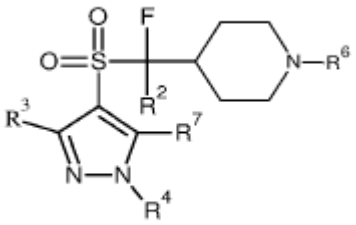
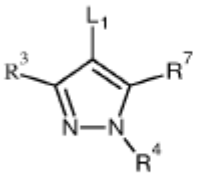
WE CLAIM

1. A process for preparation of a compound of formula II,

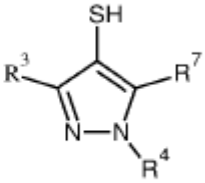


Formula II

wherein R^2 is F, C_1-C_4 alkyl, or C_1-C_4 haloalkyl;
R^3 is H, F, C_1-C_4 alkyl, or C_1-C_4 haloalkyl, R^4 is C_1-C_4 alkyl, R^6 is H or a protecting group or a salt thereof and R^7 is H, Cl or trialkylsilyl,
comprising:
a) reacting a compound of formula VII, with elemental sulfur in the presence of a base, a catalyst and a reducing agent to give a compound of formula VI;

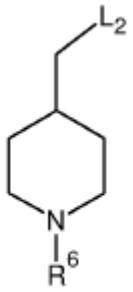


Formula VII

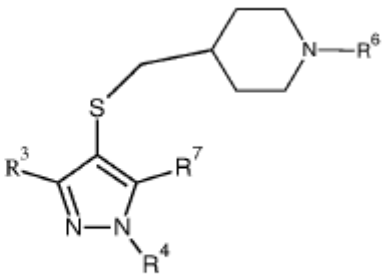


Formula VI

wherein R^3, R^4 and R^7 are as defined above, and L_1 is a leaving group;
b) reacting the compound of formula VI with a compound of formula VIII, to give a compound of formula V;



Formula VIII

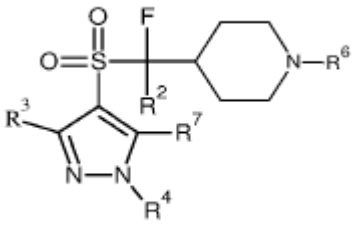


Formula V

wherein L_2 is a leaving group, and R^3 R^4, R^6 and R^7 are as defined above; and

c) converting the compound of formula V to the compound of formula II.

2. A process for preparation of a compound of formula II

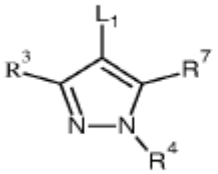


Formula II

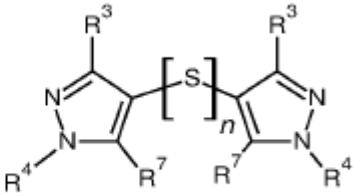
wherein R^2 is F, C_1-C_4 alkyl, or C_1-C_4 haloalkyl, R^3 is H, F, C_1-C_4 alkyl, or C_1-C_4 haloalkyl, R^4 is C_1-C_4 alkyl, R^6 is H or a protecting group or a salt thereof and R^7 is H, Cl or trialkylsilyl;

comprising:

a) reacting a compound of formula VII with elemental sulfur in the presence of a base and a catalyst to give a compound of formula VIB,



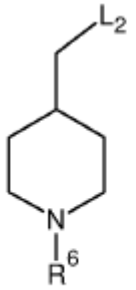
Formula VII



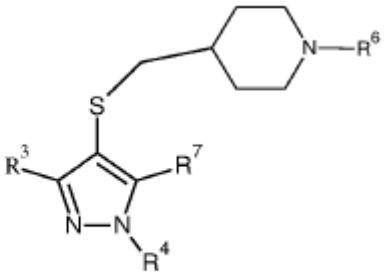
Formula VIB

wherein R^3, R^4, and R^7 are as defined above, L_1 is selected from a leaving group, and n is 2-8;

b) reacting the compound of formula VIB with a compound of formula VIII, to give a compound of formula V;



Formula VIII

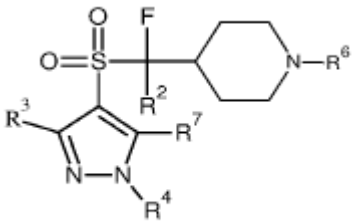


Formula V

wherein R^6 is as defined above, and L_2 is a leaving group; and

c) converting the compound of formula V to the compound of formula II.

3. A process for preparation of a compound of formula II,

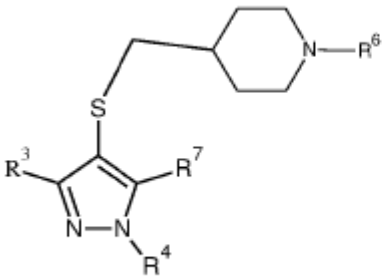


Formula II

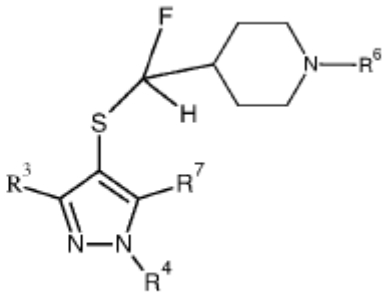
wherein R^2 is F, C_1-C_4 alkyl, or C_1-C_4 haloalkyl; R^3 is H, F, C_1-C_4 alkyl, or C_1-C_4 haloalkyl, R^4 is C_1-C_4 alkyl, R^6 is H or a protecting group or a salt thereof and R^7 is H, Cl or trialkylsilyl,

comprising:

a) fluorinating a compound of formula V to give a compound of formula IV;

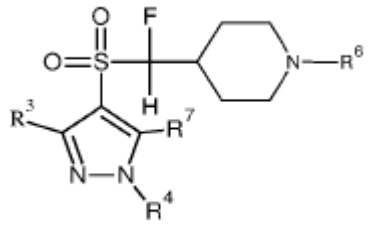


Formula V



Formula IV

b) oxidizing the compound of formula IV to give a compound of formula III; and

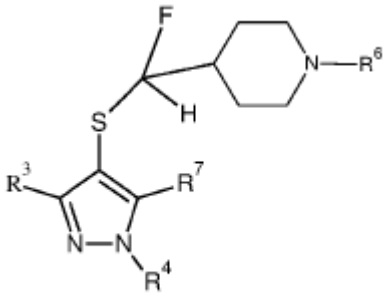


Formula III

c) converting the compound of formula III to the compound of formula II.

4. A process as claimed in claim 3, wherein the fluorination and oxidization are carried out without isolating the compound of formula IV.

5. A process for preparation of a compound of formula IV

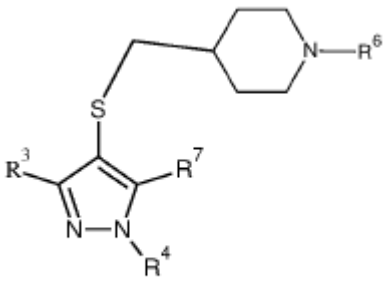


Formula IV

wherein

R^3 is H, F, C_1-C_4 alkyl, or C_1-C_4 haloalkyl, R^4 is C_1-C_4 alkyl, R^6 is H or a protecting group or a salt thereof and R^7 is H, Cl or trialkylsilyl,

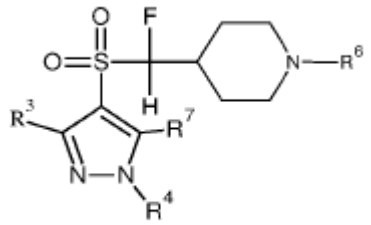
comprising fluorinating a compound of formula V,



Formula V

wherein R^3, R^4, R^6 and R^7 are as defined above, to obtain a compound of formula IV.

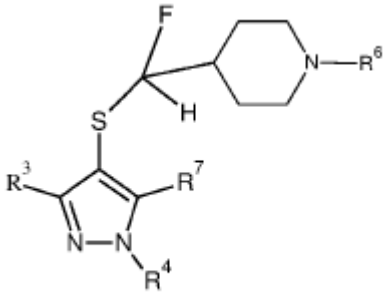
6. A process for preparation of a compound of formula III



Formula III

wherein R^3 is H, F, C_1-C_4 alkyl, or C_1-C_4 haloalkyl, R^4 is C_1-C_4 alkyl, R^6 is H or a protecting group or a salt thereof and R^7 is H, Cl or trialkylsilyl,

comprising oxidizing the compound of formula IV

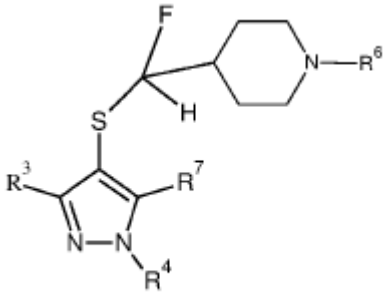


Formula IV

wherein R^3, R^4, R^6 and R^7 are as defined above,

to obtain a compound of formula III.

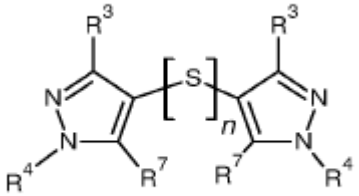
7. A compound of formula IV,



Formula IV

wherein R^3 is H, F, C_1-C_4 alkyl, or C_1-C_4 haloalkyl, R^4 is C_1-C_4 alkyl, R^6 is H or a protecting group or a salt thereof and R^7 is H, Cl or trialkylsilyl.

8. A compound of formula VIB,



Formula VIB

wherein R^3 is F, C_1-C_4 alkyl, or C_1-C_4 haloalkyl, R^4 is C_1-C_4 alkyl, R^7 is H, Cl or trialkylsilyl, and n is 2-8.

9. The process as claimed in claim 1 and 2, wherein the base is selected from the group consisting of potassium carbonate, sodium carbonate, cesium carbonate, potassium bicarbonate, sodium bicarbonate and cesium bicarbonate.

10. The process as claimed in claim 1 and 2, wherein the catalyst is selected from the group consisting of copper powder, copper chloride, copper bromide, and copper iodide.

11. The process as claimed in claim 1, wherein reducing agent is selected from the group consisting of zinc/acetic acid, zinc/alcoholic potassium hydroxide, sodium borohydride, potassium borohydride, lithium aluminum hydride, triphenylphosphine/HCl, tris(2-carboxyethyl)phosphine, and borane.

12. The process as claimed in claims 3-5, wherein the fluorination is carried out in presence of a fluorinating agent selected from the group consisting of 1-fluoropyridinium triflate, 1-fluoropyridinium tetrafluoroborate, 1-fluoro-2,4,6-trimethylpyridinium tetrafluoroborate, 1-fluoro-2,4,6-trimethylpyridinium triflate, 1-fluoro-2,6-dichloropyridinium triflate, 2,6- dichloro- 1-fluoropyridinium tetrafluoroborate, 1-fluoro-4-methylpyridinium triflate, and 1-fluoro-4-methylpyridinium tetrafluoroborate.

13. The process as claimed in 3, 4, and 6, wherein the oxidation is carried out in presence of an oxidizing agent selected from the group consisting of hydrogen

peroxide/sodium tungstate, peracetic acid, benzyl hydroperoxide, ethylbenzene hydroperoxide, cumyl hydroperoxide, sodium hypochlorite, oxalic acid dihydrate/hydrogen peroxide, meta-chloroperoxybenzoic acid, urea-hydrogen peroxide adduct, Permanganate/manganese dioxide, Ruthenium chloride hydrate/sodium periodate and oxone.

14. The process as claimed in claim 3, wherein the step c) of converting the compound of formula III to a compound of formula II is carried out using alkylating agent selected from the group consisting of bromoalkane, chloroalkane, iodoalkane, diazoalkane, dialkylcarbonate, and dialkylsulfonate in presence of a base selected from the group consisting of sodium hydride, potassium hydride, sodium ethoxide, sodium methoxide, lithium tert-butoxide, sodium tert-butoxide, potassium tert-butoxide, triethylamine, n-butylamine, t-butylamine, pyridine, methyl lithium, n-butyl lithium, lithium diisopropylamide, lithium 2,2,6,6-tetramethylpziperidine, sodium bis(trimethylsilyl)amide, lithium bis(trimethylsilyl)amide, potassium bis(trimethylsilyl)amide, and lithium diethylamide.

15. A process for the preparation of 3-(difluoromethyl)-4-iodo-1-methyl-1H-pyrazole, comprising the steps of:

a) decarboxylating 3-(difluoromethyl)-1-methyl-1H-pyrazole-4-carboxylic acid to form 3-(difluoromethyl)-1-methyl-1H-pyrazole; and

b) iodinating 3-(difluoromethyl)-1-methyl-1H-pyrazole to form 3-(difluoromethyl)-4-iodo-1-methyl-1H-pyrazole.

16. The process of claim 15, wherein step a) is carried out using Cu powder and Cu_2O in the presence of an aliphatic amine in a polar aprotic solvent.

17. The process of claim 16, wherein the aliphatic amine is selected from the group consisting of methylamine, ethylamine, triethylamine, diethylmethylamine, isopropylamine, diisopropylamine, diisopropylmethylamine, diisopropylethylamine, n-butylamine, tertiary butylamine, and tributylamine, or any combination thereof.

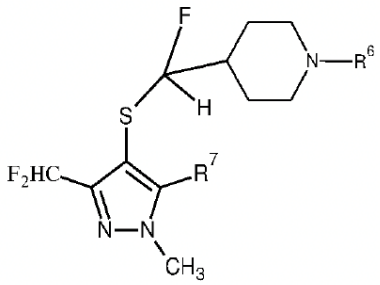
18. The process of claim 15, wherein step b) is carried out using iodine and potassium iodate in the presence of acetic acid and sulphuric acid.

19. The compound of claim 7, wherein R^3 is difluoromethyl.

20. The compound of claim 7, wherein R^4 is methyl.

21. The compound of claim 7, wherein: R^7 is H or Cl.

22. The compound of claim 7, wherein the compound comprises a compound of formula IVA:



Formula IVA

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23. The compound of claim 22, wherein the compound comprises: tert-butyl-4-[{[3-(difluoromethyl)-1-methyl-1H-pyrazol-4-yl]sulfanyl}(fluoro)methyl]piperidine-1-carboxylate.