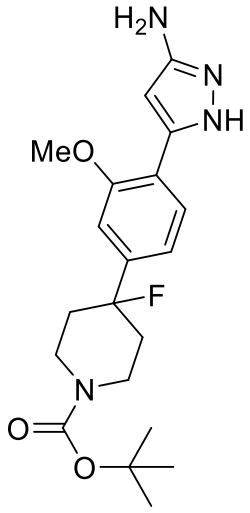
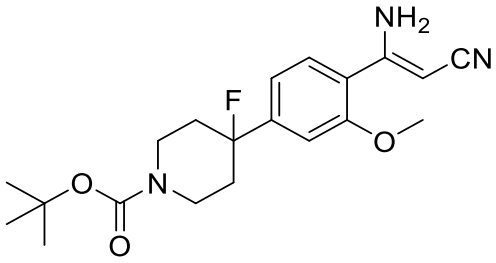
CLAIMS

1. A process for the preparation of a compound of formula (15):



(15)

which process comprises reacting a compound of the formula (14):



(14)

with hydrazine (NH_2NH_2).

2. A process according to claim 1 wherein the reaction is carried out in a polar, protic solvent, optionally wherein the polar, protic solvent is a C_{1-4} alcohol, such as ethanol (EtOH).

3. A process according to claim 1 or claim 2 wherein the reaction is carried out in the presence of glacial acetic acid.

4. A process according to any one of claims 1 to 3 wherein the reaction is carried out at a temperature of 70 °C to 80 °C, for example at a temperature of approximately 75 °C.

5. A process according to any one of claims 1 to 4 wherein the reaction is carried out for a time period of 4 hours or less, for example for a time period of from 1 hour to 3 hours.

6. A process for the preparation of 5-[[5-[4-(4-fluoro-1-methyl-4-piperidyl)-2-methoxy-phenyl]-1H-pyrazol-3-yl]amino]pyrazine-2-carbonitrile, which process comprises:

i) a process according to claim 1; and

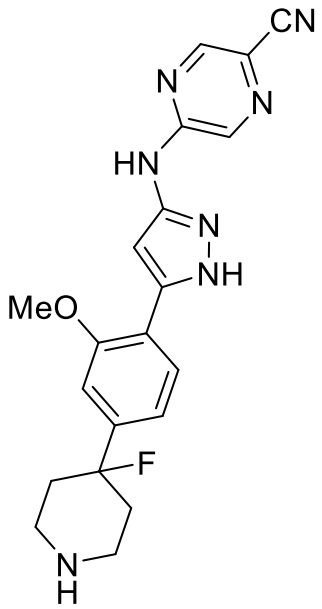
ii) interconverting a product obtained from step i) into 5-[[5-[4-(4-fluoro-1-methyl-4-piperidyl)-2-methoxy-phenyl]-1H-pyrazol-3-yl]amino]pyrazine-2-carbonitrile; and

iii) optionally forming a pharmaceutically acceptable salt of 5-[[5-[4-(4-fluoro-1-methyl-4-piperidyl)-2-methoxy-phenyl]-1H-pyrazol-3-yl]amino]pyrazine-2-carbonitrile.

7. A process for the preparation of 5-[[5-[4-(4-fluoro-1-methyl-4-piperidyl)-2-methoxy-phenyl]-1H-pyrazol-3-yl]amino]pyrazine-2-carbonitrile, which process comprises:

i) a process according to claim 1;

ii) interconverting a product obtained from step i) to a compound of formula (18):



(18);

iii) interconverting a product obtained from step ii) into 5-[[5-[4-(4-fluoro-1-methyl-4-piperidyl)-2-methoxy-phenyl]-1H-pyrazol-3-yl]amino]pyrazine-2-carbonitrile; and

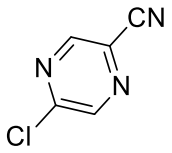
iv) optionally forming a pharmaceutically acceptable salt of 5-[[5-[4-(4-fluoro-1-methyl-4-piperidyl)-2-methoxy-phenyl]-1H-pyrazol-3-yl]amino]pyrazine-2-carbonitrile.

8. A process according to claim 7 wherein the product obtained from step ii) is interconverted into 5-[[5-[4-(4-fluoro-1-methyl-4-piperidyl)-2-methoxy-phenyl]-1H-pyrazol-3-yl]amino]pyrazine-2-carbonitrile by reacting the compound of formula (18) with a methylating agent (such as HCHO in the presence of a reducing agent such as $(AcO_3)BH$).

9. A process for the preparation of 5-[[5-[4-(4-fluoro-1-methyl-4-piperidyl)-2-methoxy-phenyl]-1H-pyrazol-3-yl]amino]pyrazine-2-carbonitrile, which process comprises:

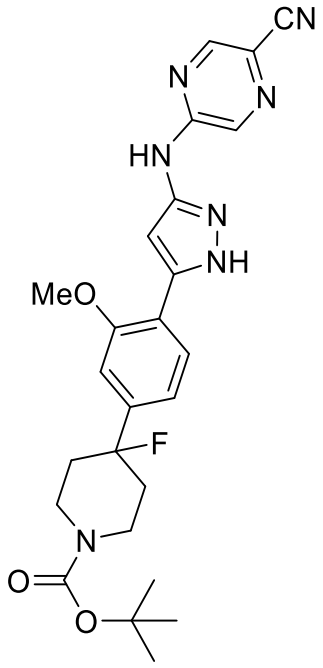
i) a process for the preparation of a compound of formula (15) according to claim 1;

ii) reacting the compound of formula (15) with a compound of formula (16):



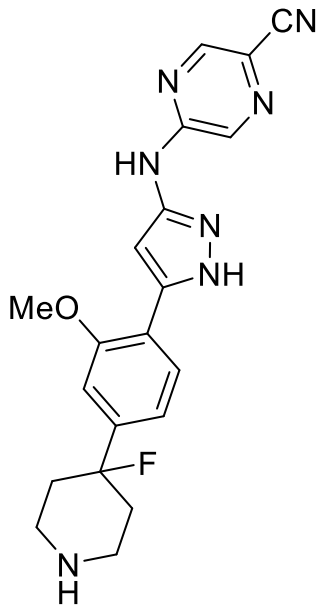
(16)

to form a compound of formula (17):



(17);

ii) reacting the compound of formula (17) with an alkylsilyl halide or a sulphonic acid to form a compound of formula (18):

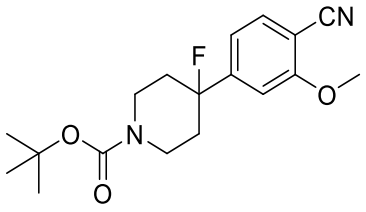


(18); and

ii) interconverting the compound of formula (18) obtained from step i) into 5-[[5-[4-(4-fluoro-1-methyl-4-piperidyl)-2-methoxy-phenyl]-1H-pyrazol-3-yl]amino]pyrazine-2-carbonitrile, for example by reacting the compound of formula (18) with a methylating agent (such as HCHO in the presence of a reducing agentsuch as (AcO_3)BH); and

iii) optionally forming a pharmaceutically acceptable salt of 5-[[5-[4-(4-fluoro-1-methyl-4-piperidyl)-2-methoxy-phenyl]-1H-pyrazol-3-yl]amino]pyrazine-2-carbonitrile.

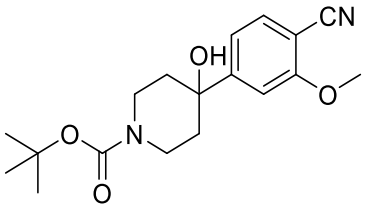
10. A process according to claim 9, wherein the process further comprises preparing the compound of formula (14) by reacting a compound of formula (13):



(13)

with acetonitrile (CH_3CN) in the presence of a base.

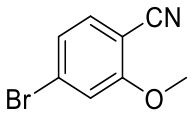
11. A process according to claim 10, wherein the process further comprises preparing the compound of formula (13) by reacting a compound of formula (12):



(12)

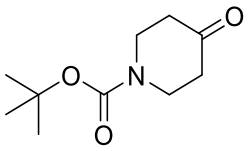
with a deoxyfluorination reagent.

12. A process according to claim 11, wherein the process further comprises preparing the compound of formula (12) by reacting a compound of formula (10):



(10)

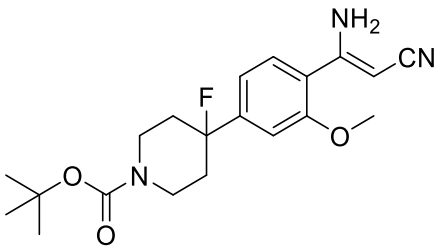
with a compound of formula (11):



in the presence of a metallating agent, such as a Grignard reagent.

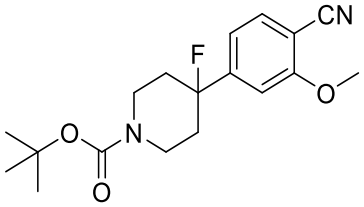
13. A compound selected from:

(a) a compound of the formula (14):



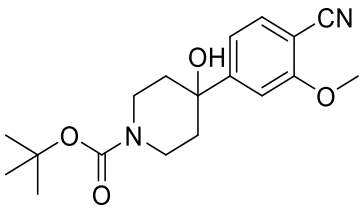
(14)

(b) a compound of the formula (13):



(13)

(c) a compound of the formula (12):



(12).

14. A compound according to claim 13 in a substantially crystalline form.

15. A compound according to claim 14 wherein the compound is of the formula (14) and has an Xray powder diffraction pattern characterised by the presence of major peaks at two or more, e.g. three or more, or four or more, and in particular five diffraction angles (2θ) selected from 7.8º, 14.6º, 15.4º, 15.7° and 18.9° (±0.2º).