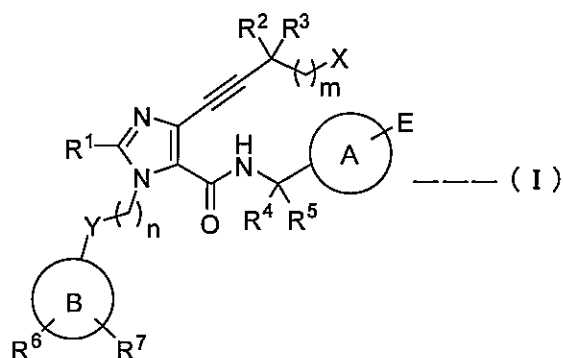


CLAIMS

1. A 4-alkynylimidazole derivative represented by the general formula (I) or a pharmaceutically acceptable salt thereof:

[Formula 1]



wherein ring A is an optionally substituted cycloalkyl, an optionally substituted aryl or an optionally substituted heteroaryl;

ring B is aryl or heteroaryl;

m is an integer of any one of 0~2;

n is an integer of any one of 1~3;

R¹ is a hydrogen atom, a C₁~C₄ alkyl group, a C₁~C₄ alkoxy group, a halogen atom, or a C₁~C₄ haloalkyl group;

R² and R³ are each independently a hydrogen atom, a halogen atom or a C₁~C₄ alkyl group or may, taken together with the carbon atom to which R² and R³ are adjacent, form a C₃~C₆ carbon ring;

R⁴ and R⁵ are each independently a hydrogen atom or a C₁~C₄ alkyl group or may, taken together with the carbon atom to which R⁴ and R⁵ are adjacent, form a C₃~C₆ carbon ring, and R⁶ and R⁷ are each independently a hydrogen atom, a C₁~C₄ alkyl group, a C₁~C₄ alkoxy group, a C₁~C₄ hydroxyalkyl group, a carboxyl group, a cyano group, a halogen atom, a C₁~C₄ haloalkyl group, or a C₁~C₄ haloalkoxy group;

X is -OR⁸, -NR⁹R¹⁰ or a halogen atom;

R⁸ is a hydrogen atom, a C₁~C₄ alkyl group or a C₁~C₄ haloalkyl group;

R^9 and R^{10} are each independently a hydrogen atom or a $C_1\sim C_4$ alkyl group or may, taken together with the nitrogen atom to which R^9 and R^{10} are adjacent, form a nitrogen-containing heterocycle, Y is a single bond, an oxygen atom or a sulfur atom; and

E is $-CO_2H$, or bioisostere of a carboxyl group.

2. The 4-alkynylimidazole derivative according to claim 1 or a pharmaceutically acceptable salt thereof, wherein in the foregoing general formula (I), X is $-OR^8$ (R^8 is as defined in claim 1) and m is 0.

3. The 4-alkynylimidazole derivative according to claim 1 or 2 or a pharmaceutically acceptable salt thereof, wherein in the foregoing general formula (I), R^2 and R^3 are both a methyl group.

4. The 4-alkynylimidazole derivative according to any one of claims 1 to 3 or a pharmaceutically acceptable salt thereof, wherein in the foregoing general formula (I), R^1 is a methyl group, an ethyl group, a cyclopropyl group, a chlorine atom, a difluoromethyl group, or a trifluoromethyl group.

5. The 4-alkynylimidazole derivative according to claim 4 or a pharmaceutically acceptable salt thereof, wherein in the foregoing general formula (I), R^1 is a chlorine atom.

6. The 4-alkynylimidazole derivative according to any one of claims 1 to 5 or a pharmaceutically acceptable salt thereof, wherein in the foregoing formula (I), ring A is cyclohexyl substituted by E at the 4-position or phenyl substituted by E at the 4-position (where E is as defined in claim 1).

7. The 4-alkynylimidazole derivative according to any one of claims 1 to 6 or a pharmaceutically acceptable salt thereof, wherein in the foregoing formula (I), E is $-CO_2H$ or tetrazolyl.

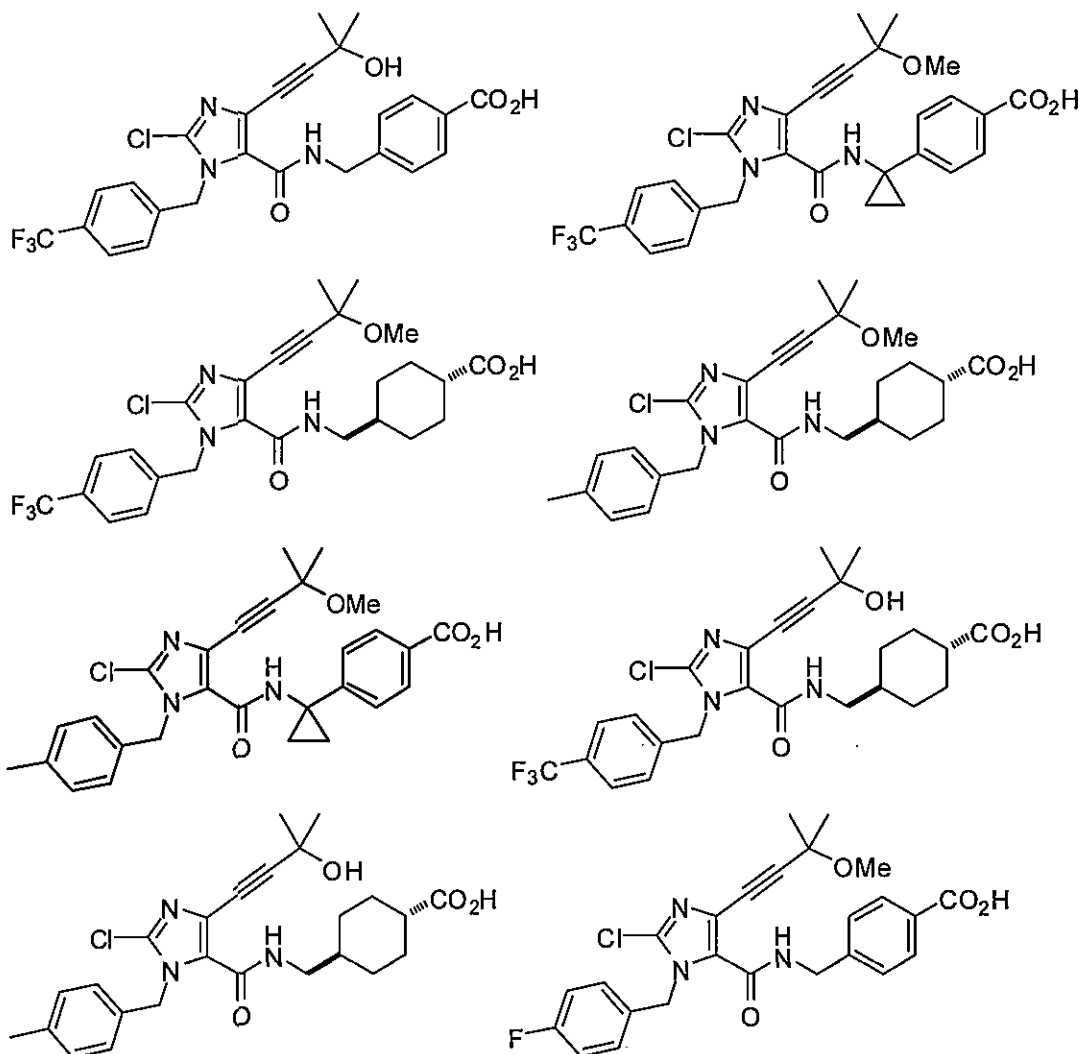
8. The 4-alkynylimidazole derivative according to any one of claims 1 to 7 or a pharmaceutically acceptable salt thereof, wherein in the foregoing formula (I), ring B is

phenyl, n is 1, and Y is a single bond.

9. The 4-alkynylimidazole derivative according to claim 8 or a pharmaceutically acceptable salt thereof, wherein in the foregoing formula (I), ring B is phenyl substituted by R^6 at the 4-position, R^7 is a hydrogen atom, and R^6 is any one of a $C_1\sim C_4$ alkyl group, a $C_1\sim C_4$ alkoxy group, a cyano group, a halogen atom, a $C_1\sim C_4$ haloalkyl group, and a $C_1\sim C_4$ haloalkoxy group.

10. The 4-alkynylimidazole derivative according to claim 1 or a pharmaceutically acceptable salt thereof, wherein the compound represented by the foregoing formula (I) is any one of:

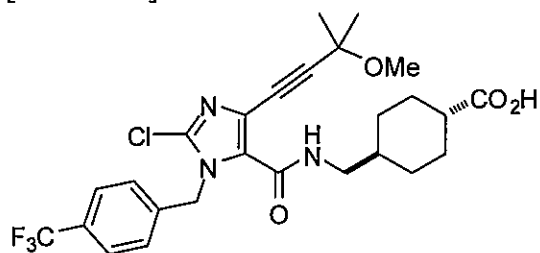
[Formula 2]



11. The 4-alkynylimidazole derivative according to claim 1 or a pharmaceutically

acceptable salt thereof, wherein the compound represented by the foregoing formula (I) is:

[Formula 3]



12. A pharmaceutical comprising the 4-alkynylimidazole derivative according to any one of claims 1 to 11 or a pharmaceutically acceptable salt thereof as an active ingredient.
13. An EP4 receptor antagonist comprising the 4-alkynylimidazole derivative according to any one of claims 1 to 11 or a pharmaceutically acceptable salt thereof.
14. The alkynylimidazole derivative according to claims 1 to 11 or a pharmaceutically acceptable salt thereof for use in the treatment of a disease selected from an inflammatory disease or an inflammatory pain.
15. The alkynylimidazole derivative according to any one of claims 1 to 11 or a pharmaceutically acceptable salt thereof for use in the treatment of a disease selected from the group consisting of arthritic pain, articular rheumatism, osteoarthritis, lumbago, scapulohumeral periarthritis, cervico-omo-brachial syndrome, tendonitis, and thecitis.
16. The alkynylimidazole derivative according to any one of claims 1 to 11 or a pharmaceutically acceptable salt thereof for use in the treatment of an immune disease in which Th1 cells and/or Th17 cells are implicated.
17. The alkynylimidazole derivative according to any one of claims 1 to 11 or a pharmaceutically acceptable salt thereof for use in the treatment of at least one disease selected from the group consisting of multiple sclerosis, ulcerative colitis, Crohn's disease, atopic dermatitis, psoriasis, and contact dermatitis.
18. The alkynylimidazole derivative according to any one of claims 1 to 11 or a

pharmaceutically acceptable salt thereof for use in the treatment of multiple sclerosis.