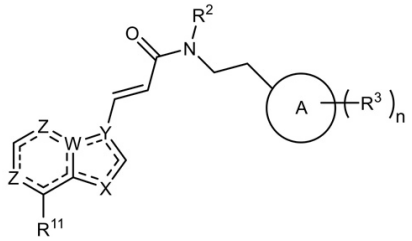
Claims

[Claim 1]

A compound represented by general formula [I]:



wherein

R^{11} is hydrogen, halogen, -C_{1-6} alkyl or -O-C_{1-6} alkyl;

R^2 is hydrogen or -C_{1-6} alkyl,

R^3 is halogen, -Q_k-(C_{1-6} alkyl)$_m$-Q_p-R^{31}, optionally-substituted phenyl or optionally-substituted heteroaryl which is selected from the groupe consisting of furyl, thienyl, oxazolyl, thiazolyl, pyrazolyl, pyridyl, pyrazyl, pyridazinyl and pyrimidyl,

R^{31} is -C_{1-6} alkyl or -C_{3-8} cycloalkyl,

Qs are the same or different and each independently represent oxygen, sulfur, -C(=O)-O- or -NH-,

k, m and p are 0 or 1,

n is 0, 1 or 2, wherein when n is 2, R^3s each independently represent the same or different substituent,

W is carbon or nitrogen,

X is carbon, nitrogen or N-R^{12},

Y is carbon or nitrogen,

Zs are the same or different and each independently represent nitrogen or C-H,

provided that X and Y are not carbon at the same time,

R^{12} is hydrogen, -C_{1-6} alkyl, -C_{1-6} alkyl-O-C_{1-6} alkyl, -C(=O)-C_{1-6} alkyl, -C(=O)-aryl or -C(=O)-O-C_{1-6} alkyl,

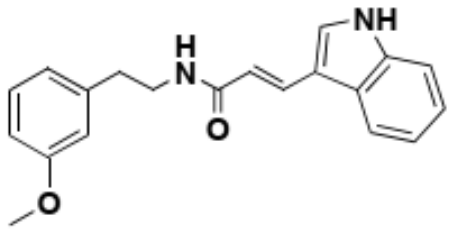
Ring A is aryl or heteroaryl,

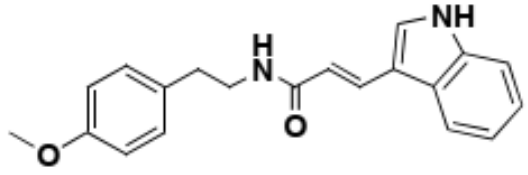
--- is single bond or double bond;

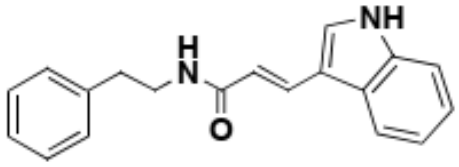
provided that when X is N-H, W and Y are carbon and all Z are C-H, Ring A is neither 2-(-O-C_{1-6} alkyl)phenyl nor 2,5-di(-O-C_{1-6} alkyl)phenyl,

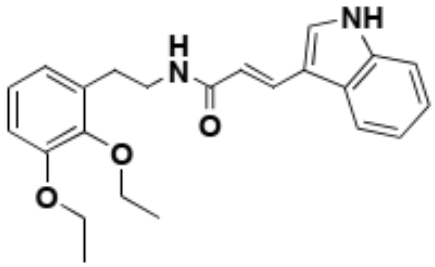
or a salt thereof,

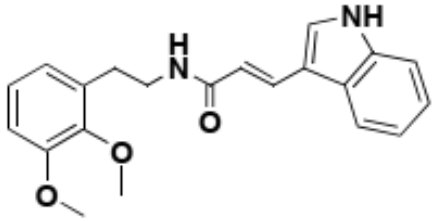
wherein the following compounds are disclaimed:

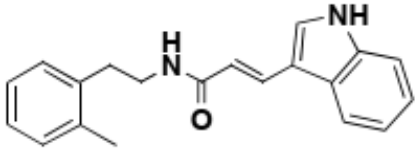


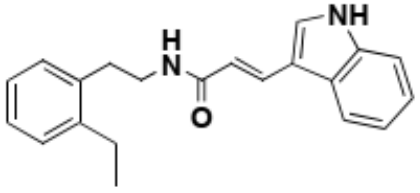


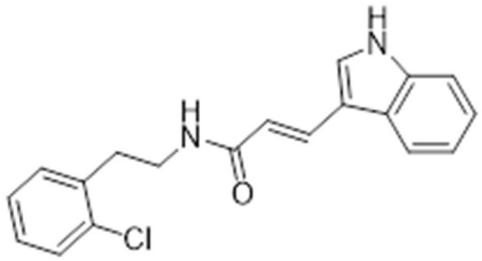


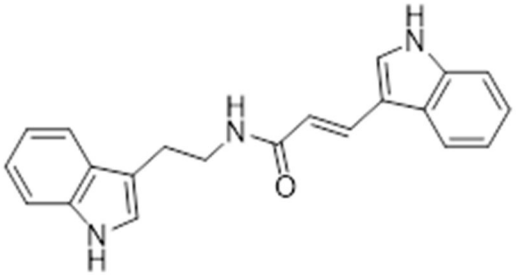


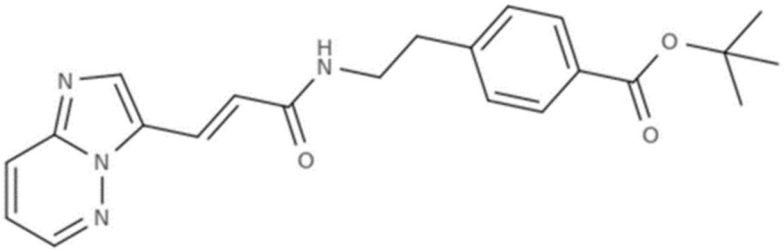


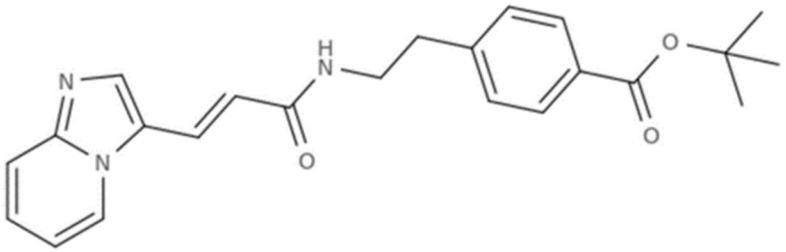


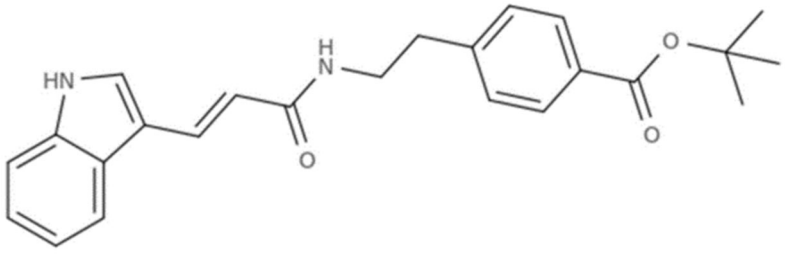


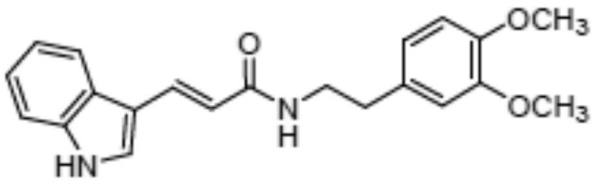












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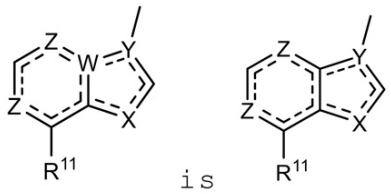
[Claim 2]

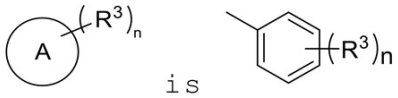
The compound according to claim 1, wherein in the general formula [I],



wherein R^{11}, X, Y, Zs and --- are as defined above,
or a salt thereof.

[Claim 3]

The compound according to claim 1, wherein in the general formula [I],



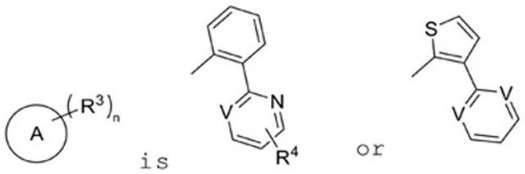
wherein R^3 and n are as defined above,
or a salt thereof.

[Claim 4]

The compound according to claim 1, wherein in the general formula [I], the heteroaryl in Ring A is selected from the group consisting of furan, thiophene, pyridine and quinoline,
or a salt thereof.

[Claim 5]

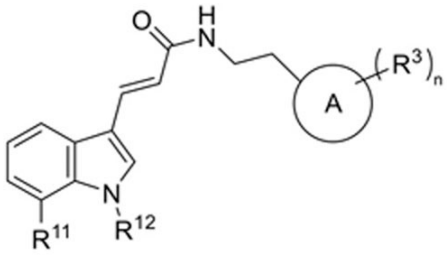
The compound according to claim 1, wherein in the general formula [I],



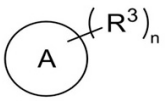
wherein Vs are the same or different and each independently represent nitrogen or C-H,
R^4 is hydrogen, halogen, -C_{1-6} alkyl or -O-C_{1-6} alkyl,
or a salt thereof.

[Claim 6]

The compound according to claim 1, which is represented by general formula [Ia]:



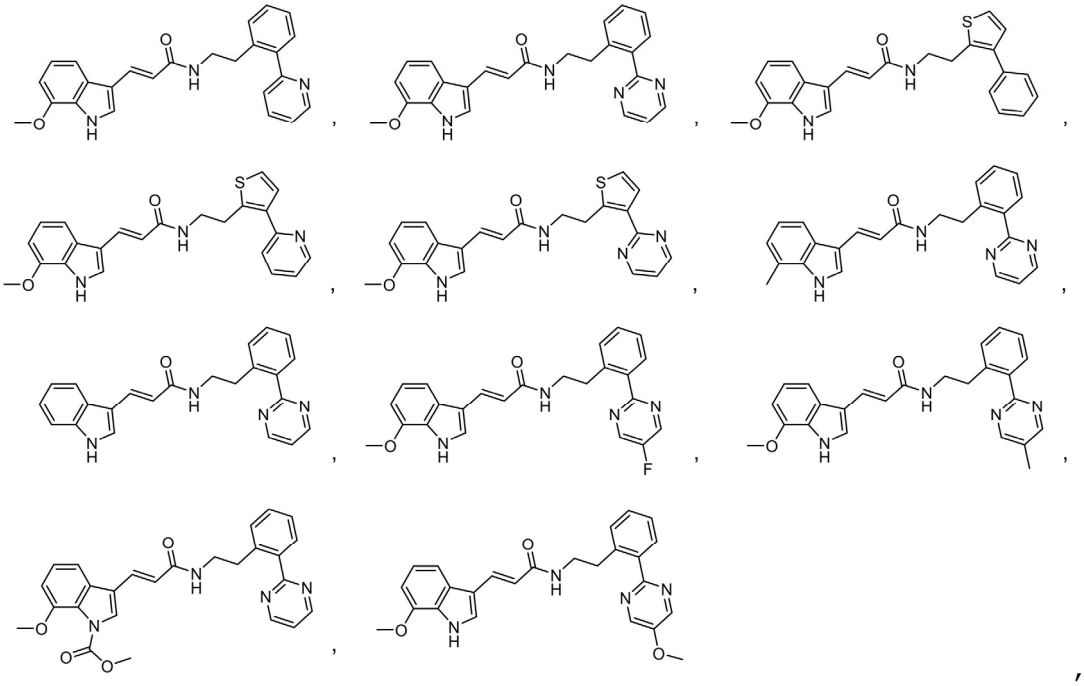
wherein R^{11} is hydrogen, halogen, -C_{1-6} alkyl or -O-C_{1-6} alkyl,
R^{12} is hydrogen or -C(=O)-O-C_{1-6} alkyl,



is pyridylbenzene, pyrimidylbenzene (wherein the pyrimidyl is optionally substituted by halogen, -C_{1-6} alkyl or -O-C_{1-6} alkyl), phenylthiophene, pyridylthiophene or pyrimidylthiophene,
or a salt thereof.

[Claim 7]

The compound according to claim 1, which is selected from the group consisting of the following compounds:



or a salt thereof.

[Claim 8]

Use of the compound according to any one of claims 1 to 7 or a salt thereof for promoting platelet production *in vitro*.

[Claim 9]

A method for promoting platelet production *in vitro*, which comprises culturing platelet progenitor cells in the presence of the compound according to any one of claims 1 to 7 or a salt thereof.

[Claim 10]

A method for producing platelets *in vitro*, which comprises culturing platelet progenitor cells in the presence of the compound according to any one of claims 1 to 7 or a salt thereof.

[Claim 11]

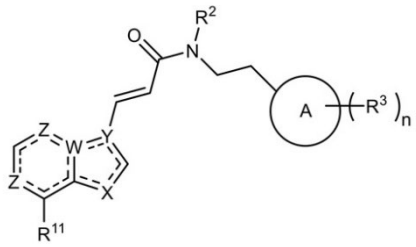
A method for culturing platelet progenitor cells to promote platelet production *in vitro*, which comprises culturing platelet progenitor cells in the presence of the compound according to any one of claims 1 to 7 or a salt thereof.

[Claim 12]

Use of the compound according to any one of claims 1 to 7 or a salt thereof in the production of platelets *in vitro*.

[Claim 13]

Use of the compound represented by general formula [I']:



wherein

R^{11} is hydrogen, halogen, -C_{1-6} alkyl or -O-C_{1-6} alkyl;

R^2 is hydrogen or -C_{1-6} alkyl,

R^3 is halogen, -Q_k-(C_{1-6} alkyl)$_m$-Q_p-R^{31}, optionally-substituted phenyl or optionally-substituted heteroaryl which is selected form the group consisting of furyl, thienyl, oxazolyl, thiazolyl, pyrazolyl, pyridyl, pyrazyl, pyridazinyl and pyrimidyl,

R^{31} is -C_{1-6} alkyl or -C_{3-8} cycloalkyl,

Qs are the same or different and each independently represent oxygen, sulfur, -C(=O)-O- or -NH-,

k, m and p are 0 or 1,

n is 0, 1 or 2, wherein when n is 2, R^3s each independently represent the same or different substituent

W is carbon or nitrogen,

X is carbon, nitrogen or N-R^{12},

Y is carbon or nitrogen,

Zs are the same or different and each independently represent nitrogen or C-H,

provided that X and Y are not carbon at the same time

R^{12} is hydrogen, -C_{1-6} alkyl, -C_{1-6} alkyl-O-C_{1-6} alkyl, -C(=O)-C_{1-6} alkyl, -C(=O)-aryl or -C(=O)-O-C_{1-6} alkyl,

Ring A is aryl or heteroaryl,

--- is single bond or double bond,

or a salt thereof,

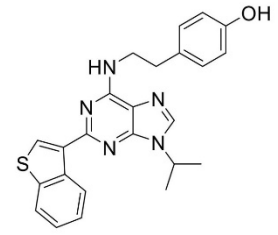
for promoting platelet production *in vitro*.

[Claim 14]

The use according to claim 13, wherein the compound represented by general formula [I'] or a salt thereof is used in combination with an aryl hydrocarbon receptor antagonist.

[Claim 15]

The use according to claim 14, wherein the aryl hydrocarbon receptor antagonist is selected from the group consisting of the following compounds: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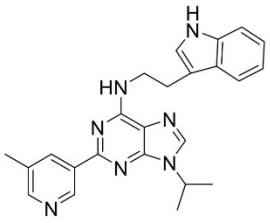
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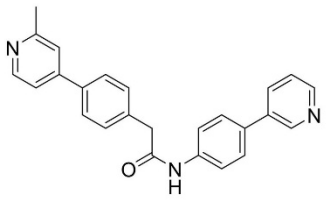
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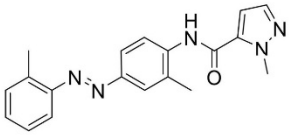
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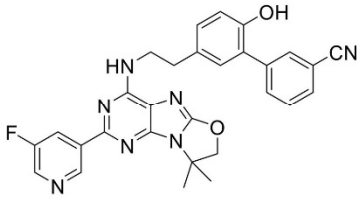
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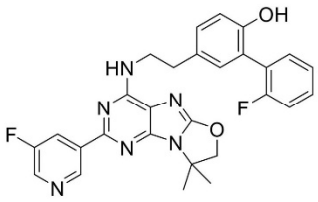
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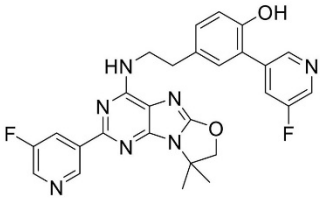
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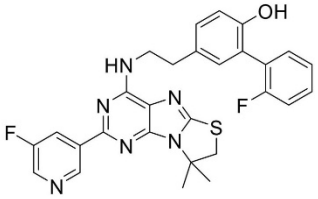
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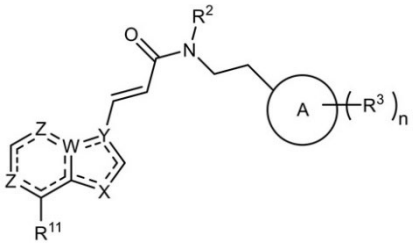
[Claim 16]

A method for promoting platelet production *in vitro*, which comprises culturing platelet progenitor cells in the presence of the compound represented by general formula [I']:



wherein

R^{11} is hydrogen, halogen, -C_{1-6} alkyl or -O-C_{1-6} alkyl;

R^2 is hydrogen or -C_{1-6} alkyl,

R^3 is halogen, -Q_k-(C_{1-6} alkyl)$_m$-Q_p-R^{31}, optionally-substituted phenyl or optionally-substituted heteroaryl which is selected form the group consisting of furyl, thienyl, oxazolyl, thiazolyl, pyrazolyl, pyridyl, pyrazyl, pyridazinyl and pyrimidyl,

R^{31} is -C_{1-6} alkyl or -C_{3-8} cycloalkyl,

Qs are the same or different and each independently represent oxygen, sulfur, -

C(=O)-O- or -NH-,

k, m and p are 0 or 1,

n is 0, 1 or 2, wherein when n is 2, R^3s each independently represent the same or different substituent

W is carbon or nitrogen,

X is carbon, nitrogen or N-R^{12},

Y is carbon or nitrogen,

Zs are the same or different and each independently represent nitrogen or C-H,

provided that X and Y are not carbon at the same time

R^{12} is hydrogen, -C_{1-6} alkyl, -C_{1-6} alkyl-O-C_{1-6} alkyl, -C(=O)-C_{1-6} alkyl, -C(=O)-aryl or -C(=O)-O-C_{1-6} alkyl,

Ring A is aryl or heteroaryl,

--- is single bond or double bond,

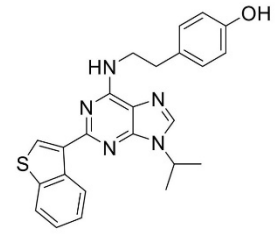
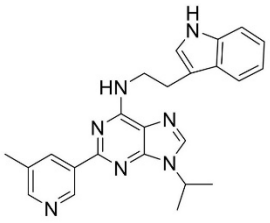
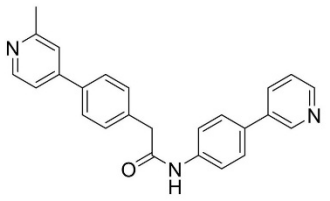
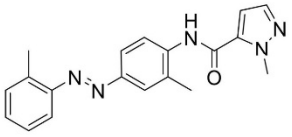
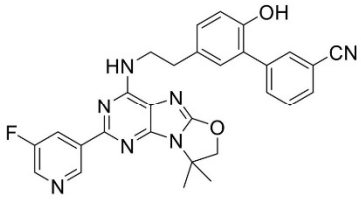
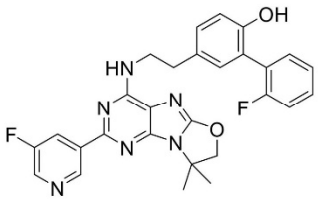
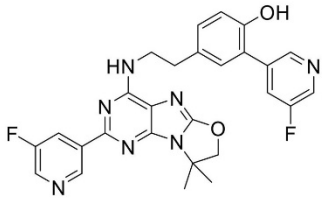
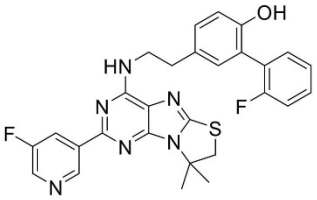
or a salt thereof.

[Claim 17]

The method according to claim 16, wherein the compound represented by general formula [I'] or a salt thereof is present with an aryl hydrocarbon receptor antagonist.

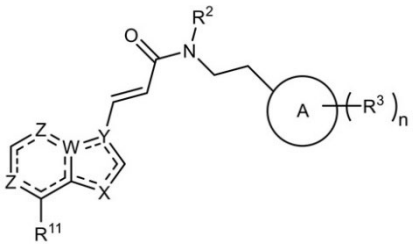
[Claim 18]

The method according to claim 17, wherein the aryl hydrocarbon receptor antagonist is selected from the group consisting of the following compounds:

[Claim 19]

A method for producing platelets *in vitro*, which comprises culturing platelet progenitor cells in the presence of the compound represented by general formula [I']:



wherein

R^{11} is hydrogen, halogen, -C_{1-6} alkyl or -O-C_{1-6} alkyl;

R^2 is hydrogen or -C_{1-6} alkyl,

R^3 is halogen, -Q_k-(C_{1-6} alkyl)$_m$-Q_p-R^{31}, optionally-substituted phenyl or optionally-substituted heteroaryl which is selected form the group consisting of furyl, thienyl, oxazolyl, thiazolyl, pyrazolyl, pyridyl, pyrazyl, pyridazinyl and pyrimidyl,

R^{31} is -C_{1-6} alkyl or -C_{3-8} cycloalkyl,

Qs are the same or different and each independently represent oxygen, sulfur, -C(=O)-O- or -NH-,

k, m and p are 0 or 1,

n is 0, 1 or 2, wherein when n is 2, R^3s each independently represent the same or different substituent

W is carbon or nitrogen,

X is carbon, nitrogen or N-R^{12},

Y is carbon or nitrogen,

Zs are the same or different and each independently represent nitrogen or C-H,

provided that X and Y are not carbon at the same time

R^{12} is hydrogen, -C_{1-6} alkyl, -C_{1-6} alkyl-O-C_{1-6} alkyl, -C(=O)-C_{1-6} alkyl, -C(=O)-aryl or -C(=O)-O-C_{1-6} alkyl,

Ring A is aryl or heteroaryl,

--- is single bond or double bond,

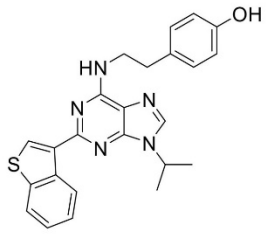
or a salt thereof.

[Claim 20]

The method according to claim 19, wherein the compound represented by general formula [I'] or a salt thereof is present with an aryl hydrocarbon receptor antagonist.

[Claim 21]

The method according to claim 20, wherein the aryl hydrocarbon receptor antagonist is selected from the group consisting of the following compounds: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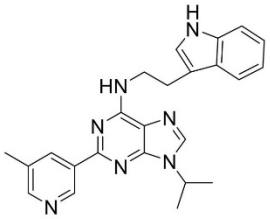
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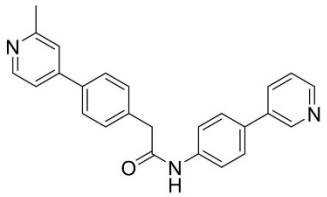
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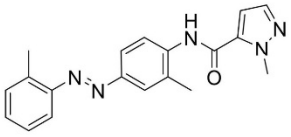
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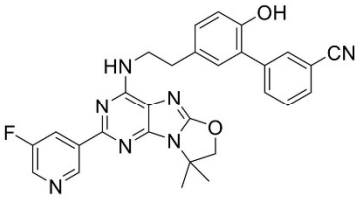
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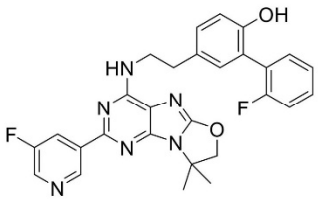
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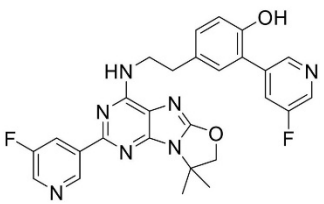
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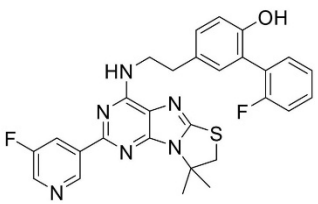
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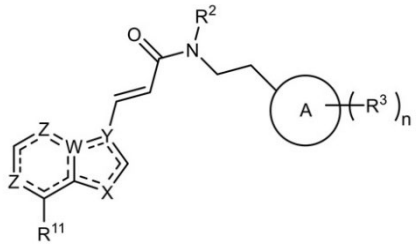
[Claim 22]

A method for culturing platelet progenitor cells to promote platelet production in vitro, which comprises culturing platelet progenitor cells in the presence of the compound represented by general formula [I']:



wherein

R^{11} is hydrogen, halogen, -C_{1-6} alkyl or -O-C_{1-6} alkyl;

R^2 is hydrogen or -C_{1-6} alkyl,

R^3 is halogen, -Q_k-(C_{1-6} alkyl)$_m$-Q_p-R^{31}, optionally-substituted phenyl or optionally-substituted heteroaryl which is selected form the group consisting of furyl, thienyl, oxazolyl, thiazolyl, pyrazolyl, pyridyl, pyrazyl, pyridazinyl and pyrimidyl,

R^{31} is -C_{1-6} alkyl or -C_{3-8} cycloalkyl,

Qs are the same or different and each independently represent oxygen, sulfur, -C(=O)-O- or -NH-,

k, m and p are 0 or 1,

n is 0, 1 or 2, wherein when n is 2, R^3s each independently represent the same or different substituent

W is carbon or nitrogen,

X is carbon, nitrogen or N-R^{12},

Y is carbon or nitrogen,

Zs are the same or different and each independently represent nitrogen or C-H,

provided that X and Y are not carbon at the same time

R^{12} is hydrogen, -C_{1-6} alkyl, -C_{1-6} alkyl-O-C_{1-6} alkyl, -C(=O)-C_{1-6} alkyl, -C(=O)-aryl or -C(=O)-O-C_{1-6} alkyl,

Ring A is aryl or heteroaryl,

--- is single bond or double bond,

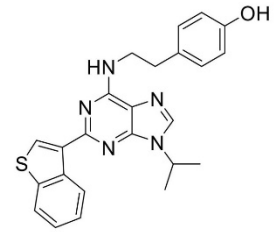
or a salt thereof.

[Claim 23]

The method according to claim 22, wherein the compound represented by general formula [I'] or a salt thereof is present with an aryl hydrocarbon receptor antagonist.

[Claim 24]

The method according to claim 23, wherein the aryl hydrocarbon receptor antagonist is selected from the group consisting of the following compounds: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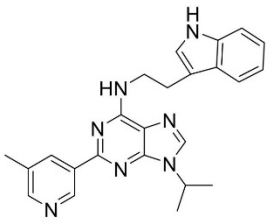
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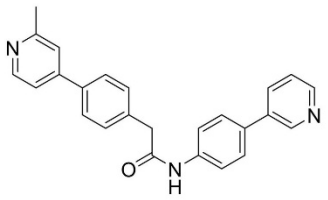
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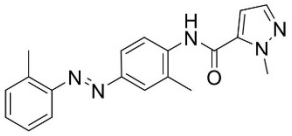
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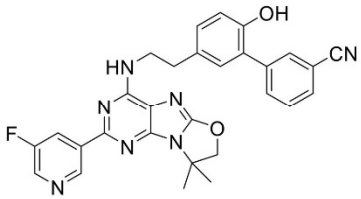
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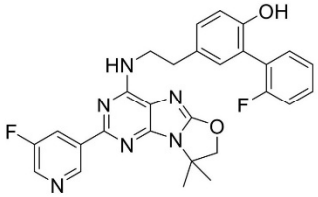
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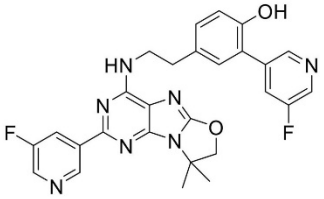
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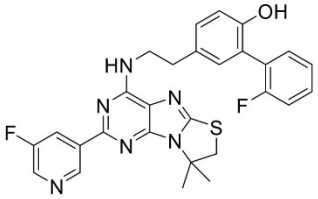
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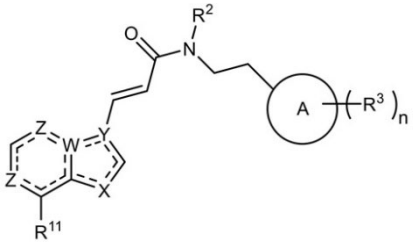
[Claim 25]

Use of the compound represented by general formula [I']:



wherein

R^{11} is hydrogen, halogen, -C_{1-6} alkyl or -O-C_{1-6} alkyl;

R^2 is hydrogen or -C_{1-6} alkyl,

R^3 is halogen, -Q_k-(C_{1-6} alkyl)$_m$-Q_p-R^{31}, optionally-substituted phenyl or optionally-substituted heteroaryl which is selected form the group consisting of furyl, thienyl, oxazolyl, thiazolyl, pyrazolyl, pyridyl, pyrazyl, pyridazinyl and pyrimidyl,

R^{31} is -C_{1-6} alkyl or -C_{3-8} cycloalkyl,

Qs are the same or different and each independently represent oxygen, sulfur, -C(=O)-O- or -NH-,

k, m and p are 0 or 1,

n is 0, 1 or 2, wherein when n is 2, R^3s each independently represent the same or different substituent

W is carbon or nitrogen,

X is carbon, nitrogen or N-R^{12},

Y is carbon or nitrogen,

Zs are the same or different and each independently represent nitrogen or C-H,

provided that X and Y are not carbon at the same time

R^{12} is hydrogen, -C_{1-6} alkyl, -C_{1-6} alkyl-O-C_{1-6} alkyl, -C(=O)-C_{1-6} alkyl, -C(=O)-aryl or -C(=O)-O-C_{1-6} alkyl,

Ring A is aryl or heteroaryl,

--- is single bond or double bond,

or a salt thereof,

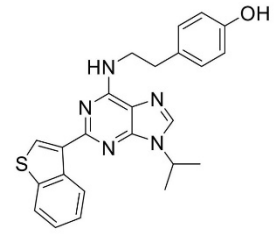
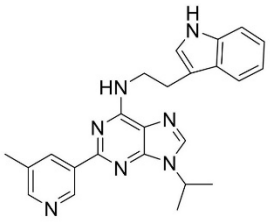
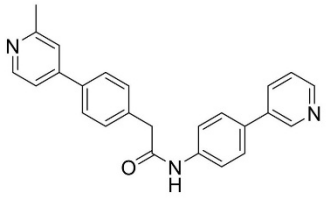
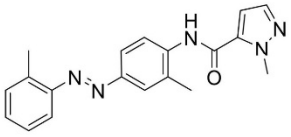
in the production of platelets *in vitro*.

[Claim 26]

The use according to claim 25, wherein the compound represented by general formula [I'] or a salt thereof is used in combination with an aryl hydrocarbon receptor antagonist.

[Claim 27]

The use according to claim 26, wherein the aryl hydrocarbon receptor antagonist is selected from the group consisting of the following compounds:


OH
HN
N
N
N
N
S
,

H
N
HN
N
N
N
N
N
,

N
O
N
H
N
,

H
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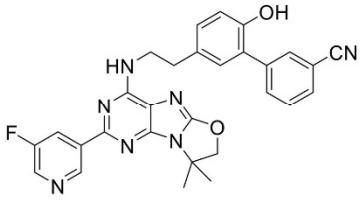
N
N
N
O
,

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CN
HN
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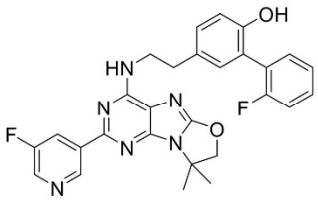
O
F
N
,

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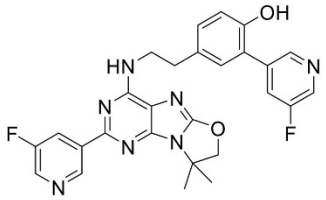
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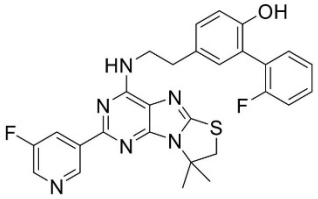
OH
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S
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