Claims

1. A manufacturing method for 4-methoxypyrrole derivatives, comprising:

1) a step of preparing a compound represented by the following Chemical Formula 4 by reacting a compound represented by the following Chemical Formula 2 with a compound represented by the following Chemical Formula 3;

2) a step of preparing a compound represented by the following Chemical Formula 5 by reacting a compound represented by the following Chemical Formula 4 with sodium borohydride;

3) a step of preparing a compound represented by the following Chemical Formula 6 by reacting a compound represented by the following Chemical Formula 5 with an oxidant; and

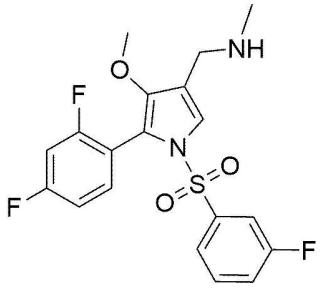
4) a step of reacting a compound represented by the following Chemical Formula 6 with methylamine to produce an intermediate, and converting the intermediate to a compound represented by the following Chemical Formula 1 by adding a reductant; and

wherein the step 1 is performed in the presence of a N,N-diisopropylethylamine and 4-(dimethylamino)-pyridine;

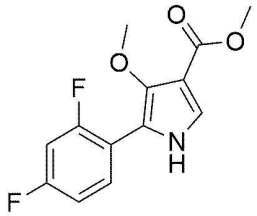
wherein the step 2 is performed in the presence of zinc chloride and dimethylaniline; and

wherein the oxidation of the step 3 is performed in the presence of a mixture of the (diacetoxyiodo)benzene and the (2,2,6,6-tetramethylpiperidin-1-yl)oxyl:

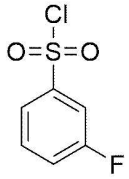
[Chemical Formula 1]



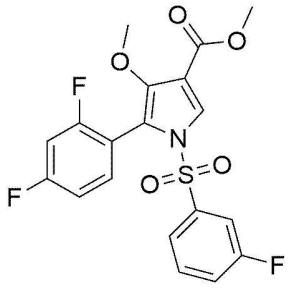
[Chemical Formula 2]



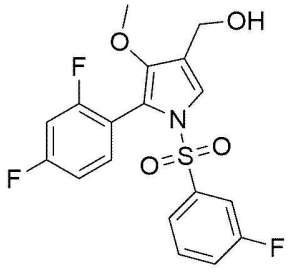
[Chemical Formula 3]



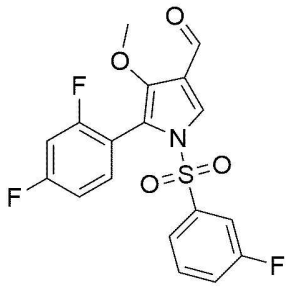
[Chemical Formula 4]



[Chemical Formula 5]



[Chemical Formula 6]



2. The manufacturing method of claim 1,

wherein a molar ratio of the compound represented by the Chemical Formula 2 and the compound represented by the Chemical Formula 3 is 10:1 to 1:10 in the step 1.

3. The manufacturing method of claim 1,

wherein a reaction solvent of the step 1 is acetonitrile, tetrahydrofuran, methylene chloride, methanol, ethanol, propanol, iso-propanol, butanol, tert-butanol, or a mixture of two or more thereof.

4. The manufacturing method of claim 1,

wherein a reaction temperature in the step 1 is 10 to 35 ℃.

5. The manufacturing method of claim 1,

wherein the zinc chloride and the dimethylaniline are mixed to satisfy a molar ratio of the compound represented by the Chemical Formula 4 and the zinc chloride of 10:1 to 1:10, and a molar ratio of the compound represented by the Chemical Formula 4 and the dimethylaniline of 10:1 to 1:10 at the same time, and then used in the reaction of step 2.

6. The manufacturing method of claim 1,

wherein a reaction solvent of the step 2 is dimethylacetamide,

tetrahydrofuran, dimethyl sulfoxide, toluene, methanol, ethanol, dichloromethane, or a mixture of two or more thereof.

7. The manufacturing method of claim 1,

wherein a reaction temperature in the step 2 is -15 to 80 ℃.

8. The manufacturing method of claim 1,

the (diacetoxyiodo)benzene and the (2,2,6,6-tetramethylpiperidin-1-yl)oxyl are mixed to satisfy a molar ratio of the compound represented by the Chemical Formula 5 and the (diacetoxyiodo)benzene of 10:1 to 1:10, and a molar ratio of the compound represented by the Chemical Formula 5 and the (2,2,6,6-tetramethylpiperidin-1-yl)oxyl of 10:1 to 1:10 at the same time.

9. The manufacturing method of claim 1,

wherein a reaction solvent of the step 3 is dichloromethane, dichloroethane, acetonitrile, ethyl acetate, methanol, toluene, dimethylformamide, dimethyl sulfoxide, tetrahydrofuran, or a mixture of two or more thereof.

10. The manufacturing method of claim 1,

wherein a reaction temperature in the step 3 is 10 to 40 ℃.

11. The manufacturing method of claim 1,

wherein a reaction solvent of the step 4 is methanol, ethanol, isopropanol, dichloromethane, dichloroethane, tetrahydrofuran, ethyl acetate, dimethyl ether, acetonitrile, or a mixture of two or more thereof.

12. The manufacturing method of claim 1,

wherein the reaction of the compound represented by the Chemical

Formula 6 and the methylamine is performed at a reaction temperature of 10 to 30 ℃ in the step 4.

13. The manufacturing method of claim 1,

wherein the reductant of the step 4 is sodium borohydride, sodium cyanoborohydride, sodium triacetoxyborohydride, or a mixture of two or more thereof.

14. The manufacturing method of claim 1,

wherein the reaction of the reductant and the intermediate is performed at a reaction temperature of -5 to 10 ℃ in the step 4.

15. The manufacturing method of claim 1,

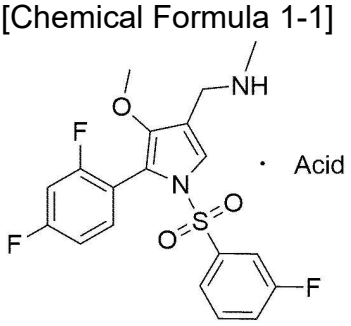
wherein a molar ratio of the compound represented by the Chemical Formula 6 and the methylamine is 10:1 to 1:10, and a molar ratio of the compound represented by the Chemical Formula 6 and the reductant is 10:1 to 1:10 in the step 4.

16. The manufacturing method of claim 1,

further comprising

a step preparing an acidic salt represented by the following Chemical Formula 1-1 by adding an acid to the compound represented by the Chemical Formula 1, after the step 4:

[Chemical Formula 1-1]



17. The manufacturing method of claim 16,

wherein the step after step 4 comprises a step of crystallizing the acidic salt represented by the Chemical Formula 1-1 by supplying an organic solvent to the compound represented by the Chemical Formula 1 and then supplying an acid or a mixed solution thereof with an organic solvent.

18. The manufacturing method of claim 17,

wherein the crystallization temperature is -15 to 20 ℃.