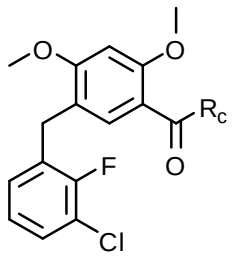
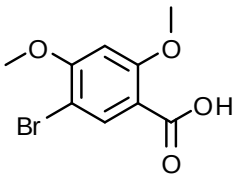
CLAIMS

1. A method for preparing a compound of formula 5':



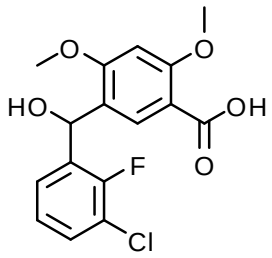
5'

or a salt thereof comprising converting a corresponding compound of formula 2:



2

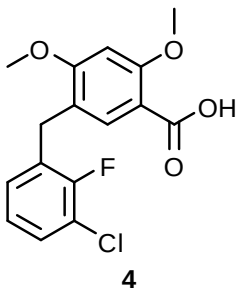
or a salt thereof to the compound of formula 3:



3

or the salt thereof;

converting the compound of formula 3 or the salt thereof to a compound of formula 4:

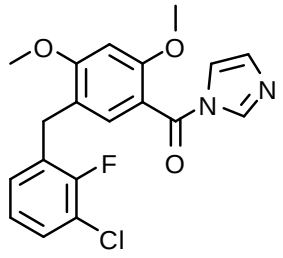


4

or a salt thereof; and

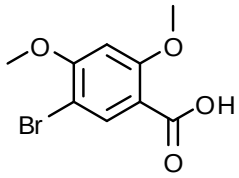
converting the compound of formula **4** or the salt thereof to a compound of formula **5'** or a salt thereof, wherein R_c is halo or 1-imidazolyl.

2. A method for preparing a compound of formula 5a:



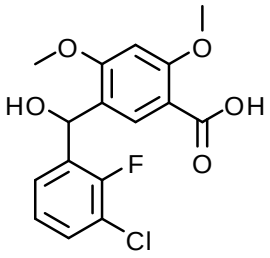
5a

comprising converting a corresponding compound of formula 2:



2

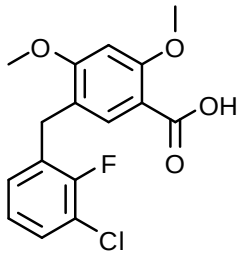
or a salt thereof to the compound of formula 3:



3

or the salt thereof;

converting the compound of formula **3** or the salt thereof to a compound of formula 4:



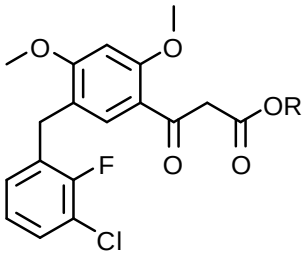
4

or a salt thereof;

converting the compound of formula 4 or the salt thereof to the compound of 5a.

3. The method of claim **2**, wherein the compound of formula 4 is converted to the compound of formula 5a by treatment with 1,1'-carbonyldiimidazole.

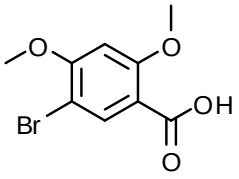
4. A method for preparing a compound of formula 6:



6

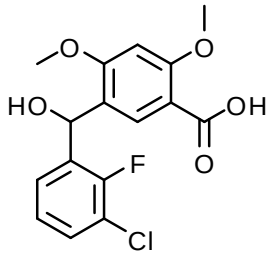
or a salt thereof, wherein R is C_1-C_6 alkyl, comprising:

converting a corresponding compound of formula 2:



2

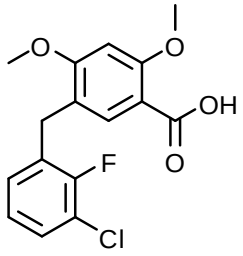
or a salt thereof to the compound of formula 3:



3

or the salt thereof;

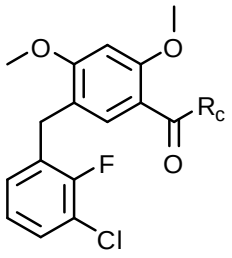
converting the compound of formula 3 or the salt thereof to a compound of formula 4:



4

or a salt thereof;

converting the compound of formula 4 or the salt thereof to a compound of formula 5':

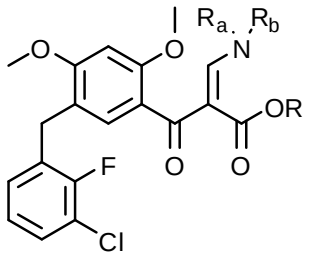


5'

or a salt thereof, wherein R_c is a leaving group; and

converting the compound of formula 5' or the salt thereof to a compound of formula **6** or a salt thereof, wherein R is C_1-C_6 alkyl by treatment with the corresponding mono-alkylmalonate salt.

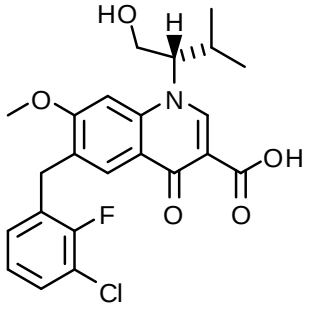
5. The method of claim **4** further comprising treating the compound of formula 6 with N,N-dimethyformlamide dimethyl acetal to provide a compound of formula 7:



7

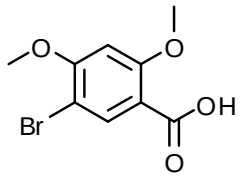
wherein R_a and R_b are each independently C_1-C_6 alkyl.

6. A method of preparing a compound of formula 10:



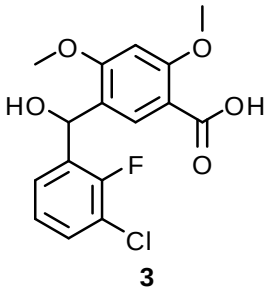
10

comprising converting a corresponding compound of formula 2:



2

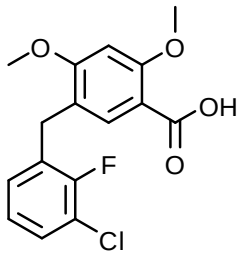
or a salt thereof to the compound of formula 3:



3

or the salt thereof;

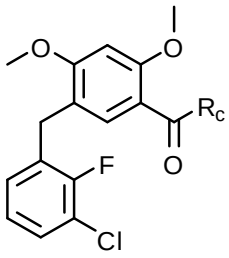
converting the compound of formula 3 or the salt thereof to a compound of formula 4:



4

or a salt thereof;

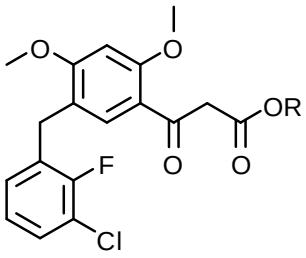
converting the compound of formula 4 or the salt thereof to a compound of formula 5':



5'

or a salt thereof, wherein R_c is a leaving group;

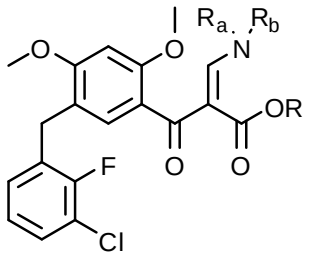
converting the compound of formula 5' or the salt thereof to a compound of formula 6:



6

or a salt thereof, wherein R is C_1-C_6 alkyl;

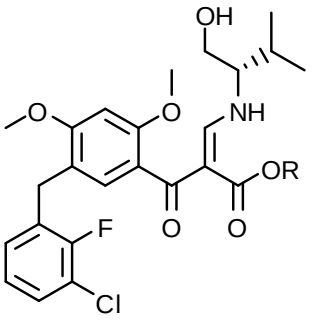
converting the compound of formula 6 to the compound of formula 7:



7

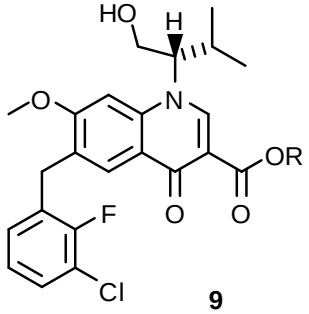
wherein R_a and R_b are each independently C_1-C_6 alkyl;

converting the compound of formula 7 to the compound of formula 8:



8 ;

converting the compound of formula 8 to the compound of formula 9:

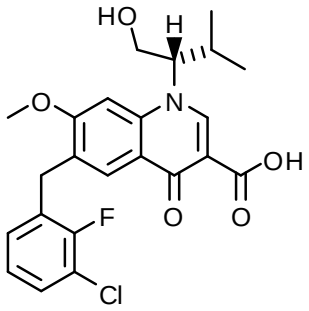


9

and

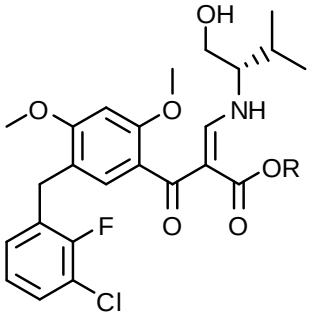
converting the compound of formula 9 to the compound of formula 10 by treatment with aqueous potassium hydroxide in aqueous isopropyl alcohol.

7. A method of preparing a compound of formula 10:



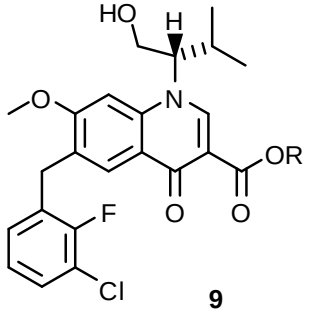
10

comprising cyclizing a corresponding compound of formula 8:



8

to provide a compound of formula 9:



9

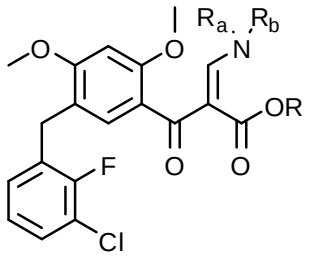
wherein R is C_1-C_6 alkyl; and

converting the compound of formula 9 to the compound of formula 10 by treatment with a base.

8. The method of claim **7**, wherein the compound of formula 8 is cyclized by treatment with potassium chloride and N,O-bistrimethylsilylacetamide.

9. The method of claim **7**, wherein the compound of formula 9 is converted to the compound of formula **10** by treatment with aqueous potassium hydroxide in aqueous isopropyl alcohol.

10. The method of claim **7**, further comprising preparing the compound of formula 8 by converting a corresponding compound of formula **7**:

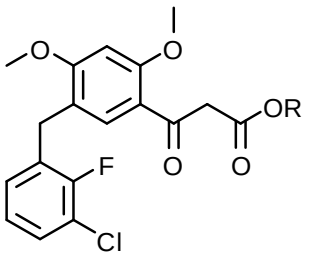


7

wherein R_a and R_b are each independently C_1-C_6 alkyl; and R is C_1-C_6 alkyl to the compound of formula 8.

11. The method of claim **10**, wherein the compound of formula 7 is converted to the compound of formula 8 by treatment with (S)-2-amino-3-methyl-1-butanol.

12. The method of claim **10**, further comprising preparing the compound of formula 7 by converting a corresponding compound of formula 6:



6

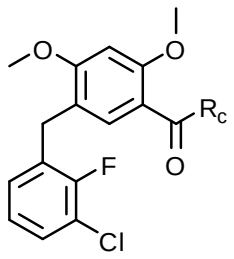
or a salt thereof, wherein R is C_1-C_6 alkyl to the compound of formula **7**.

13. The method of claim **12**, wherein the compound of formula 6 is converted to the compound of formula **7** by treatment with N,N-dimethyformlamide dimethyl acetal.

14. The method of claim **13**, wherein the treatment with N,N-dimethyformlamide dimethyl acetal is carried out in the presence of acetic acid at a temperature of about 100 ± 50 ºC.

15. The method of claim **12**, further comprising preparing the compound of formula 6 by

converting a compound of formula 5':



5'

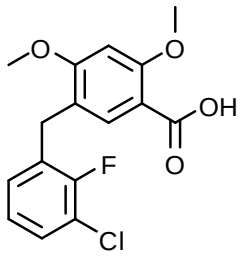
wherein R_c is a leaving group to the compound of formula 6.

16. The method of claim **15**, wherein the compound of formula 5' is converted to the compound of formula **6** by treatment with the corresponding mono-alkylmalonate salt.

17. The method of claim **16**, wherein the mono-alkylmalonate salt is a mono-ethylmalonate salt.

18. The method of claim **16**, wherein the compound of formula 5' is converted to the compound of formula **6** by treatment with potassium monoethylmalonate.

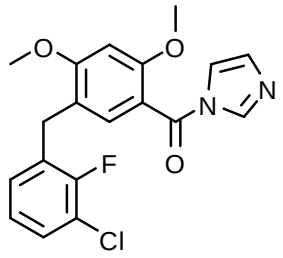
19. The method of claim **15**, further comprising preparing the compound of formula 5' by converting a compound of formula 4:



4

or a salt thereof to the compound of formula 5'.

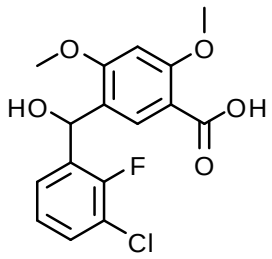
20. The method of claim **19**, wherein the compound of formula 5' is a compound of formula 5a:



5a

and wherein the compound of formula 4 or a salt thereof is converted to the compound of formula 5a by treatment with 1,1'-carbonyldiimidazole.

21. The method of claim **19** further comprising preparing the compound of formula 4 or the salt thereof by converting a compound of formula 3:



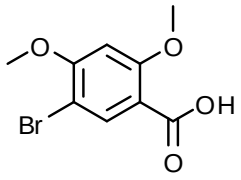
3

or a salt thereof to the compound of formula 4 or the salt thereof.

22. The method of claim **21**, wherein the compound of formula 3 or the salt thereof is converted to the compound of formula 4 or the salt thereof by treatment with a silane reducing agent in the presence of an acid.

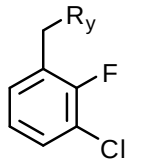
23. The method of claim **22**, wherein the silane reducing agent is triethylsilane and the acid is trifluoroacetic acid.

24. The method of claim **19** further comprising preparing the compound of formula 4 or the salt thereof by forming an organometallic compound from a compound of formula 2:



2

or a salt thereof and reacting the organometallic compound with a compound of formula 11:

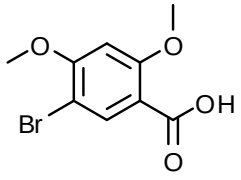


11

wherein R_y is a suitable leaving group to provide the compound of formula 4.

25. The method of claim 24, wherein R_y is a triflate, mesylate, tosylate, or brosylate.

26. A salt prepared by treating a compound of formula 2:



2

with an organometallic reagent.

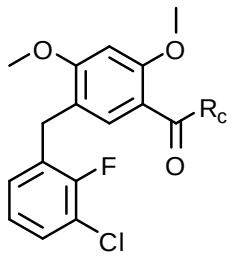
27. The salt of claim **26**, wherein the organometallic reagent is a dialkylmagnesium, dialkylzinc, an alkylmagnesium halide, a trialkylaluminum, or a metal hydride reagent.

28. The salt of claim **27**, wherein the organometallic reagent is dibutylmagnesium or butylethylmagnesium.

29. The salt of claim **27**, wherein the organometallic reagent is butylethylmagnesium-butanol adduct.

30. An organolithium compound prepared by treating the salt of claim **26** with an alkyllithium reagent.

31. A compound of formula 5':



5'

wherein R_c is a suitable leaving group, or a salt thereof.