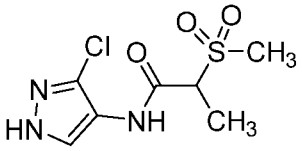
WHAT IS CLAIMED IS:

1. A molecule, *N*-(3-chloro-1*H*-pyrazol-4-yl)-2-(methylsulfonyl)propanamide (**S2b**), having the following formula



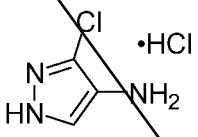
S2b

2. A process for the preparation of the molecule according to claim 1

said process comprising:

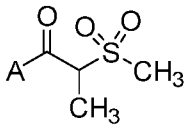
reacting

(A) 3-chloro-1*H*-pyrazol-4-amine hydrochloride (**S2a**)



S2a ; and

(B) an activated carboxylic acid **S1b**



S1b

wherein said A of said activated carboxylic acid **S1b** is selected from the group consisting of Cl, $O(C=O)R_1$, $O(C=O)OR_1$, and OR_1, wherein R_1 is $(C_1\text{-}C_4)$alkyl;

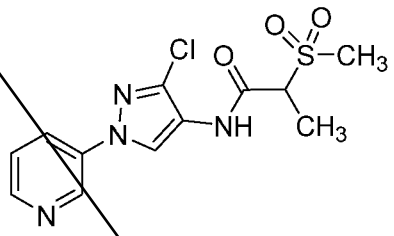
in the presence of a base and a solvent.

3. The process according to claim 2 wherein said base is selected from the group consisting of pyridine, lutidine, 2-picoline, *N,N*-diisopropylethylamine, triethylamine, sodium hydroxide,

potassium hydroxide, potassium carbonate, potassium bicarbonate, sodium carbonate, and sodium bicarbonate.

4. The process according to claim 2 wherein said solvent is selected from the group consisting of heptanes, chloroform, dichloroethane, toluene, dichloromethane, tetrahydrofuran, 2-methyltetrahydrofuran, methyl *tert*-butyl ether, cyclopentyl methyl ether, acetonitrile, ethyl acetate, *n*-butanol, isopropanol, *n*-propanol, ethanol, methanol, water, and mixtures thereof.

5. A process for the preparation of *N*-(3-chloro-1-(pyridin-3-yl)-1*H*-pyrazol-4-yl)-2-(methylsulfonyl)propanamide (**S3b**)



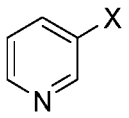
S3b

said process comprising:

reacting

(A) the molecule according to claim 1, and

(B) a 3-halopyridine **S3a**



S3a ,

wherein X is Br, Cl, or I;

in the presence of a base, a copper halide, a ligand, and a solvent.

6. The process according to claim 5 wherein said base is selected from the group consisting of pyridine, lutidine, 2-picoline, *N,N*-diisopropylethylamine, triethylamine, sodium methoxide, sodium ethoxide, lithium hydroxide, sodium hydroxide, potassium hydroxide, cesium hydroxide, calcium hydroxide, sodium diphosphate, potassium phosphate, sodium phosphate, potassium

carbonate, potassium bicarbonate, calcium carbonate, cesium carbonate, lithium carbonate, sodium carbonate, and sodium bicarbonate.

7. The process according to claim 5 wherein said copper halide is selected from the group consisting of copper(I) chloride, copper(II) chloride, and copper(I) iodide.

8. The process according to claim 5 wherein said ligand is selected from the group consisting of *N,N'*-dimethylethylenediamine, triethylenetetramine, bis(2-hydroxyethyl) ethylenediamine, 1-butylimidazole, 8-hydroxyquinoline, L-proline, 2,2-bipyridyl, 1,10-phenanthroline, and pipecolinic acid.

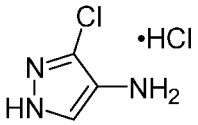
9. The process according to claim 5 wherein said solvent is selected from the group consisting of ethyl acetate, dioxane, tetrahydrofuran, 2-methyltetrahydrofuran, 1,2-dimethoxyethane, dichloromethane, dimethyl sulfoxide, *N*-methylpyrrolidone, *N,N*-dimethylformamide, propionitrile, benzonitrile, acetonitrile, xylenes, toluene, water, and mixtures thereof.

10. A process comprising the steps of:

(A) preparing the molecule according to claim 1

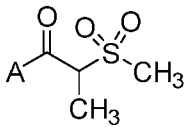
by reacting

(i) 3-chloro-1*H*-pyrazol-4-amine hydrochloride (**S2a**)



S2a ; and

(ii) an activated carboxylic acid **S1b**

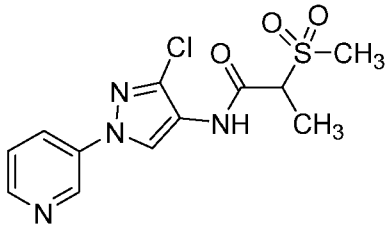


S1b

wherein said A of said activated carboxylic acid **S1b** is selected from the group consisting of Cl, $O(C=O)R_1$, $O(C=O)OR_1$, and OR_1, wherein (C_1-C_4)alkyl;

in the presence of a base and a solvent; and

(B) preparing *N*-(3-chloro-1-(pyridin-3-yl)-1*H*-pyrazol-4-yl)-2-(methylsulfonyl)propanamide (**S3b**)

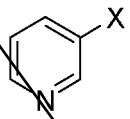


S3b

by reacting

(i) the molecule according to claim 1; and

(ii) a 3-halopyridine **S3a**



S3a ,

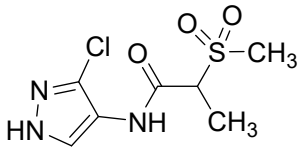
wherein X is Br, Cl, or I;

in the presence of a base, a copper halide, a ligand, and a solvent.

11. The process according to any one of claims 5 through 9 and claim 10 part (B), wherein said solvent is a mixture of acetonitrile, dimethyl sulfoxide, xylenes, and water.

WHAT IS CLAIMED IS:

1. A molecule, *N*-(3-chloro-1*H*-pyrazol-4-yl)-2-(methylsulfonyl)propanamide (**S2b**), having the following formula



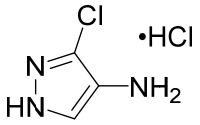
S2b .

2. A process for the preparation of the molecule according to claim 1

said process comprising:

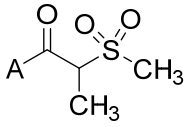
reacting

(A) 3-chloro-1*H*-pyrazol-4-amine hydrochloride (**S2a**)



S2a ; and

(B) an activated carboxylic acid **S1b**



S1b

wherein said A of said activated carboxylic acid **S1b** is selected from the group consisting of Cl, $O(C=O)R_1$, $O(C=O)OR_1$, and OR_1, wherein R_1 is $(C_1\text{-}C_4)$alkyl;

in the presence of a base and a solvent.

3. The process according to claim 2 wherein said base is selected from the group consisting of pyridine, lutidine, 2-picoline, *N,N*-diisopropylethylamine, triethylamine, sodium hydroxide,

potassium hydroxide, potassium carbonate, potassium bicarbonate, sodium carbonate, and sodium bicarbonate.

4. The process according to claim 2 wherein said solvent is selected from the group consisting of heptanes, chloroform, dichloroethane, toluene, dichloromethane, tetrahydrofuran, 2-methyltetrahydrofuran, methyl *tert*-butyl ether, cyclopentyl methyl ether, acetonitrile, ethyl acetate, *n*-butanol, isopropanol, *n*-propanol, ethanol, methanol, water, and mixtures thereof.

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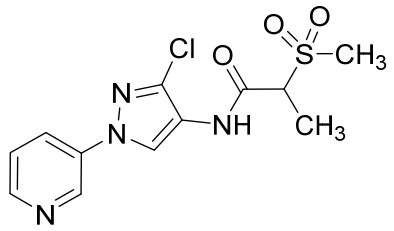


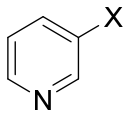
S3b

said process comprising:

reacting

(A) the molecule according to claim 1; and

(B) a 3-halopyridine **S3a**



S3a,

wherein X is Br, Cl, or I;

in the presence of a base, a copper halide, a ligand, and a solvent.

6. The process according to claim 5 wherein said base is selected from the group consisting of pyridine, lutidine, 2-picoline, *N,N*-diisopropylethylamine, triethylamine, sodium methoxide, sodium ethoxide, lithium hydroxide, sodium hydroxide, potassium hydroxide, cesium hydroxide, calcium hydroxide, sodium diphosphate, potassium phosphate, sodium phosphate, potassium

carbonate, potassium bicarbonate, calcium carbonate, cesium carbonate, lithium carbonate, sodium carbonate, and sodium bicarbonate.

7. The process according to claim 5 wherein said copper halide is selected from the group consisting of copper(I) chloride, copper(II) chloride, and copper(I) iodide.

8. The process according to claim 5 wherein said ligand is selected from the group consisting of *N,N'*-dimethylethylenediamine, triethylenetetramine, bis(2-hydroxyethyl) ethylenediamine, 1-butylimidazole, 8-hydroxyquinoline, L-proline, 2,2-bipyridyl, 1,10-phenanthroline, and pipecolinic acid.

9. The process according to claim 5 wherein said solvent is selected from the group consisting of ethyl acetate, dioxane, tetrahydrofuran, 2-methyltetrahydrofuran, 1,2-dimethoxyethane, dichloromethane, dimethyl sulfoxide, *N*-methylpyrrolidone, *N,N*-dimethylformamide, propionitrile, benzonitrile, acetonitrile, xylenes, toluene, water, and mixtures thereof.

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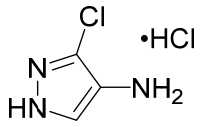
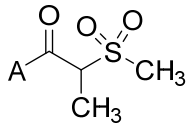


S2a ; and

(ii) an activated carboxylic acid **S1b**

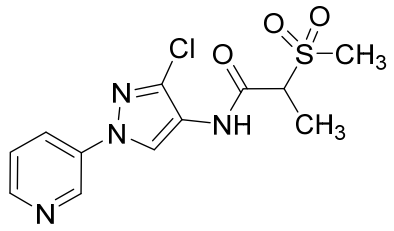


S1b

wherein said A of said activated carboxylic acid **S1b** is selected from the group consisting of Cl, $O(C=O)R_1$, $O(C=O)OR_1$, and OR_1, wherein R_1 is $(C_1\text{-}C_4)$alkyl;

in the presence of a base and a solvent; and

(B) preparing *N*-(3-chloro-1-(pyridin-3-yl)-1*H*-pyrazol-4-yl)-2-(methylsulfonyl)propanamide (**S3b**)

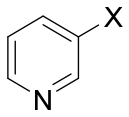


S3b

by reacting

(i) the molecule according to claim 1; and

(ii) a 3-halopyridine **S3a**



S3a,

wherein X is Br, Cl, or I;

in the presence of a base, a copper halide, a ligand, and a solvent.

11. The process according to any one of claims 5 through 9 and claim 10 part (B), wherein said solvent is a mixture of acetonitrile, dimethyl sulfoxide, xylenes, and water.