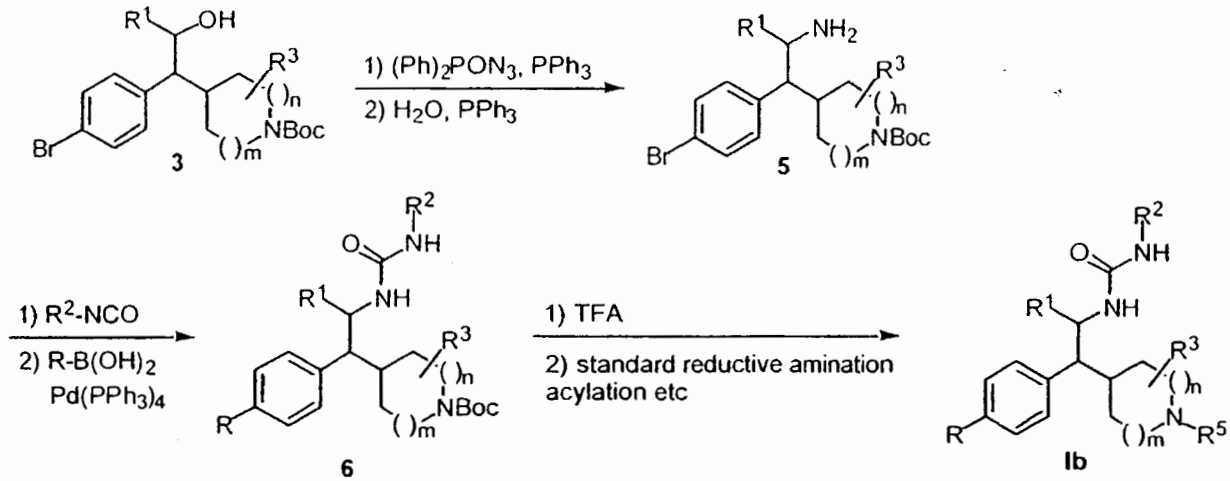
Scheme 1



N-Boc ketone **1**, easily prepared from the N-TFA precursor (the synthesis of which is described in WO98/05292 for m = n = 1) via standard TFA-removal with potassium carbonate in methanol/water followed by N-protection with di-tert-butyldicarbonate, is subjected to Wittig olefination, followed by hydroboration and oxidation to afford alcohol **3**. Suzuki coupling on alcohol **3** with arylboronic acid R-$B(OH)_2$ followed by treatment of the biaryl alcohol intermediate with isocyanate R^2-NCO give biaryl carbamate **4**. This biaryl carbamate **4** is treated with TFA to remove the Boc-protecting group, and the resulting amine is further functionalized via reductive amination with an appropriate aldehyde or ketone, nucleophilic displacement with an alkyl- or aralkyl- halide, acylation with an acyl halide or sulfonation to provide biaryl carbamate **Ia**. Alternatively, the sequence of steps in Scheme 1 can be modified so that the Suzuki coupling reaction occurs after the condensation with the isocyanate R^2-NCO, or so that it is performed at the very end of the sequence, after removal of the Boc-protecting group and functionalization as above-mentioned.

Compounds of formula Ib wherein X^1 is CH, X^3 is NH, and Ar is 1,4-phenylene are prepared according to the method described in scheme 2:

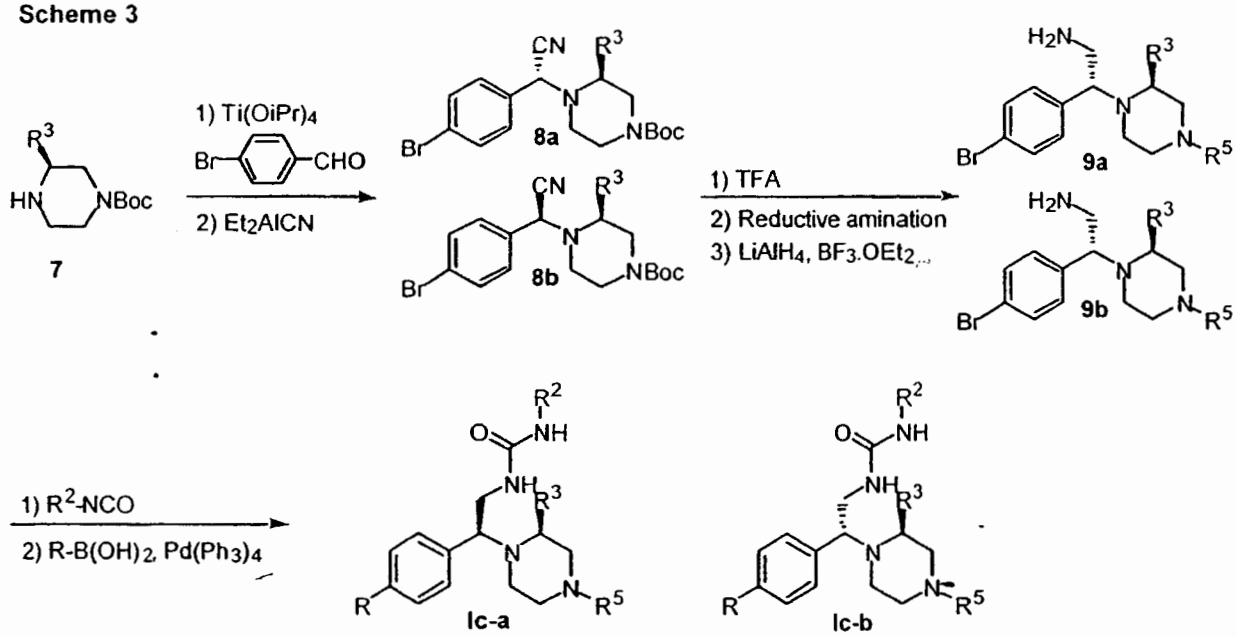
Scheme 2



Intermediate **3** is reacted with diphenylphosphoryl azide followed by reduction of the intermediate azide to provide amine **5**. Reaction of amine **5** with isocyanate R^2-NCO followed by Suzuki coupling with arylboronic acid R-B(OH)$_2$ affords biaryl urea **6**. Then, and as for the end-synthesis of **Ia**, Boc removal with TFA and further functionalization of the resulting amine give biaryl urea **Ib**.

Compounds of formula **Ic** wherein X^1 is N, X^3 is NH, and Ar is 1,4-phenylene are prepared according to the method described in Scheme 3 (m and n = 1):

Scheme 3

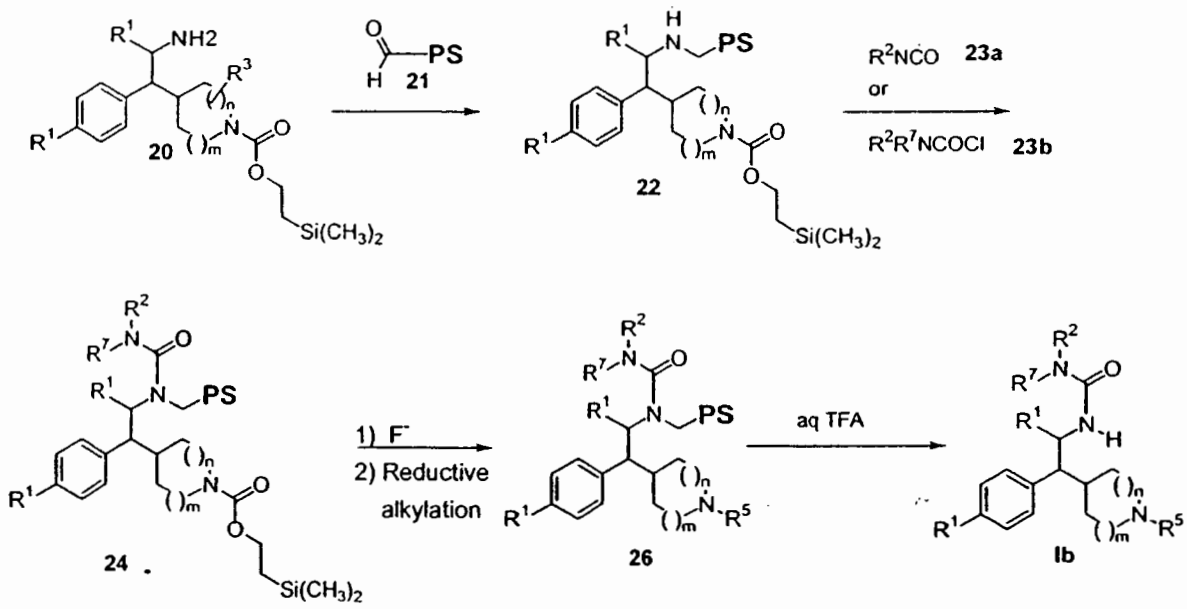


Reductive alkylation of piperazine **7** and 4-bromobenzaldehyde with titanium tetraisopropoxide and diethylaluminum cyanide affords Strecker amines **8a-b** as a mixture of diastereoisomers. The Boc protective group in **8a-b** is removed with TFA then the liberated free amine is functionalized via reductive amination with an appropriate aldehyde or ketone, or alkylation with an alkyl- or aralkyl-halide. The

cyano group is then reduced with lithium aluminum hydride to give amines **9a** and **9b** that can be separated at that stage. Reaction of amine **9a** and/or **9b** with isocyanate R^2-NCO followed by Suzuki coupling with arylboronic acid R-B(OH)$_2$, affords piperazine biaryl urea **Ic-a** and/or **Ic-b** that can also be separated at that stage. Separation of the diastereoisomers can be performed at any stage of the synthesis following and including intermediates **9a-b**. Any modification of the sequence in the scheme including the use of other protective groups or simplification when starting from a non-protected amine **7** would be apparent to those skilled in the art.

Combinatorial libraries of compounds of formula 1b can also be prepared using solid phase chemistry as shown in Scheme 4.

Scheme 4



A library of intermediates 20, prepared in a manner similar to intermediate 5 of Scheme 2, is treated with a suitable solid-phase aldehyde reagent 21 such as Novabiochem 2-(4-formyl-3-methoxyphenoxy)ethyl polystyrene in the presence of a reducing agent such as sodium triacetoxyborohydride to give resin-bound amine 22. This is treated either with an isocyanate 23a or with a carbamoyl chloride 23b optionally in the presence of a base such as diisopropylethylamine to give urea 24. The protecting group is removed by treatment with fluoride, and the resulting free amine 25 is derivatized as described in Scheme 1 and Scheme 2 to give 26. The product is removed from the solid support by treatment with strong acid such as

trifluoroacetic acid. Modifications to the sequence, including the use of alternative protecting groups, will be apparent to those skilled in the art.

Alternative mechanistic pathways and analogous structures within the scope of the invention would be apparent to those skilled in the art.

Starting materials are prepared by known methods and/or methods described in the Preparations.

The compounds of formula I exhibit MCH receptor antagonizing activity, which has been correlated with pharmaceutical activity for treating eating disorders, such as obesity and hyperphagia, and diabetes.

The compounds of formula I display pharmacological activity in a test procedure designed to demonstrate MCH receptor antagonist activity. The compounds are non-toxic at pharmaceutically therapeutic doses.

MCH receptor binding assay:

Membranes from CHO cells expressing the MCH receptor were prepared by lysing cells with 5 mM HEPES for 15 min at 4C. Cell lysates were centrifuged (12.5000 x g, 15 min) and the pellet was resuspended in 5 mM HEPES. For each 96-well plate (Microlite, Dynex Technologies), 1 mg of cell membranes were incubated with 10 mg of wheat germ agglutinin SPA beads (Amersham) for 5 min at 4 C in a volume of 10 ml of binding buffer (25 mM HEPES, 10 mM $MGCl_2$, 10 mM NaCl, 5 mM $MnCl_2$, 0.1% BSA). The membrane/bead mixture was centrifuged (1500 x g, 3.5 min), the supernatant was aspirated, and the pellet was resuspended in 10 ml binding buffer. The centrifugation, aspiration and resuspension were then repeated. The membrane/bead mixture (100 l) was then added to 96-well plates containing 50 l of 500 pM [^{125}I]-MCH (NEN) and 50 ml of the appropriate concentration of compound (4X the desired final concentration). Nonspecific binding was determined by including 1 M MCH in the binding reaction. The binding reaction was incubated at room temperature for 2 h. Plates were then analyzed in a TOPCOUNT microplate scintillation counter (Packard). Data was analyzed and Ki values were determined using GraphPad Prim.

For the compounds of this invention, a range of MCH receptor binding activity (Ki values) of from about 0.0 nM to about 1500 nM was observed. Compounds of this

invention preferably have a binding activity in the range of from about 0.1 nM to about 250 nM, more preferably from about 0.6 to about 30 nM, and most preferably from about 0.6 to about 2 nM.

Yet another aspect of this invention are combinations of a compound of formula I, a prodrug thereof, or a pharmaceutically acceptable salt of said compound or of said prodrug and other compounds as described below.

Accordingly, another aspect of this invention is a method for treating obesity comprising administering to a mammal (*e.g.*, a female or male human)

a. an amount of a first compound, said first compound being a formula I compound, a prodrug thereof, or a pharmaceutically acceptable salt of said compound or of said prodrug; and

b. an amount of a second compound, said second compound being an antiobesity and/or anorectic agent such as a β_3 agonist, a thyromimetic agent, an anoretic agent, or an NPY antagonist wherein the amounts of the first and second compounds result in a therapeutic effect.

This invention is also directed to a pharmaceutical combination composition comprising: a therapeutically effective amount of a composition comprising a first compound, said first compound being a formula I compound, a prodrug thereof, or a pharmaceutically acceptable salt of said compound or of said prodrug a second compound, said second compound being an antiobesity and/or anorectic agent such as a β_3 agonist, a thyromimetic agent, an anoretic, or an NPY antagonist; and/or optionally a pharmaceutical carrier, vehicle or diluent.

Another aspect of this invention is a kit comprising:

a. an amount of a formula I compound, a prodrug thereof, or a pharmaceutically acceptable salt of said compound or of said prodrug and a pharmaceutically acceptable carrier, vehicle or diluent in a first unit dosage form;

b. an amount of an antiobesity and/or anorectic agent such as a β_3 agonist, a thyromimetic agent, an anoretic agent, or an NPY antagonist and a pharmaceutically acceptable carrier, vehicle or diluent in a second unit dosage form; and

c. means for containing said first and second dosage forms wherein the amounts of the first and second compounds result in a therapeutic effect.

Preferred antiobesity and/or anorectic agents (taken singly or in any combination thereof) in the above combination methods, combination compositions and combination kits are:

phenylpropanolamine, ephedrine, pseudoephedrine, phentermine, a cholecystokinin-A (hereinafter referred to as CCK-A) agonist, a monoamine reuptake inhibitor (such as sibutramine), a sympathomimetic agent, a serotonergic agent (such as dexfenfluramine or fenfluramine), a dopamine agonist (such as bromocriptine), a melanocyte-stimulating hormone receptor agonist or mimetic, a melanocyte-stimulating hormone analog, a cannabinoid receptor antagonist, a melanin concentrating hormone antagonist, the OB protein (hereinafter referred to as "leptin"), a leptin analog, a leptin receptor agonist, a galanin antagonist or a GI lipase inhibitor or decreaser (such as orlistat). Other anorectic agents include bombesin agonists, dehydroepiandrosterone or analogs thereof, glucocorticoid receptor agonists and antagonists, orexin receptor antagonists, urocortin binding protein antagonists, agonists of the glucagon-like peptide-1 receptor such as Exendin and ciliary neurotrophic factors such as Axokine.

Another aspect of this invention is a method treating diabetes comprising administering to a mammal (*e.g.*, a female or male human)

a. an amount of a first compound, said first compound being a formula I compound, a prodrug thereof, or a pharmaceutically acceptable salt of said compound or of said prodrug; and

b. an amount of a second compound, said second compound being an aldose reductase inhibitor, a glycogen phosphorylase inhibitor, a sorbitol dehydrogenase inhibitor, a protein tyrosine phosphatase 1B inhibitor, a dipeptidyl protease inhibitor, insulin (including orally bioavailable insulin preparations), an insulin mimetic, metformin, acarbose, a PPAR-gamma ligand such as troglitazone, rosaglitazone, pioglitazone or GW-1929, a sulfonylurea, glipazide, glyburide, or chlorpropamide wherein the amounts of the first and second compounds result in a therapeutic effect.

This invention is also directed to a pharmaceutical combination composition comprising: a therapeutically effective amount of a composition comprising a first compound, said first compound being a formula I compound, a prodrug thereof, or a pharmaceutically acceptable salt of said compound or of said prodrug;

a second compound, said second compound being an aldose reductase inhibitor, a glycogen phosphorylase inhibitor, a sorbitol dehydrogenase inhibitor, a protein tyrosine phosphatase 1B inhibitor, a dipeptidyl protease inhibitor, insulin (including orally bioavailable insulin preparations), an insulin mimetic, metformin, acarbose, a PPAR-gamma ligand such as troglitazone, rosaglitazone, pioglitazone, or GW-1929, a sulfonylurea, glipazide, glyburide, or chlorpropamide; and optionally a pharmaceutical carrier, vehicle or diluent.

Another aspect of this invention is a kit comprising:

a. an amount of a formula I compound, a prodrug thereof, or a pharmaceutically acceptable salt of said compound or of said prodrug and a pharmaceutically acceptable carrier, vehicle or diluent in a first unit dosage form;

b. an amount of an aldose reductase inhibitor, a glycogen phosphorylase inhibitor, a sorbitol dehydrogenase inhibitor, a protein tyrosine phosphatase 1B inhibitor, a dipeptidyl protease inhibitor, insulin (including orally bioavailable insulin preparations), an insulin mimetic, metformin, acarbose, a PPAR-gamma ligand such as troglitazone, rosaglitazone, pioglitazone, or GW-1929, a sulfonylurea, glipazide, glyburide, or chlorpropamide and a pharmaceutically acceptable carrier, vehicle or diluent in a second unit dosage form; and

c. means for containing said first and second dosage forms wherein the amounts of the first and second compounds result in a therapeutic effect.

For preparing pharmaceutical compositions from the compounds described by this invention, inert, pharmaceutically acceptable carriers can be either solid or liquid. Solid form preparations include powders, tablets, dispersible granules, capsules, cachets and suppositories. The powders and tablets may be comprised of from about 5 to about 95 percent active ingredient. Suitable solid carriers are known in the art, e.g., magnesium carbonate, magnesium stearate, talc, sugar or lactose. Tablets, powders, cachets and capsules can be used as solid dosage forms suitable for oral administration. Examples of pharmaceutically acceptable carriers and methods of manufacture for various compositions may be found in A. Gennaro (ed.), *Remington's Pharmaceutical Sciences*, 18th Edition, (1990), Mack Publishing Co., Easton, Pennsylvania.

Liquid form preparations include solutions, suspensions and emulsions. As an example may be mentioned water or water-propylene glycol solutions for parenteral injection or addition of sweeteners and opacifiers for oral solutions, suspensions and emulsions. Liquid form preparations may also include solutions for intranasal administration.

Aerosol preparations suitable for inhalation may include solutions and solids in powder form, which may be in combination with a pharmaceutically acceptable carrier, such as an inert compressed gas, e.g. nitrogen.

Also included are solid form preparations that are intended to be converted, shortly before use, to liquid form preparations for either oral or parenteral administration. Such liquid forms include solutions, suspensions and emulsions.

The compounds of the invention may also be deliverable transdermally. The transdermal compositions can take the form of creams, lotions, aerosols and/or emulsions and can be included in a transdermal patch of the matrix or reservoir type as are conventional in the art for this purpose.

Preferably the compound is administered orally.

Preferably, the pharmaceutical preparation is in a unit dosage form. In such form, the preparation is subdivided into suitably sized unit doses containing appropriate quantities of the active component, e.g., an effective amount to achieve the desired purpose.

The quantity of active compound in a unit dose of preparation may be varied or adjusted from about 1 mg to about 100 mg, preferably from about 1 mg to about 50 mg, more preferably from about 1 mg to about 25 mg, according to the particular application.

The actual dosage employed may be varied depending upon the requirements of the patient and the severity of the condition being treated. Determination of the proper dosage regimen for a particular situation is within the skill of the art. For convenience, the total daily dosage may be divided and administered in portions during the day as required.

The amount and frequency of administration of the compounds of the invention and/or the pharmaceutically acceptable salts thereof will be regulated according to the judgment of the attending clinician considering such factors as age, condition and size of the patient as well as severity of the symptoms being treated. A typical

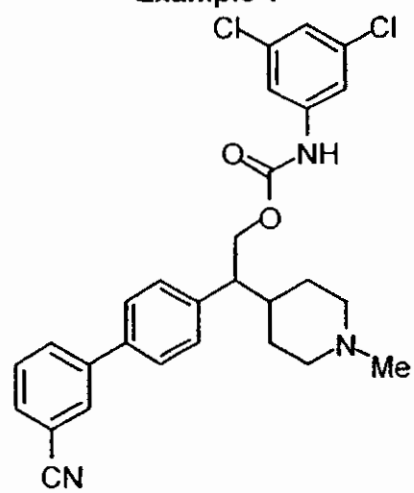
recommended daily dosage regimen for oral administration can range from about 1 mg/day to about 300 mg/day, preferably 1 mg/day to 50 mg/day, in two to four divided doses.

The invention disclosed herein is exemplified by the following preparations and examples which should not be construed to limit the scope of the disclosure. Alternative mechanistic pathways and analogous structures will be apparent to those skilled in the art.

Where NMR data are presented, ^1H spectra were obtained on either a Varian VXR-200 (200 MHz, ^1H), Varian Gemini-300 (300 MHz) or XL-400 (400 MHz) and are reported as ppm down field from Me_4Si with number of protons, multiplicities, and coupling constants in Hertz indicated parenthetically. Where LC/MS data are presented, analyses was performed using an Applied Biosystems API-100 mass spectrometer and Shimadzu SCL-10A LC column: Altech platinum C18, 3 micron, 33mm x 7mm ID; gradient flow: 0 min – 10% CH_3CN, 5 min – 95% CH_3CN, 7 min – 95% CH_3CN, 7.5 min – 10% CH_3CN, 9 min – stop. The retention time and observed parent ion are given.

EXAMPLES

Example 1



This compound (compound 1) was prepared according to Scheme 1.

Example 1-A: To a suspension of methyltriphenylphosphonium bromide (43.2 g; 121 mmol) in THF (350 ml) at -78 °C was added n-butyl lithium 1.6 N solution in hexanes

(75.6 ml; 121 mmol), and the solution was warmed to 0 °C, stirred 5 minutes, then cooled to -78 °C. A solution of bromoketone **1** (m and n = 1; 40.0 g; 110 mmol) in THF (150 ml) was added and the mixture was allowed to warm to room temperature. After 30 minutes the crude was poured into Et_2O and water, washed with half-saturated brine, brine, dried over Na_2SO_4 and concentrated to an oil. Purification by flash-chromatography over silica gel (eluting Hexanes/AcOEt 85:15) afforded 31.4 g (79%) of colorless olefin **2**.

Example 1-B: To a solution of olefin **2** (21.0 g; 57 mmol) in THF (40 ml) at 0 °C was added 9-BBN 0.5 N solution in THF (198 ml) and the reaction was refluxed under nitrogen for 2 h. The cooled mixture was concentrated, slowly treated with a 1:1 mixture of THF/EtOH (140 ml) at 0 °C followed, 30 min later, by 30% H_2O_2 aqueous solution (140 ml). After stirring overnight at room temperature, the final solution was concentrated of EtOH, diluted with CH_2Cl_2, filtered over Celite, and extracted with CH_2Cl_2. Combined organic layers were dried over Na_2SO_4, concentrated and the crude was subjected to flash-chromatography over silica gel (eluting Hexanes/AcOEt 7:3 to 1:1) to give 17.6 g (84%) of colorless bromo alcohol **3**.

Example 1-C: A mixture of bromo alcohol **3** (600 mg; 1.62 mmol), 3-cyanophenylboronic acid (310 mg; 2.10 mmol), $PdCl_2(PPh_3)_2$ (75 mg) and Na_2CO_3 (600 mg) in DME (2.5 ml) and water (2.5 ml) was heated at 72 °C for 5 h. The cooled solution was diluted with 0.1 N NaOH and extracted with CH_2Cl_2. Combined organic layers were dried over Na_2SO_4, concentrated and the crude was subjected to flash-chromatography over silica gel (eluting Hexanes/AcOEt 8:2 to 1:1) to provide 440 mg (67%) of biaryl alcohol.

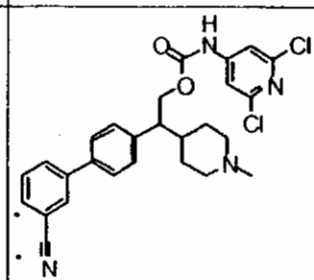
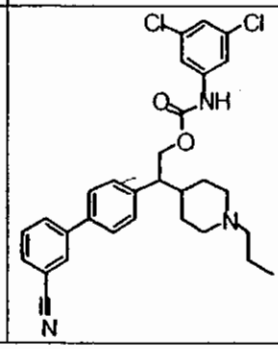
Example 1-D: A mixture of biaryl alcohol (560 mg; 1.38 mmol), 3,5-dichlorophenyl isocyanate (320 mg; 1.7 mmol) and triethylamine (0.2 mL; 1.38 mmol) in THF (5 ml) was stirred overnight at room temperature. Concentration of the solvent followed by purification flash-chromatography over silica gel (eluting Hexanes/AcOEt 8:2 to 6:4) provided 600 mg (73%) of biaryl carbamate **4**.

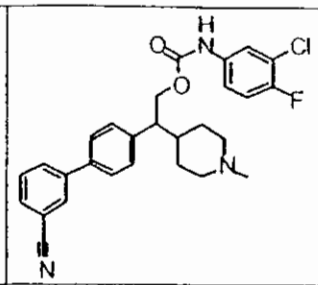
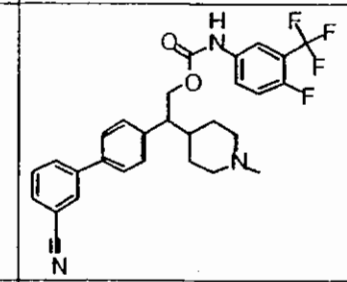
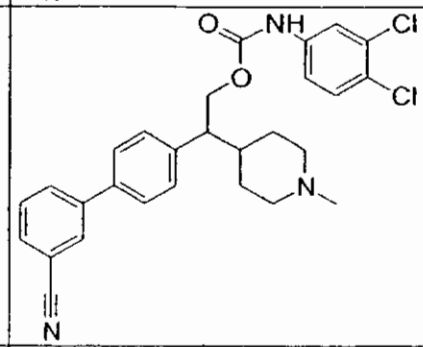
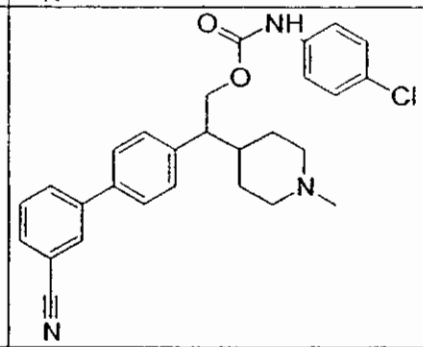
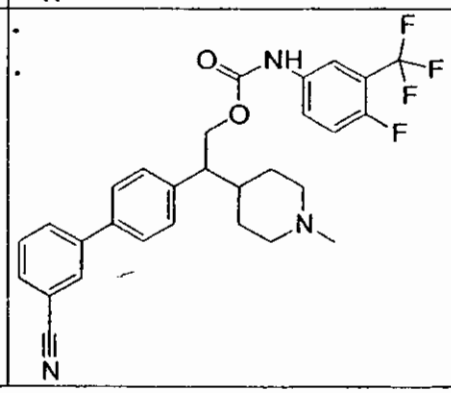
Example 1-E: A solution of biaryl carbamate **4** (350 mg) in CH_2Cl_2 (3 ml) and TFA (1 ml) was stirred 2 h at room temperature then concentrated. The crude was diluted with 1 N NaOH, extracted with CH_2Cl_2, and combined organic layers were dried over Na_2SO_4 and concentrated to provide 280 mg (96%) of biaryl carbamate amine.

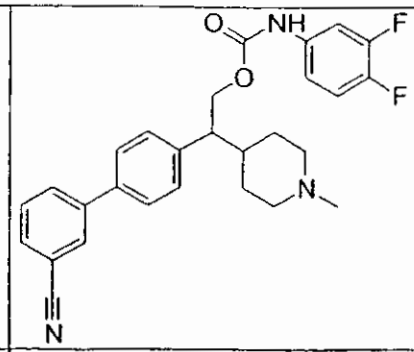
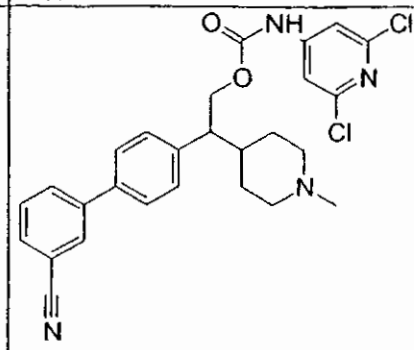
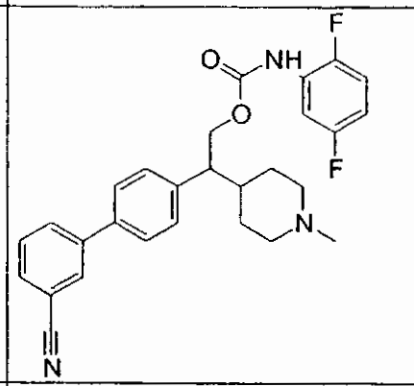
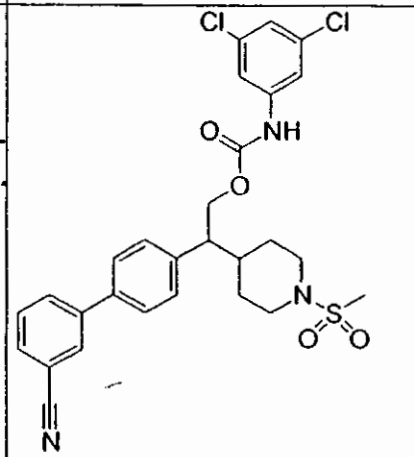
Example 1-F: A solution of biaryl carbamate amine (30 mg; 0.06 mmol), 37% aqueous formaldehyde (50 μl), Na_2SO_4 (400 mg) and sodium triacetoxyborohydride (40 mg; 0.19 mmol) in DCE (0.5 ml) was stirred overnight at room temperature. The mixture was quenched with MeOH (0.2 ml), diluted 15 min later with 0.1 N NaOH and extracted with CH_2Cl_2. Combined organic layers were dried over Na_2SO_4, concentrated and the crude was purified by preparative chromatography over silica gel (eluting Hexanes/AcOEt 1:1) to give 8.5 mg of product Ia as free base. Trituration in Et_2O provided 8.8 mg of hydrochloride salt as a foam: ^{1}H-NMR (free base, 300 MHz, $CDCl_3$) δ 7.85 (s, 1H), 7.81 (br d, 1H), 7.62 (m, 1H), 7.50-7.60 (m, 3H), 7.25-7.35 (m, 4H), 7.03 (s, 1H), 6.84 (br s, 1H), 4.57 (dd, *J* = 11 Hz and 5.6 Hz, 1H), 4.45 (dd, *J* = 11 Hz and 9 Hz, 1H), 2.99 (br d, 1H), 2.80-2.95 (m, 2H), 2.30 (s, 3H), 1.85-2.10 (m, 3H), 1.30-1.75 (m, 4H); HRMS ($M+H^+$) 508.1564.

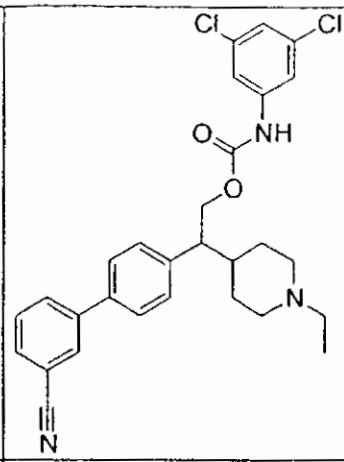
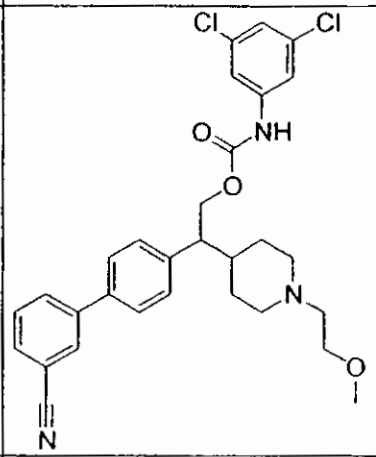
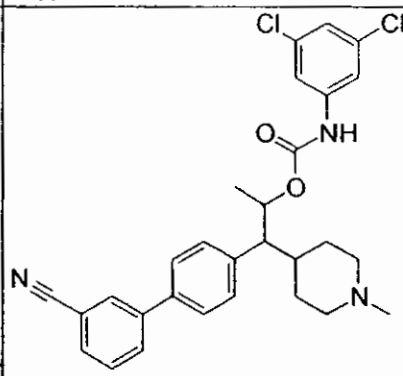
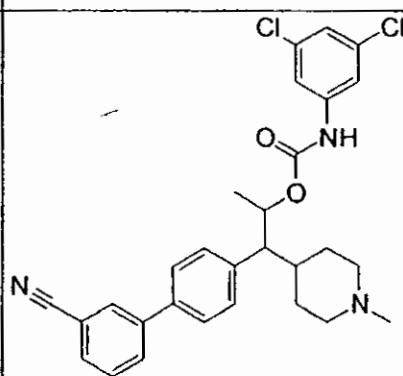
Using similar procedures, compounds of the following structures were prepared

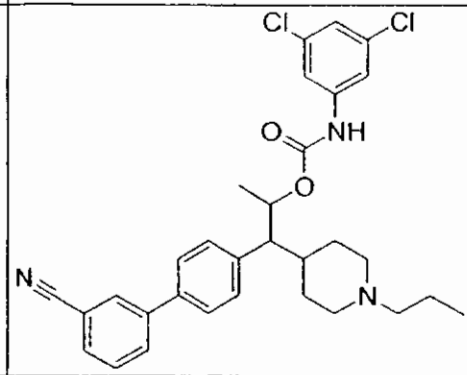
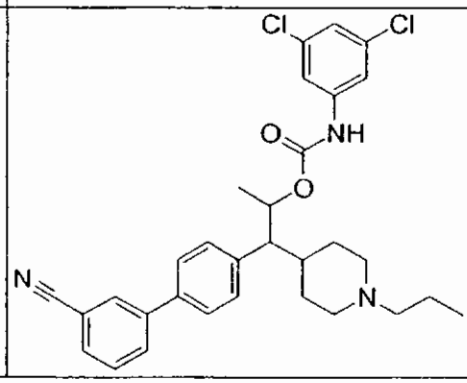
Table 2

Compound	Structure	HRMS($M+H^+$)	LCMS (retention time; MS)	NMR
2		509.1514		
3		536.1881		

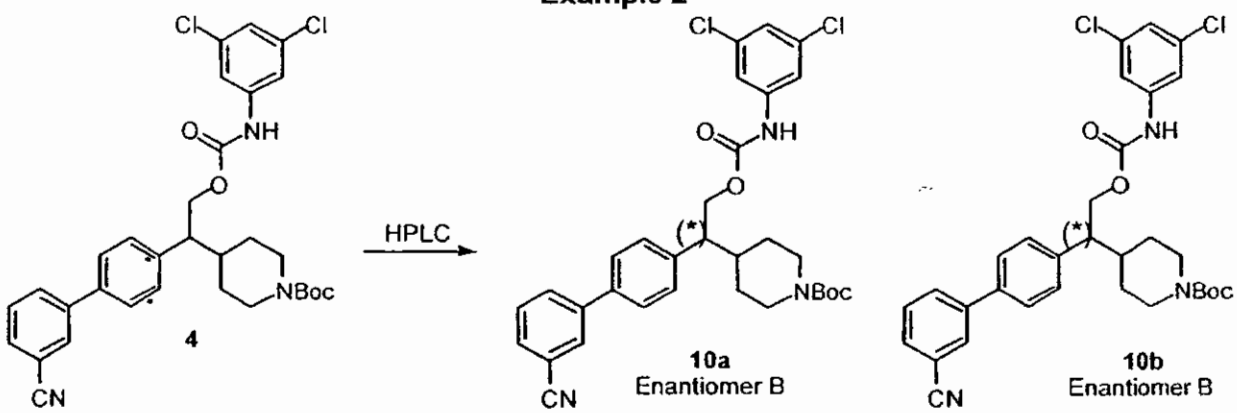
4		492.1845		
5		526.2106		
5a		508.1554	5.66; 508.1	
5b		474.1941	5.51; 474.1	
5c		526.2106	5.56; 526.1	

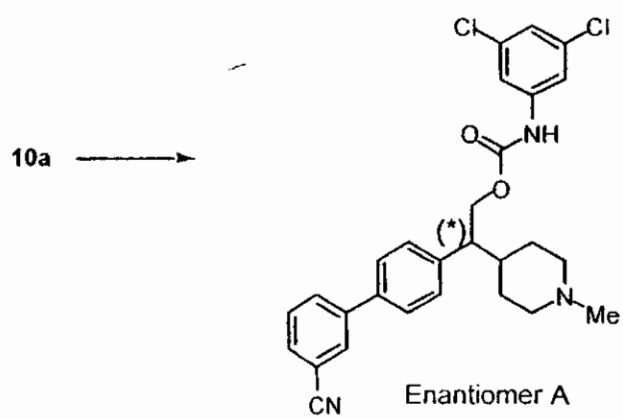
5d		476.2154	5.31; 476.1	
5e		509.1514	5.36; 509.1	7.75-7.85 (m, 2H), 7.45-7.65 (m, 4H), 7.32 (s, 2H), 7.24 (d, *J* = 8.1 Hz, 2H), 4.50-4.60 (m, 1H), 4.35-4.45 (m, 1H), 2.70-2.95 (m, 3H), 2.22 (s, 3H), 1.75-2.00 (m, 3H), 1.20-1.70 (m, 4H)
5f		476.2146	5.31; 476.1	
5g		non-ionizable	non-ionizable	7.85 (s, 1H), 7.80 (d, *J* = 7.8 Hz, 1H), 7.62 (d, *J* = 7.8 Hz, 1H), 7.50-7.60 (m, 3H), 7.20-7.35 (m, 3H), 7.03 (s, 1H), 6.59 (br s, 1H), 4.55-4.65 (m, 1H), 4.40-4.50 (m, 1H), 3.89 (br d, 1H), 3.74 (br d, 1H), 3.14 (s, 2H), 2.85-2.95 (m, 1H), 2.75 (s, 3H), 2.50-2.70 (m, 1H), 2.00-2.10 (m, 1H), 1.70-1.90 (m, 1H), 1.45-1.65 (m, 1H), 1.20-1.40 (m, 1H)

5h		522.1709	6.36; 522.1	
5i		552.1829	6.26; 552.1	
5j		522.1715	5.91; 522.1	7.84 (s, 1H), 7.79 (d, *J* = 8.4 Hz, 1H), 7.45-7.65 (m, 4H), 7.25-7.40 (m, 3H), 7.05 (s, 1H), 6.76 (s, 1H), 5.40-5.50 (m, 1H), 2.95 (br d, 1H), 2.79 (br d, 1H), 2.45-2.55 (m, 1H), 2.25 (s, 3H), 1.70-2.10 (m, 4H), 1.10-1.50 (m, 4H), 1.14 (d, *J* = 6.6 Hz, 3H)
5k		522.1715	5.71; 522.1	7.84 (s, 1H), 7.79 (d, *J* = 7.8 Hz, 1H), 7.45-7.65 (m, 4H), 7.36 (s, 1H), 7.21 (d, *J* = 8.1 Hz, 2H), 7.04 (s, 1H), 6.88 (s, 1H), 5.35-5.50 (m, 1H), 2.75-2.95 (m, 2H), 2.22

				(s, 3H), 1.55-2.05 (m, 6H), 1.20-1.45 (m, 2H), 1.17 (d, *J* = 6.6 Hz, 3H)
5l		550.2026	5.81; 550.1	
5m		550.2026	5.86; 550.1	

Example 2





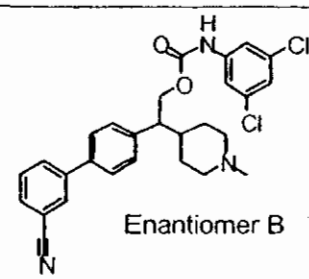
(Compound 6)

Example 2-A: Biaryl carbamate **4** obtained in Example 1-D (260 mg) was subjected to chiral HPLC on Chiracel AD column (eluting Hexanes/isopropanol 9:1) to afford in order of elution: (i) enantiomer A **10a** (130 mg); (ii) enantiomer B **10b** (130 mg).

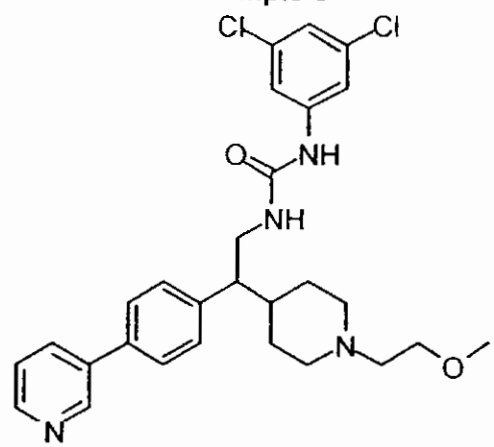
Example 2-B: Application of the sequence of steps from example 1-E to 1-F on enantiomer **10a** afforded the final compound: HRMS ($M+H^+$) 508.1554.

Using similar procedures, compounds of the following structures were prepared

Table 3

Compound	Structure	HRMS($M+H^+$)
7	 Enantiomer B	508.1554

Example 3



This compound (compound 8) was prepared according to Scheme 2.

Example 3-A: To a solution of bromo alcohol **3** (15.4 g; 41.5 mmol) and triphenylphosphine (11.0 g; 42 mmol) in THF (120 ml) in a water bath was added diethylazodicarboxylate (6.61 ml; 42 mmol) followed slowly by diphenylphosphoryl azide (9.03 ml; 42 mmol) and the mixture was stirred overnight at room temperature. Water (30 ml) followed by triphenylphosphine (22 g; 84 mmol) were then added and the reaction was refluxed under nitrogen overnight. THF solvent was evaporated, the resulting mixture was diluted with 1N NaOH and extracted with CH_2Cl_2. Combined organic layers were dried over Na_2SO_4, concentrated, and the residue was subjected to flash-chromatography over silica gel (eluting CH_2Cl_2/MeOH/NH_4OH 95:5:0 to 90:10:1) to give 8.1 g (51%) of bromo amine **5**.

Example 3-B: A solution of bromo amine **5** (4.6 g; 10.4 mmol), 3,5-dichlorophenyl isocyanate (2.35 g; 12.5 mmol) and triethylamine (0.7 mL; 5.2 mmol) in THF (25 ml) was stirred overnight at room temperature. The mixture was diluted with 0.1 N NaOH, extracted with CH_2Cl_2 and dried over Na_2SO_4. Concentration of the solvents followed by purification flash-chromatography over silica gel (eluting Hexanes/AcOEt 8:2 to 1:1) provided 3.2 g (54%) of bromo urea.

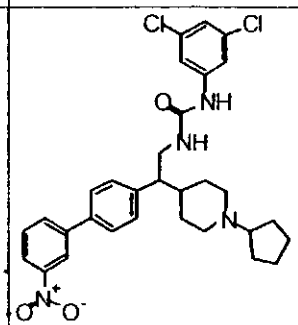
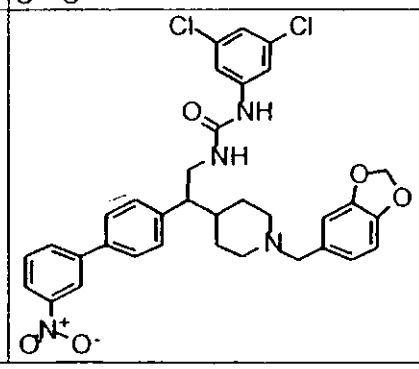
Example 3-C: A mixture of bromo urea (1.4 g; 2.40 mmol), 3-pyridylboronic acid (0.45 g; 3.6 mmol), $Pd(PPh_3)_4$ (0.56 g) and Na_2CO_3 (1.0 g) in DME (5 ml) and water (5 ml) was heated at 75 °C overnight. The cooled solution was diluted with 0.1 N NaOH and extracted with CH_2Cl_2. Combined organic layers were dried over Na_2SO_4, concentrated and the crude was subjected to flash-chromatography over silica gel (eluting Hexanes/AcOEt 1:1 to AcOEt) to provide 1.10 (85%) of biaryl urea **6**.

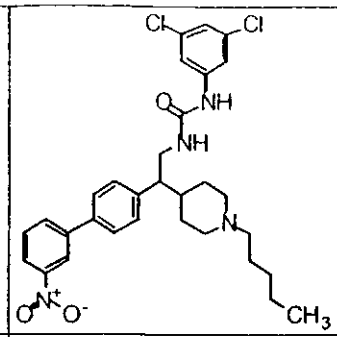
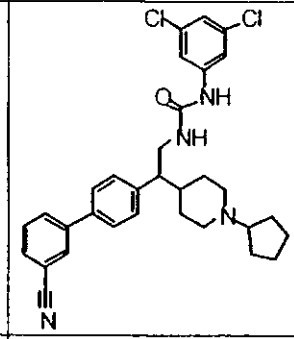
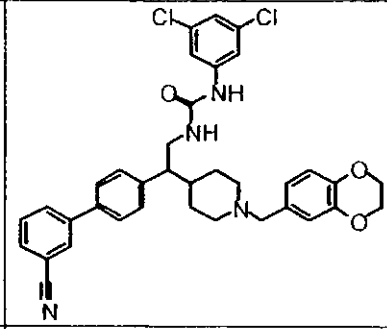
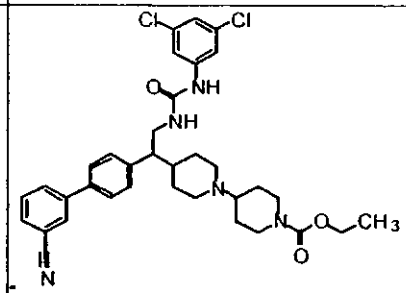
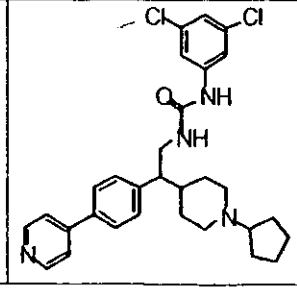
Example 3-D: Removal of the Boc-protecting group in biaryl urea **6** (1.10 g) proceeded as in Example 1-E to afford 0.95 g of biaryl urea amine.

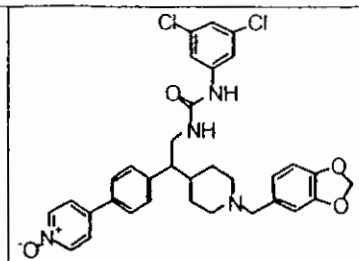
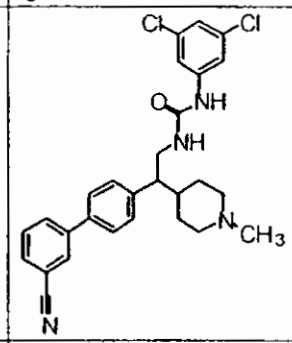
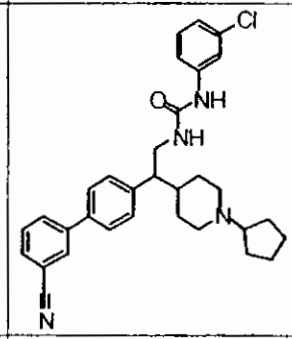
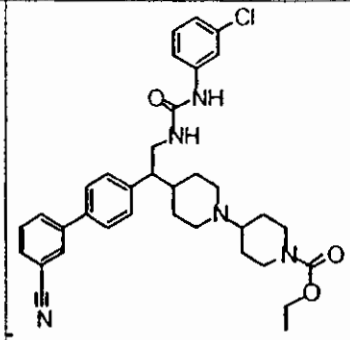
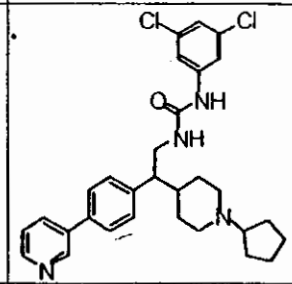
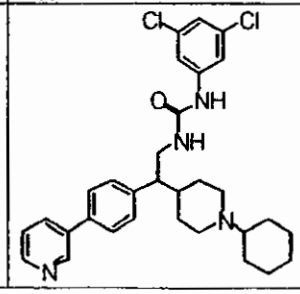
Example 3-E: A solution of biaryl urea amine (100 mg; 0.21 mmol), 2-bromoethyl methyl ether (32 mg; 0.23 mmol) and potassium carbonate (60 mg; 0.42 mmol) was heated in CH_3CN at 40 °C overnight. The cooled solution was diluted with 0.1 N NaOH and extracted with CH_2Cl_2, then AcOEt. Combined organic layers were dried over Na_2SO_4, concentrated and the crude was purified by preparative chromatography over silica gel (eluting CH_2Cl_2/MeOH/NH_4OH 9:1:0.2) to give 39.2 mg of hydrochloride salt **Ib**, after trituration in Et_2O: ^{1}H-NMR (free base, 300 MHz, $CDCl_3$) δ 8.54 (s, 1H), 8.46 (s, 1H), 8.43 (d, *J* = 4.2 Hz, 1H), 7.75 (br d, 1H), 7.25-7.40 (m, 3H), 7.21 (s, 1 H), 7.10 (d, *J* = 8.1 Hz, 2H), 6.87 (s, 1H), 5.43 (m, 1H), 3.91 (m, 1H), 3.46 (t, *J* = 5.4 Hz, 2H), 3.25-3.40 (m, 1H), 3.29 (s, 3H), 3.00 (br d, 1H), 2.82 (br d, 1H), 2.46-2.65 (m, 1H), 2.51 (t, *J* = 5.4 Hz, 2H), 1.80-2.10 (m, 3H), 1.10-1.60 (m, 4H); HRMS ($M+H^+$) 527.1979.

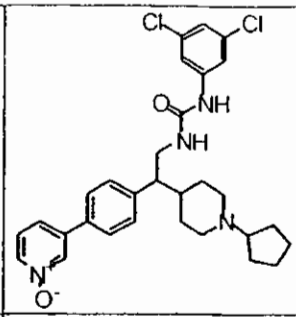
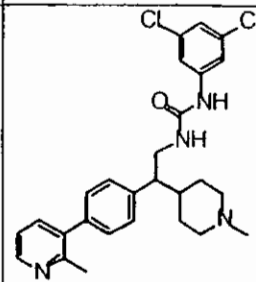
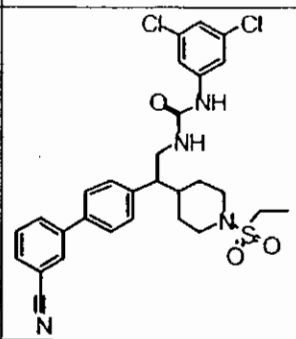
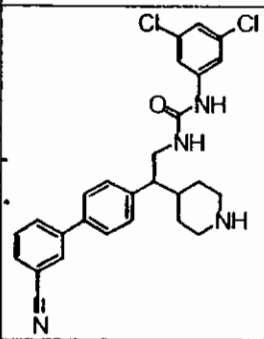
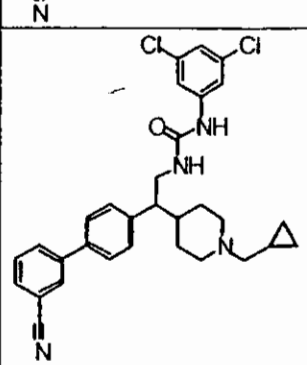
Using similar procedures, compounds of the following structures were prepared

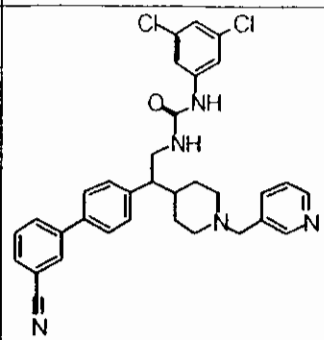
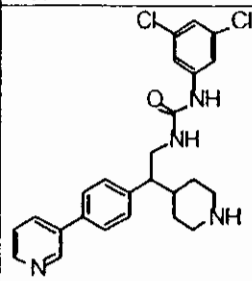
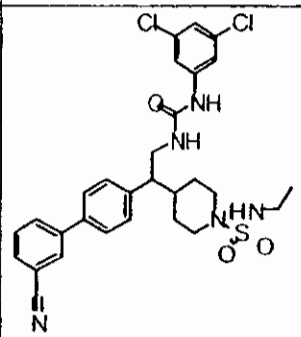
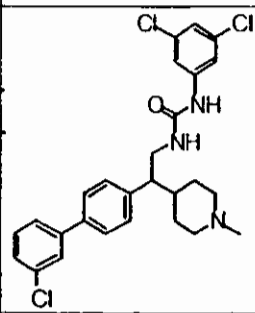
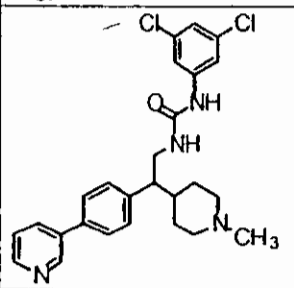
Table 4

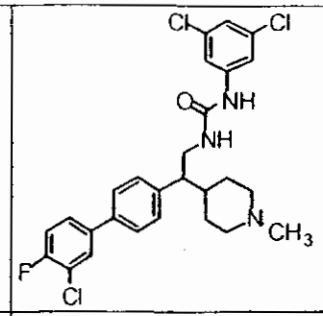
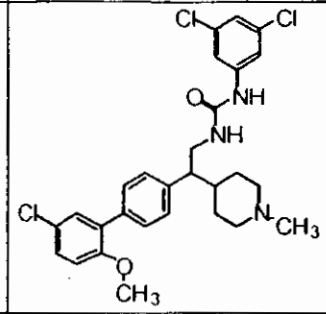
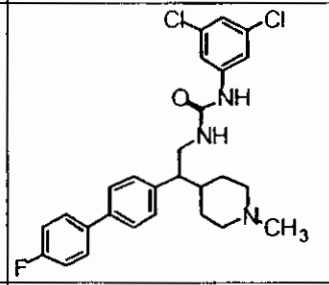
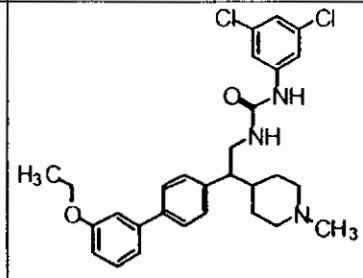
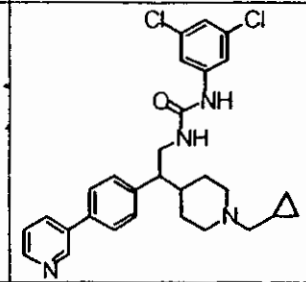
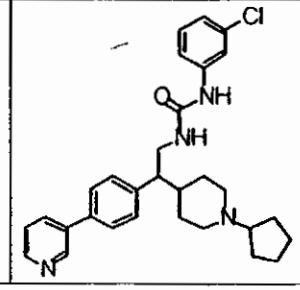
Compound	Structure	HRMS($M+H^+$)	^{1}H-NMR (free base, 300 MHz, $CDCl_3$)	LCMS (retention time; MS)
9		581.2084	8.40 (s, 1H), 8.19 (d, *J* = 5.8 Hz, 1H), 7.87 (d, *J* = 5.8 Hz, 1H), 7.80 (d, *J* = 6.4 Hz, 1H), 7.55-7.65 (m, 4H), 7.22 (d, *J* = 8.0 Hz, 2H), 6.95 (s, 1H), 3.84 (m, 1H), 3.43 (m, 1H), 3.18 (br d, 1H), 3.06 (br d, 1H), 2.71 (m, 1H), 2.56 (br s, 1H), 1.40-2.10 (m, 15H)	
10		647.1820		

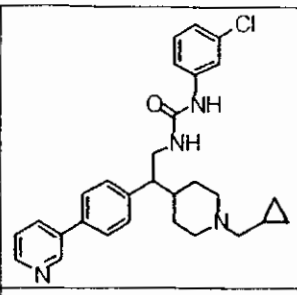
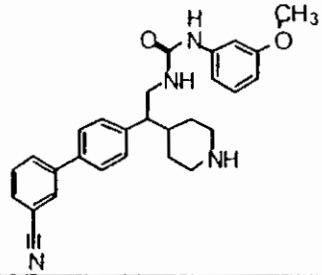
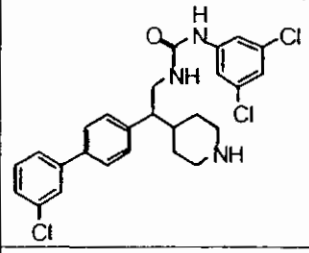
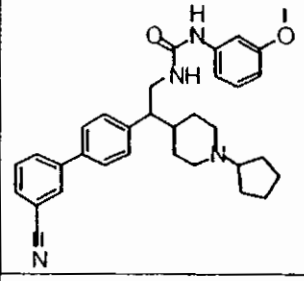
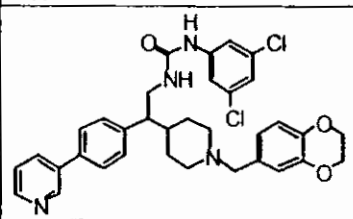
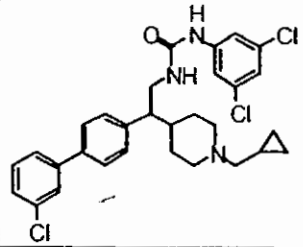
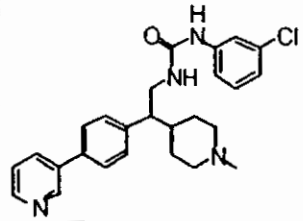
11		583.2236		
12		561.2188		
13		641.2083		
14		648.2503	7.78 (s, 1H), 7.77 (d, *J* = 7.5 Hz, 1H), 7.45-7.65 (m, 4H), 7.21 (d, *J* = 7.8 Hz, 2H), 6.93 (s, 1H), 5.18 (br s, 1H), 4.20 (br d, 2H), 4.08 (q, *J* = 7.2 Hz, 2H), 3.82 (m, 1H), 3.40 (m, 1H), 3.03 (br d, 1H), 2.92 (br d, 1H), 2.45-2.80 (m, 4H), 2.10-2.30 (m, 2H), 1.98 (br s, 1H), 1.83 (br d, 2H), 1.30-1.65 (m, 6H), 2.24 (t, *J* = 7.2 Hz, 3H)	
15		537.2186		

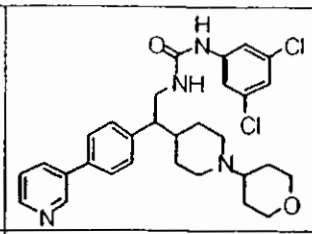
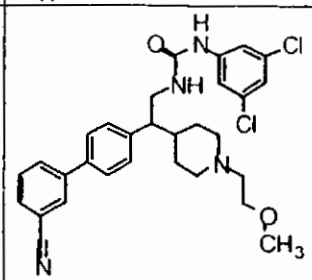
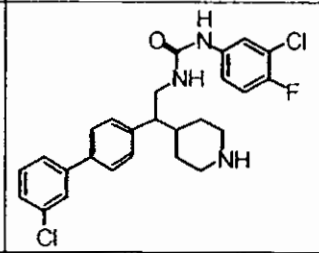
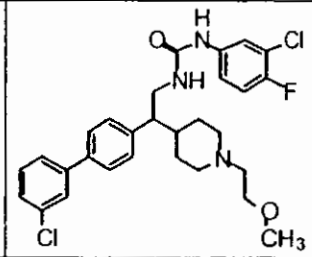
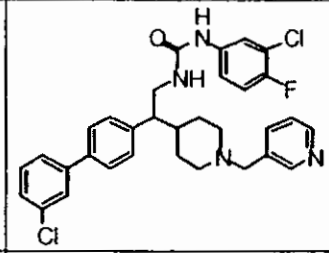
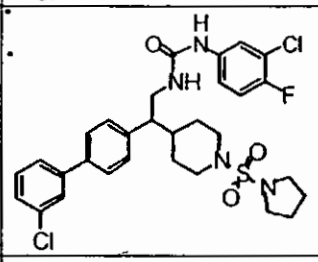
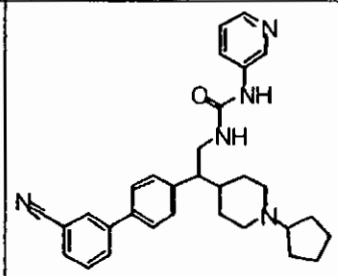
16		619.1879		
17		507.1719		
18		527.2576		
19		614.2887		
20		537.2181		
21		551.2347		

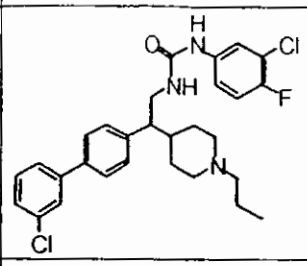
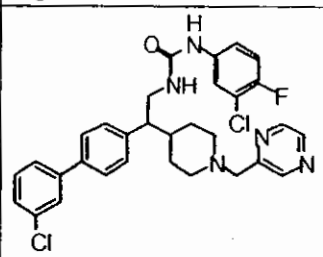
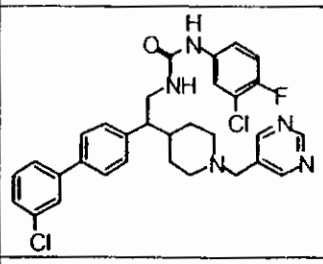
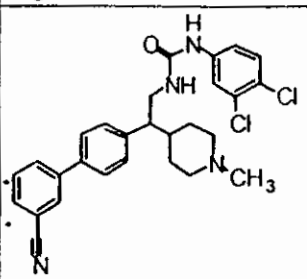
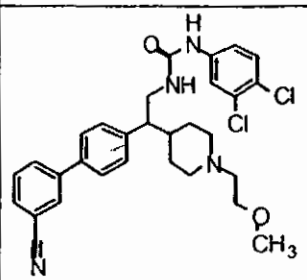
22		553.2145		
23		497.1875	8.49 (s, 1H), 8.44 (br s, 1H), 7.49 (d, *J* = 5.7 Hz, 1H), 7.20-7.35 (m, 2H), 7.13 (d, *J* = 6 Hz, 2H), 7.07 (d, *J* = 6.0 Hz, 2H), 6.91 (s, 1H), 5.47 (br s, 1H), 3.81 (m, 1H), 3.39 (m, 1H), 2.98 (br d, 1H), 2.88 (br d, 1H), 2.60 (m, 1H), 2.32 (s, 3H), 2.29 (s, 3H), 1.90-2.15 (m, 3H), 1.30-1.65 (m, 4H)	
24		585.1498		
25		493.1564		
26		547.2030	7.73 (s, 1H), 7.70 (d, *J* = 7.8 Hz, 1H), 7.58 (m, 1H), 7.40-7.55 (m, 3H), 7.15-7.30 (m, 4H), 6.92 (s,1H), 5.01 (br s, 1H), 3.89 (m, 1H), 3.34 (m, 1H), 3.12 (br d, 1H), 3.00 (br d, 1H), 2.63 (m, 1H), 2.22 (d, *J* = 6.3 Hz, 2H), 1.80-2.05 (m, 3H), 1.15-1.65 (m, 4H), 0.83	

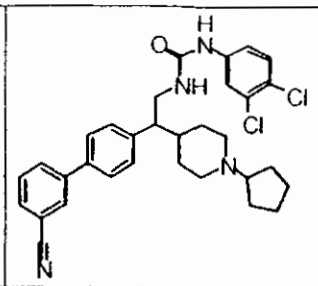
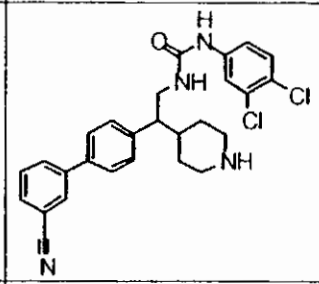
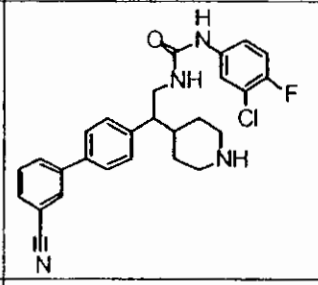
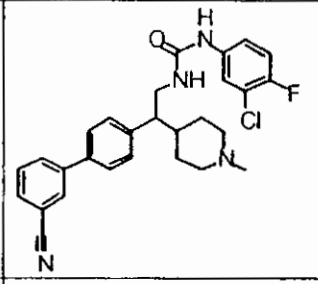
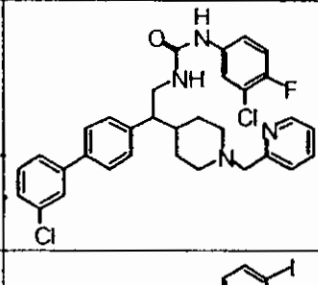
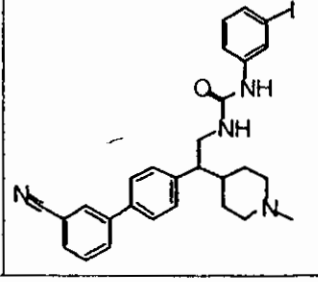
			(m, 1H), 0.49 (d, *J* = 8.1 Hz, 2H), 0.08 (d, *J* = 4.8 Hz, 2H)	
27		584.1982		
28		469.1554		
29		600.1601	7.65-7.75 (m, 2H), 7.57 (m, 1H), 7.40-7.50 (m, 3H), 7.10-7.25 (m, 4H), 6.92 (s,1H), 5.05 (br s, 1H), 4.30 (br s, 1H), 3.92 (m, 1H), 3.72 (br d, 1H), 3.58 (br d, 1H), 3.30 (m, 1H), 3.04 (q, *J* = 5.4 Hz, 2H), 2.50-2.75 (m, 3H), 1.96 (br d, 1H), 1.15-1.70 (m, 4H), 1.14 (t, *J* = 5.4 Hz, 3H)	
30		518.1345		
31		483.1719		

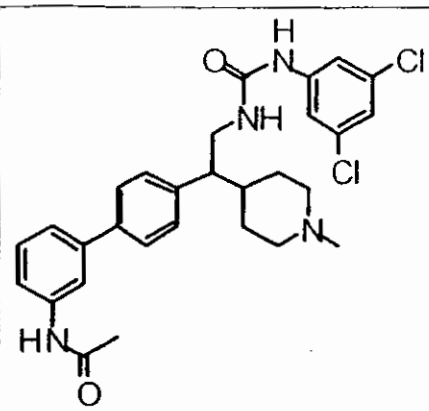
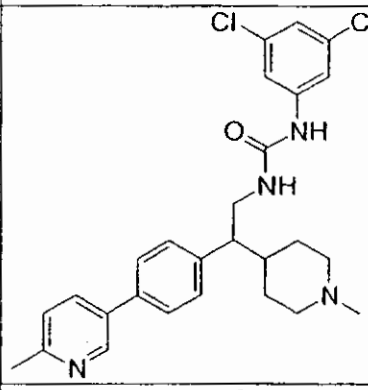
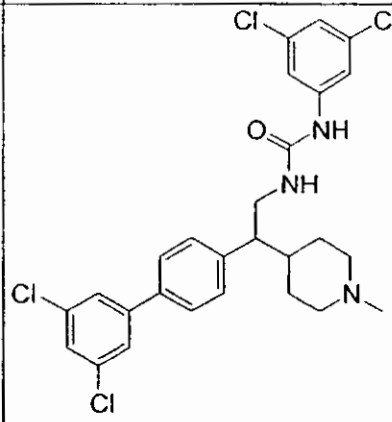
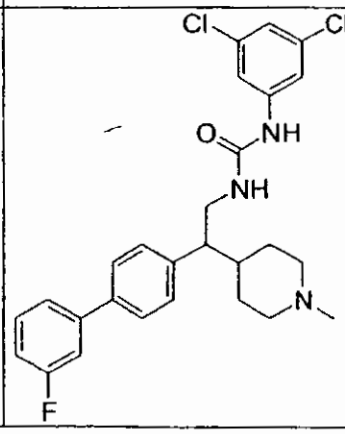
32		534.1287		
33		546.1482		
34		500.1659		
35		526.2022		
36		523.2029		
37		503.2583		

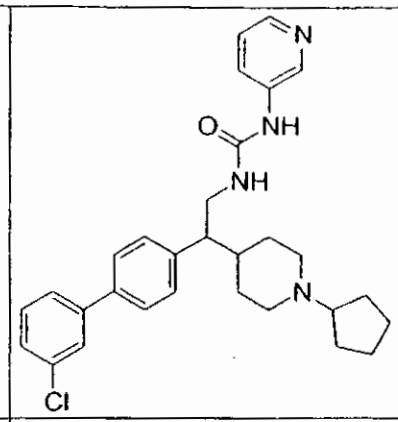
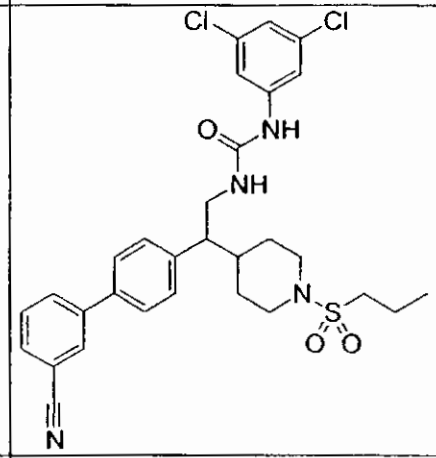
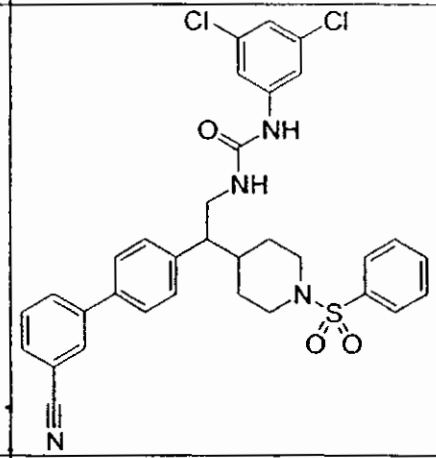
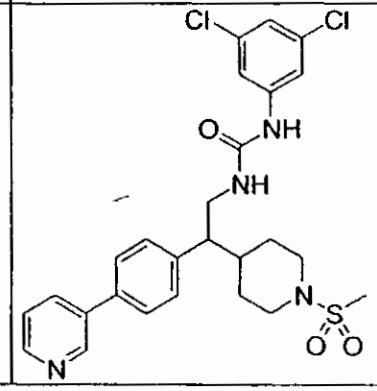
38		489.2428		
39		455.2430		
40		502.1231		
41		523.3075		
42		617.2084		
43		556.1683		
44		449.2106		

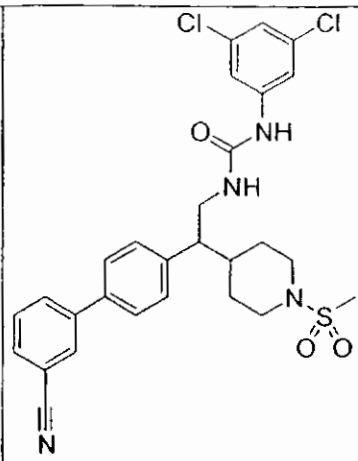
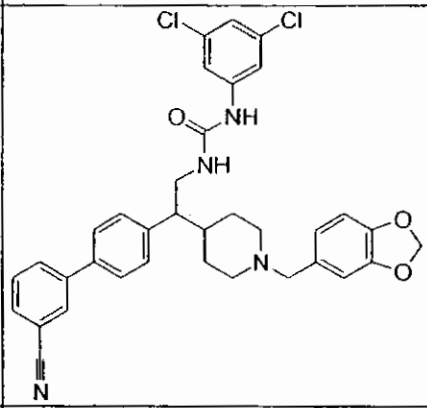
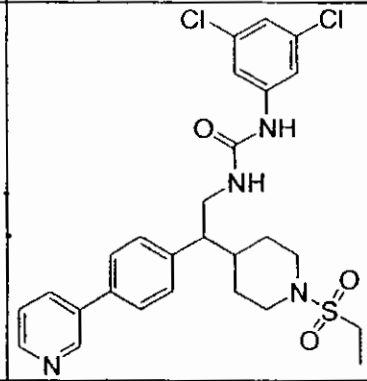
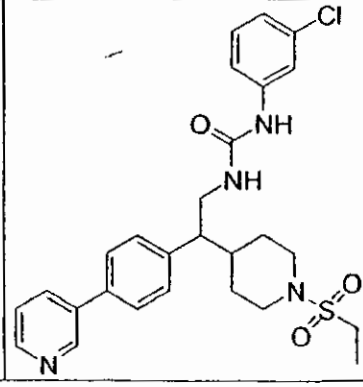
45		553.2145		
46		551.1987		
47		486.1509		
48		544.1939		
49		577.1927		
50		619.1704		
51		494.2916	8.43 (s, 1H), 8.15 (d, *J* = 4.8 Hz, 1H), 8.06 (br s, 1H), 7.98 (d, *J* = 8.5 Hz, 1H), 7.70-7.80 (m, 2H), 7.50-7.65 (m, 2H), 7.46 (d, *J* = 8.0 Hz, 2H), 7.23 (d, *J* = 8.0 Hz, 2H), 7.17 (m, 1H), 5.90 (br s, 1H), 3.87 (m, 1H), 3.53 (m, 1H), 3.36 (br	

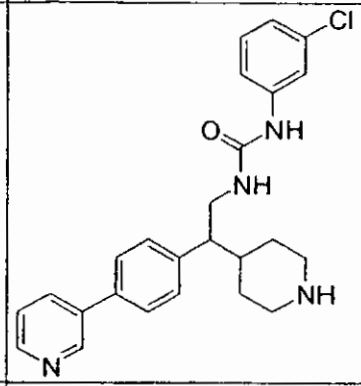
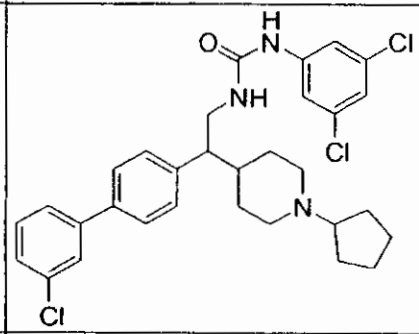
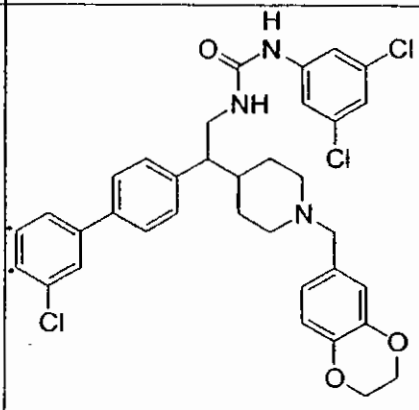
			d, 1H), 3.22 (br d, 1H), 2.70-2.85 (m, 2H), 1.25-2.15 (m, 15H)	
52		528.1979		
53		578.1899	8.60 (s, 1H), 8.46 (s, 1H), 8.41 (s, 1H), 7.47 (s, 1H), 7.25-7.45 (m, 6H), 7.11 (d, *J* = 6.3 Hz, 2H), 7.03 (br s, 1H), 6.85-7.00 (m, 2H), 4.83 (br s, 1H), 3.82 (m, 1H), 3.62 (s, 2H), 3.24 (m, 1H), 2.90 (br d, 1H), 2.78 (br d, 1H), 2.57 (m, 1H), 2.10 (br t, 1H), 1.98 (br t, 1H), 1.86 (m, 1H), 1.15-1.60 (m, 4H)	
54		578.1893		
55		507.1724		
56		551.1987		

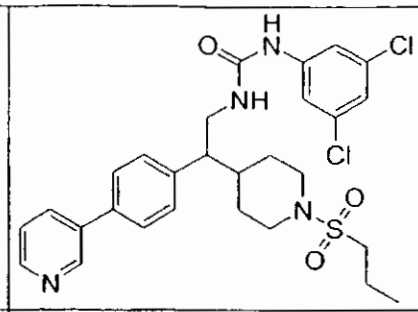
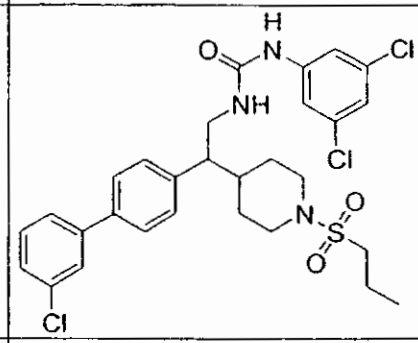
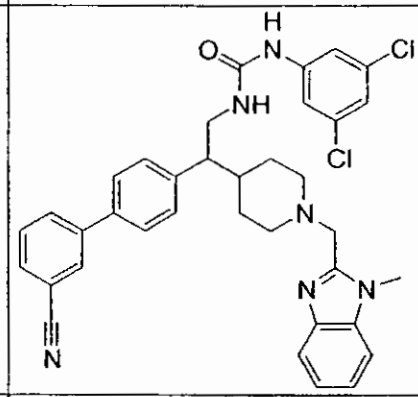
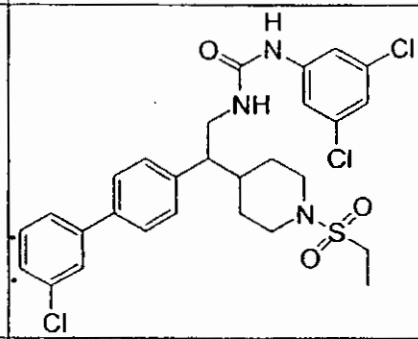
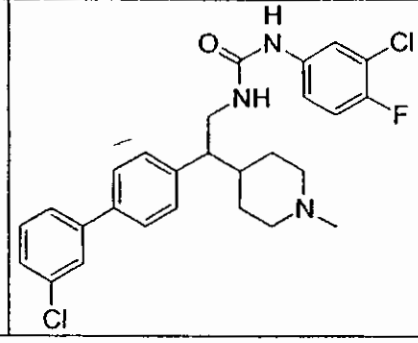
57		561.2183		
58		493.1554		
59		477.1849		
60		491.2020		
61		577.1944		
62		565.1466		

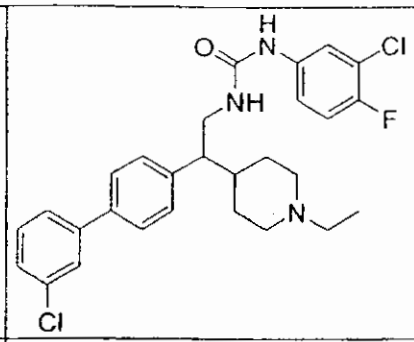
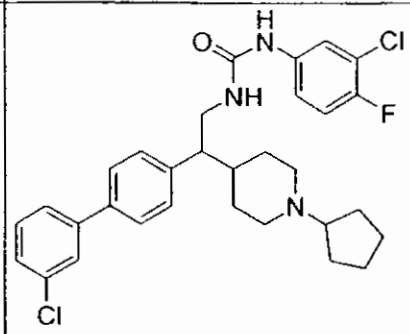
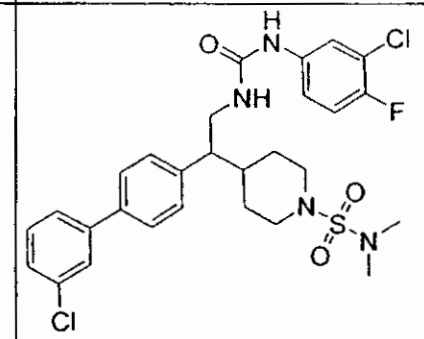
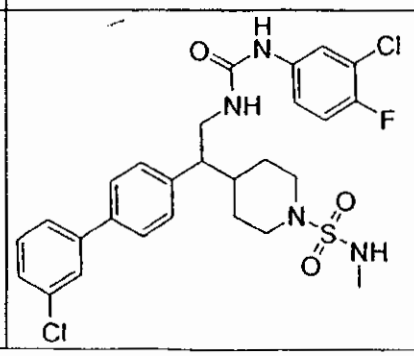
63		539.1985	8.83 (br s, 1H), 8.50 (s, 1H), 7.80 (s, 1H), 7.25-7.40 (m, 4H), 7.00-7.15 (m, 4H), 6.86 (s, 1H), 5.59 (d, 1H), 3.90 (m, 1H), 3.08 (br t, 1H), 2.96 (br d, 1H), 2.74 (br d, 1H), 2.48 (m, 1H), 2.17 (br s, 1H), 2.24 (s, 3H), 2.10 (s, 3H), 1.75-2.00 (m, 2H), 1.15-1.55 (m, 4H)	
63a				4.16; 497.1
63b			7.44 (d, *J* = 6.3 Hz, 2H), 7.38 (s, 2H), 7.32 (s, 1H), 7.15-7.25 (m, 4H), 6.94 (s, 1H), 5.05 (br s, 1H), 3.80-3.90 (m, 1H), 3.25-3.40 (m, 1H), 2.97 (br d, 1H), 2.87 (br d, 1H), 2.55-2.65 (m, 1H), 2.31 (s, 3H), 1.85-2.10 (m, 3H), 1.50-1.60 (m, 2H), 1.25-1.45 (m, 2H)	5.86; 552.1
63c				5.21; 500.1

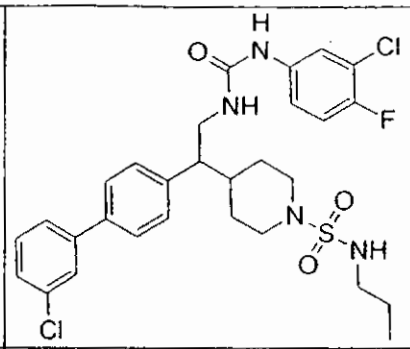
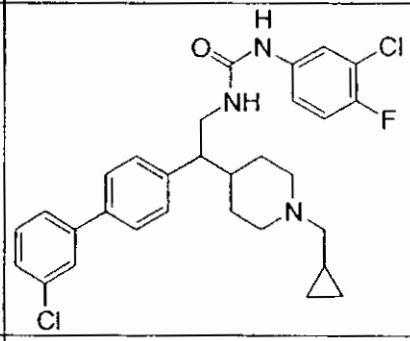
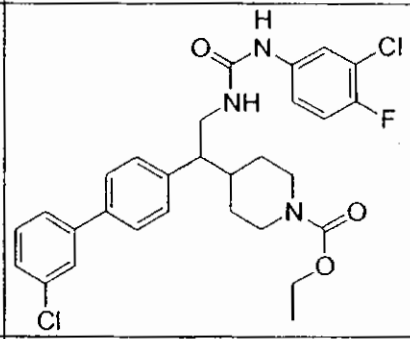
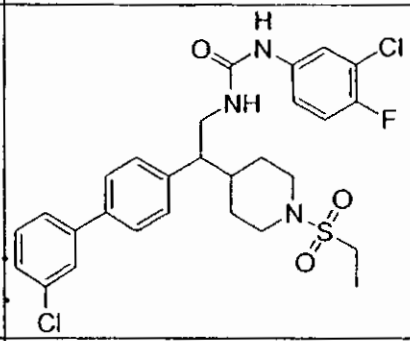
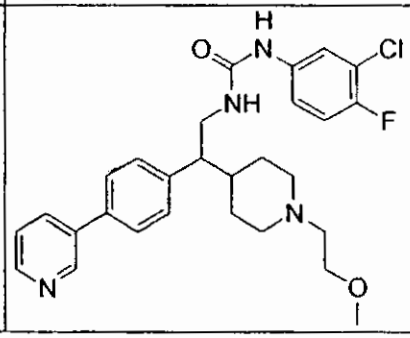
63d		503.2583		4.51; 503.1
63e		599.1642		5.26; 599.1
63f		633.1500		5.46; 633.1
63g		547.1343		4.76; 547.1

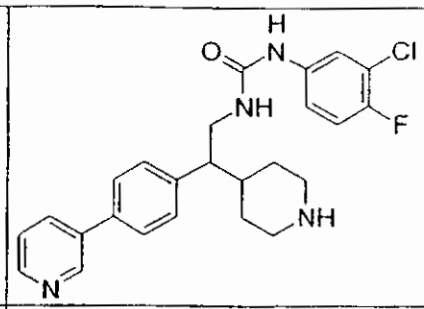
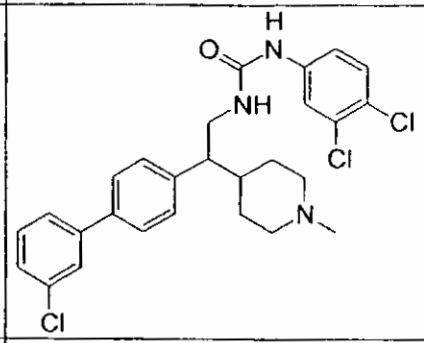
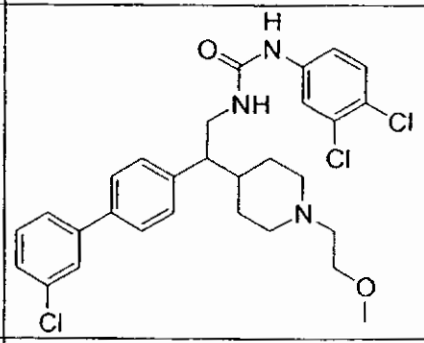
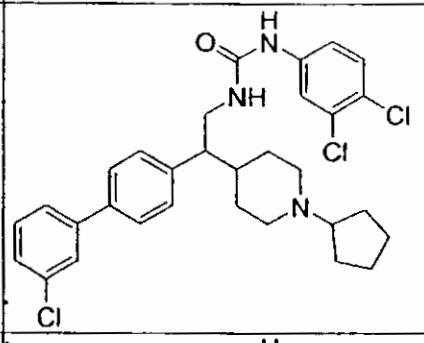
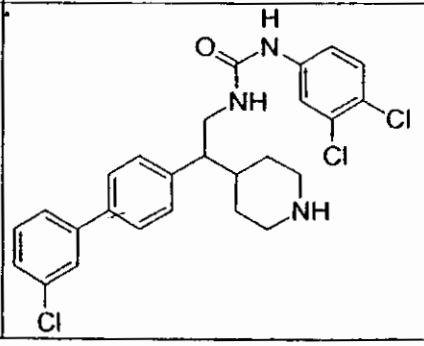
63h		non-ionizable	7.76 (s, 1H), 7.73 (d, *J* = 5.1 Hz, 1H), 7.45-7.60 (m, 4H), 7.23 (d, *J*= 6.6 Hz, 2H), 7.17 (s, 2H), 6.94 (s, 1H), 6.84 (s, 1H), 4.84 (br s, 1H), 3.75-3.95 (m, 2H), 3.69 (br d, 1H), 3.30-3.40 (m, 1H), 2.73 (s, 3H), 2.45-2.75 (m, 3H), 1.95-2.05 (m, 1H), 1.55-1.75 (m, 1H), 1.15-1.55 (m, 3H)	non-ionizable
63i				5.46; 627.1
63j		561.1499		4.66; 561.1
63k		527.1876	8.58 (m, 1H), 7.85-7.95 (m, 1H), 7.35-7.65 (m, 4H), 7.30 (s, 1H), 7.19 (d, *J* = 8.4 Hz, 2H), 7.05-7.15 (m, 2H), 6.85-6.95 (m, 1H), 5.26 (s, 1H), 3.80-4.00 (m,	4.31; 527.1

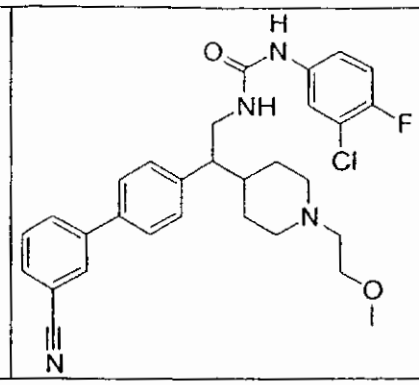
			2H), 3.69 (br d, 1H), 3.30-3.45 (m, 1H), 2.89 (q, *J* = 7.5 Hz, 2H), 2.55-2.85 (m, 3H), 1.95-2.10 (m, 1H), 1.60-1.75 (m, 1H), 1.05-1.50 (m, 6H)	
63l		435.1941		3.81; 435.1
63m		570.1851		5.56; 570.1
63n		650.1735	7.49 (s, 1H), 7.45 (d, *J* = 8.1 Hz, 1H), 7.25-7.40 (m, 4H), 7.05-7.20 (m, 4H), 7.04 (br s, 1H), 6.65-6.95 (m, 4H), 4.92 (br s, 1H), 4.22 (s, 4H), 3.70-3.85 (m, 1H), 3.36 (s, 2H), 3.20-3.35 (m, 1H), 2.90-(br d, 1H), 2.78 (br d, 1H), 2.50-2.60 (m, 1H), 1.70-2.00 (m, 3H), 1.10-1.60 (m, 4H)	5.81; 650.2

63o		575.1656		4.91; 575.1
63p		608.1304		5.91; 608.1
63q		637.2248		5.46; 637.2
63r		594.1127		5.88; 594.1
63s		500.1672		5.01; 500.1

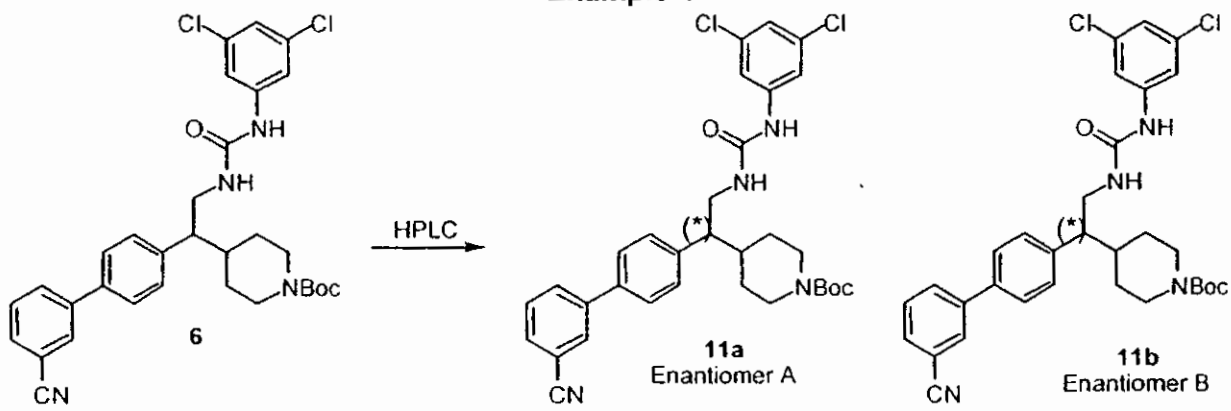
63t		514.1823		4.91; 514.1
63u		554.2151	7.25-7.55 (m, 7H), 7.13 (d, *J* = 8.4 Hz, 2H), 7.00-7.10 (m, 1H), 6.93 (t, *J* = 8.7 Hz, 1H), 5.34 (br s, 1H), 3.65-3.80 (m, 1H), 3.30-3.45 (m, 1H), 3.20 (br d, 1H), 3.10 (br d, 1H), 2.55-2.75 (m, 2H), 1.80-2.20 (m, 4H), 1.40-1.80 (m, 11H)	5.06; 554.1
63v		593.1548	7.25-7.55 (m, 7H), 7.15 (d, *J* = 8.0 Hz, 2H), 6.85-7.05 (m, 3H), 4.87 (br s, 1H), 3.75-3.85 (m, 1H), 3.67 (br d, 1H), 3.54 (br d, 1H), 3.20-3.30 (m, 1H), 2.75 (s, 6H), 2.55-2.80 (m, 3H), 1.85-2.00 (m, 1H), 1.55-1.65 (m, 1H), 1.05-1.35 (m, 2H)	5.46; 593.1
63w		579.1394	-	

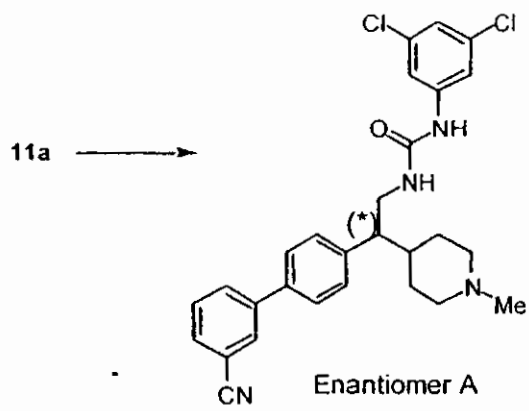
63x		607.1707		5.31; 607.1
63y		540.1992		5.41; 540.1
63z		558.1733		5.82; 558.1
63aa		578.1446		5.52; 578.1
63ab		511.2283		3.76; 511.1

63ac		453.1853		3.66; 453.1
63ad		516.1382		5.36; 516.1
63ae		560.1645		5.51; 560.1
63af		570.1851		5.51; 570.1
63ag		502.1224		5.36; 502.1

63ah		535.2277		4.61; 535.1

Example 4





Enantiomer A
(Compound 64)

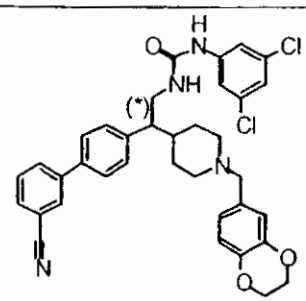
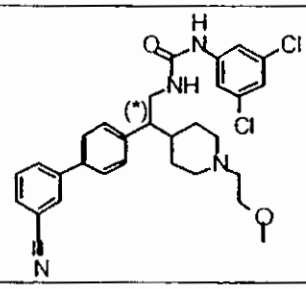
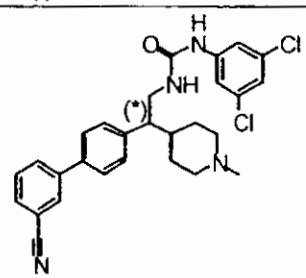
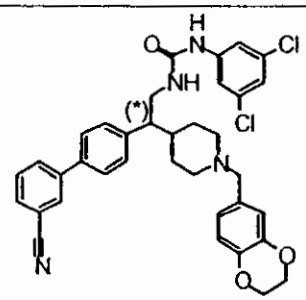
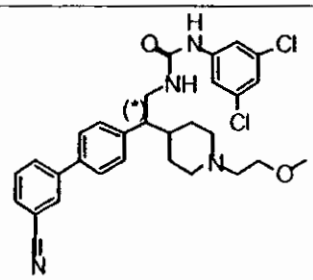
Example 4-A: Application of the sequence of steps from example 3-A to 3-C on amine **5** with the appropriate reagents afforded intermediate **6**. Purification of this intermediate (525 mg) by chiral HPLC was performed on Chiracel OD column (eluting Hexanes/isopropanol 8:2) to afford in order of elution: (i) enantiomer A **11a** (250 mg); (ii) enantiomer B **11b** (250 mg).

Example 4-B: Application of the sequence of steps from example 1-E to 1-F on enantiomer **11a** with the appropriate reagents afforded the final compound: ^{1}H-NMR (free base, 300 MHz, $CDCl_3$) δ 7.79 (s, 1H), 7.76 (d, J = 6.0 Hz, 1H), 7.61 (d, J = 6.0 Hz, 1H), 7.45-7.55 (m, 4H), 7.30 (s, 1 H), 7.22 (d, J = 6.4 Hz, 2H), 6.93 (s, 1H), 5.19

(br s, 1H), 3.82 (m, 1H), 3.30 (m, 1H), 2.88 (br d, 1H), 2.77 (br s, 1H), 2.58 (m, 1H), 2.23 (s, 3H), 1.70-2.05 (m, 3H), 1.10-1.65 (m, 4H); HRMS ($M+H^+$) 507.1714.

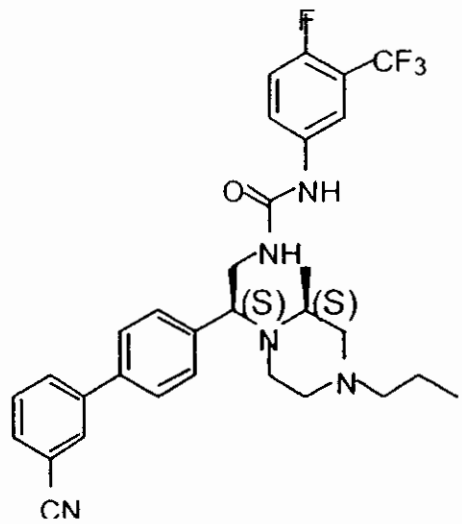
Using similar procedures, compounds of the following structures were prepared

Table 5

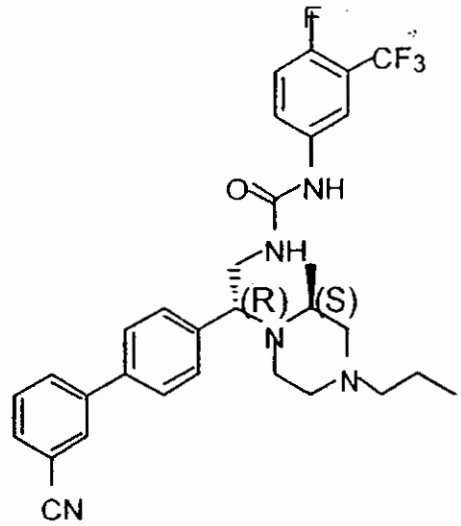
Compound	Structure	Enantiomer	HRMS(M+H$^+$)
65		A	641.2084
66		A	551.1987
67		B	507.1719
68		B	641.2078
69		B	551.1993

5

Example 5



Compound 70



Compound 71

These compounds were prepared according to Scheme 3.

Example 5-A: A solution of 4-bromobenzaldehyde (14.8 g; 80 mmol), N4-Boc protected (S)-2-methyl piperazine (16.1 g; 80 mmol - prepared from the reaction of commercial (S)-2-methylpiperazine with N-(tert-butoxycarbonyl)phthalimide) and titanium(IV)isopropoxide (25.6 ml; 86 mmol) in DCE (150 ml) was stirred overnight at room temperature. The mixture was carefully treated with diethylaluminum cyanide 1N in toluene (142 ml) and stirred 4 h at 75 °C. The cooled solution was diluted with CH_2Cl_2 /AcOEt 1:1, and Celite was added followed by water (30 ml), dropwise. The resulting slurry was filtered over Celite, concentrated and purified by flash-chromatography over silica gel (eluting Hexanes/AcOEt 1:1) to give 23.3 g (74%) of mixture of diastereoisomers **8a-b** as an oil.

Example 5-B: Removal of the Boc-protecting group in **8a-b** (12.17 g; 310 mmol) proceeded as in Example 1-E to afford 9.5 g (100%) of free amine as a mixture of diastereoisomers.

Example 5-C: Piperazine N-functionalization of free amine (4.0 g; 13.6 mmol) with propionaldehyde followed a procedure similar to the one described in example 1-F to give, after flash-chromatography over silica gel (eluting Hexanes/AcOEt 1:1 to AcOEt), 4.3 g (93%) of diastereoisomeric mixture of bromo cyano intermediates.

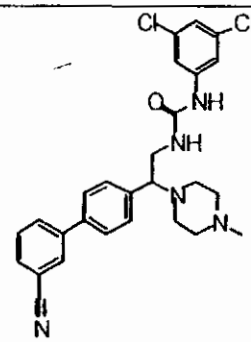
Example 5-D: To the bromo cyano intermediates (4.3 g; 12.8 mmol) in THF (40 ml) at 0 °C was slowly lithium aluminum hydride 1N in THF (38.4 ml) followed by boron trifluoride etherate (1.73 ml; 14.1 mmol) and the mixture was stirred overnight at room

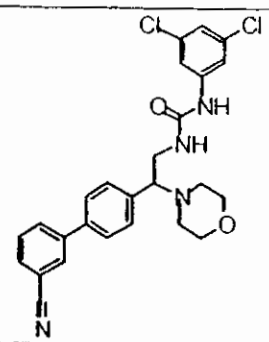
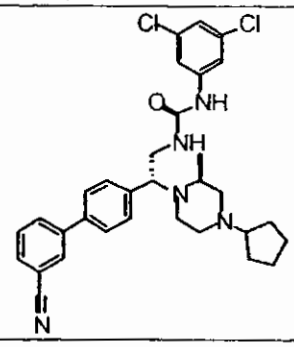
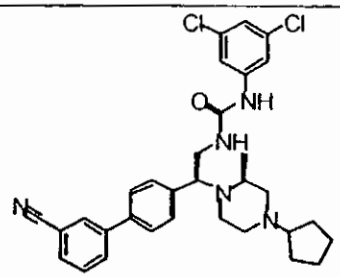
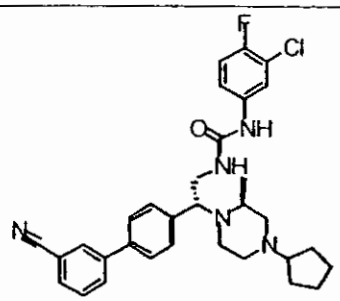
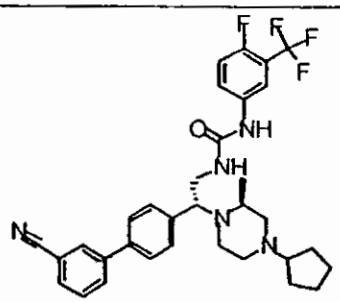
temperature. The final solution was slowly poured into ice-cooled 2N H_2SO_4, stirred 1 h, then neutralized with 3N NaOH and extracted with CH_2Cl_2. After concentration, the crude was passed through a plug of silica gel (eluting CH_2Cl_2/MeOH 9:1 to 7:3) to provide 2.0 g (50%) of mixture of diastereoisomers **9a-b** as an oil.

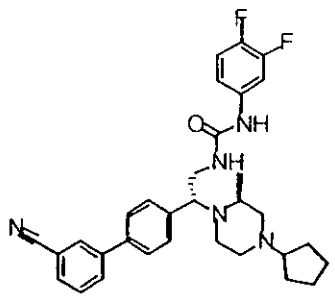
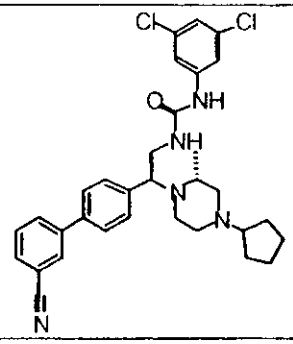
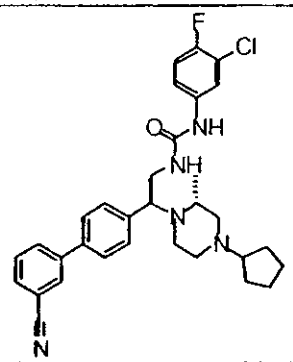
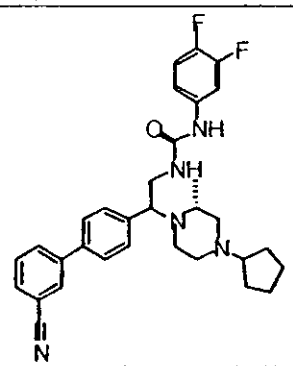
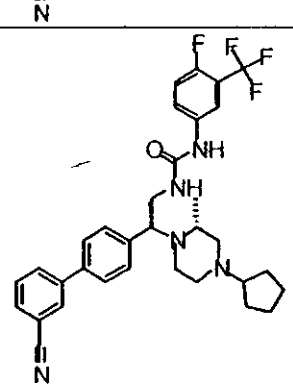
Example 5-E: Suzuki coupling of **9a-b** (2.0 g; 5.9 mmol) and 3-cyanophenylboronic acid proceeded as in example 1-C to give, after flash-chromatography over silica gel (eluting CH_2Cl_2/MeOH 9:1), 1.54 g (74%) of biaryl amine as a mixture of diastereoisomers.

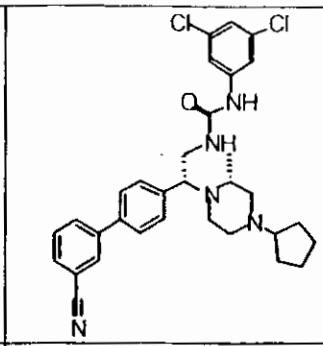
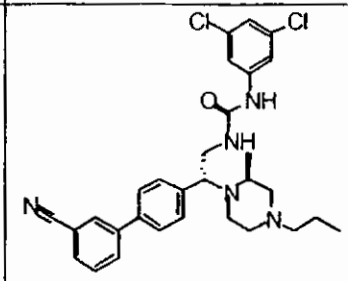
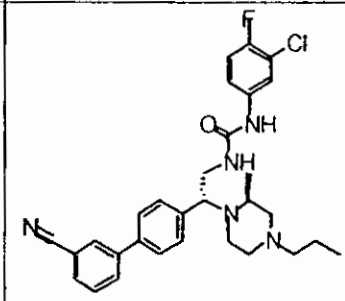
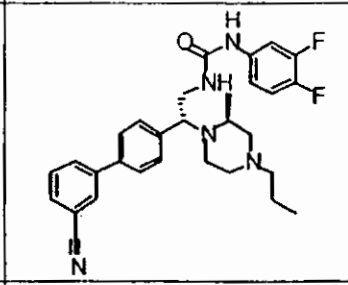
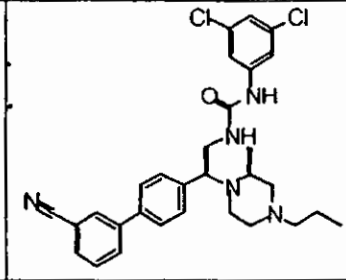
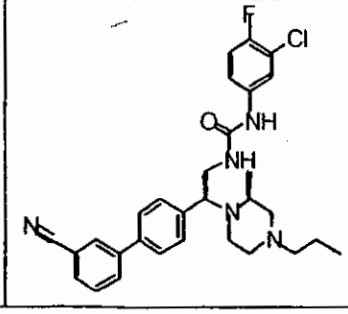
Example 5-F: Reaction of biaryl amine diastereoisomeric mixture (150 mg; 0.41 mmol) with 4-fluoro-3-trifluoromethylphenyl isocyanate proceeded as in Example 3-B. Purification by preparative chromatography over silica gel (eluting CH_2Cl_2/AcOEt 7:3) gave, in order of elution: first **Ic-a** (tentatively assigned the (S,S) configuration), 22.3 mg as hydrochloride salt - ^{1}H-NMR (free base, 300 MHz, $CDCl_3$) δ 7.91 (s, 1H), 7.78 (d, *J* = 7.6 Hz, 1H), 7.40-7.70 (m, 6H), 7.25 (d, *J* = 7.9 Hz, 2H), 7.11 (t, *J* = 9.8 Hz, 1H), 5.71 (br s, 1H), 4.25 (m, 1H), 3.50-3.80 (m, 2H), 2.70-2.90 (m, 2H), 2.59 (m, 1H), 2.05-2.45 (m, 4H), 1.89 (m, 1H), 1.45 (m, 2H), 1.19 (d, *J* = 6 Hz, 3H), 0.85 (t, *J* = 7.4 Hz, 3H) - HRMS ($M+H^+$) 568.2700; second **Ic-b** (tentatively assigned the (R,S) configuration), 124.5 mg as hydrochloride salt - ^{1}H-NMR (free base, 300 MHz, $CDCl_3$) δ 7.65-7.80 (m, 3H), 7.40-7.60 (m, 7H), 6.98 (t, *J* = 10 Hz, 1H), 5.51 (br s, 1H), 4.07 (br s, 1H), 3.70-3.80 (m, 1H), 3.40-3.70 (m, 2H), 3.20 (br s, 1H), 2.15-2.60 (m, 6H), 1.46 (m, 2H), 1.18 (d, *J* = 6.3 Hz, 3H), 0.86 (t, *J* = 7.4 Hz, 3H). HRMS ($M+H^+$) 568.2700. Using similar procedures, compounds of the following structures were prepared (Note: tentative chirality assignments were based on the comparison of NMR data as well as TLC properties)

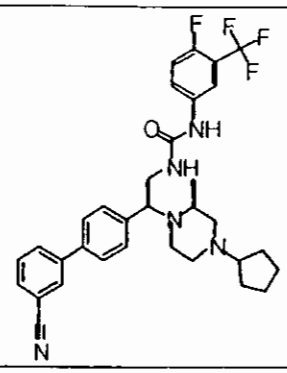
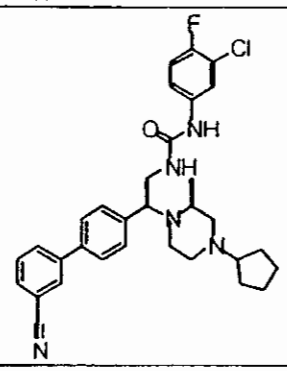
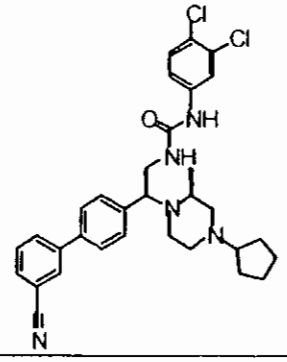
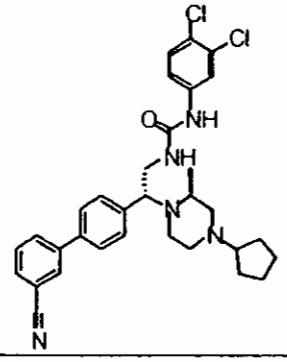
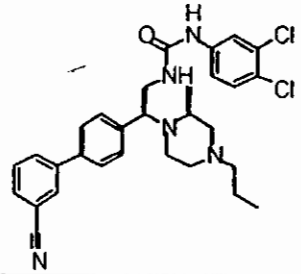
Table 6

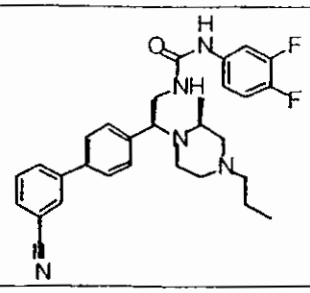
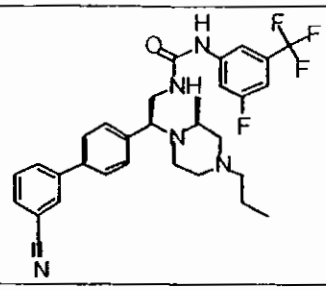
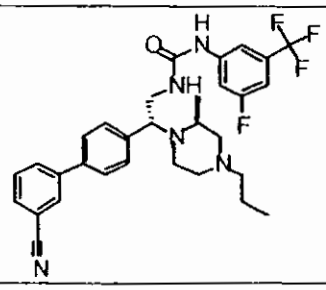
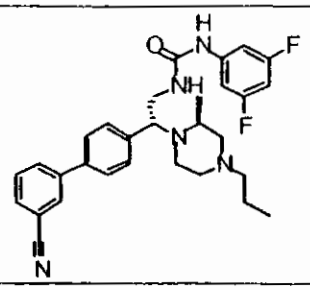
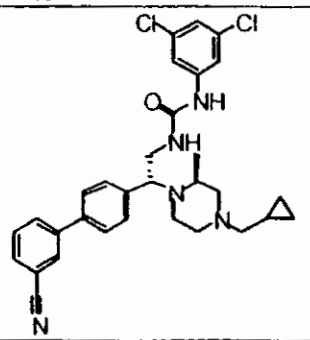
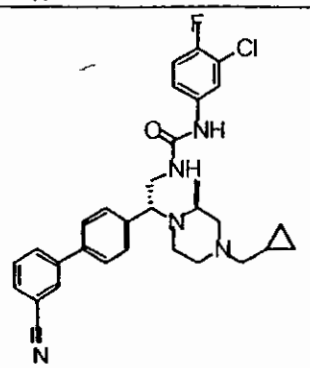
Compound	Structure	HRMS($M+H^+$)	^{1}H-NMR (free base, 300 MHz, $CDCl_3$)
72		508.1674	7.81 (s, 1H), 7.79 (d, *J* = 8.2 Hz, 1H), 7.64 (m, 1H), 7.50-7.60 (m, 2H), 7.25-7.35 (m, 5H), 6.98 (s, 1H), 5.77 (br s, 1H), 3.55-3.80 (m, 4H), 2.60-2.80 (m, 6H), 2.43 (s, 3H)

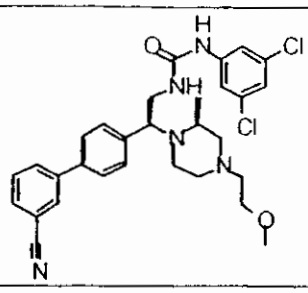
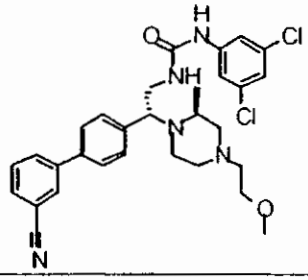
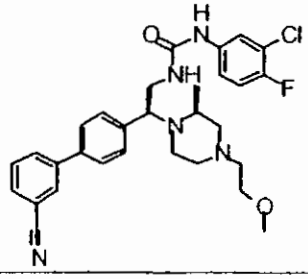
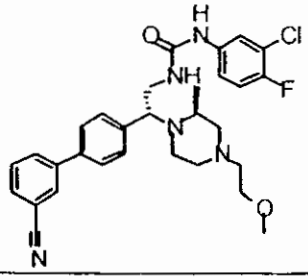
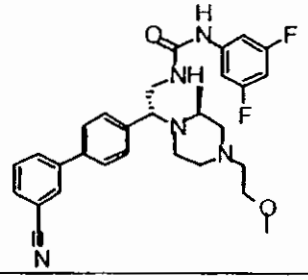
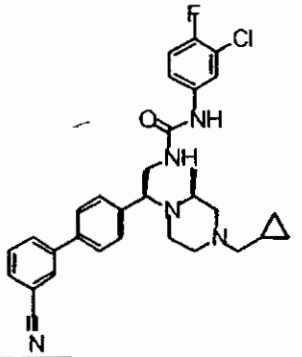
73		495.1349	7.75 (s, 1H), 7.73 (d, *J* = 8.0 Hz, 1H), 7.45-7.65 (m, 5H), 7.31 (d, *J* = 6.3Hz, 2H), 7.26 (s, 1H), 6.93 (s, 1H), 5.63 (br s, 1H), 3.89 (m, 1H), 3.60-3.75 (m, 4H), 3.45-3.60 (m, 2H), 2.46 (m, 4H)
74		576.2290	
75		576.2302	
76		560.2599	
77		594.2846	

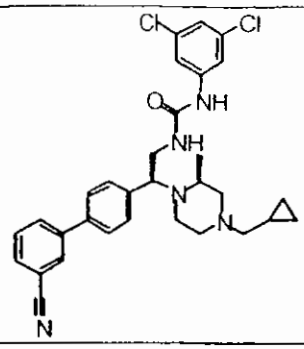
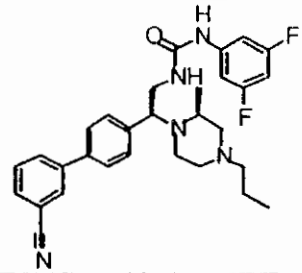
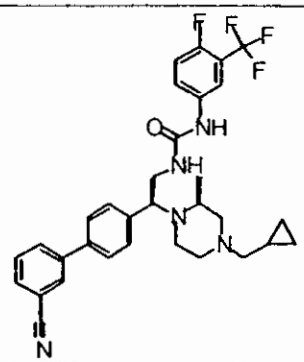
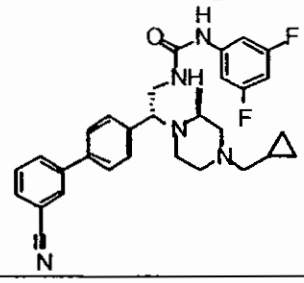
78		544.2872	
79		576.2291	
80		560.2599	
81		544.2895	
82		594.2852	

83		576.2285	
84		550.2148	
85		534.2439	
86		518.2721	
87		550.2148	
88		534.2444	7.81 (s, 1H), 7.80 (d, *J* = 8.1 Hz, 1H), 7.63 (m, 1H), 7.40-7.55 (m, 6H), 7.10 (m, 1H), 6.99 (t, *J* = 8.7 Hz, 1H), 5.21 (br s, 1H), 4.05 (br s, 1H), 3.75 (m, 1H), 3.62 (m, 1H), 3.29 (m, 1H), 2.82 (br s, 1H), 2.25-2.60 (m, 7H), 1.51 (m, 2H), 1.21 (d, *J* = 6.3 Hz, 3H), 0.89 (t, *J* = 7.4 Hz, 3H)

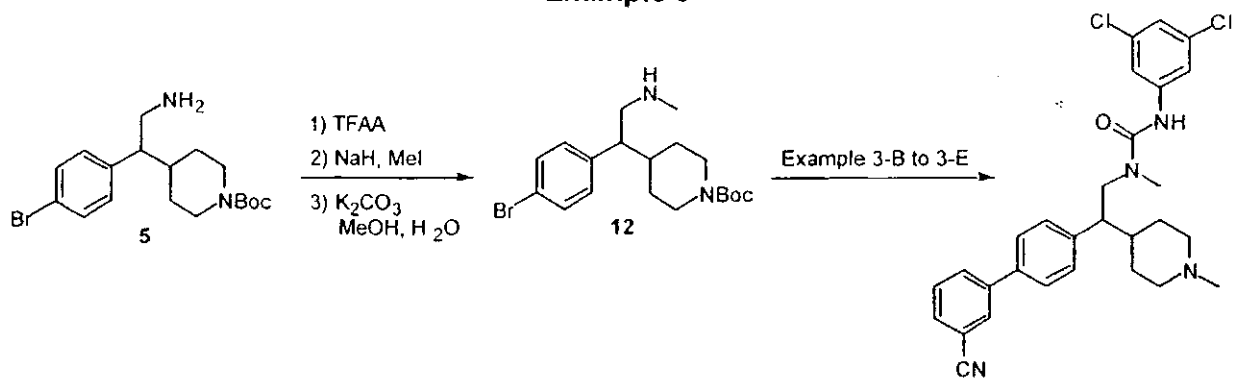
89		594.2852	
90		560.2593	
91		576.2302	
92		576.2302	
93		550.2143	

94		518.2733	
95		568.2700	
96		568.2700	
97		518.2733	
98		562.2144	
99		546.2432	7.70-7.80 (m, 2H), 7.58 (m, 2H), 7.35-7.55 (m, 5H), 7.07 (m, 1H), 6.95 (t, *J* = 8.5 Hz, 1H), 5.56 (br s, 1H), 4.15 (br s, 1H), 3.60-3.75 (m, 2H), 3.21 (m, 1H), 3.03 (s, 2H), 2.67 (br s, 1H), 2.45-2.60 (m, 3H), 2.10-2.35 (m, 3H), 1.19 (d, *J* = 6.3 Hz, 3H), 0.82 (m, 1H), 0.49 (d, *J* = 7.5 Hz, 2H), 0.07 (d, *J* = 4.6 Hz, 2H)

100		566.2097	
101		566.2097	
102		550.2394	
103		550.2389	
104		534.2687	7.83 (s, 1H), 7.70-7.80 (m, 2H), 7.59 (m, 2H), 7.40-7.55 (m, 3H), 6.94 (d, *J* = 9 Hz, 2H), 6.38 (t, *J* = 9 Hz, 1H), 5.46 (br s, 1H), 4.11 (m, 1H), 3.68 (m, 2H), 3.50 (m, 2H), 3.32 (s, 3H), 3.21 (m, 2H), 2.40-2.70 (m, 5H), 2.20-2.35 (m, 2H), 1.17 (d, *J* = 6.0 Hz, 3H)
105		546.2438	

106		562.2142	
107		518.2730	
108		580.2690	
109		530.2732	

Example 6



Compound 110

Example 6-A: To a solution of amine **5** (325 mg; 0.85 mmol) in CH_2Cl_2 (3 mL) at 0 °C was added pyridine (102 µL; 1.3 mmol) followed by trifluoroacetic anhydride (131 µL; 0.93 mmol) and the solution was stirred overnight at room temperature. The crude mixture was directly purified by flash chromatography over silica gel (eluting CH_2Cl_2/MeOH 95:5 to 9:1) to yield 300 mg (75%) of trifluoroacetamide.

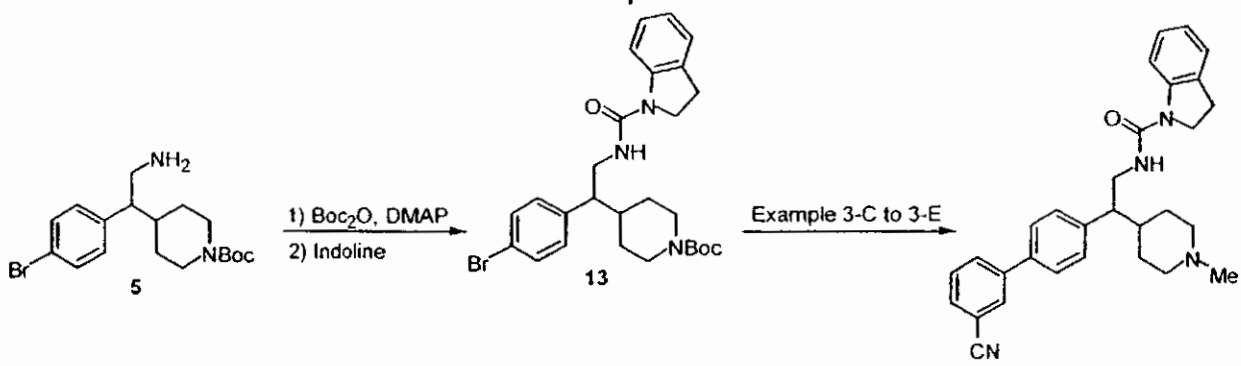
Example 6-B: Trifluoroacetamide (300 mg; 0.63 mmol) in THF (2 mL) at 0° C was treated with NaH 60% dispersion in mineral oil (50 mg; 0.63 mmol) followed by MeI (60 µL; 0.94 mmol) and the reaction was stirred at room temperature overnight. THF was evaporated, the residue was diluted with water and extracted with CH_2Cl_2. Combined organic layers were washed with saturated brine, dried over Na_2SO_4, concentrated and the crude was purified by flash chromatography over silica gel (eluting Hexanes/AcOEt 4:1 to 1:1) to give 200 mg (65%) of N-methyltrifluoroacetamide.

Example 6-C: A solution of N-methyltrifluoroacetamide (200 mg: 0.41 mmol) and potassium carbonate (282 mg; 2.0 mmol) in MeOH (4 mL) and water (1 mL) was stirred at room temperature overnight. After concentration of MeOH, the mixture was diluted with water and extracted with CH_2Cl_2 then AcOEt. Organic layers were washed with saturated brine, dried over Na_2SO_4 and concentrated to yield 190 mg (100%) of N-methyl amine **12**.

Example 6-D: Application of the sequence of steps from example 3-B to 3-E on N-methylamine **12** with the appropriate reagents afforded the final compound: ^{1}H-NMR (free base, 300 MHz, $CDCl_3$) δ 7.82 (s, 1H), 7.78 (d, J = 7.8 Hz, 1H), 7.50-7.65 (m, 4H), 7.31 (d, J = 8.1 Hz, 2H), 7.10 (s, 2H), 6.92 (s, 1H), 6.01 (s, 1H), 3.82 (dd, J = 14

Hz and 5 Hz, 1H), 3.67 (dd, J = 14 Hz and 10 Hz, 1H), 3.04 (br d, 1H), 2.75-2.95 (m, 2H), 2.79 (s, 3H), 2.33 (s, 3H), 1.90-2.15 (m, 3H), 1.20-1.75 (m, 4H); HR ($M+H^+$) 521.1884.

Example 7



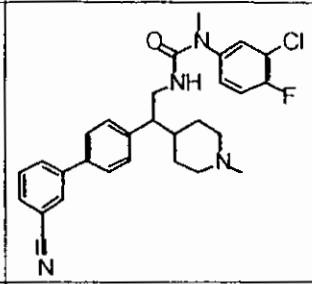
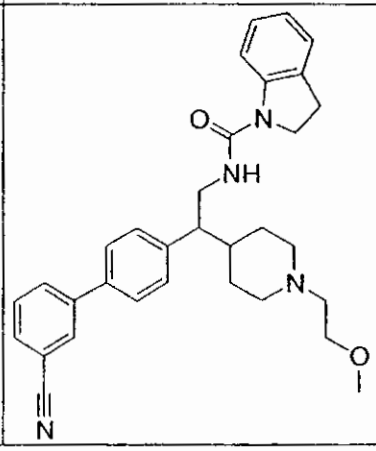
Compound 111

Example 7-A: To a solution of Boc_2O (240 mg; 1.10 mmol) in anhydrous CH_2Cl_2 (3 mL) was added DMAP (100 mg; 0.82 mmol) followed by amine **5** (300 mg; 0.78 mmol) in CH_2Cl_2 and the reaction mixture was stirred 1 h at room temperature. Indoline (205 mg; 1.7 mmol) in CH_2Cl_2 was added and the reaction was stirred overnight. The crude mixture was poured into 0.2 N NaOH, extracted with CH_2Cl_2 then AcOEt. Combined organic layers were dried over Na_2SO_4, concentrated, and the crude was purified by preparative silica gel chromatography (eluting Hexanes/AcOEt 7:3) to yield 227mg (55%) of indoline urea **13**.

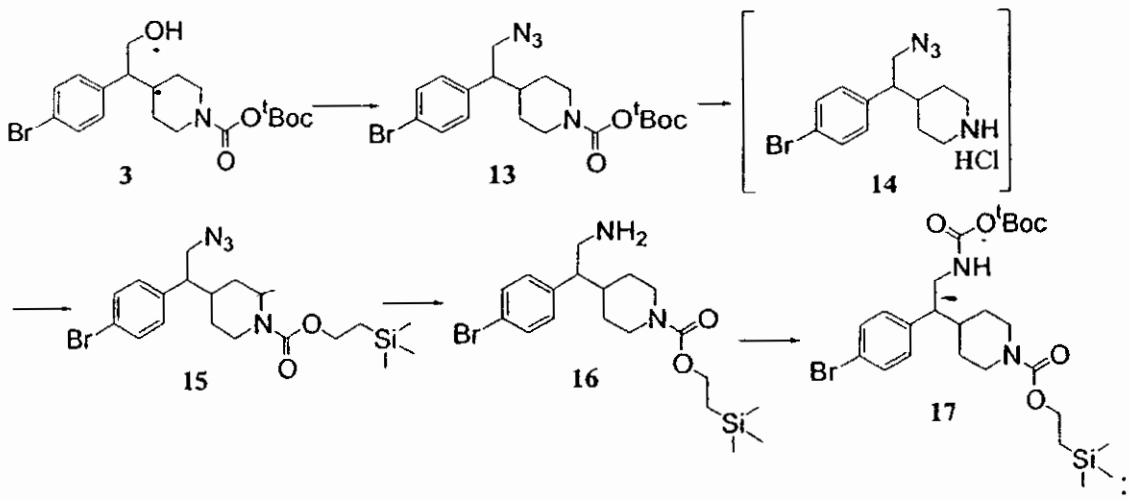
Example 7-B: Application of the sequence of steps from example 3-C to 3-E on indoline urea **13** with the appropriate reagents afforded the final compound: ^{1}H-NMR (free base, 300 MHz, $CDCl_3$) δ 7.86 (s, 1H), 7.83 (d, J = 7.2 Hz, 1H), 7.50-7.70 (m, 5H), 7.29 (d, J = 8.4 Hz, 2H), 7.00-7.15 (m, 2H), 6.86 (t, J = 7.1 Hz, 1H), 4.60 (br s, 1H), 4.35 (m, 1H), 4.03 (m, 1H), 3.61 (t, J = 8.7 Hz, 2H), 3.39 (m, 1H), 3.05 (t, J = 8.7 Hz, 2H), 2.88 (br d, 1H), 2.77 (m, 1H), 2.31 (s, 3H), 1.90-2.15 (m, 3H), 1.25-1.75 (m, 4H); HR ($M+H^+$) 465.2650.

Using similar procedures, the compound of the following structure was prepared

Table 7

Compound	Structure	HRMS(M+H$^+$)	LCMS (retention time; MS)
112		505.2174	
113		509.2907	4.66; 509.1

Preparation 1: Preparation of 4-[1-(4-Bromo-phenyl)-2-tert-butoxycarbonylamino-ethyl]-piperidine-1-carboxylic acid 2-trimethylsilanyl-ethyl ester (17).



Preparation 1-A: Intermediate 3 (5.6 g, 14.6 mmol), prepared as described in Example 1-A and 1-B, was dissolved in anhydrous tetrahydrofuran (50 mL).

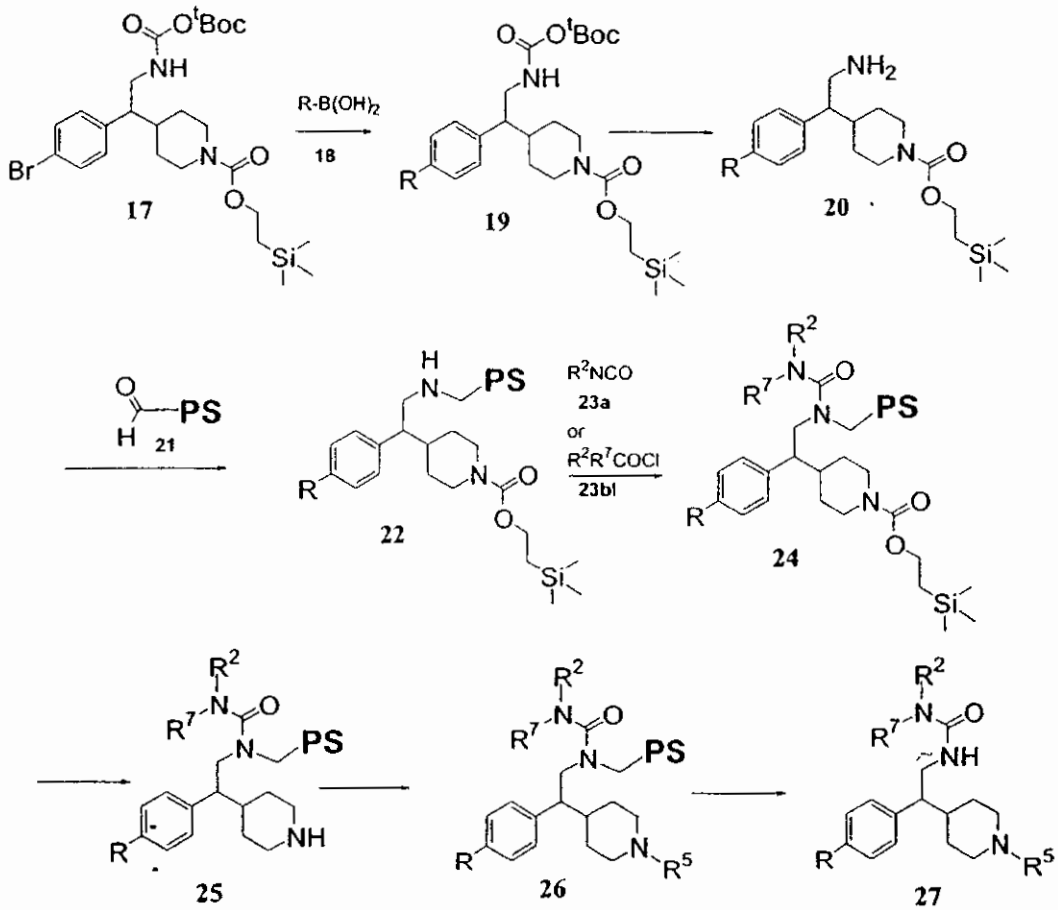
Triphenylphosphine (4 g, 15.3 mmol) and diethyl azodicarboxylate (2.69 g, 15.4 mmol) was added. Diphenylphosphoryl azide (4.2 g, 15.3 mmol) was added in small portions. The reaction mixture was stirred at room temperature overnight. The solvent was evaporated under reduced pressure. The crude product was purified by flash column chromatography eluted with ethyl acetate-hexanes (1:4 v/v) to afford tert-butyl 4-[2-azido-1-(4-bromophenyl)ethyl]piperidinecarboxylate 13 (2.5 g, 6.1 mmol). MS (LCMS-Electrospray) 409.1 MH^+.

Preparation 1-B: A solution of hydrogen chloride in 1,4-dioxane (4 M, 60 mL, 240 mmol) was added to tert-butyl 4-[2-azido-1-(4-bromophenyl)ethyl]piperidinecarboxylate 13 (2.5 g, 6.1 mmol). The reaction mixture was stirred at room temperature for 1 h. The solvent was evaporated under reduced pressure. The residue containing 4-[2-azido-1-(4-bromophenyl)ethyl]piperidine hydrochloride 14 was dissolved in a 50 % v/v aqueous tetrahydrofuran solution (68 mL). Potassium carbonate (2.12 g, 15.3 mmol) and 2-(trimethylsilyl)ethyl p-nitrophenyl carbonate (1.74 g, 61.4 mmol) were added. The reaction mixture was stirred at room temperature for 3 h. Organic solvent was evaporated under reduced pressure. Ethyl acetate was added. The organic layer was washed with aqueous sodium bicarbonate solution, water and brine. The organic layer was dried over sodium sulfate. The solvent was evaporated under reduced pressure. The crude product was purified by flash column chromatography eluted with ethyl acetate-hexanes (1:5 v/v) to afford 2-(trimethylsilyl)ethyl 4-[2-azido-1-(4-bromophenyl)ethyl]piperidinecarboxylate 15 (2.1 g, 4.6 mmol). MS (LCMS-Electrospray) 454.1 MH^+.

Preparation 1-C To a solution of 2-(trimethylsilyl)ethyl 4-[2-azido-1-(4-bromophenyl)ethyl]piperidinecarboxylate 15 (4.3 g, 9.5 mmol) in tetrahydrofuran-water (10:1 v/v) at room temperature was added triphenylphoshine (4.97 g, 19 mmol). The reaction mixture was stirred under a nitrogen atmosphere and heated under reflux overnight. Organic solvent was evaporated under reduced pressure. Dichloromethane was added. The organic layer was washed with aqueous sodium bicarbonate solution. The organic layer was dried over sodium sulfate. The solvent was evaporated under reduced pressure. The residue containing 2-(trimethylsilyl)ethyl 4-[2-amino-1-(4-bromophenyl)ethyl]piperidinecarboxylate 16 was dissolved in 1,4-dioxane (40 mL). Di-tert-butyl dicarbonate (2.1 g, 9.6 mmol) was

added. The reaction mixture was stirred at room temperature for 3 h. The solvent was evaporated under reduced pressure. The crude product was purified by flash column chromatography eluted with ethyl acetate-hexanes (1:6 v/v) to afford 2-(trimethylsilyl)ethyl 4-{2-[(tert-butoxy)carbonylamino]-1-(4-bromophenyl)ethyl}piperidinecarboxylate 17 (4.3 g, 8.2 mmol). MS (LCMS-Electrospray) 528.1 MH^+.

Example 8: Preparation of libraries of compounds of type 27



Example 8-A: To a solution of 2-(trimethylsilyl)ethyl 4-{2-[(tert-butoxy)carbonylamino]-1-(4-bromophenyl)ethyl}piperidinecarboxylate 17 from preparation_1 (2.6 g, 4.9 mmol) in dimethoxyethane (28 mL) was added saturated aqueous sodium carbonate solution (14 mL), boronic acid 18 (7.3 mmol) and [1,1'-bis(diphenylphosphino)ferrocene]-dichloropalladium (II) (0.6 g, 0.82 mmol). The reaction mixture was heated under reflux for 4 h. Organic solvent was evaporated under reduced pressure. Ethyl acetate was added. The organic layer was washed with water and brine. The organic layer

was dried over sodium sulfate. The solvent was evaporated under reduced pressure. The crude product was purified by flash column chromatography to afford compound 19.

Example 8-B: To a solution of compound 19 (4.6 mmol) in ethanol (15 mL) at room temperature was added p-toluenesulfonic acid (1.3 g, 6.8 mmol).. The reaction mixture was heated under reflux overnight. The solvent was evaporated under reduced pressure. Dichloromethane was added. The organic layer was washed with aqueous sodium bicarbonate solution. The organic layer was dried over sodium sulfate. The solvent was evaporated under reduced pressure. The residue containing compound 20 was used in the next reaction without further purification.

Example 8-C: The solid phase synthesis was conducted in a reaction vessel (IRORI Minikan ®)which was constructed from a porous polypropylene capsule. An aldehyde resin 21 (Novabiochem 2-(4-formyl-3-methoxyphenoxy)ethyl polystyrene) (0.018 mmol) was treated with a solution of compound 20 (0.036 mmol) and sodium triacetoxyborohydride (0.09 mmol) in acetic acid-tetrahydrofuran (1:19 v/v) at room temperature overnight. The resin was washed with methanol-N.N-dimethylformamide (1:5 v/v) (4 times) and N,N-dimethylformamide (4 times) to afford the resin-bound compound 22.

Example 8-D: The resin-bound compound 22 was treated with a solution of substituted isocyanate 23a (0.18 mmol) in N,N-dimethylformamide at room temperature overnight. The resin was washed with N,N-dimethylformamide (4 times) and tetrahydrofuran (4 times) to afford the resin-bound compound 24. Alternatively, the resin-bound compound 22 was treated with a solution of substituted carbamyl chloride 23b (0.18 mmol) and di-iso-propylethylamine (0.36 mmol) in N,N-dimethylformamide at room temperature overnight. The resin was washed with N,N-dimethylformamide (4 times) and tetrahydrofuran (4 times) to afford the resin-bound compound 24.

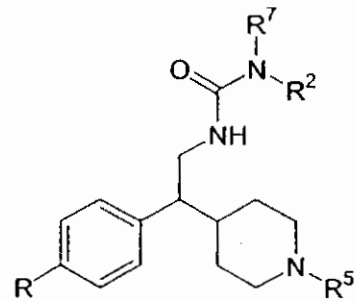
Example 8-E: The resin-bound compound 24 was treated with a 1 N solution of tetrabutylammonium fluoride in tetrahydrofuran at room temperature for 2 h. The resin was washed with tetrahydrofuran (4 times) to afford the resin-bound compound 25.

Example 8-F: The resin-bound compound 25 was treated with a solution of aldehyde or ketone (0.18 mmol) and sodium triacetoxyborohydride (0.18 mmol) in acetic acid-tetrahydrofuran (1:19 v/v) at room temperature overnight. The resin was washed with

methanol-tetrahydrofuran (1:5 v/v) (4 times), tetrahydrofuran (4 times) and dichloromethane (4 times) to afford the resin-bound compound 26.

Example 8-G: The resin-bound compound 801D was treated with 3 mL of a trifluoroacetic acid-water-dichloromethane (38:2:60 v/v) solution at room temperature for 20 min. The filtrate was added to 1 mL of acetic acid and the solution was concentrated by vacuum centrifugation to afford compound 27.

Using the above procedure, libraries of the following compounds were prepared:



R	R^2	R^7	R^5	obs M+1 m/z
Phenyl	3-chlorophenyl	H	H	434.1
Phenyl	3-chlorophenyl	H	methyl	448.1
Phenyl	3-chlorophenyl	H	cyclopropylmethyl	488.1
Phenyl	3-chlorophenyl	H	cyclopentyl	502.1
Phenyl	3-chlorophenyl	H	3,4-methylenedioxybenzyl	568.1
Phenyl	3,5-dichlorophenyl	H	H	468.1
Phenyl	3,5-dichlorophenyl	H	methyl	482.1
Phenyl	3,5-dichlorophenyl	H	cyclopropylmethyl	522.1
Phenyl	3,5-dichlorophenyl	H	cyclopentyl	536.1
Phenyl	3,5-dichlorophenyl	H	3,4-methylenedioxybenzyl	602.1
Phenyl	3-fluorophenyl	H	H	418.1
Phenyl	3-fluorophenyl	H	methyl	432.1
Phenyl	3-fluorophenyl	H	cyclopropylmethyl	472.1
Phenyl	3-fluorophenyl	H	cyclopentyl	486.1
Phenyl	3-fluorophenyl	H	3,4-methylenedioxybenzyl	552.1
Phenyl	3,4-difluorophenyl	H	H	436.1
Phenyl	3,4-difluorophenyl	H	methyl	450.1
Phenyl	3,4-difluorophenyl	H	cyclopropylmethyl	490.1
Phenyl	3,4-difluorophenyl	H	cyclopentyl	504.1

R	R^2	R^1	R^5	obs M+1 m/z
Phenyl	3,4-difluorophenyl	H	3,4-methylenedioxybenzyl	570.1
3-cyanophenyl	2-fluorophenyl	H	cyclopropylmethyl	497.1
3-cyanophenyl	3-fluorophenyl	H	cyclopropylmethyl	497.1
3-cyanophenyl	4-fluorophenyl	H	cyclopropylmethyl	497.1
3-cyanophenyl	2-methoxyphenyl	H	cyclopropylmethyl	509.1
3-cyanophenyl	3-methoxyphenyl	H	cyclopropylmethyl	509.1
3-cyanophenyl	4-methoxyphenyl	H	cyclopropylmethyl	509.1
3-cyanophenyl	3,5-dimethoxyphenyl	H	cyclopropylmethyl	539.1
3-cyanophenyl	3-cyanophenyl	H	cyclopropylmethyl	504.1
3-cyanophenyl	4-cyanophenyl	H	cyclopropylmethyl	504.1
3-cyanophenyl	2-fluorophenyl	H	cyclopentyl	511.1
3-cyanophenyl	3-fluorophenyl	H	cyclopentyl	511.1
3-cyanophenyl	4-fluorophenyl	H	cyclopentyl	511.1
3-cyanophenyl	2-methoxyphenyl	H	cyclopentyl	523.1
3-cyanophenyl	4-methoxyphenyl	H	cyclopentyl	523.1
3-cyanophenyl	3,5-dimethoxyphenyl	H	cyclopentyl	553.1
3-cyanophenyl	3-cyanophenyl	H	cyclopentyl	518.1
3-cyanophenyl	4-cyanophenyl	H	cyclopentyl	518.1
3-fluorophenyl	Phenyl	H	methyl	432.1
3-fluorophenyl	2-chlorophenyl	H	methyl	466.11
3-fluorophenyl	3-chlorophenyl	H	methyl	466.11
3-fluorophenyl	4-chlorophenyl	H	methyl	466.11
3-fluorophenyl	2-methoxyphenyl	H	methyl	462.11
3-fluorophenyl	3-methoxyphenyl	H	methyl	462.11
3-fluorophenyl	4-methoxyphenyl	H	methyl	462.11
3-fluorophenyl	3,4-methylenedioxyphenyl	H	methyl	476.11
3-fluorophenyl	2,5-dimethoxyphenyl	H	methyl	492.12
3-fluorophenyl	2,4-dimethoxyphenyl	H	methyl	492.12
3-fluorophenyl	3,5-dimethoxyphenyl	H	methyl	492.12
3-fluorophenyl	2-fluorophenyl	H	methyl	450.11
3-fluorophenyl	3-fluorophenyl	H	methyl	450.11
3-fluorophenyl	4-fluorophenyl	H	methyl	450.11

R	R^2	R^7	R^5	obs M+1 m/z
3-fluorophenyl	3-chloro,4-fluorophenyl	H	methyl	484.12
3-fluorophenyl	3,4-difluorophenyl	H	methyl	468.11
3-fluorophenyl	2,4-difluorophenyl	H	methyl	468.11
3-fluorophenyl	2,6-difluorophenyl	H	methyl	468.11
3-fluorophenyl	2-5-difluorophenyl	H	methyl	468.11
3-fluorophenyl	3-cyanophenyl	H	methyl	457.11
3-fluorophenyl	4-cyanophenyl	H	methyl	457.11
3-fluorophenyl	N,R2,R7 = pyrrolidine	N,R2,R7 = pyrrolidine	methyl	410.1
3-fluorophenyl	N,R2,R7 = morpholine	N,R2,R7 = morpholine	methyl	426.1
3-fluorophenyl	Phenyl	Methyl	methyl	446.11
3-fluorophenyl	isopropyl	isopropyl	methyl	440.11
3-fluorophenyl	Methyl	Methyl	methyl	384.09
3-fluorophenyl	ethyl	ethyl	methyl	412.1
3-fluorophenyl	Phenyl	H	cyclopropylmethyl	472.11
3-fluorophenyl	3,5-dichlorophenyl	H	cyclopropylmethyl	540.13
3-fluorophenyl	2-chlorophenyl	H	cyclopropylmethyl	506.12
3-fluorophenyl	3-chlorophenyl	H	cyclopropylmethyl	506.12
3-fluorophenyl	4-chlorophenyl	H	cyclopropylmethyl	506.12
3-fluorophenyl	2-methoxyphenyl	H	cyclopropylmethyl	502.12
3-fluorophenyl	3-methoxyphenyl	H	cyclopropylmethyl	502.12
3-fluorophenyl	4-methoxyphenyl	H	cyclopropylmethyl	502.12
3-fluorophenyl	3,4-methylenedioxyphenyl	H	cyclopropylmethyl	516.12
3-fluorophenyl	2,5-dimethoxyphenyl	H	cyclopropylmethyl	532.13
3-fluorophenyl	2,4-dimethoxyphenyl	H	cyclopropylmethyl	532.13
3-fluorophenyl	3,5-dimethoxyphenyl	H	cyclopropylmethyl	532.13
3-fluorophenyl	2-fluorophenyl	H	cyclopropylmethyl	490.12
3-fluorophenyl	3-fluorophenyl	H	cyclopropylmethyl	490.12
3-fluorophenyl	4-fluorophenyl	H	cyclopropylmethyl	490.12
3-fluorophenyl	3-chloro,4-fluorophenyl	H	cyclopropylmethyl	524.12

R	R^2	R^7	R^5	obs M+1 m/z
3-fluorophenyl	3,4-difluorophenyl	H	cyclopropylmethyl	508.12
3-fluorophenyl	2,4-difluorophenyl	H	cyclopropylmethyl	508.12
3-fluorophenyl	2,6-difluorophenyl	H	cyclopropylmethyl	508.12
3-fluorophenyl	2-5-difluorophenyl	H	cyclopropylmethyl	508.12
3-fluorophenyl	3-cyanophenyl	H	cyclopropylmethyl	497.12
3-fluorophenyl	4-cyanophenyl	H	cyclopropylmethyl	497.12
3-fluorophenyl	N,R2,R7 = pyrrolidine	N,R2,R7 = pyrrolidine	cyclopropylmethyl	450.11
3-fluorophenyl	N,R2,R7 = morpholine	N,R2,R7 = morpholine	cyclopropylmethyl	466.11
3-fluorophenyl	Phenyl	Methyl	cyclopropylmethyl	486.12
3-fluorophenyl	isopropyl	isopropyl	cyclopropylmethyl	480.12
3-fluorophenyl	Methyl	Methyl	cyclopropylmethyl	424.1
3-fluorophenyl	ethyl	ethyl	cyclopropylmethyl	452.11
3-fluorophenyl	Phenyl	H	cyclopentyl	486.12
3-fluorophenyl	3,5-dichlorophenyl	H	cyclopentyl	554.13
3-fluorophenyl	2-chlorophenyl	H	cyclopentyl	520.12
3-fluorophenyl	3-chlorophenyl	H	cyclopentyl	520.12
3-fluorophenyl	4-chlorophenyl	H	cyclopentyl	520.12
3-fluorophenyl	2-methoxyphenyl	H	cyclopentyl	516.12
3-fluorophenyl	3-methoxyphenyl	H	cyclopentyl	516.12
3-fluorophenyl	4-methoxyphenyl	H	cyclopentyl	516.12
3-fluorophenyl	3,4-methylenedioxyphenyl	H	cyclopentyl	530.13
3-fluorophenyl	2,5-dimethoxyphenyl	H	cyclopentyl	546.13
3-fluorophenyl	2,4-dimethoxyphenyl	H	cyclopentyl	546.13
3-fluorophenyl	3,5-dimethoxyphenyl	H	cyclopentyl	546.13
3-fluorophenyl	2-fluorophenyl	H	cyclopentyl	504.12
3-fluorophenyl	3-fluorophenyl	H	cyclopentyl	504.12
3-fluorophenyl	4-fluorophenyl	H	cyclopentyl	504.12
3-fluorophenyl	3-chloro,4-fluorophenyl	H	cyclopentyl	538.13
3-fluorophenyl	3,4-difluorophenyl	H	cyclopentyl	522.12
3-fluorophenyl	2,4-difluorophenyl	H	cyclopentyl	523.12

R	R^2	R^7	R^5	obs M+1 m/z
3-fluorophenyl	2,6-difluorophenyl	H	cyclopentyl	523.12
3-fluorophenyl	2-5-difluorophenyl	H	cyclopentyl	523.12
3-fluorophenyl	3-cyanophenyl	H	cyclopentyl	511.12
3-fluorophenyl	4-cyanophenyl	H	cyclopentyl	511.12
3-fluorophenyl	N,R2,R7 = pyrrolidine	N,R2,R7 = pyrrolidine	cyclopentyl	464.11
3-fluorophenyl	N,R2,R7 = morpholine	N,R2,R7 = morpholine	cyclopentyl	480.12
3-fluorophenyl	Phenyl	Methyl	cyclopentyl	500.12
3-fluorophenyl	isopropyl	isopropyl	cyclopentyl	494.12
3-fluorophenyl	Methyl	Methyl	cyclopentyl	438.11
3-fluorophenyl	ethyl	ethyl	cyclopentyl	466.11
3-fluorophenyl	Phenyl	H	3,4-ethylenedioxybenzyl	566.13
3-fluorophenyl	3,5-dichlorophenyl	H	3,4-ethylenedioxybenzyl	634.15
3-fluorophenyl	2-chlorophenyl	H	3,4-ethylenedioxybenzyl	600.14
3-fluorophenyl	3-chlorophenyl	H	3,4-ethylenedioxybenzyl	600.14
3-fluorophenyl	4-chlorophenyl	H	3,4-ethylenedioxybenzyl	600.14
3-fluorophenyl	2-methoxyphenyl	H	3,4-ethylenedioxybenzyl	596.14
3-fluorophenyl	3-methoxyphenyl	H	3,4-ethylenedioxybenzyl	596.14
3-fluorophenyl	4-methoxyphenyl	H	3,4-ethylenedioxybenzyl	596.14
3-fluorophenyl	3,4-methylenedioxyphenyl	H	3,4-ethylenedioxybenzyl	610.14
3-fluorophenyl	2,5-dimethoxyphenyl	H	3,4-ethylenedioxybenzyl	626.15
3-fluorophenyl	2,4-dimethoxyphenyl	H	3,4-ethylenedioxybenzyl	626.15
3-fluorophenyl	3,5-dimethoxyphenyl	H	3,4-ethylenedioxybenzyl	626.15
3-fluorophenyl	2-fluorophenyl	H	3,4-ethylenedioxybenzyl	584.14
3-fluorophenyl	3-fluorophenyl	H	3,4-ethylenedioxybenzyl	584.14
3-fluorophenyl	4-fluorophenyl	H	3,4-ethylenedioxybenzyl	584.14
3-fluorophenyl	3-chloro,4-fluorophenyl	H	3,4-ethylenedioxybenzyl	618.14
3-fluorophenyl	3,4-difluorophenyl	H	3,4-ethylenedioxybenzyl	602.14
3-fluorophenyl	2,4-difluorophenyl	H	3,4-ethylenedioxybenzyl	602.14
3-fluorophenyl	2,6-difluorophenyl	H	3,4-ethylenedioxybenzyl	602.14
3-fluorophenyl	2-5-difluorophenyl	H	3,4-ethylenedioxybenzyl	602.14

R	R^2	R^7	R^5	obs M+1 m/z
3-fluorophenyl	3-cyanophenyl	H	3,4-ethylenedioxybenzyl	591.14
3-fluorophenyl	4-cyanophenyl	H	3,4-ethylenedioxybenzyl	591.14
3-fluorophenyl	N,R2,R7 = pyrrolidine	N,R2,R7 = pyrrolidine	3,4-ethylenedioxybenzyl	544.13
3-fluorophenyl	N,R2,R7 = morpholine	N,R2,R7 = morpholine	3,4-ethylenedioxybenzyl	560.13
3-fluorophenyl	Phenyl	Methyl	3,4-ethylenedioxybenzyl	580.14
3-fluorophenyl	isopropyl	isopropyl	3,4-ethylenedioxybenzyl	574.13
3-fluorophenyl	Methyl	Methyl	3,4-ethylenedioxybenzyl	518.12
3-fluorophenyl	ethyl	ethyl	3,4-ethylenedioxybenzyl	546.13
3-cyanophenyl	Phenyl	H	methyl	439.11
3-cyanophenyl	2-chlorophenyl	H	methyl	473.11
3-cyanophenyl	3-chlorophenyl	H	methyl	473.11
3-cyanophenyl	4-chlorophenyl	H	methyl	473.11
3-cyanophenyl	2-methoxyphenyl	H	methyl	469.11
3-cyanophenyl	3-methoxyphenyl	H	methyl	469.11
3-cyanophenyl	4-methoxyphenyl	H	methyl	469.11
3-cyanophenyl	3,4-methylenedioxyphenyl	H	methyl	483.12
3-cyanophenyl	2,5-dimethoxyphenyl	H	methyl	499.12
3-cyanophenyl	2,4-dimethoxyphenyl	H	methyl	499.12
3-cyanophenyl	3,5-dimethoxyphenyl	H	methyl	499.12
3-cyanophenyl	2-fluorophenyl	H	methyl	457.11
3-cyanophenyl	3-fluorophenyl	H	methyl	457.11
3-cyanophenyl	4-fluorophenyl	H	methyl	457.11
3-cyanophenyl	3,4-difluorophenyl	H	methyl	475.11
3-cyanophenyl	2,4-difluorophenyl	H	methyl	475.11
3-cyanophenyl	2,6-difluorophenyl	H	methyl	475.11
3-cyanophenyl	2-5-difluorophenyl	H	methyl	475.11
3-cyanophenyl	3-cyanophenyl	H	methyl	464.11
3-cyanophenyl	4-cyanophenyl	H	methyl	464.11
3-cyanophenyl	N,R2,R7 = pyrrolidine	N,R2,R7 = pyrrolidine	methyl	417.1

R	R^2	R^7	R^5	obs M+1 m/z
3-cyanophenyl	N,R2,R7 = morpholine	N,R2,R7 = morpholine	methyl	433.11
3-cyanophenyl	Phenyl	Methyl	methyl	453.11
3-cyanophenyl	isopropyl	isopropyl	methyl	447.11
3-cyanophenyl	Methyl	Methyl	methyl	391.1
3-cyanophenyl	ethyl	ethyl	methyl	419.1
3-cyanophenyl	Phenyl	H	cyclopropylmethyl	479.11
3-cyanophenyl	2-chlorophenyl	H	cyclopropylmethyl	513.12
3-cyanophenyl	3-chlorophenyl	H	cyclopropylmethyl	513.12
3-cyanophenyl	4-chlorophenyl	H	cyclopropylmethyl	513.12
3-cyanophenyl	3,4-methylenedioxyphenyl	H	cyclopropylmethyl	523.12
3-cyanophenyl	2,5-dimethoxyphenyl	H	cyclopropylmethyl	539.13
3-cyanophenyl	2,4-dimethoxyphenyl	H	cyclopropylmethyl	539.13
3-cyanophenyl	3-chloro,4-fluorophenyl	H	cyclopropylmethyl	531.13
3-cyanophenyl	3,4-difluorophenyl	H	cyclopropylmethyl	515.12
3-cyanophenyl	2,4-difluorophenyl	H	cyclopropylmethyl	515.12
3-cyanophenyl	2,6-difluorophenyl	H	cyclopropylmethyl	515.12
3-cyanophenyl	2-5-difluorophenyl	H	cyclopropylmethyl	515.12
3-cyanophenyl	N,R2,R7 = pyrrolidine	N,R2,R7 = pyrrolidine	cyclopropylmethyl	457.11
3-cyanophenyl	N,R2,R7 = morpholine	N,R2,R7 = morpholine	cyclopropylmethyl	473.11
3-cyanophenyl	Phenyl	Methyl	cyclopropylmethyl	493.12
3-cyanophenyl	isopropyl	isopropyl	cyclopropylmethyl	487.12
3-cyanophenyl	Methyl	Methyl	cyclopropylmethyl	431.1
3-cyanophenyl	ethyl	ethyl	cyclopropylmethyl	459.11
3-cyanophenyl	Phenyl	H	cyclopentyl	493.12
3-cyanophenyl	2-chlorophenyl	H	cyclopentyl	527.12
3-cyanophenyl	4-chlorophenyl	H	cyclopentyl	527.12
3-cyanophenyl	3,4-methylenedioxyphenyl	H	cyclopentyl	537.13

R	R^2	R^7	R^5	obs M+1 m/z
3-cyanophenyl	2,5-dimethoxyphenyl	H	cyclopentyl	553.13
3-cyanophenyl	2,4-dimethoxyphenyl	H	cyclopentyl	553.13
3-cyanophenyl	3-chloro,4-fluorophenyl	H	cyclopentyl	545.13
3-cyanophenyl	3,4-difluorophenyl	H	cyclopentyl	529.13
3-cyanophenyl	2,4-difluorophenyl	H	cyclopentyl	529.13
3-cyanophenyl	2,6-difluorophenyl	H	cyclopentyl	529.13
3-cyanophenyl	2-5-difluorophenyl	H	cyclopentyl	529.13
3-cyanophenyl	N,R2,R7 = pyrrolidine	N,R2,R7 = pyrrolidine	cyclopentyl	471.11
3-cyanophenyl	N,R2,R7 = morpholine	N,R2,R7 = morpholine	cyclopentyl	487.12
3-cyanophenyl	Phenyl	Methyl	cyclopentyl	507.12
3-cyanophenyl	isopropyl	isopropyl	cyclopentyl	501.12
3-cyanophenyl	Methyl	Methyl	cyclopentyl	445.11
3-cyanophenyl	ethyl	ethyl	cyclopentyl	473.11
3-cyanophenyl	Phenyl	H	3,4-ethylenedioxybenzyl	573.13
3-cyanophenyl	2-chlorophenyl	H	3,4-ethylenedioxybenzyl	607.1
3-cyanophenyl	3-chlorophenyl	H	3,4-ethylenedioxybenzyl	607.14
3-cyanophenyl	4-chlorophenyl	H	3,4-ethylenedioxybenzyl	607.14
3-cyanophenyl	2-methoxyphenyl	H	3,4-ethylenedioxybenzyl	603.1
3-cyanophenyl	3-methoxyphenyl	H	3,4-ethylenedioxybenzyl	603.14
3-cyanophenyl	4-methoxyphenyl	H	3,4-ethylenedioxybenzyl	603.14
3-cyanophenyl	3,4-methylenedioxyphenyl	H	3,4-ethylenedioxybenzyl	617.1
3-cyanophenyl	2,5-dimethoxyphenyl	H	3,4-ethylenedioxybenzyl	633.15
3-cyanophenyl	2,4-dimethoxyphenyl	H	3,4-ethylenedioxybenzyl	633.15
3-cyanophenyl	3,5-dimethoxyphenyl	H	3,4-ethylenedioxybenzyl	633.15
3-cyanophenyl	2-fluorophenyl	H	3,4-ethylenedioxybenzyl	591.14
3-cyanophenyl	3-fluorophenyl	H	3,4-ethylenedioxybenzyl	591.14
3-cyanophenyl	4-fluorophenyl	H	3,4-ethylenedioxybenzyl	591.14
3-cyanophenyl	3-chloro,4-fluorophenyl	H	3,4-ethylenedioxybenzyl	625.15
3-cyanophenyl	3,4-difluorophenyl	H	3,4-ethylenedioxybenzyl	609.14

R	R^2	R^7	R^5	obs M+1 m/z
3-cyanophenyl	2,4-difluorophenyl	H	3,4-ethylenedioxybenzyl	609.14
3-cyanophenyl	2,6-difluorophenyl	H	3,4-ethylenedioxybenzyl	609.14
3-cyanophenyl	2-5-difluorophenyl	H	3,4-ethylenedioxybenzyl	609.14
3-cyanophenyl	3-cyanophenyl	H	3,4-ethylenedioxybenzyl	598.14
3-cyanophenyl	4-cyanophenyl	H	3,4-ethylenedioxybenzyl	598.14
3-cyanophenyl	N,R2,R7 = pyrrolidine	N,R2,R7 = pyrrolidine	3,4-ethylenedioxybenzyl	551.13
3-cyanophenyl	N,R2,R7 = morpholine	N,R2,R7 = morpholine	3,4-ethylenedioxybenzyl	567.13
3-cyanophenyl	Phenyl	Methyl	3,4-ethylenedioxybenzyl	587.14
3-cyanophenyl	isopropyl	isopropyl	3,4-ethylenedioxybenzyl	581.14
3-cyanophenyl	Methyl	Methyl	3,4-ethylenedioxybenzyl	525.1
3-cyanophenyl	ethyl	ethyl	3,4-ethylenedioxybenzyl	553.13
3,4-methylenedioxyphenyl	Phenyl	H	methyl	458.11
3,4-methylenedioxyphenyl	3,5-dichlorophenyl	H	methyl	526.12
3,4-methylenedioxyphenyl	2-chlorophenyl	H	methyl	492.12
3,4-methylenedioxyphenyl	3-chlorophenyl	H	methyl	492.12
3,4-methylenedioxyphenyl	4-chlorophenyl	H	methyl	492.12
3,4-methylenedioxyphenyl	2-methoxyphenyl	H	methyl	488.12
3,4-methylenedioxyphenyl	3-methoxyphenyl	H	methyl	488.12
3,4-methylenedioxyphenyl	4-methoxyphenyl	H	methyl	488.12
3,4-methylenedioxyphenyl	3,4-methylenedioxyphenyl	H	methyl	502.12
3,4-methylenedioxyphenyl	2,5-dimethoxyphenyl	H	methyl	518.12
3,4-methylenedioxyphenyl	2,4-dimethoxyphenyl	H	methyl	518.12
3,4-methylenedioxyphenyl	3,5-dimethoxyphenyl	H	methyl	518.12
3,4-methylenedioxyphenyl	2-fluorophenyl	H	methyl	476.11

R	R^2	R^7	R^5	obs M+1 m/z
3,4-methylenedioxyphenyl	3-fluorophenyl	H	methyl	476.11
3,4-methylenedioxyphenyl	4-fluorophenyl	H	methyl	476.11
3,4-methylenedioxyphenyl	3-chloro,4-fluorophenyl	H	methyl	510.12
3,4-methylenedioxyphenyl	3,4-difluorophenyl	H	methyl	494.12
3,4-methylenedioxyphenyl	2,4-difluorophenyl	H	methyl	494.12
3,4-methylenedioxyphenyl	2,6-difluorophenyl	H	methyl	494.12
3,4-methylenedioxyphenyl	2-5-difluorophenyl	H	methyl	494.12
3,4-methylenedioxyphenyl	3-cyanophenyl	H	methyl	483.12
3,4-methylenedioxyphenyl	4-cyanophenyl	H	methyl	483.12
3,4-methylenedioxyphenyl	N,R2,R7 = pyrrolidine	N,R2,R7 = pyrrolidine	methyl	436.11
3,4-methylenedioxyphenyl	N,R2,R7 = morpholine	N,R2,R7 = morpholine	methyl	452.11
3,4-methylenedioxyphenyl	Phenyl	Methyl	methyl	472.11
3,4-methylenedioxyphenyl	isopropyl	isopropyl	methyl	466.11
3,4-methylenedioxyphenyl	Methyl	Methyl	methyl	410.1
3,4-methylenedioxyphenyl	ethyl	ethyl	methyl	438.11
3,4-methylenedioxyphenyl	Phenyl	H	cyclopropylmethyl	498.12
3,4-methylenedioxyphenyl	3,5-dichlorophenyl	H	cyclopropylmethyl	566.13
3,4-methylenedioxyphenyl	2-chlorophenyl	H	cyclopropylmethyl	532.13
3,4-methylenedioxyphenyl	3-chlorophenyl	H	cyclopropylmethyl	532.13
3,4-methylenedioxyphenyl	4-chlorophenyl	H	cyclopropylmethyl	532.13
3,4-methylenedioxyphenyl	2-methoxyphenyl	H	cyclopropylmethyl	528.13

R	R^2	R^7	R^5	obs M+1 m/z
3,4-methylenedioxyphenyl	3-methoxyphenyl	H	cyclopropylmethyl	528.13
3,4-methylenedioxyphenyl	4-methoxyphenyl	H	cyclopropylmethyl	528.13
3,4-methylenedioxyphenyl	3,4-methylenedioxyphenyl	H	cyclopropylmethyl	542.13
3,4-methylenedioxyphenyl	2,5-dimethoxyphenyl	H	cyclopropylmethyl	558.13
3,4-methylenedioxyphenyl	2,4-dimethoxyphenyl	H	cyclopropylmethyl	558.13
3,4-methylenedioxyphenyl	3,5-dimethoxyphenyl	H	cyclopropylmethyl	558.13
3,4-methylenedioxyphenyl	2-fluorophenyl	H	cyclopropylmethyl	516.12
3,4-methylenedioxyphenyl	3-fluorophenyl	H	cyclopropylmethyl	516.12
3,4-methylenedioxyphenyl	4-fluorophenyl	H	cyclopropylmethyl	516.12
3,4-methylenedioxyphenyl	3-chloro,4-fluorophenyl	H	cyclopropylmethyl	550.13
3,4-methylenedioxyphenyl	3,4-difluorophenyl	H	cyclopropylmethyl	534.13
3,4-methylenedioxyphenyl	2,4-difluorophenyl	H	cyclopropylmethyl	534.13
3,4-methylenedioxyphenyl	2,6-difluorophenyl	H	cyclopropylmethyl	534.13
3,4-methylenedioxyphenyl	2-5-difluorophenyl	H	cyclopropylmethyl	534.13
3,4-methylenedioxyphenyl	3-cyanophenyl	H	cyclopropylmethyl	523.12
3,4-methylenedioxyphenyl	4-cyanophenyl	H	cyclopropylmethyl	523.12
3,4-methylenedioxyphenyl	N,R2,R7 = pyrrolidine	N,R2,R7 = pyrrolidine	cyclopropylmethyl	476.11
3,4-methylenedioxyphenyl	N,R2,R7 = morpholine	N,R2,R7 = morpholine	cyclopropylmethyl	492.12
3,4-methylenedioxyphenyl	Phenyl	Methyl	cyclopropylmethyl	512.12
3,4-methylenedioxyphenyl	isopropyl	isopropyl	cyclopropylmethyl	506.12

R	R^2	R^7	R^5	obs M+1 m/z
3,4-methylenedioxyphenyl	Methyl	Methyl	cyclopropylmethyl	450.11
3,4-methylenedioxyphenyl	ethyl	ethyl	cyclopropylmethyl	478.11
3,4-methylenedioxyphenyl	Phenyl	H	cyclopentyl	512.12
3,4-methylenedioxyphenyl	3,5-dichlorophenyl	H	cyclopentyl	580.14
3,4-methylenedioxyphenyl	2-chlorophenyl	H	cyclopentyl	546.13
3,4-methylenedioxyphenyl	3-chlorophenyl	H	cyclopentyl	546.13
3,4-methylenedioxyphenyl	4-chlorophenyl	H	cyclopentyl	546.13
3,4-methylenedioxyphenyl	2-methoxyphenyl	H	cyclopentyl	542.13
3,4-methylenedioxyphenyl	3-methoxyphenyl	H	cyclopentyl	542.13
3,4-methylenedioxyphenyl	4-methoxyphenyl	H	cyclopentyl	542.13
3,4-methylenedioxyphenyl	3,4-methylenedioxyphenyl	H	cyclopentyl	556.13
3,4-methylenedioxyphenyl	2,5-dimethoxyphenyl	H	cyclopentyl	572.13
3,4-methylenedioxyphenyl	2,4-dimethoxyphenyl	H	cyclopentyl	572.13
3,4-methylenedioxyphenyl	3,5-dimethoxyphenyl	H	cyclopentyl	572.13
3,4-methylenedioxyphenyl	2-fluorophenyl	H	cyclopentyl	530.13
3,4-methylenedioxyphenyl	3-fluorophenyl	H	cyclopentyl	530.13
3,4-methylenedioxyphenyl	4-fluorophenyl	H	cyclopentyl	530.13
3,4-methylenedioxyphenyl	3-chloro,4-fluorophenyl	H	cyclopentyl	564.13
3,4-methylenedioxyphenyl	3,4-difluorophenyl	H	cyclopentyl	548.13
3,4-methylenedioxyphenyl	2,4-difluorophenyl	H	cyclopentyl	548.13
3,4-methylenedioxyphenyl	2,6-difluorophenyl	H	cyclopentyl	548.13

R	R^2	R^7	R^5	obs M+1 m/z
3,4-methylenedioxyphenyl	2-5-difluorophenyl	H	cyclopentyl	548.13
3,4-methylenedioxyphenyl	3-cyanophenyl	H	cyclopentyl	537.13
3,4-methylenedioxyphenyl	4-cyanophenyl	H	cyclopentyl	537.13
3,4-methylenedioxyphenyl	N,R2,R7 = pyrrolidine	N,R2,R7 = pyrrolidine	cyclopentyl	490.12
3,4-methylenedioxyphenyl	N,R2,R7 = morpholine	N,R2,R7 = morpholine	cyclopentyl	506.12
3,4-methylenedioxyphenyl	Phenyl	Methyl	cyclopentyl	526.12
3,4-methylenedioxyphenyl	isopropyl	isopropyl	cyclopentyl	520.12
3,4-methylenedioxyphenyl	Methyl	Methyl	cyclopentyl	464.11
3,4-methylenedioxyphenyl	ethyl	ethyl	cyclopentyl	492.12
3,4-methylenedioxyphenyl	Phenyl	H	3,4-ethylenedioxybenzyl	592.14
3,4-methylenedioxyphenyl	3,5-dichlorophenyl	H	3,4-ethylenedioxybenzyl	660.16
3,4-methylenedioxyphenyl	2-chlorophenyl	H	3,4-ethylenedioxybenzyl	626.15
3,4-methylenedioxyphenyl	3-chlorophenyl	H	3,4-ethylenedioxybenzyl	626.15
3,4-methylenedioxyphenyl	4-chlorophenyl	H	3,4-ethylenedioxybenzyl	626.15
3,4-methylenedioxyphenyl	2-methoxyphenyl	H	3,4-ethylenedioxybenzyl	622.15
3,4-methylenedioxyphenyl	3-methoxyphenyl	H	3,4-ethylenedioxybenzyl	622.15
3,4-methylenedioxyphenyl	4-methoxyphenyl	H	3,4-ethylenedioxybenzyl	622.15
3,4-methylenedioxyphenyl	3,4-methylenedioxyphenyl	H	3,4-ethylenedioxybenzyl	636.15
3,4-methylenedioxyphenyl	2,5-dimethoxyphenyl	H	3,4-ethylenedioxybenzyl	652.16
3,4-methylenedioxyphenyl	2,4-dimethoxyphenyl	H	3,4-ethylenedioxybenzyl	652.16
3,4-methylenedioxyphenyl	3,5-dimethoxyphenyl	H	3,4-ethylenedioxybenzyl	652.16

R	R^2	R^7	R^5	obs M+1 m/z
3,4-methylenedioxyphenyl	2-fluorophenyl	H	3,4-ethylenedioxybenzyl	610.14
3,4-methylenedioxyphenyl	3-fluorophenyl	H	3,4-ethylenedioxybenzyl	610.14
3,4-methylenedioxyphenyl	4-fluorophenyl	H	3,4-ethylenedioxybenzyl	610.14
3,4-methylenedioxyphenyl	3-chloro,4-fluorophenyl	H	3,4-ethylenedioxybenzyl	644.15
3,4-methylenedioxyphenyl	3,4-difluorophenyl	H	3,4-ethylenedioxybenzyl	628.15
3,4-methylenedioxyphenyl	2,4-difluorophenyl	H	3,4-ethylenedioxybenzyl	628.15
3,4-methylenedioxyphenyl	2,6-difluorophenyl	H	3,4-ethylenedioxybenzyl	628.15
3,4-methylenedioxyphenyl	2-5-difluorophenyl	H	3,4-ethylenedioxybenzyl	628.15
3,4-methylenedioxyphenyl	3-cyanophenyl	H	3,4-ethylenedioxybenzyl	617.14
3,4-methylenedioxyphenyl	4-cyanophenyl	H	3,4-ethylenedioxybenzyl	617.14
3,4-methylenedioxyphenyl	N,R2,R7 = pyrrolidine	N,R2,R7 = pyrrolidine	3,4-ethylenedioxybenzyl	570.13
3,4-methylenedioxyphenyl	N,R2,R7 = morpholine	N,R2,R7 = morpholine	3,4-ethylenedioxybenzyl	586.14
3,4-methylenedioxyphenyl	Phenyl	Methyl	3,4-ethylenedioxybenzyl	606.14
3,4-methylenedioxyphenyl	isopropyl	isopropyl	3,4-ethylenedioxybenzyl	600.14
3,4-methylenedioxyphenyl	Methyl	Methyl	3,4-ethylenedioxybenzyl	544.13
3,4-methylenedioxyphenyl	ethyl	ethyl	3,4-ethylenedioxybenzyl	572.13
3-chlorophenyl	4-chlorophenyl	H	methyl	482.12
3-methoxyphenyl	2-fluorophenyl	H	3,4-ethylenedioxybenzyl	596.14
3-methoxyphenyl	3-cyanophenyl	H	3,4-ethylenedioxybenzyl	603.14
3-chlorophenyl	Phenyl	H	methyl	448.11
3-chlorophenyl	2-methoxyphenyl	H	methyl	478.11
3-methoxyphenyl	2,4-difluorophenyl	H	3,4-ethylenedioxybenzyl	614.14
3-methoxyphenyl	2-5-difluorophenyl	H	3,4-ethylenedioxybenzyl	614.14
3-chlorophenyl	2-chlorophenyl	H	cyclopropylmethyl	522.12

R	R^2	R^7	R^5	obs M+1 m/z
3-methoxyphenyl	N,R2,R7 = morpholine	N,R2,R7 = morpholine	cyclopropylmethyl	478.11
3-methoxyphenyl	4-cyanophenyl	H	3,4-ethylenedioxybenzyl	603.14
3-methoxyphenyl	2-methoxyphenyl	H	3,4-ethylenedioxybenzyl	608.14
3-methoxyphenyl	4-methoxyphenyl	H	3,4-ethylenedioxybenzyl	608.14
3-methoxyphenyl	N,R2,R7 = pyrrolidine	N,R2,R7 = pyrrolidine	3,4-ethylenedioxybenzyl	556.13
3-chlorophenyl	Phenyl	Methyl	methyl	462.11
3-chlorophenyl	4-chlorophenyl	H	cyclopropylmethyl	522.12
3-methoxyphenyl	4-chlorophenyl	H	cyclopentyl	532.13
3-methoxyphenyl	ethyl	ethyl	3,4-ethylenedioxybenzyl	558.13
3-chlorophenyl	2-fluorophenyl	H	methyl	466.11
3-chlorophenyl	3-fluorophenyl	H	methyl	466.11
3-chlorophenyl	2-chlorophenyl	H	methyl	482.12
3-chlorophenyl	3-chlorophenyl	H	methyl	482.12
3-chlorophenyl	2,6-difluorophenyl	H	methyl	484.12
3-methoxyphenyl	3-fluorophenyl	H	3,4-ethylenedioxybenzyl	596.14
3-chlorophenyl	4-cyanophenyl	H	methyl	473.11
3-methoxyphenyl	Phenyl	Methyl	3,4-ethylenedioxybenzyl	592.14
3-methoxyphenyl	3,5-dichlorophenyl	H	methyl	512.12
3-methoxyphenyl	4-cyanophenyl	H	cyclopropylmethyl	509.12
3-methoxyphenyl	3-cyanophenyl	H	cyclopentyl	523.12
3-methoxyphenyl	3-chloro,4-fluorophenyl	H	3,4-ethylenedioxybenzyl	630.15
3-chlorophenyl	2-methoxyphenyl	H	cyclopropylmethyl	518.12
3-methoxyphenyl	3,5-dichlorophenyl	H	cyclopropylmethyl	552.13
3-methoxyphenyl	Phenyl	H	cyclopentyl	498.12
3-methoxyphenyl	3-chloro,4-fluorophenyl	H	cyclopentyl	550.13
3-methoxyphenyl	N,R2,R7 = morpholine	N,R2,R7 = morpholine	cyclopentyl	492.12
3-chlorophenyl	2,5-dimethoxyphenyl	H	methyl	508.12
3-methoxyphenyl	4-chlorophenyl	H	cyclopropylmethyl	518.12
3-chlorophenyl	3,4-difluorophenyl	H	methyl	484.12
3-chlorophenyl	Phenyl	H	cyclopropylmethyl	488.12

R	R^2	R^7	R^5	obs M+1 m/z
3-methoxyphenyl	2,6-difluorophenyl	H	cyclopentyl	534.13
3-methoxyphenyl	Methyl	Methyl	3,4-ethylenedioxybenzyl	530.13
3-chlorophenyl	4-methoxyphenyl	H	cyclopropylmethyl	518.12
3-methoxyphenyl	3-chloro,4-fluorophenyl	H	methyl	496.12
3-methoxyphenyl	3-chlorophenyl	H	cyclopentyl	532.13
3-methoxyphenyl	4-fluorophenyl	H	3,4-ethylenedioxybenzyl	596.14
3-chlorophenyl	4-fluorophenyl	H	methyl	466.11
3-methoxyphenyl	Phenyl	H	methyl	444.11
3-methoxyphenyl	2,4-difluorophenyl	H	cyclopropylmethyl	520.12
3-methoxyphenyl	2-methoxyphenyl	H	methyl	474.11
3-methoxyphenyl	2,6-difluorophenyl	H	cyclopropylmethyl	520.12
3-methoxyphenyl	2-chlorophenyl	H	3,4-ethylenedioxybenzyl	612.14
3-methoxyphenyl	2,5-dimethoxyphenyl	H	3,4-ethylenedioxybenzyl	638.15
3-chlorophenyl	ethyl	ethyl	methyl	428.1
3-methoxyphenyl	4-chlorophenyl	H	methyl	478.11
3-methoxyphenyl	2,4-difluorophenyl	H	methyl	480.12
3-methoxyphenyl	2-chlorophenyl	H	cyclopentyl	532.13
3-methoxyphenyl	2-chlorophenyl	H	cyclopropylmethyl	518.12
3-methoxyphenyl	4-methoxyphenyl	H	cyclopentyl	528.13
3-methoxyphenyl	4-chlorophenyl	H	3,4-ethylenedioxybenzyl	612.14
3-methoxyphenyl	2,6-difluorophenyl	H	3,4-ethylenedioxybenzyl	614.14
3-chlorophenyl	3,4-methylenedioxyphenyl	H	methyl	492.12
3-methoxyphenyl	2,4-dimethoxyphenyl	H	cyclopentyl	558.13
3-chlorophenyl	3-chlorophenyl	H	cyclopropylmethyl	522.12
3-methoxyphenyl	2-fluorophenyl	H	methyl	462.11
3-methoxyphenyl	3-cyanophenyl	H	methyl	469.11
3-methoxyphenyl	3-cyanophenyl	H	cyclopropylmethyl	509.12
3-methoxyphenyl	3,4-difluorophenyl	H	3,4-ethylenedioxybenzyl	614.14
3-methoxyphenyl	2-chlorophenyl	H	methyl	478.11
3-methoxyphenyl	3,4-difluorophenyl	H	methyl	480.12
3-methoxyphenyl	2,6-difluorophenyl	H	methyl	480.12

R	R^2	R^7	R^5	obs M+1 m/z
3-methoxyphenyl	N,R2,R7 = pyrrolidine	N,R2,R7 = pyrrolidine	methyl	422.1
3-methoxyphenyl	4-fluorophenyl	H	cyclopropylmethyl	502.12
3-methoxyphenyl	Phenyl	Methyl	cyclopentyl	512.12
3-chlorophenyl	2,4-dimethoxyphenyl	H	methyl	508.12
3-methoxyphenyl	3,4-methylenedioxyphenyl	H	cyclopropylmethyl	528.13
3-methoxyphenyl	3-chloro,4-fluorophenyl	H	cyclopropylmethyl	536.13
3-methoxyphenyl	2-5-difluorophenyl	H	cyclopropylmethyl	520.12
3-methoxyphenyl	3,4-methylenedioxyphenyl	H	cyclopentyl	542.13
3-methoxyphenyl	3,4-difluorophenyl	H	cyclopentyl	534.13
3-methoxyphenyl	ethyl	ethyl	cyclopentyl	478.11
3-methoxyphenyl	Phenyl	H	3,4-ethylenedioxybenzyl	578.14
3-methoxyphenyl	3-methoxyphenyl	H	3,4-ethylenedioxybenzyl	608.14
3-methoxyphenyl	3,5-dimethoxyphenyl	H	3,4-ethylenedioxybenzyl	638.15
3-chlorophenyl	3-methoxyphenyl	H	methyl	478.11
3-chlorophenyl	3,5-dimethoxyphenyl	H	methyl	508.12
3-methoxyphenyl	2-5-difluorophenyl	H	methyl	480.12
3-methoxyphenyl	2-fluorophenyl	H	cyclopropylmethyl	502.12
3-methoxyphenyl	3,5-dichlorophenyl	H	cyclopentyl	566.13
3-chlorophenyl	Methyl	Methyl	methyl	400.1
3-methoxyphenyl	3,4-methylenedioxyphenyl	H	methyl	488.12
3-methoxyphenyl	Methyl	Methyl	cyclopropylmethyl	436.11
3-chlorophenyl	3-cyanophenyl	H	methyl	473.11
3-chlorophenyl	N,R2,R7 = morpholine	N,R2,R7 = morpholine	methyl	442.11
3-methoxyphenyl	2,5-dimethoxyphenyl	H	methyl	504.12
3-methoxyphenyl	N,R2,R7 = morpholine	N,R2,R7 = morpholine	methyl	438.11

R	R^2	R^7	R^5	obs M+1 m/z
3-methoxyphenyl	2-methoxyphenyl	H	cyclopropylmethyl	514.12
3-methoxyphenyl	4-cyanophenyl	H	cyclopentyl	523.12
3-methoxyphenyl	N,R2,R7 = pyrrolidine	N,R2,R7 = pyrrolidine	cyclopentyl	476.11
3-chlorophenyl	N,R2,R7 = pyrrolidine	N,R2,R7 = pyrrolidine	methyl	426.1
3-methoxyphenyl	4-methoxyphenyl	H	cyclopropylmethyl	514.12
3-methoxyphenyl	ethyl	ethyl	cyclopropylmethyl	464.11
3-methoxyphenyl	3,5-dimethoxyphenyl	H	cyclopentyl	558.13
3-methoxyphenyl	2-5-difluorophenyl	H	cyclopentyl	534.13
3-methoxyphenyl	Methyl	Methyl	cyclopentyl	450.11
3-chlorophenyl	2,4-difluorophenyl	H	methyl	484.12
3-methoxyphenyl	4-fluorophenyl	H	methyl	462.11
3-methoxyphenyl	Phenyl	Methyl	methyl	458.11
3-methoxyphenyl	Phenyl	Methyl	cyclopropylmethyl	498.12
3-methoxyphenyl	2,5-dimethoxyphenyl	H	cyclopentyl	558.13
3-methoxyphenyl	4-fluorophenyl	H	cyclopentyl	516.1
3-methoxyphenyl	2,4-difluorophenyl	H	cyclopentyl	534.13
3-chlorophenyl	3-methoxyphenyl	H	cyclopropylmethyl	518.12
3-methoxyphenyl	2-methoxyphenyl	H	cyclopentyl	528.13
3-methoxyphenyl	3,5-dichlorophenyl	H	3,4-ethylenedioxybenzyl	646.15
3-methoxyphenyl	2,4-dimethoxyphenyl	H	3,4-ethylenedioxybenzyl	638.15
3-methoxyphenyl	3-fluorophenyl	H	cyclopropylmethyl	502.12
3-methoxyphenyl	2-fluorophenyl	H	cyclopentyl	516.12
3-methoxyphenyl	3-chlorophenyl	H	methyl	478.11
3-methoxyphenyl	2,4-dimethoxyphenyl	H	methyl	504.12
3-methoxyphenyl	3-fluorophenyl	H	methyl	462.11
3-methoxyphenyl	3-methoxyphenyl	H	cyclopropylmethyl	514.12
3-methoxyphenyl	3-fluorophenyl	H	cyclopentyl	516.12
3-methoxyphenyl	isopropyl	isopropyl	cyclopentyl	506.12
3-methoxyphenyl	N,R2,R7 = morpholine	N,R2,R7 = morpholine	3,4-ethylenedioxybenzyl	572.13
3-methoxyphenyl	3-chlorophenyl	H	cyclopropylmethyl	518.12
3-methoxyphenyl	3,4-difluorophenyl	H	cyclopropylmethyl	520.12
3-methoxyphenyl	Methyl	Methyl	methyl	396.1

R	R^2	R^7	R^5	obs M+1 m/z
3-methoxyphenyl	N,R2,R7 = pyrrolidine	N,R2,R7 = pyrrolidine	cyclopropylmethyl	462.11
3-chlorophenyl	2-5-difluorophenyl	H	methyl	484.12
3-methoxyphenyl	2,4-dimethoxyphenyl	H	cyclopropylmethyl	544.13
3-methoxyphenyl	3-chlorophenyl	H	3,4-ethylenedioxybenzyl	612.14
3-methoxyphenyl	ethyl	ethyl	methyl	424.1
3-methoxyphenyl	3,5-dimethoxyphenyl	H	cyclopropylmethyl	544.13
3-chlorophenyl	4-methoxyphenyl	H	methyl	478.11
3-methoxyphenyl	3-methoxyphenyl	H	methyl	474.11
3-methoxyphenyl	3,4-methylenedioxypheny l	H	3,4-ethylenedioxybenzyl	622.15
3-methoxyphenyl	isopropyl	isopropyl	3,4-ethylenedioxybenzyl	586.14
3-chlorophenyl	isopropyl	isopropyl	methyl	456.11
3-methoxyphenyl	Phenyl	H	cyclopropylmethyl	484.12
3-methoxyphenyl	4-cyanophenyl	H	methyl	469.11
3-methoxyphenyl	isopropyl	isopropyl	methyl	452.11
3-methoxyphenyl	3-methoxyphenyl	H	cyclopentyl	528.13
3-methoxyphenyl	4-methoxyphenyl	H	methyl	474.11
3-methoxyphenyl	3,5-dimethoxyphenyl	H	methyl	504.12
3-methoxyphenyl	2,5-dimethoxyphenyl	H	cyclopropylmethyl	544.13
3-methoxyphenyl	isopropyl	isopropyl	cyclopropylmethyl	492.12
3-chlorophenyl	3,4-methylenedioxypheny l	H	cyclopropylmethyl	532.13
3-chlorophenyl	2,5-dimethoxyphenyl	H	cyclopropylmethyl	548.13
3-chlorophenyl	2,4-dimethoxyphenyl	H	cyclopropylmethyl	548.13
3-chlorophenyl	3,5-dimethoxyphenyl	H	cyclopropylmethyl	548.13
3-chlorophenyl	2-fluorophenyl	H	cyclopropylmethyl	506.12
3-chlorophenyl	3-fluorophenyl	H	cyclopropylmethyl	506.12
3-chlorophenyl	4-fluorophenyl	H	cyclopropylmethyl	506.12
3-chlorophenyl	3,4-difluorophenyl	H	cyclopropylmethyl	524.12
3-chlorophenyl	2,4-difluorophenyl	H	cyclopropylmethyl	524.12
3-chlorophenyl	2,6-difluorophenyl	H	cyclopropylmethyl	524.12
3-chlorophenyl	2-5-difluorophenyl	H	cyclopropylmethyl	524.12

R	R^2	R^7	R^5	obs M+1 m/z
3-chlorophenyl	3-cyanophenyl	H	cyclopropylmethyl	513.12
3-chlorophenyl	4-cyanophenyl	H	cyclopropylmethyl	513.12
3-chlorophenyl	N,R2,R7 = pyrrolidine	N,R2,R7 = pyrrolidine	cyclopropylmethyl	466.11
3-chlorophenyl	N,R2,R7 = morpholine	N,R2,R7 = morpholine	cyclopropylmethyl	482.12
3-chlorophenyl	Phenyl	Methyl	cyclopropylmethyl	502.12
3-chlorophenyl	isopropyl	isopropyl	cyclopropylmethyl	496.12
3-chlorophenyl	Methyl	Methyl	cyclopropylmethyl	440.11
3-chlorophenyl	ethyl	ethyl	cyclopropylmethyl	468.11
3-chlorophenyl	Phenyl	H	cyclopentyl	502.12
3-chlorophenyl	2-chlorophenyl	H	cyclopentyl	536.13
3-chlorophenyl	3-chlorophenyl	H	cyclopentyl	536.13
3-chlorophenyl	4-chlorophenyl	H	cyclopentyl	536.13
3-chlorophenyl	2-methoxyphenyl	H	cyclopentyl	532.13
3-chlorophenyl	3-methoxyphenyl	H	cyclopentyl	532.13
3-chlorophenyl	4-methoxyphenyl	H	cyclopentyl	532.13
3-chlorophenyl	3,4-methylenedioxyphenyl	H	cyclopentyl	546.13
3-chlorophenyl	2,5-dimethoxyphenyl	H	cyclopentyl	562.13
3-chlorophenyl	2,4-dimethoxyphenyl	H	cyclopentyl	562.13
3-chlorophenyl	3,5-dimethoxyphenyl	H	cyclopentyl	562.13
3-chlorophenyl	2-fluorophenyl	H	cyclopentyl	520.12
3-chlorophenyl	3-fluorophenyl	H	cyclopentyl	520.12
3-chlorophenyl	4-fluorophenyl	H	cyclopentyl	520.12
3-chlorophenyl	3,4-difluorophenyl	H	cyclopentyl	538.13
3-chlorophenyl	2,4-difluorophenyl	H	cyclopentyl	538.13
3-chlorophenyl	2,6-difluorophenyl	H	cyclopentyl	538.13
3-chlorophenyl	2-5-difluorophenyl	H	cyclopentyl	538.13
3-chlorophenyl	3-cyanophenyl	H	cyclopentyl	527.12
3-chlorophenyl	4-cyanophenyl	H	cyclopentyl	527.12
3-chlorophenyl	N,R2,R7 = pyrrolidine	N,R2,R7 = pyrrolidine	cyclopentyl	480.12

R	R^2	R^7	R^5	obs M+1 m/z
3-chlorophenyl	N,R2,R7 = morpholine	N,R2,R7 = morpholine	cyclopentyl	496.12
3-chlorophenyl	Phenyl	Methyl	cyclopentyl	516.12
3-chlorophenyl	isopropyl	isopropyl	cyclopentyl	510.12
3-chlorophenyl	Methyl	Methyl	cyclopentyl	454.11
3-chlorophenyl	ethyl	ethyl	cyclopentyl	482.12
3-chlorophenyl	Phenyl	H	3,4-ethylenedioxybenzyl	582.14
3-chlorophenyl	2-chlorophenyl	H	3,4-ethylenedioxybenzyl	616.14
3-chlorophenyl	3-chlorophenyl	H	3,4-ethylenedioxybenzyl	616.14
3-chlorophenyl	4-chlorophenyl	H	3,4-ethylenedioxybenzyl	616.14
3-chlorophenyl	2-methoxyphenyl	H	3,4-ethylenedioxybenzyl	612.14
3-chlorophenyl	3-methoxyphenyl	H	3,4-ethylenedioxybenzyl	612.14
3-chlorophenyl	4-methoxyphenyl	H	3,4-ethylenedioxybenzyl	612.14
3-chlorophenyl	3,4-methylenedioxyphenyl	H	3,4-ethylenedioxybenzyl	626.15
3-chlorophenyl	2,5-dimethoxyphenyl	H	3,4-ethylenedioxybenzyl	642.15
3-chlorophenyl	2,4-dimethoxyphenyl	H	3,4-ethylenedioxybenzyl	642.15
3-chlorophenyl	3,5-dimethoxyphenyl	H	3,4-ethylenedioxybenzyl	642.15
3-chlorophenyl	2-fluorophenyl	H	3,4-ethylenedioxybenzyl	600.14
3-chlorophenyl	3-fluorophenyl	H	3,4-ethylenedioxybenzyl	600.14
3-chlorophenyl	4-fluorophenyl	H	3,4-ethylenedioxybenzyl	600.14
3-chlorophenyl	3-chloro,4-fluorophenyl	H	3,4-ethylenedioxybenzyl	634.15
3-chlorophenyl	3,4-difluorophenyl	H	3,4-ethylenedioxybenzyl	618.14
3-chlorophenyl	2,4-difluorophenyl	H	3,4-ethylenedioxybenzyl	618.14
3-chlorophenyl	2,6-difluorophenyl	H	3,4-ethylenedioxybenzyl	618.14
3-chlorophenyl	2-5-difluorophenyl	H	3,4-ethylenedioxybenzyl	618.14
3-chlorophenyl	3-cyanophenyl	H	3,4-ethylenedioxybenzyl	607.14
3-chlorophenyl	N,R2,R7 = pyrrolidine	N,R2,R7 = pyrrolidine	3,4-ethylenedioxybenzyl	560.13
3-chlorophenyl	N,R2,R7 = morpholine	N,R2,R7 = morpholine	3,4-ethylenedioxybenzyl	576.14
3-chlorophenyl	Phenyl	Methyl	3,4-ethylenedioxybenzyl	596.14
3-chlorophenyl	isopropyl	isopropyl	3,4-ethylenedioxybenzyl	590.14

R	R^2	R^7	R^5	obs M+1 m/z
3-chlorophenyl	Methyl	Methyl	3,4-ethylenedioxybenzyl	534.13
3-chlorophenyl	ethyl	ethyl	3,4-ethylenedioxybenzyl	562.13
3-cyanophenyl	3-fluorophenyl	H	4-pyranyl	527.1
3-cyanophenyl	3-cyanophenyl	H	4-pyranyl	534.1
4-fluorophenyl	Phenyl	H	methyl	432.1
4-fluorophenyl	2-chlorophenyl	H	methyl	466.11
4-fluorophenyl	3-chlorophenyl	H	methyl	466.11
4-fluorophenyl	4-chlorophenyl	H	methyl	466.11
4-fluorophenyl	2-methoxyphenyl	H	methyl	462.11
4-fluorophenyl	3-methoxyphenyl	H	methyl	462.11
4-fluorophenyl	4-methoxyphenyl	H	methyl	462.11
4-fluorophenyl	3,4-methylenedioxyphenyl	H	methyl	476.11
4-fluorophenyl	2,5-dimethoxyphenyl	H	methyl	492.12
4-fluorophenyl	2,4-dimethoxyphenyl	H	methyl	492.12
4-fluorophenyl	3,5-dimethoxyphenyl	H	methyl	492.12
4-fluorophenyl	2-fluorophenyl	H	methyl	450.11
4-fluorophenyl	3-fluorophenyl	H	methyl	450.11
4-fluorophenyl	4-fluorophenyl	H	methyl	450.11
4-fluorophenyl	3-chloro,4-fluorophenyl	H	methyl	484.12
4-fluorophenyl	3,4-difluorophenyl	H	methyl	468.11
4-fluorophenyl	2,4-difluorophenyl	H	methyl	468.11
4-fluorophenyl	2,6-difluorophenyl	H	methyl	468.11
4-fluorophenyl	2-5-difluorophenyl	H	methyl	468.11
4-fluorophenyl	3-cyanophenyl	H	methyl	457.11
4-fluorophenyl	4-cyanophenyl	H	methyl	457.11
4-fluorophenyl	N,R2,R7 = pyrrolidine	N,R2,R7 = pyrrolidine	methyl	410.1
4-fluorophenyl	N,R2,R7 = morpholine	N,R2,R7 = morpholine	methyl	426.1
4-fluorophenyl	Phenyl	Methyl	methyl	446.11
4-fluorophenyl	isopropyl	isopropyl	methyl	440.11
4-fluorophenyl	Methyl	Methyl	methyl	384.09

R	R^2	R^7	R^5	obs M+1 m/z
4-fluorophenyl	ethyl	ethyl	methyl	412.1
4-fluorophenyl	Phenyl	H	cyclopropylmethyl	472.11
4-fluorophenyl	3,5-dichlorophenyl	H	cyclopropylmethyl	540.13
4-fluorophenyl	2-chlorophenyl	H	cyclopropylmethyl	506.12
4-fluorophenyl	3-chlorophenyl	H	cyclopropylmethyl	506.12
4-fluorophenyl	4-chlorophenyl	H	cyclopropylmethyl	506.12
4-fluorophenyl	2-methoxyphenyl	H	cyclopropylmethyl	502.12
4-fluorophenyl	3-methoxyphenyl	H	cyclopropylmethyl	502.12
4-fluorophenyl	4-methoxyphenyl	H	cyclopropylmethyl	502.12
4-fluorophenyl	3,4-methylenedioxyphenyl	H	cyclopropylmethyl	516.12
4-fluorophenyl	2,5-dimethoxyphenyl	H	cyclopropylmethyl	532.13
4-fluorophenyl	2,4-dimethoxyphenyl	H	cyclopropylmethyl	532.13
4-fluorophenyl	3,5-dimethoxyphenyl	H	cyclopropylmethyl	532.13
4-fluorophenyl	2-fluorophenyl	H	cyclopropylmethyl	490.12
4-fluorophenyl	3-fluorophenyl	H	cyclopropylmethyl	490.12
4-fluorophenyl	4-fluorophenyl	H	cyclopropylmethyl	490.12
4-fluorophenyl	3-chloro,4-fluorophenyl	H	cyclopropylmethyl	524.12
4-fluorophenyl	3,4-difluorophenyl	H	cyclopropylmethyl	508.12
4-fluorophenyl	2,4-difluorophenyl	H	cyclopropylmethyl	508.12
4-fluorophenyl	2,6-difluorophenyl	H	cyclopropylmethyl	508.12
4-fluorophenyl	2-5-difluorophenyl	H	cyclopropylmethyl	508.12
4-fluorophenyl	3-cyanophenyl	H	cyclopropylmethyl	497.12
4-fluorophenyl	4-cyanophenyl	H	cyclopropylmethyl	497.12
4-fluorophenyl	N,R2,R7 = pyrrolidine	N,R2,R7 = pyrrolidine	cyclopropylmethyl	450.11
4-fluorophenyl	Phenyl	Methyl	cyclopropylmethyl	486.12
4-fluorophenyl	isopropyl	isopropyl	cyclopropylmethyl	480.12
4-fluorophenyl	Methyl	Methyl	cyclopropylmethyl	424.1
4-fluorophenyl	ethyl	ethyl	cyclopropylmethyl	452.11
4-fluorophenyl	Phenyl	H	cyclopentyl	486.12
4-fluorophenyl	3,5-dichlorophenyl	H	cyclopentyl	554.13
4-fluorophenyl	2-chlorophenyl	H	cyclopentyl	520.12

R	R^2	R^7	R^5	obs M+1 m/z
4-fluorophenyl	3-chlorophenyl	H	cyclopentyl	520.12
4-fluorophenyl	4-chlorophenyl	H	cyclopentyl	520.12
4-fluorophenyl	2-methoxyphenyl	H	cyclopentyl	516.12
4-fluorophenyl	3-methoxyphenyl	H	cyclopentyl	516.12
4-fluorophenyl	4-methoxyphenyl	H	cyclopentyl	516.12
4-fluorophenyl	3,4-methylenedioxyphenyl	H	cyclopentyl	530.13
4-fluorophenyl	2,5-dimethoxyphenyl	H	cyclopentyl	546.1
4-fluorophenyl	2,4-dimethoxyphenyl	H	cyclopentyl	546.13
4-fluorophenyl	3,5-dimethoxyphenyl	H	cyclopentyl	546.13
4-fluorophenyl	2-fluorophenyl	H	cyclopentyl	504.12
4-fluorophenyl	3-fluorophenyl	H	cyclopentyl	504.12
4-fluorophenyl	4-fluorophenyl	H	cyclopentyl	504.12
4-fluorophenyl	3-chloro,4-fluorophenyl	H	cyclopentyl	538.13
4-fluorophenyl	3,4-difluorophenyl	H	cyclopentyl	522.12
4-fluorophenyl	2,4-difluorophenyl	H	cyclopentyl	522.12
4-fluorophenyl	2,6-difluorophenyl	H	cyclopentyl	522.12
4-fluorophenyl	2-5-difluorophenyl	H	cyclopentyl	522.12
4-fluorophenyl	3-cyanophenyl	H	cyclopentyl	511.1
4-fluorophenyl	4-cyanophenyl	H	cyclopentyl	511.12
4-fluorophenyl -	N,R2,R7 = pyrrolidine	N,R2,R7 = pyrrolidine	cyclopentyl	464.11
4-fluorophenyl	N,R2,R7 = morpholine	N,R2,R7 = morpholine	cyclopentyl	480.12
4-fluorophenyl	Phenyl	Methyl	cyclopentyl	500.12
4-fluorophenyl	isopropyl	isopropyl	cyclopentyl	494.12
4-fluorophenyl	Methyl	Methyl	cyclopentyl	438.11
4-fluorophenyl	ethyl	ethyl	cyclopentyl	466.11
4-fluorophenyl	Phenyl	H	3,4-ethylenedioxybenzyl	566.13
4-fluorophenyl	3,5-dichlorophenyl	H	3,4-ethylenedioxybenzyl	634.15
4-fluorophenyl	2-chlorophenyl	H	3,4-ethylenedioxybenzyl	600.14
4-fluorophenyl	3-chlorophenyl	H	3,4-ethylenedioxybenzyl	600.14
4-fluorophenyl	4-chlorophenyl	H	3,4-ethylenedioxybenzyl	600.14

R	R^2	R^7	R^5	obs M+1 m/z
4-fluorophenyl	2-methoxyphenyl	H	3,4-ethylenedioxybenzyl	596.14
4-fluorophenyl	3-methoxyphenyl	H	3,4-ethylenedioxybenzyl	596.14
4-fluorophenyl	4-methoxyphenyl	H	3,4-ethylenedioxybenzyl	596.14
4-fluorophenyl	3,4-methylenedioxyphenyl	H	3,4-ethylenedioxybenzyl	610.14
4-fluorophenyl	2,5-dimethoxyphenyl	H	3,4-ethylenedioxybenzyl	626.15
4-fluorophenyl	2,4-dimethoxyphenyl	H	3,4-ethylenedioxybenzyl	626.15
4-fluorophenyl	3,5-dimethoxyphenyl	H	3,4-ethylenedioxybenzyl	626.15
4-fluorophenyl	2-fluorophenyl	H	3,4-ethylenedioxybenzyl	584.14
4-fluorophenyl	3-fluorophenyl	H	3,4-ethylenedioxybenzyl	584.14
4-fluorophenyl	4-fluorophenyl	H	3,4-ethylenedioxybenzyl	584.14
4-fluorophenyl	3-chloro,4-fluorophenyl	H	3,4-ethylenedioxybenzyl	618.14
4-fluorophenyl	3,4-difluorophenyl	H	3,4-ethylenedioxybenzyl	602.14
4-fluorophenyl	2,4-difluorophenyl	H	3,4-ethylenedioxybenzyl	602.14
4-fluorophenyl	2,6-difluorophenyl	H	3,4-ethylenedioxybenzyl	602.14
4-fluorophenyl	2-5-difluorophenyl	H	3,4-ethylenedioxybenzyl	602.14
4-fluorophenyl	3-cyanophenyl	H	3,4-ethylenedioxybenzyl	591.14
4-fluorophenyl	4-cyanophenyl	H	3,4-ethylenedioxybenzyl	591.1
4-fluorophenyl	N,R2,R7 = pyrrolidine	N,R2,R7 = pyrrolidine	3,4-ethylenedioxybenzyl	544.13
4-fluorophenyl	N,R2,R7 = morpholine	N,R2,R7 = morpholine	3,4-ethylenedioxybenzyl	560.13
4-fluorophenyl	Phenyl	Methyl	3,4-ethylenedioxybenzyl	580.14
4-fluorophenyl	isopropyl	isopropyl	3,4-ethylenedioxybenzyl	574.13
4-fluorophenyl	Methyl	Methyl	3,4-ethylenedioxybenzyl	518.12
4-methoxyphenyl	Phenyl	H	methyl	444.11
4-methoxyphenyl	3,5-dichlorophenyl	H	methyl	512.12
4-methoxyphenyl	2-chlorophenyl	H	methyl	478.11
4-methoxyphenyl	3-chlorophenyl	H	methyl	478.11
4-methoxyphenyl	4-chlorophenyl	H	methyl	478.11
4-methoxyphenyl	2-methoxyphenyl	H	methyl	474.11
4-methoxyphenyl	3-methoxyphenyl	H	methyl	474.11
4-methoxyphenyl	4-methoxyphenyl	H	methyl	474.11

R	R^2	R^7	R^5	obs M+1 m/z
4-methoxyphenyl	3,4-methylenedioxyphenyl	H	methyl	488.12
4-methoxyphenyl	2,5-dimethoxyphenyl	H	methyl	504.12
4-methoxyphenyl	2,4-dimethoxyphenyl	H	methyl	504.12
4-methoxyphenyl	3,5-dimethoxyphenyl	H	methyl	504.12
4-methoxyphenyl	2-fluorophenyl	H	methyl	462.11
4-methoxyphenyl	3-fluorophenyl	H	methyl	462.11
4-methoxyphenyl	4-fluorophenyl	H	methyl	462.11
4-methoxyphenyl	3-chloro,4-fluorophenyl	H	methyl	496.12
4-methoxyphenyl	3,4-difluorophenyl	H	methyl	480.12
4-methoxyphenyl	2,4-difluorophenyl	H	methyl	480.12
4-methoxyphenyl	2,6-difluorophenyl	H	methyl	480.12
4-methoxyphenyl	2-5-difluorophenyl	H	methyl	480.12
4-methoxyphenyl	3-cyanophenyl	H	methyl	469.11
4-methoxyphenyl	4-cyanophenyl	H	methyl	469.11
4-methoxyphenyl	N,R2,R7 = pyrrolidine	N,R2,R7 = pyrrolidine	methyl	422.1
4-methoxyphenyl	N,R2,R7 = morpholine	N,R2,R7 = morpholine	methyl	438.11
4-methoxyphenyl	Phenyl	Methyl	methyl	458.11
4-methoxyphenyl	isopropyl	isopropyl	methyl	452.11
4-methoxyphenyl	Methyl	Methyl	methyl	396.1
4-methoxyphenyl	ethyl	ethyl	methyl	424.1
4-methoxyphenyl	Phenyl	H	cyclopropylmethyl	484.12
4-methoxyphenyl	3,5-dichlorophenyl	H	cyclopropylmethyl	552.13
4-methoxyphenyl	2-chlorophenyl	H	cyclopropylmethyl	518.12
4-methoxyphenyl	3-chlorophenyl	H	cyclopropylmethyl	518.12
4-methoxyphenyl	4-chlorophenyl	H	cyclopropylmethyl	518.12
4-methoxyphenyl	2-methoxyphenyl	H	cyclopropylmethyl	514.12
4-methoxyphenyl	3-methoxyphenyl	H	cyclopropylmethyl	514.12
4-methoxyphenyl	4-methoxyphenyl	H	cyclopropylmethyl	514.12

R	R^2	R^7	R^5	obs M+1 m/z
4-methoxyphenyl	3,4-methylenedioxyphenyl	H	cyclopropylmethyl	528.13
4-methoxyphenyl	2,5-dimethoxyphenyl	H	cyclopropylmethyl	544.13
4-methoxyphenyl	2,4-dimethoxyphenyl	H	cyclopropylmethyl	544.13
4-methoxyphenyl	3,5-dimethoxyphenyl	H	cyclopropylmethyl	544.13
4-methoxyphenyl	2-fluorophenyl	H	cyclopropylmethyl	502.12
4-methoxyphenyl	3-fluorophenyl	H	cyclopropylmethyl	502.12
4-methoxyphenyl	4-fluorophenyl	H	cyclopropylmethyl	502.12
4-methoxyphenyl	3-chloro,4-fluorophenyl	H	cyclopropylmethyl	536.13
4-methoxyphenyl	3,4-difluorophenyl	H	cyclopropylmethyl	520.12
4-methoxyphenyl	2,4-difluorophenyl	H	cyclopropylmethyl	521.12
4-methoxyphenyl	2,6-difluorophenyl	H	cyclopropylmethyl	520.12
4-methoxyphenyl	2-5-difluorophenyl	H	cyclopropylmethyl	520.12
4-methoxyphenyl	3-cyanophenyl	H	cyclopropylmethyl	509.12
4-methoxyphenyl	4-cyanophenyl	H	cyclopropylmethyl	509.12
4-methoxyphenyl	N,R2,R7 = pyrrolidine	N,R2,R7 = pyrrolidine	cyclopropylmethyl	462.11
4-methoxyphenyl	N,R2,R7 = morpholine	N,R2,R7 = morpholine	cyclopropylmethyl	478.11
4-methoxyphenyl	Phenyl	Methyl	cyclopropylmethyl	498.12
4-methoxyphenyl	isopropyl	isopropyl	cyclopropylmethyl	492.12
4-methoxyphenyl	Methyl	Methyl	cyclopropylmethyl	436.11
4-methoxyphenyl	ethyl	ethyl	cyclopropylmethyl	464.11
4-methoxyphenyl	3,5-dichlorophenyl	H	cyclopentyl	566.13
4-methoxyphenyl	2-chlorophenyl	H	cyclopentyl	532.13
4-methoxyphenyl	3-chlorophenyl	H	cyclopentyl	532.1
4-methoxyphenyl	4-chlorophenyl	H	cyclopentyl	532.13
4-methoxyphenyl	2-methoxyphenyl	H	cyclopentyl	528.1
4-methoxyphenyl	3-methoxyphenyl	H	cyclopentyl	528.1
4-methoxyphenyl	4-methoxyphenyl	H	cyclopentyl	528.13
4-methoxyphenyl	3,4-methylenedioxyphenyl	H	cyclopentyl	542.13
4-methoxyphenyl	2,5-dimethoxyphenyl	H	cyclopentyl	558.13
4-methoxyphenyl	2,4-dimethoxyphenyl	H	cyclopentyl	558.13

R	R^2	R^7	R^5	obs M+1 m/z
4-methoxyphenyl	3,5-dimethoxyphenyl	H	cyclopentyl	558.1
4-methoxyphenyl	2-fluorophenyl	H	cyclopentyl	516.1
4-methoxyphenyl	3-fluorophenyl	H	cyclopentyl	516.12
4-methoxyphenyl	4-fluorophenyl	H	cyclopentyl	516.12
4-methoxyphenyl	3-chloro,4-fluorophenyl	H	cyclopentyl	550.13
4-methoxyphenyl	3,4-difluorophenyl	H	cyclopentyl	534.13
4-methoxyphenyl	2,4-difluorophenyl	H	cyclopentyl	535.13
4-methoxyphenyl	2,6-difluorophenyl	H	cyclopentyl	534.1
4-methoxyphenyl	2-5-difluorophenyl	H	cyclopentyl	534.1
4-methoxyphenyl	3-cyanophenyl	H	cyclopentyl	523.12
4-methoxyphenyl	4-cyanophenyl	H	cyclopentyl	523.12
4-methoxyphenyl	N,R2,R7 = pyrrolidine	N,R2,R7 = pyrrolidine	cyclopentyl	476.11
4-methoxyphenyl	N,R2,R7 = morpholine	N,R2,R7 = morpholine	cyclopentyl	492.12
4-fluorophenyl	N,R2,R7 = morpholine	N,R2,R7 = morpholine	cyclopropylmethyl	466.11
4-methoxyphenyl	Phenyl	Methyl	cyclopentyl	512.12
4-methoxyphenyl	isopropyl	isopropyl	cyclopentyl	506.12
4-methoxyphenyl	Methyl	Methyl	cyclopentyl	450.11
4-methoxyphenyl	ethyl	ethyl	cyclopentyl	478.11
4-methoxyphenyl	Phenyl	H	3,4-ethylenedioxybenzyl	578.14
4-methoxyphenyl	3,5-dichlorophenyl	H	3,4-ethylenedioxybenzyl	646.15
4-methoxyphenyl	2-chlorophenyl	H	3,4-ethylenedioxybenzyl	612.14
4-methoxyphenyl	3-chlorophenyl	H	3,4-ethylenedioxybenzyl	612.14
4-methoxyphenyl	4-chlorophenyl	H	3,4-ethylenedioxybenzyl	612.14
4-methoxyphenyl	2-methoxyphenyl	H	3,4-ethylenedioxybenzyl	608.14
4-methoxyphenyl	3-methoxyphenyl	H	3,4-ethylenedioxybenzyl	608.14
4-methoxyphenyl	4-methoxyphenyl	H	3,4-ethylenedioxybenzyl	608.14
4-methoxyphenyl	3,4-methylenedioxyphenyl	H	3,4-ethylenedioxybenzyl	622.15
4-methoxyphenyl	2,5-dimethoxyphenyl	H	3,4-ethylenedioxybenzyl	638.15
4-methoxyphenyl	2,4-dimethoxyphenyl	H	3,4-ethylenedioxybenzyl	638.15
4-methoxyphenyl	3,5-dimethoxyphenyl	H	3,4-ethylenedioxybenzyl	638.15
4-methoxyphenyl	2-fluorophenyl	H	3,4-ethylenedioxybenzyl	596.14

R	R^2	R^7	R^5	obs M+1 m/z
4-methoxyphenyl	3-fluorophenyl	H	3,4-ethylenedioxybenzyl	596.14
4-methoxyphenyl	4-fluorophenyl	H	3,4-ethylenedioxybenzyl	596.14
4-methoxyphenyl	3-chloro,4-fluorophenyl	H	3,4-ethylenedioxybenzyl	630.15
4-methoxyphenyl	3,4-difluorophenyl	H	3,4-ethylenedioxybenzyl	614.14
4-methoxyphenyl	2,4-difluorophenyl	H	3,4-ethylenedioxybenzyl	614.14
4-methoxyphenyl	2,6-difluorophenyl	H	3,4-ethylenedioxybenzyl	614.14
4-methoxyphenyl	2-5-difluorophenyl	H	3,4-ethylenedioxybenzyl	614.14
4-methoxyphenyl	3-cyanophenyl	H	3,4-ethylenedioxybenzyl	603.14
4-methoxyphenyl	4-cyanophenyl	H	3,4-ethylenedioxybenzyl	603.14
4-methoxyphenyl	N,R2,R7 = pyrrolidine	N,R2,R7 = pyrrolidine	3,4-ethylenedioxybenzyl	556.13
4-methoxyphenyl	N,R2,R7 = morpholine	N,R2,R7 = morpholine	3,4-ethylenedioxybenzyl	572.13
4-methoxyphenyl	Phenyl	Methyl	3,4-ethylenedioxybenzyl	592.14
4-methoxyphenyl	isopropyl	isopropyl	3,4-ethylenedioxybenzyl	586.14
4-methoxyphenyl	Methyl	Methyl	3,4-ethylenedioxybenzyl	530.13
4-methoxyphenyl	ethyl	ethyl	3,4-ethylenedioxybenzyl	558.13
4-chlorophenyl	Phenyl	H	methyl	448.11
4-chlorophenyl	2-chlorophenyl	H	methyl	482.12
4-chlorophenyl	3-chlorophenyl	H	methyl	482.12
4-chlorophenyl	4-chlorophenyl	H	methyl	482.12
4-chlorophenyl	2-methoxyphenyl	H	methyl	478.11
4-chlorophenyl	3-methoxyphenyl	H	methyl	478.11
4-chlorophenyl	4-methoxyphenyl	H	methyl	478.11
4-chlorophenyl	3,4-methylenedioxyphenyl	H	methyl	492.12
4-chlorophenyl	2,5-dimethoxyphenyl	H	methyl	508.12
4-chlorophenyl	2,4-dimethoxyphenyl	H	methyl	508.12
4-chlorophenyl	3,5-dimethoxyphenyl	H	methyl	508.12
4-chlorophenyl	2-fluorophenyl	H	methyl	466.11
4-chlorophenyl	3-fluorophenyl	H	methyl	466.11
4-chlorophenyl	4-fluorophenyl	H	methyl	466.11
4-chlorophenyl	3-chloro,4-fluorophenyl	H	methyl	500.12
4-chlorophenyl	3,4-difluorophenyl	H	methyl	484.12

R	R^2	R^7	R^5	obs M+1 m/z
4-chlorophenyl	2,4-difluorophenyl	H	methyl	484.12
4-chlorophenyl	2,6-difluorophenyl	H	methyl	484.12
4-chlorophenyl	2-5-difluorophenyl	H	methyl	484.12
4-chlorophenyl	3-cyanophenyl	H	methyl	473.11
4-chlorophenyl	4-cyanophenyl	H	methyl	473.11
4-chlorophenyl	N,R2,R7 = pyrrolidine	N,R2,R7 = pyrrolidine	methyl	426.1
4-chlorophenyl	N,R2,R7 = morpholine	N,R2,R7 = morpholine	methyl	442.11
4-chlorophenyl	Phenyl	Methyl	methyl	462.11
4-chlorophenyl	Methyl	Methyl	methyl	400.1
4-chlorophenyl	ethyl	ethyl	methyl	428.1
4-chlorophenyl	Phenyl	H	cyclopropylmethyl	488.12
4-chlorophenyl	3,5-dichlorophenyl	H	cyclopropylmethyl	558.13
4-chlorophenyl	2-chlorophenyl	H	cyclopropylmethyl	522.12
4-chlorophenyl	3-chlorophenyl	H	cyclopropylmethyl	522.12
4-chlorophenyl	4-chlorophenyl	H	cyclopropylmethyl	522.12
4-chlorophenyl	2-methoxyphenyl	H	cyclopropylmethyl	518.12
4-chlorophenyl	3-methoxyphenyl	H	cyclopropylmethyl	518.12
4-chlorophenyl	4-methoxyphenyl	H	cyclopropylmethyl	518.12
4-chlorophenyl	3,4-methylenedioxyphenyl	H	cyclopropylmethyl	532.13
4-chlorophenyl	2,5-dimethoxyphenyl	H	cyclopropylmethyl	548.13
4-chlorophenyl	2,4-dimethoxyphenyl	H	cyclopropylmethyl	548.13
4-chlorophenyl	3,5-dimethoxyphenyl	H	cyclopropylmethyl	548.13
4-chlorophenyl	2-fluorophenyl	H	cyclopropylmethyl	506.12
4-chlorophenyl	3-fluorophenyl	H	cyclopropylmethyl	506.12
4-chlorophenyl	4-fluorophenyl	H	cyclopropylmethyl	506.12
4-chlorophenyl	3-chloro,4-fluorophenyl	H	cyclopropylmethyl	540.13
4-chlorophenyl	3,4-difluorophenyl	H	cyclopropylmethyl	524.12
4-chlorophenyl	2,4-difluorophenyl	H	cyclopropylmethyl	524.12
4-chlorophenyl	2,6-difluorophenyl	H	cyclopropylmethyl	524.12
4-chlorophenyl	2-5-difluorophenyl	H	cyclopropylmethyl	524.12
4-chlorophenyl	3-cyanophenyl	H	cyclopropylmethyl	513.12
4-chlorophenyl	4-cyanophenyl	H	cyclopropylmethyl	513.12

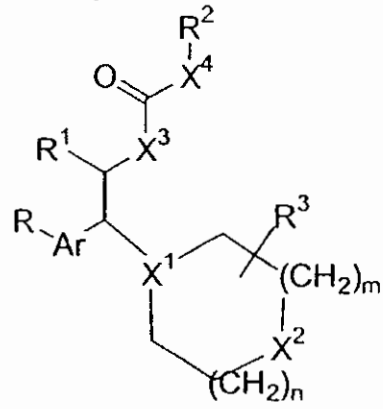
R	R^2	R^7	R^5	obs M+1 m/z
4-chlorophenyl	N,R2,R7 = pyrrolidine	N,R2,R7 = pyrrolidine	cyclopropylmethyl	466.11
4-chlorophenyl	N,R2,R7 = morpholine	N,R2,R7 = morpholine	cyclopropylmethyl	482.12
4-chlorophenyl	Phenyl	Methyl	cyclopropylmethyl	502.12
4-chlorophenyl	isopropyl	isopropyl	cyclopropylmethyl	496.12
4-chlorophenyl	Methyl	Methyl	cyclopropylmethyl	440.11
4-chlorophenyl	ethyl	ethyl	cyclopropylmethyl	468.11
4-chlorophenyl	Phenyl	H	cyclopentyl	502.12
4-chlorophenyl	3,5-dichlorophenyl	H	cyclopentyl	572.13
4-chlorophenyl	2-chlorophenyl	H	cyclopentyl	536.13
4-chlorophenyl	3-chlorophenyl	H	cyclopentyl	536.13
4-chlorophenyl	4-chlorophenyl	H	cyclopentyl	536.13
4-chlorophenyl	2-methoxyphenyl	H	cyclopentyl	532.13
4-chlorophenyl	3-methoxyphenyl	H	cyclopentyl	532.13
4-chlorophenyl	4-methoxyphenyl	H	cyclopentyl	532.13
4-chlorophenyl	3,4-methylenedioxyphenyl	H	cyclopentyl	546.13
4-chlorophenyl	2,5-dimethoxyphenyl	H	cyclopentyl	562.13
4-chlorophenyl	2,4-dimethoxyphenyl	H	cyclopentyl	562.13
4-chlorophenyl	3,5-dimethoxyphenyl	H	cyclopentyl	562.13
4-chlorophenyl	2-fluorophenyl	H	cyclopentyl	520.12
4-chlorophenyl	3-fluorophenyl	H	cyclopentyl	520.12
4-chlorophenyl	4-fluorophenyl	H	cyclopentyl	520.12
4-chlorophenyl	3-chloro,4-fluorophenyl	H	cyclopentyl	554.13
4-chlorophenyl	3,4-difluorophenyl	H	cyclopentyl	538.13
4-chlorophenyl	2,4-difluorophenyl	H	cyclopentyl	538.13
4-chlorophenyl	2,6-difluorophenyl	H	cyclopentyl	538.1
4-chlorophenyl	2-5-difluorophenyl	H	cyclopentyl	538.13
4-chlorophenyl	3-cyanophenyl	H	cyclopentyl	527.12
4-chlorophenyl	4-cyanophenyl	H	cyclopentyl	527.12
4-chlorophenyl	N,R2,R7 = pyrrolidine	N,R2,R7 = pyrrolidine	cyclopentyl	480.12
4-chlorophenyl	N,R2,R7 = morpholine	N,R2,R7 = morpholine	cyclopentyl	496.12

R	R^2	R^7	R^5	obs M+1 m/z
4-chlorophenyl	Phenyl	Methyl	cyclopentyl	516.12
4-chlorophenyl	Methyl	Methyl	cyclopentyl	454.11
4-chlorophenyl	ethyl	ethyl	cyclopentyl	482.12
4-chlorophenyl	Phenyl	H	3,4-ethylenedioxybenzyl	582.14
4-chlorophenyl	3,5-dichlorophenyl	H	3,4-ethylenedioxybenzyl	652.16
4-chlorophenyl	2-chlorophenyl	H	3,4-ethylenedioxybenzyl	616.14
4-chlorophenyl	3-chlorophenyl	H	3,4-ethylenedioxybenzyl	616.14
4-chlorophenyl	4-chlorophenyl	H	3,4-ethylenedioxybenzyl	616.14
4-chlorophenyl	2-methoxyphenyl	H	3,4-ethylenedioxybenzyl	612.14
4-chlorophenyl	3-methoxyphenyl	H	3,4-ethylenedioxybenzyl	612.14
4-chlorophenyl	4-methoxyphenyl	H	3,4-ethylenedioxybenzyl	612.14
4-chlorophenyl	3,4-methylenedioxyphenyl	H	3,4-ethylenedioxybenzyl	626.15
4-chlorophenyl	2,5-dimethoxyphenyl	H	3,4-ethylenedioxybenzyl	642.15
4-chlorophenyl	2,4-dimethoxyphenyl	H	3,4-ethylenedioxybenzyl	642.15
4-chlorophenyl	3,5-dimethoxyphenyl	H	3,4-ethylenedioxybenzyl	642.15
4-chlorophenyl	2-fluorophenyl	H	3,4-ethylenedioxybenzyl	600.14
4-chlorophenyl	3-fluorophenyl	H	3,4-ethylenedioxybenzyl	600.14
4-chlorophenyl	4-fluorophenyl	H	3,4-ethylenedioxybenzyl	600.14
4-chlorophenyl	3-chloro,4-fluorophenyl	H	3,4-ethylenedioxybenzyl	634.15
4-chlorophenyl	3,4-difluorophenyl	H	3,4-ethylenedioxybenzyl	618.14
4-chlorophenyl	2,4-difluorophenyl	H	3,4-ethylenedioxybenzyl	618.14
4-chlorophenyl	2,6-difluorophenyl	H	3,4-ethylenedioxybenzyl	618.14
4-chlorophenyl	2-5-difluorophenyl	H	3,4-ethylenedioxybenzyl	618.14
4-chlorophenyl	3-cyanophenyl	H	3,4-ethylenedioxybenzyl	607.14
4-chlorophenyl	4-cyanophenyl	H	3,4-ethylenedioxybenzyl	607.14
4-chlorophenyl	N,R2,R7 = pyrrolidine	N,R2,R7 = pyrrolidine	3,4-ethylenedioxybenzyl	560.13
4-chlorophenyl	N,R2,R7 = morpholine	N,R2,R7 = morpholine	3,4-ethylenedioxybenzyl	576.14
4-chlorophenyl	Phenyl	Methyl	3,4-ethylenedioxybenzyl	596.14
4-chlorophenyl	Methyl	Methyl	3,4-ethylenedioxybenzyl	534.13
4-chlorophenyl	ethyl	ethyl	3,4-ethylenedioxybenzyl	562.13
4-fluorophenyl	3,5-difluorophenyl	N-R^7 absent	cyclopropylmethyl	493.1
4-fluorophenyl	3,5-difluorophenyl	N-R^7 absent	cyclopentyl	507.1

R	R^2	R^7	R^5	obs M+1 m/z
4-fluorophenyl	3-chlorophenyl	N-R^7 absent	cyclopropylmethyl	491.1
4-fluorophenyl	3-chlorophenyl	N-R^7 absent	cyclopentyl	505.1
4-fluorophenyl	3-cyanophenyl	N-R^7 absent	cyclopropylmethyl	482.1
4-fluorophenyl	3-cyanophenyl	N-R^7 absent	cyclopentyl	496.1
4-fluorophenyl	3-fluorophenyl	N-R^7 absent	cyclopropylmethyl	475.1
4-fluorophenyl	3-fluorophenyl	N-R^7 absent	cyclopentyl	489.1
4-fluorophenyl	4-chlorophenyl	N-R^7 absent	cyclopropylmethyl	491.1
4-fluorophenyl	4-chlorophenyl	N-R^7 absent	cyclopentyl	505.1
4-fluorophenyl	4-cyanophenyl	N-R^7 absent	cyclopropylmethyl	482.1
4-fluorophenyl	4-cyanophenyl	N-R^7 absent	cyclopentyl	496.1
4-fluorophenyl	4-fluorophenyl	N-R^7 absent	cyclopropylmethyl	475.1
4-fluorophenyl	4-fluorophenyl	N-R^7 absent	cyclopentyl	489.1
4-fluorophenyl	Phenyl	N-R^7 absent	cyclopropylmethyl	457.1
4-fluorophenyl	Phenyl	N-R^7 absent	cyclopentyl	471.1
4-fluorophenyl	3,5-dichlorophenyl	N-R^7 absent	cyclopropylmethyl	525.1
4-fluorophenyl	3,5-dichlorophenyl	N-R^7 absent	cyclopentyl	539.1
4-fluorophenyl	3,5-dimethoxyphenyl	N-R^7 absent	cyclopropylmethyl	517.1
4-fluorophenyl	3,5-dimethoxyphenyl	N-R^7 absent	cyclopentyl	531.1
4-fluorophenyl	3-methoxyphenyl	N-R^7 absent	cyclopropylmethyl	487.1
4-fluorophenyl	3-methoxyphenyl	N-R^7 absent	cyclopentyl	501.1
4-fluorophenyl	3,5-dimethoxyphenyl	N-R^7 absent	cyclopropylmethyl	517.1
4-fluorophenyl	3,5-dimethoxyphenyl	N-R^7 absent	cyclopentyl	531.1
4-fluorophenyl	3,4-methylenedioxyphenyl	N-R^7 absent	cyclopropylmethyl	501.1
4-fluorophenyl	3,4-methylenedioxyphenyl	N-R^7 absent	cyclopentyl	515.1
4-fluorophenyl	4-methoxyphenyl	N-R^7 absent	cyclopropylmethyl	487.1
4-fluorophenyl	4-methoxyphenyl	N-R^7 absent	cyclopentyl	501.1

WHAT IS CLAIMED:

1. A compound represented by the structural formula



I

or a pharmaceutically acceptable salt , solvate or prodrug thereof, wherein

m is a number from 0 to 3;

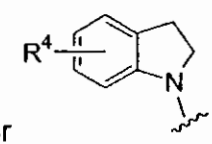
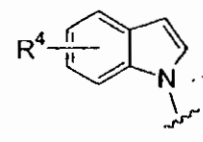
n is a number from 0 to 3;

m and n maybe the same or different;

X^1 is CH, N, or C-(C_1-C_3)alkyl;

X^2 is N-R^5, CH_2, O, S, SO, SO_2, CH-((C_1-C_6)alkyl), or CH-(CH_2O-(C_1-C_3)alkyl);

X^3 is O or N-R^6;

X^4 is a single bond, O, N, NH, N-R^7 or when X^4 is N, R^2 and X^4 can join together to form a heterocycloalkyl group such as piperidine, pyrrolidine, morpholine, piperazine, thiomorpholine or   where the N of X^4 is the heteroatom of said heterocycloalkyl group, wherein said heterocycloalkyl groups can be optionally substituted with one or more alkyl, aryl, aralkyl, or cycloalkylalkyl;

Ar is an arylene or heteroarylene group;

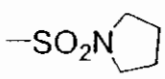
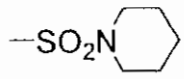
R is R^4-phenyl, R^4-pyridyl, R^4-pyridyl-N-oxide, R^4-pyrazyl or R^4-pyrimidyl;

R^1 is hydrogen or (C_1-C_3)alkyl;

R^2 is alkyl, arylalkyl, substituted arylalkyl, cycloalkyl, cycloalkylalkyl, R^8-phenyl, R^8-pyridyl, R^8-pyridyl-N-oxide;

R^3 is hydrogen, OH, -O(C_1-C_3)alkyl, or non-substituted or halosubstituted (C_1-C_3)alkyl;

R^4 and R^8 maybe the same or different, may number 0 to 3, each being independently selected from the group consisting of hydrogen, -(C_1-C_6)alkyl, -(C_3-C_7)cycloalkyl, halo, -CN, (C_1-C_6)alkoxy,-CF_3, -OCF_3, -$CONH_2$, -CONH(C_1-C_6)alkyl, -CON(C_1-C_6)alkyl (C_1-C_6)alkyl, -NH_2, -NHC(O)(C_1-C_6)alkyl, -NHC(O)NH(C_1-C_6)alkyl, -NHC(O)N((C_1-C_6)alkyl)((C_1-C_6)alkyl), -$NHSO_2$(C_1-C_6)alkyl, -S(C_1-C_6)alkyl, -SO(C_1-C_6)alkyl, -SO_2(C_1-C_6)alkyl, -SO_2NH (C_1-C_6)alkyl, -O(C_1-C_3)alkyleneO-, and NO_2 or two adjacent R^4 or two adjacent R^8 groups together may form a methylenedioxy, propylenedioxy or ethylenedioxy group;

R^5 is hydrogen, nonsubstituted or halosubstituted -(C_1-C_6)alkyl, nonsubstituted or halosubstituted (C_3-C_7)cycloalkyl, nonsubstituted or halosubstituted (C_3-C_7)cycloalkyl(C_1-C_6)alkyl, nonsubstituted or halosubstituted -(C_1-C_6) alkylene(C_1-C_6)alkoxy, nonsubstituted or halosubstituted alkoxycarbonyl, nonsubstituted or halosubstituted aryl, nonsubstituted or halosubstituted heterocycloalkyl, nonsubstituted or halosubstituted heteroaryl, nonsubstituted or halosubstituted aralkyl, nonsubstituted or halosubstituted (C_1-C_6)alkylbenzimidazole, nonsubstituted or halosubstituted heteroaralkyl, nonsubstituted or halosubstituted C(O)NH(C_1-C_3)alkylene $N(R^9)_2$, - SO_2(C_1-C_6)alkyl or wherein R^5 is independently selected from, -SO_2NH_2, -SO_2NHalkyl, -SO_2N$alkyl_2$,  and ;

R^6 and R^7 may be the same or different, each being independently selected from hydrogen, nonsubstituted or halosubstituted (C_1-C_3)alkyl; or R^6 and R^7 can be joined together to form a 4 to 7-membered ring;

and

R^9 is hydrogen, (C_1-C_6) alkyl, (C_3-C_7)cycloalkyl, (C_3-C_7)cycloalkylmethyl, aralkyl or heteroaralkyl, or the moiety –$N(R^9)_2$ may represent a pyrrolidine, piperazine or piperidine wherein the N of -$N(R^9)_2$ is the N of said pyrrolidine, piperazine or piperidine.

2. The compound of claim 1 wherein X^1 is CH or N;

X^2 is N-R^5;

X^3 is O or N-R^6;

X^4 is O, or N-R^7;

Ar is 1,4-phenylene;

R is R^4-phenyl, or R^4-pyridyl when R^4 numbers 1 and substitutes at the *meta* position of said phenyl or pyridyl;

R^1 is hydrogen;

R^2 is R^8-phenyl, where R^8 is 1-3 substituents which may be the same or different, each being independently selected from halogen, CF_3-, or (C_1-C_3)alkoxy-;

R^3 is hydrogen or methyl;

R^4 is 1 to 3 substituents which may be the same or different, each being independently selected from hydrogen, halogen, or CN;

R^5 is hydrogen, nonsubstituted or halosubstituted (C_1-C_6)alkyl, cyclopropylmethyl, CH_2-aryl, CH_2-heteroaryl, CH_2-CH_2-O-(C_1-C_6)alkyl, or SO_2-(C_1-C_6)alkyl;

R^6 and R^7 are hydrogen, or are joined together to form an imidazolone ring; and

m and n are the same or different and are equal to 0 or 1.

3. The compound of claim 2 wherein X^3 is O or NH.

4. The compound of claim 3 wherein X^4 is NH.

5. The compound of claim 4 wherein R is R^4-phenyl or R^4-pyridyl and R^4 numbers 1 and substitutes at the *meta* position.

6. The compound of claim 5 wherein R^2 is R^8-phenyl, where R^8 is 1 to 3 substituents which may be same or different, each being independently selected from halogen, CF_3, or (C_1-C_3)alkyl-O-.

7. The compound of claim 1 wherein R^3 is hydrogen or methyl.

8. The compound of claim 1 wherein R^4 is 1 to 3 substituents which may be the same or different, each being independently selected from hydrogen, halogen or CN.

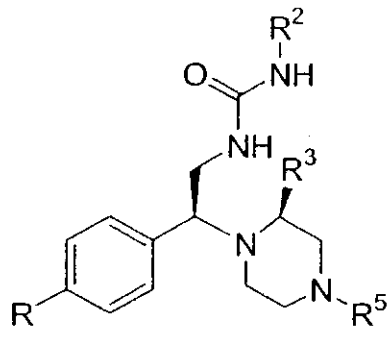
9. The compound of claim 1 wherein R^5 is hydrogen, nonsubstituted or halosubstituted (C_1-C_6)alkyl, cyclopropylmethyl, CH_2-aryl, CH_2-heteroaryl, CH_2-CH_2-O-(C_1-C_6)alkyl, or SO_2-(C_1-C_6)alkyl.

10. The compound of claim 1 wherein R^6 and R^7 are hydrogen.

11. The compound of claim 1 wherein R^6 and R^7 are joined together to form an imidazolone ring; m and n are the same or different and are equal to 0 or 1.

12. The compound of claim 1 wherein X^1 is CH, X^3 is NH or O, Ar is 1,4-phenylene, m is 1 and n is 1.

13. The compound of claim 1 wherein said compound has the formula Ic-a



Ic-a

wherein

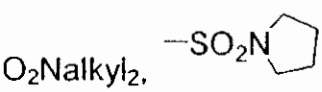
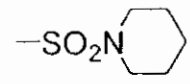
R is R^4-phenyl, R^4-pyridyl, R^4-pyridyl-N-oxide, R^4-pyrazyl or R^4-pyrimidyl;

R^2 is alkyl, arylalkyl, substituted arylalkyl, cycloalkyl, cycloalkylalkyl, R^8-phenyl, R^8-pyridyl, R^8-pyridyl-N-oxide;

R^3 is hydrogen, OH, -O(C_1-C_3)alkyl, or non-substituted or halosubstituted (C_1-C_3)alkyl;

R^4 and R^8 maybe the same or different, may number 0 to 3, each being independently selected from the group consisting of hydrogen, -(C_1-C_6)alkyl, -(C_3-C_7)cycloalkyl, halo, -CN, (C_1-C_6)alkoxy,-CF_3, -OCF_3, -$CONH_2$, -CONH(C_1-C_6)alkyl, -CON(C_1-C_6)alkyl (C_1-C_6)alkyl, -NH_2, -NHC(O)(C_1-C_6)alkyl, -NHC(O)NH(C_1-C_6)alkyl, -NHC(O)N((C_1-C_6)alkyl)((C_1-C_6)alkyl), -$NHSO_2$(C_1-C_6)alkyl, -S(C_1-C_6)alkyl, -SO(C_1-C_6)alkyl, -SO_2(C_1-C_6)alkyl, -SO_2NH (C_1-C_6)alkyl, -O(C_1-C_3)alkyleneO-, and NO_2 or two adjacent R^4 or two adjacent R^8 groups together may form a methylenedioxy, propylenedioxy or ethylenedioxy group;

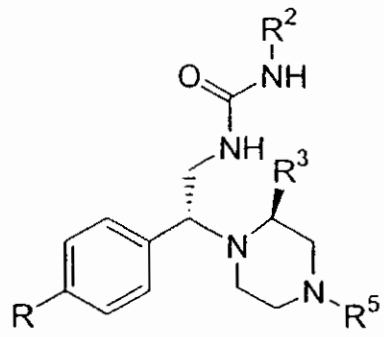
R^5 is hydrogen, nonsubstituted or halosubstituted -(C_1-C_6)alkyl, (C_3-C_7)cycloalkyl, (C_3-C_7)cycloalkyl(C_1-C_6)alkyl, -(C_1-C_6) alkylene(C_1-C_6) alkoxy,

alkoxycarbonyl, aryl, heterocycloalkyl, heteroaryl, aralkyl, heteroaralkyl, C(O)NH(C_1-C_3)alkylene $N(R^9)_2$, - SO_2(C_1-C_6)alkyl or wherein R^5 is independently selected from, - SO_2NH_2, -SO_2NHalkyl, -SO_2N$alkyl_2$,  and ;

and

R^9 is hydrogen, (C_1-C_6) alkyl, (C_3-C_7)cycloalkyl, (C_3-C_7)cycloalkylmethyl, aralkyl or heteroaralkyl, or the moiety –$N(R^9)_2$ may represent a pyrrolidine, piperazine or piperidine wherein the N of $N(R^9)_2$ is the N of said pyrrolidine, piperazine or piperidine.

14. The compound of claim 1 wherein said compound has the formula Ic-b



Ic-b

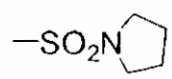
wherein

R is R^4-phenyl, R^4-pyridyl, R^4-pyridyl-N-oxide, R^4-pyrazyl or R^4-pyrimidyl;

R^2 is alkyl, arylalkyl, substituted arylalkyl, cycloalkyl, cycloalkylalkyl, R^8-phenyl, R^8-pyridyl, R^8-pyridyl-N-oxide;

R^3 is hydrogen, OH, -O(C_1-C_3)alkyl, or non-substituted or halosubstituted (C_1-C_3)alkyl;

R^4 and R^8 maybe the same or different, may number 0 to 3, each being independently selected from the group consisting of hydrogen, -(C_1-C_6)alkyl, -(C_3-C_7)cycloalkyl, halo, -CN, (C_1-C_6)alkoxy,-CF_3, -OCF_3, -$CONH_2$, -CONH(C_1-C_6)alkyl, -CON(C_1-C_6)alkyl (C_1-C_6)alkyl, -NH_2, -NHC(O)(C_1-C_6)alkyl, -NHC(O)NH(C_1-C_6)alkyl, -NHC(O)N((C_1-C_6)alkyl)((C_1-C_6)alkyl), -$NHSO_2$(C_1-C_6)alkyl, -S(C_1-C_6)alkyl, -SO(C_1-C_6)alkyl, -SO_2(C_1-C_6)alkyl, -SO_2NH (C_1-C_6)alkyl, -O(C_1-C_3)alkyleneO-, and NO_2 or two adjacent R^4 or two adjacent R^8 groups together may form a methylenedioxy, propylenedioxy or ethylenedioxy group;

R^5 is hydrogen, nonsubstituted or halosubstituted -(C_1-C_6)alkyl, (C_3-C_7)cycloalkyl, (C_3-C_7)cycloalkyl(C_1-C_6)alkyl, -(C_1-C_6) alkylene(C_1-C_6) alkoxy, alkoxycarbonyl, aryl, heterocycloalkyl, heteroaryl, aralkyl, heteroaralkyl, C(O)NH(C_1-C_3)alkylene $N(R^9)_2$, - SO_2(C_1-C_6)alkyl or wherein R^5 is independently selected from, - SO_2NH_2, -SO_2NHalkyl, -SO_2N$alkyl_2$,  and ;

and

R^9 is hydrogen, (C_1-C_6) alkyl, (C_3-C_7)cycloalkyl, (C_3-C_7)cycloalkylmethyl, aralkyl or heteroaralkyl, or the moiety –$N(R^9)_2$ may represent a pyrrolidine, piperazine or piperidine wherein the N of $N(R^9)_2$ is the N of said pyrrolidine, piperazine or piperidine.

15. A compound of claim 1 wherein

Ar is 1,4-arylene;

R^1 is H;

R^3 is H;

X^1 is CH;

X^2 is N-R^5;

X^3 is O or NH;

X^4 is NH;

n is 1 and m is 1;

R is 3-cyanophenyl or 3-pyridyl;

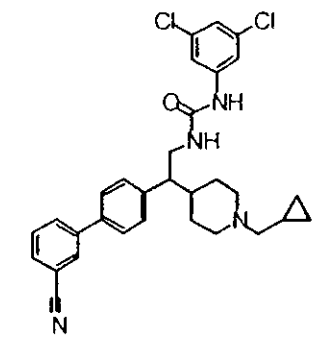
R^2 is 3,5-dichlorophenyl, 3-chloro-4-fluorophenyl,3,4-difluorophenyl, 3,5-difluorophenyl, 3,5-dichloro-4-pyridyl, 3-trifluoromethyl-4-fluorophenyl, or 3-fluoro-4-trifluoromethylphenyl;

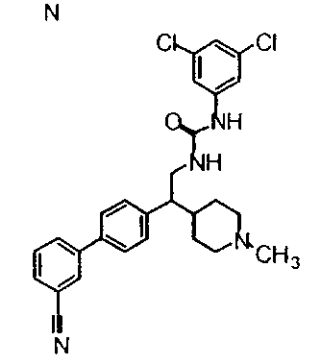
and

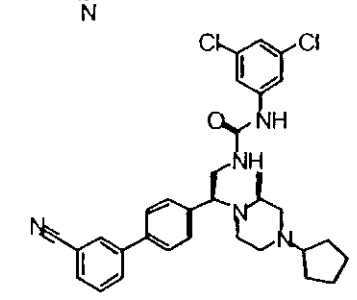
R^5 is (C_1-C_3) alkyl, (C_3-C_7) cycloalkyl, cyclopropylmethyl, 4-morpholinyl, or 2-methoxyethyl.

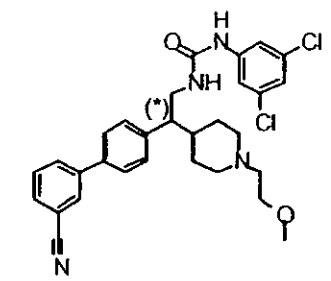
16. The compound of claim 15 wherein R^5 is selected from the group consisting of CH_3, cyclopropylmethyl, cyclopentyl and cyclohexyl.

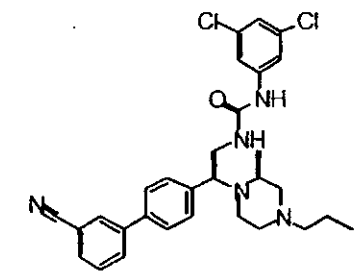
17. The compound of claim 1 selected from the group consisting of

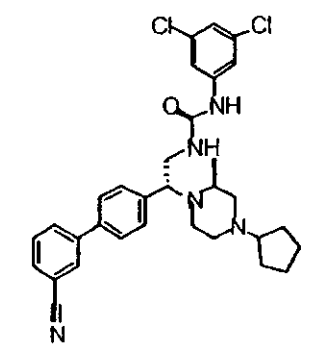


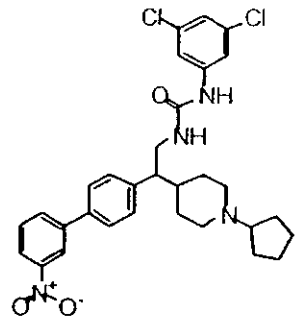


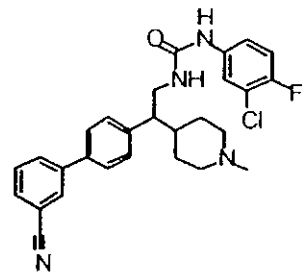


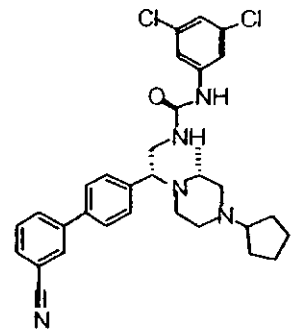


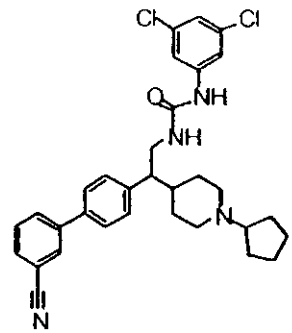


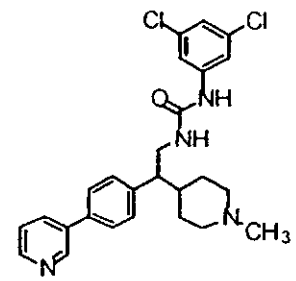


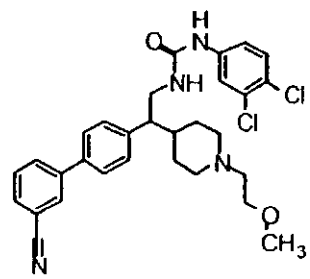


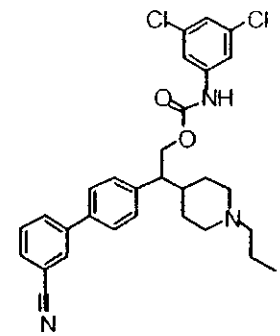


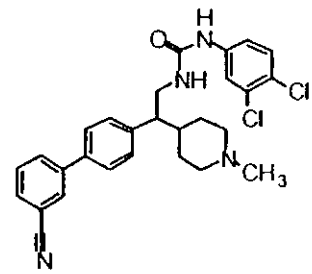


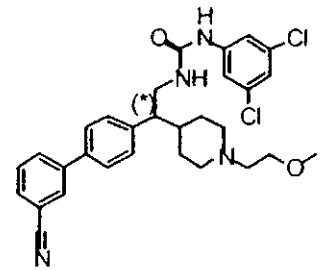


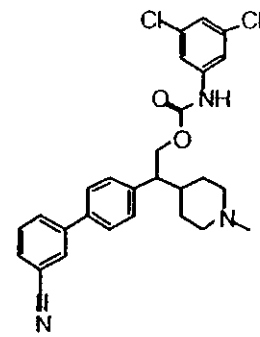


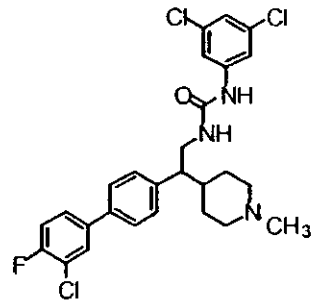


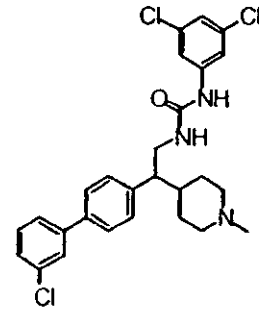


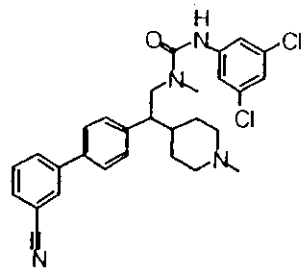


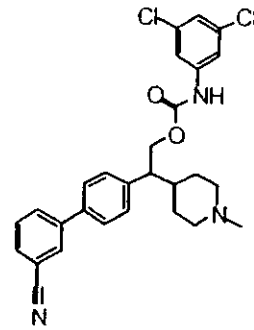


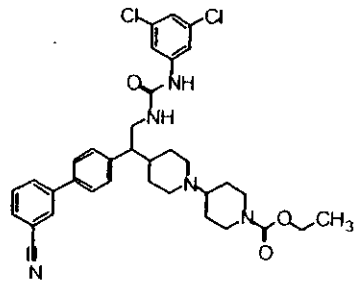


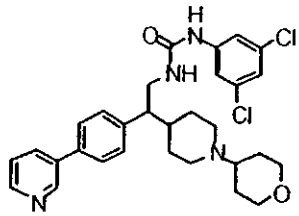


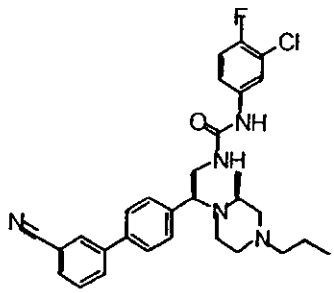


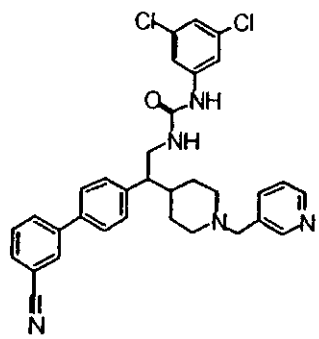


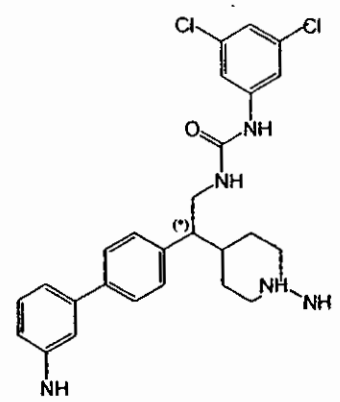


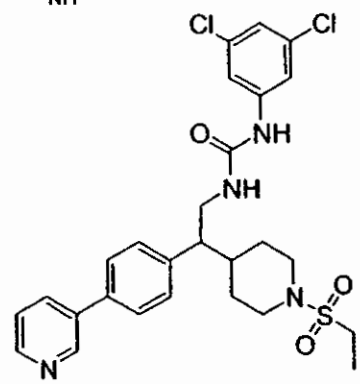




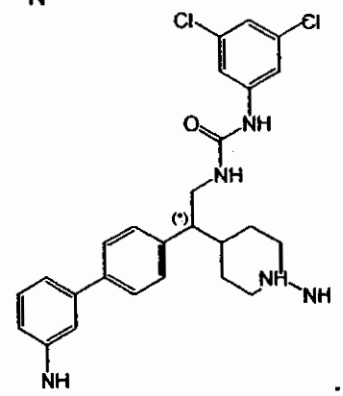








and



18. A pharmaceutical composition comprising a therapeutically effective amount of at least one compound of claim 1 in combination with at least one pharmaceutically acceptable carrier.

19. Use of an effective amount of at least one compound of claim 1 for the preparation of a medicament for treating a metabolic disorder, an eating disorder or diabetes.

20. Use of a therapeutically effective amount of at least one compound of claim 1 or a prodrug thereof or a pharmaceutically acceptable salt of said compound or of said

prodrug for the preparation of a medicament for treating eating disorders.

21. The use of claim 19 wherein said eating disorder is hyperphagia.

22. The use of claim 19 wherein said metabolic disorder is obesity.

23. The use of a therapeutically effective amount of at least one compound of claim 1 or a prodrug thereof or a pharmaceutically acceptable salt of said compound or of said prodrug for the preparation of a medicament for treating disorders associated with obesity.

24. The use of claim 23 wherein said disorders associated with obesity are type II diabetes, insulin resistance, hyperlipidemia and hypertension.

25. A pharmaceutical composition which comprises a therapeutically effective amount of a composition comprising:

a first compound, said first compound being a compound of claim 1, a prodrug thereof, or a pharmaceutically acceptable salt of said compound or of said prodrug;

a second compound, said second compound being an antiobesity and/or anorectic agent such as a β_3 agonist, a thryomimetic agent, an anorectic agent or an NPY antagonist; and

a pharmaceutically acceptable carrier thereof.

26. The use of

a therapeutically effective amount of a first compound, said first compound being a compound of claim 1, a prodrug thereof, or a pharmaceutically acceptable salt of said compound or of said prodrug; and

a therapeutically effective amount of a second compound, said second compound being an antiobesity and/or anorectic agent such as a β_3 agonist, a thryomimetic agent, an anorectic agent or an NPY antagonist;

for the preparation of a medicament for treating an eating disorder.

27. A pharmaceutical composition which comprises a therapeutically effective amount of a composition comprising:

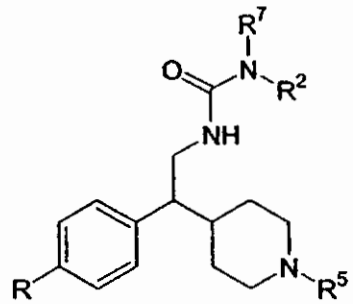
a first compound, said first compound being a compound of claim 1, a prodrug thereof, or a pharmaceutically acceptable salt of said compound or of said prodrug; a second compound, said second compound being an aldose reductase inhibitor, a glycogen phosphorylase inhibitor, a sorbitol dehydrogenase inhibitor, a protein tyrosine phosphatase 1B inhibitor, a dipeptidyl protease inhibitor, insulin (including orally bioavailable insulin preparations), an insulin mimetic, metformin, acarbose, a PPAR-gamma ligand such as troglitazone, rosaglitazone, pioglitazone, or GW-1929, a sulfonylurea, glipazide, glyburide, or chlorpropamide; and

a pharmaceutically acceptable carrier therefor.

28. A pharmaceutical composition made by combining at least one compound of claim 1 and at least one pharmaceutically acceptable carrier therefor.

29. A process for making a pharmaceutical composition comprising combining at least one compound of claim 1 and at least one pharmaceutically acceptable carrier.

30. The compound of claim 1 wherein said compound has the formula Ic-c wherein R, R^2, R^5 and R^7 are herein defined below:



Ic-c

R	R^2	R^7	R^5
3-cyanophenyl	3-fluorophenyl	H	cyclopentyl
3-cyanophenyl	3-cyanophenyl	H	cyclopentyl
3-cyanophenyl	3-fluorophenyl	H	methyl
3-cyanophenyl	3,4-difluorophenyl	H	methyl
3-cyanophenyl	2-5-difluorophenyl	H	methyl

3-cyanophenyl	Phenyl	H	cyclopropylmethyl
3-cyanophenyl	3-chlorophenyl	H	cyclopropylmethyl
3-cyanophenyl	3-chloro,4-fluorophenyl	H	cyclopropylmethyl
3-cyanophenyl	3,4-difluorophenyl	H	cyclopropylmethyl
3-cyanophenyl	2-5-difluorophenyl	H	cyclopropylmethyl
3-cyanophenyl	3-chlorophenyl	H	3,4-ethylenedioxybenzyl
3-cyanophenyl	3-fluorophenyl	H	3,4-ethylenedioxybenzyl
3-cyanophenyl	3-chloro,4-fluorophenyl	H	3,4-ethylenedioxybenzyl
3-cyanophenyl	3-fluorophenyl	H	4-pyranyl
3-cyanophenyl	isopropyl	isopropyl	3,4-ethylenedioxybenzyl
4-fluorophenyl	N,R2,R7 = morpholine	N,R2,R7 = morpholine	methyl