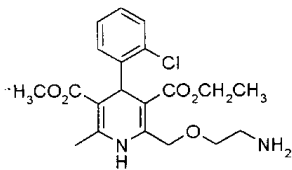
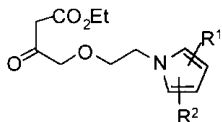


2 - ¹ (Hantzsch reaction) , ² 1,4 -
:

1



2



R¹ R²

, C₁₋₄

C₁₋₄

6 - 1,4 - m - channel blocker)

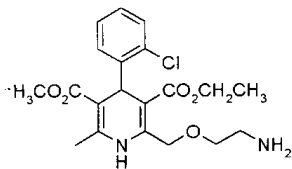
1 - 3,5 -

(3 - 5 - 2 - (2 -

-) - 4 - (2 -

) - (calciu

1



1,4 -

3 5

가

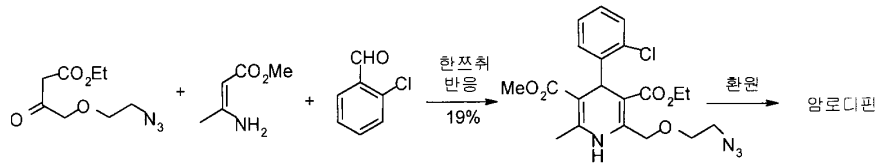
(Hantzsch reaction)

가

87 - 909

1
1,4 -

1



, Et Me

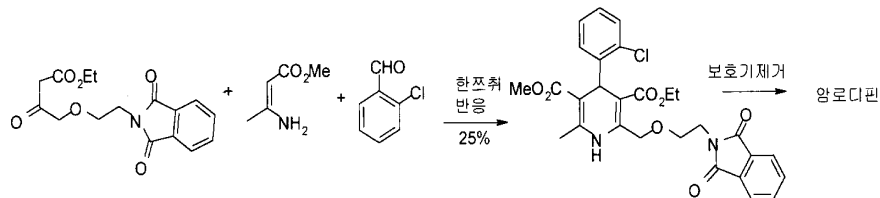
19%

86 - 1921

1,4 -

2

2



, Et Me

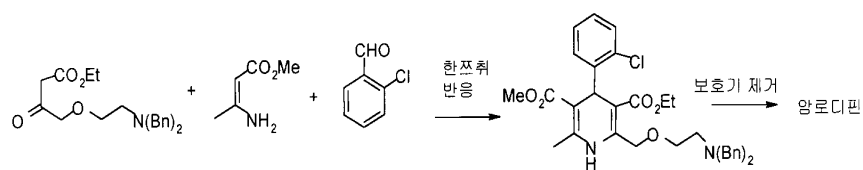
25%

87 - 909

1,4 -

3

3

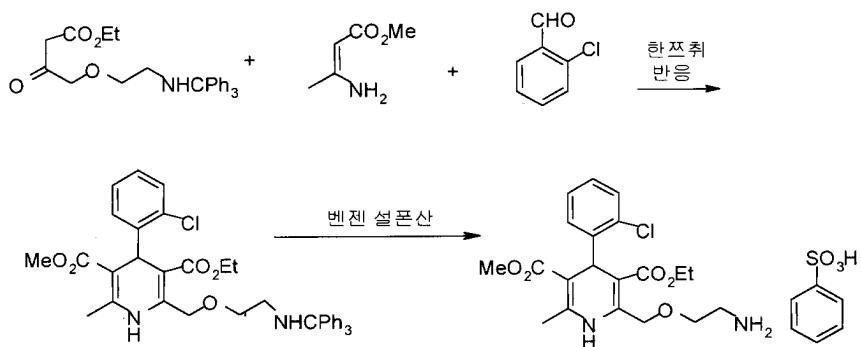


, Bn , Et Me .

10% , 2

5,389,654 , 4 ,
1,4 -

4

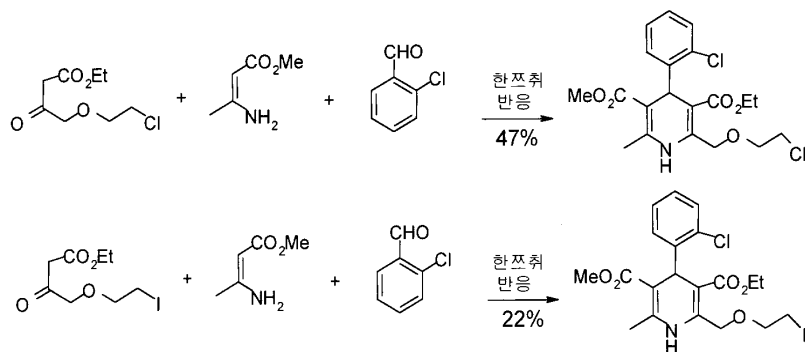


, Ph , Et Me .

7%

6,046,337 , 5 ,
:

5



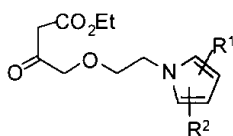
Et Me .

, 가 47% , 가 22%

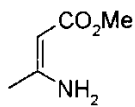
, 가 (steric hinderance) ,

(a) 2 , 3
 4 2- 5 1,4- ;
 (b) 5 1,4- ;

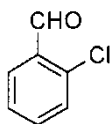
2



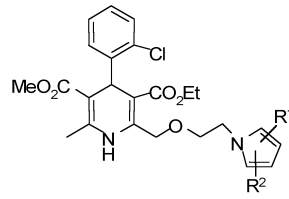
3



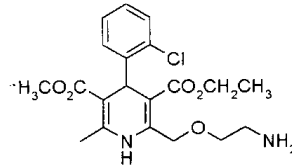
4



5



1



R¹ R²

, C₁₋₄

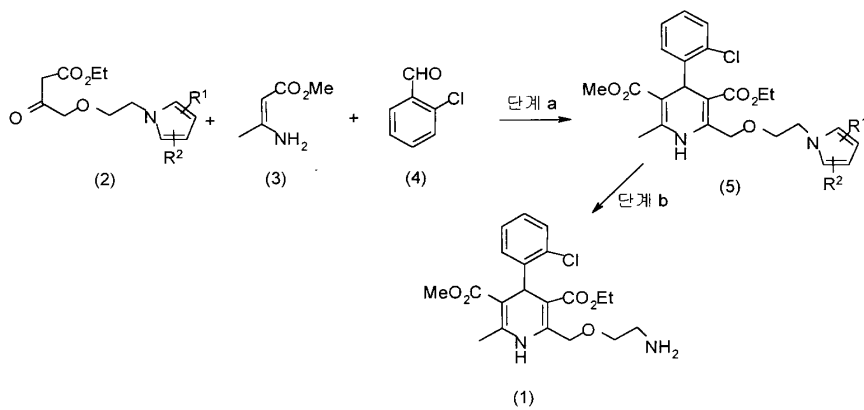
C₁₋₄

Me

Et

6 :

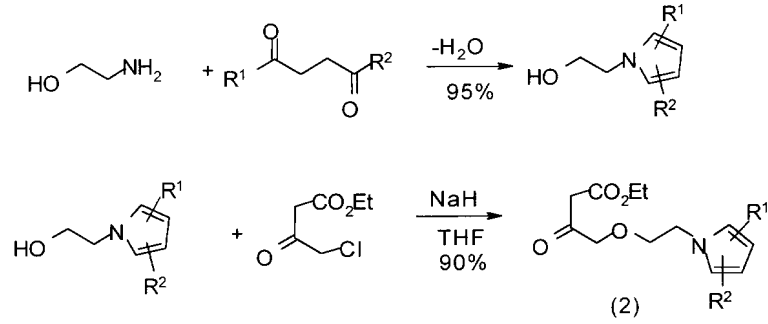
6



, R¹, R², Et Me

, R¹ R²가
(J. Chem. Soc., Perkin Trans. I, 2801,(1984))

7



, R¹, R² Et

가

3 5

가

(90%)

a , 2

20

가

4 2-

5 1,4-

0.9 - 1.2:1:1

2-

, 1-
53 %

C₁₋₄

가

b , 5 1,4-

4

5

가

75 %

5 1,4-

15

25

20

10

가

가 1:3

5,

1:4

,가

5 1,4-

가

, 1-

5 1,4-
가

가
1: 2 - (2,5 - - 1 -)

30.5g(0.5mol), 57g(0.5mol) 0.35g(5mmol,) 300Mℓ
가 (Dean - stark) 3 가 , 200
Mℓ 100Mℓ 가 30 (pad)
66g(:95%)

¹H - NMR(300MHz, CDCl₃) (ppm): 5.82(s,2H), 3.94(t, 2H, J=6Hz), 3.78(t,2H, J=6Hz), 2.28(s,6H)

2: 4 - [2 - (2,5 - - 1 -)]

500Mℓ 32g(60%) 가 , 1 2 - (2,
5 - - 1 -) 56g(0.4mol) 30 가 1 0
2 가 4 - 65.84g(0.4mol) 200Mℓ
가 , 3N pH 6 7
가 600Mℓ 100Mℓ 2
96.2g(:90%)

¹H - NMR(300MHz, CDCl₃) (ppm): 5.86(s,2H), 4.19(q, 2H, J=7.1Hz), 4.04(s,2H), 3.98(t,2H, J=6.0Hz), 3.65(t,2H, J=6.0Hz), 3.41(s,2H), 2.23(s,6H), 1.27(t,3H, J=7.1Hz)

1: 3 - - 5 - - 2 - (2 - -) - 4 - (2 -) - 6 - - 1,4 - - 3,5 -

(a) 3 - - 5 - - 2 - [(2 - (2,5 - - 1 -)) -] - 4 - (2 -) - 6 - - 1,4 -
- 3,5 -

2 4 - [2 - (2,5 - - 1 -)] 11.4g(42.6mmol), 2 -
6g(42.6mmol) 3 - 4.9g(42.6mmol) 100Mℓ 가
20
11g(: 53%)

m.p: 46 - 48

Mass: m/z= 509.11(M+Na)⁺, 485.94(M+H)⁺

¹H - NMR(300MHz, CDCl₃) (ppm): 7.07 7.36(m,4H), 6.65(b,1H,NH), 5.86(s,2H), 5.40(s,1H), 4.73(s,2H), 4.03 4.11(m,4H), 3.74(t,2H, J=5.4Hz), 3.64(s,3H), 2.31(s,6H), 2.27(s,3H), 1.24(t,3H, J=7.1Hz)

IR(KBr): 3377, 2977, 2945, 1692, 1480, 1433, 1305cm⁻¹

(b) 3 - - 5 - - 2 - (2 - -) - 4 - (2 -) - 6 - - 1,4 - - 3,5 -

1
- 1,4 -
q)
가
Cl pH 1

3 -
- 3,5 -
16.4g(162mmol, 10eq)
100Mℓ 2

- 5 -
- 2 - [(2 - (2,5 -
7.9g(16.2mmol),
60Mℓ 2

- 1 -)
) -] - 4 - (2 -) - 6 -
22.6g(324mmol, 20e
가 4.5
100Mℓ 가 3N H
pH 8 9

1N NaOH
pH 8 9

(foam)

5.1g(: 77%)

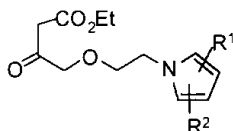
¹H - NMR(300MHz, CDCl₃) (ppm): 7.40(br. s, 1H, NH), 7.02 - 7.37(n, 4H, ArH), 5.39(s, 1H), 4.75(d.d., 2H), 4.02(q, 2H), 3.71(m, 2H), 3.60(s, 3H), 3.12(m, 2H), 2.70(br, 2H, NH), 2.36(s, 3H) 1.19(t, 3H)

(57)

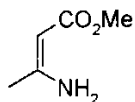
1.

(a) 2, 5, 1,4 - ; (b) 4, 2 - 5, 1,4 -
1 :

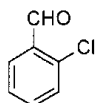
2



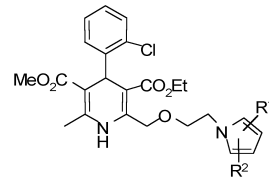
3



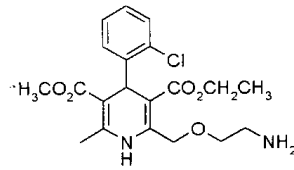
4



5



1



R¹ R² , C₁₋₄ , C₁₋₄ ,

Me ,

Et .

2.

1 ,

a가 2 가 , 2 - 0.9 - 1.2:1:1

3.

1 ,

b가 5 1,4 - 가 15 25

4.

1 ,

b 가 5 1,4 - 10

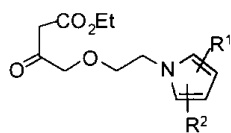
5.

1

2

:

2



R¹ R² , C₁₋₄ ,

C₁₋₄ ,

Et .

6.

2

R¹ R² 가 .