



(72)

가 4 16 1-604

가 6 408

1 10-7

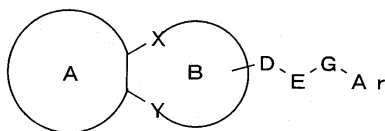
14-59-205

(74)

:

(54)

:



[ , A ; B ; X Y NR<sup>1</sup> - ( , R<sup>1</sup> ) ; D C<sub>1-3</sub> ; E NH ; G 가 ; Ar , D R<sup>4</sup>가 B , ] .

(cholestyramine) (cholestipol) (US 4027009), A (ACAT) (intestinal tract) , A (HMG-CoA) ( 1476569) , 3- -3- (US 4231938), (US 4444784) (US 4346227) .

, HMG - CoA

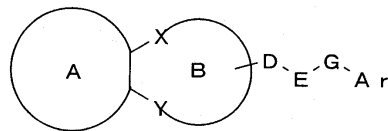
A

( , , ) ( )  
 )  
 가 ,  
 가

, , 가  
 , 가  
 ACAT 가

, , ACAT 가  
 , 가 ,  
 ,

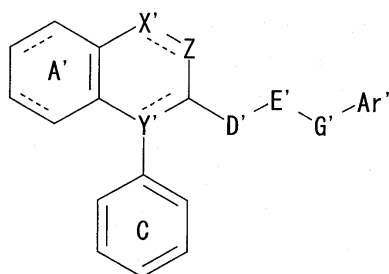
(1) | :  
 |



[ , A ; X Y -NR<sup>1</sup> - ( , R<sup>1</sup> ) , -O- , -S- , -CO- , -CS- , -C(R<sup>2</sup>)R<sup>2a</sup> - ( , R<sup>2</sup> , R<sup>2a</sup> ) , -N= =CR<sup>3</sup> - ( , R<sup>3</sup> ) ; D C<sub>1-3</sub> , -NH- -CH<sub>2</sub>NH- ; E - NR<sup>4</sup> - ( , R<sup>4</sup> ) , -O- , -S(O)<sub>n</sub> - (n 0, 1 2 ) -CO NR<sup>5</sup> - ( , R<sup>5</sup> ) ; G C<sub>1-3</sub> ; Ar 5- 7- , D가 B , R<sup>4</sup>가 B B -D-E-G-Ar 가 가 ];

(2) (1) , II :

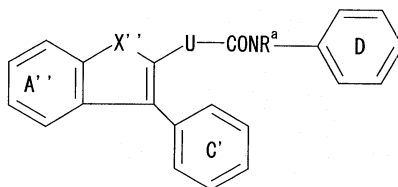
II



[ , A' 6- ; C ; X' Z -NR<sup>1'</sup> - ( , R<sup>1'</sup> ) , -O- -S- ) -CO- , -CS- -C(R<sup>2'</sup>)R<sup>2a'</sup> - ( , R<sup>2'</sup> , R<sup>2a'</sup> ) -N= , =CR<sup>3'</sup> - ( , R<sup>3'</sup> ) ; Y' , Y' ( ) , Y' -CR<sup>6</sup> ; D' C<sub>1-3</sub> ; E' -NR<sup>7</sup> - ( , R<sup>7</sup> ) ; Ar' ( , n 0, 1 2 ) ; G' C<sub>1-3</sub> 5- 7- , D' Z , R<sup>7</sup> Z ];

(3) (1) , III :

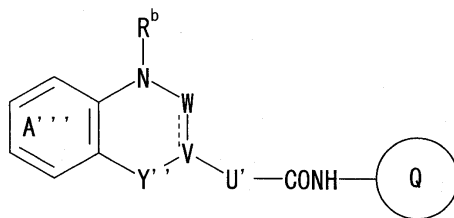
III



[ , A'', C', D, X'' -NR<sup>8</sup> - ( , R<sup>8</sup> ), -O- -S- , U - (CH<sub>2</sub>)<sub>m</sub> - ( , m 1 2 ) -NH- , R<sup>a</sup> ];

(4) (1) , IV :

IV

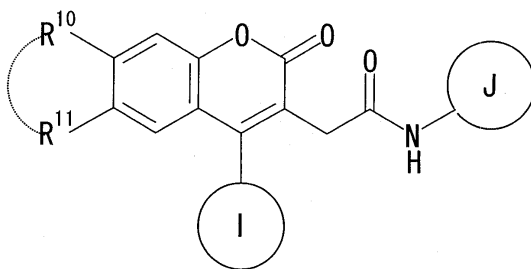


[ , V, A''', W, Q, W -CH<sub>2</sub> -, -CO- -CS ]

Y'' -CH<sub>2</sub> -, -O-, -S-, -CO-, -CS- -NR<sup>9</sup> ( , R<sup>9</sup> ) , U' -N H-, -CH<sub>2</sub> - -CH<sub>2</sub>NH- , R<sup>b</sup> ];

(5) (1) , V :

V

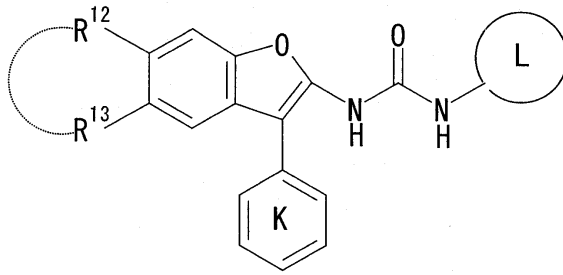


[ , R<sup>10</sup> R<sup>11</sup> , 가 , I , J ];

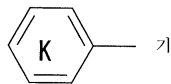
(6) 가 (1) , R<sup>10</sup> R<sup>11</sup> ;

(7) (1) , VI :

VI



[ , R<sup>12</sup> R<sup>13</sup> , 가



, L ];

(8) (1) , ;

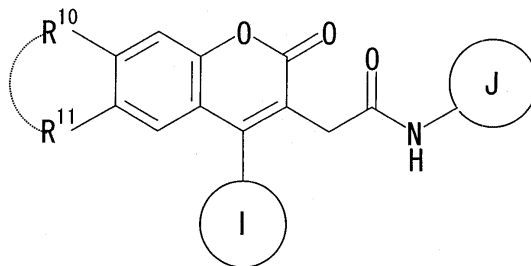
(9) (1) , ;

(10) (1) , ;

(11) (1) , ;

(12) VI :

[ VI]



[ , R<sup>10</sup> R<sup>11</sup> , , 가 , I , , R<sup>10</sup> , R<sup>11</sup> , J ];

(13) (12) , R<sup>10</sup> R<sup>11</sup> , 가 ;

(14) (12) , R<sup>10</sup> R<sup>11</sup> C<sub>1-7</sub> ;

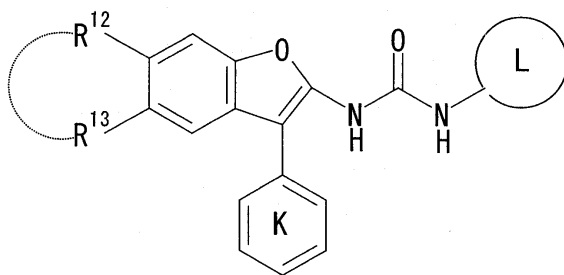
(15) (12) , 가 C<sub>5-7</sub> ;

(16) (12) , J가 / ;

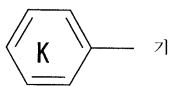
(17) (12) , I가 , ;

(18) VI :

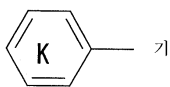
[ VI]



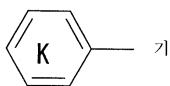
[ , R<sup>12</sup> R<sup>13</sup> , , 가



( , 2- 2- ), L



가 , R<sup>13</sup> 가 ,

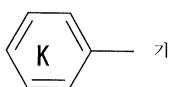


가 2- , R<sup>13</sup> 가 ];

(19) (18) , R<sup>12</sup> R<sup>13</sup> C<sub>1-3</sub> ;

(20) (18) , 가 C<sub>5-7</sub> ;

(21) (18) ,



가 C<sub>1-3</sub> ;

(22) (18) , L ;

(23) 2-[7- -4-(3- )-6- -2- -2H- -3- ]-N-[4- -2-(

2-[7- -4-(3- )-6~ -2- -2H- -3- ]-N-[4- -2-(

2-[7- -4-(3- -4- )-6- -2- -2H- -3- ]-N-[4- -2-(

2-[7- -4-(3- -4- )-6- -2- -2H- -3- ]-N-[4- -2-(

2-[7- -6- -4-(3- )-2- -2H- -3- ]-N-[4- -2-( )

2-[7- -6- -4-(3- )-2- -2H- -3- ]-N-[4- -2-( )

2-[7- -2- -4- -6-[(4- -1- ) ]-2H- -3- ]-N-[4- -2-(

2-[7- -2- -4- -6-[(4- -1- ) ]-2H- -3- ]-N-[4- -2-

2-[7- -6-[[4-(4- )-3,6- -1(2H)- ] ]-2- -4- -2H- -



2 - [7 - - 6 - [[4 - (4 - ) - 3,6 - - 1(2H) - ] ] - 2 - - 4 - - 2H - -  
 3 - ] - N - [4 - - 2 - ( ) ] ;

2 - [7 - - 6 - [[4 - (3 - ) - 1 - ] ] - 2 - - 4 - - 2H - - 3 - ] - N - [4 -  
 - 2 - ( ) ] ;

2 - [7 - - 6 - [[4 - (3 - ) - 1 - ] ] - 2 - - 4 - - 2H - - 3 - ] - N - [4 -  
 - 2 - ( ) ] ; ;

(24) (12), (18) (23) (prodrug);

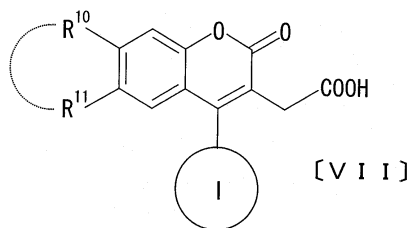
(25) (12), (18) (23) ;

(26) , ;

(27) (26) , HMG - CoA ;

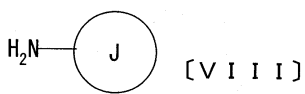
(28) VII (12) VIII :

VII



[ , (12) ]

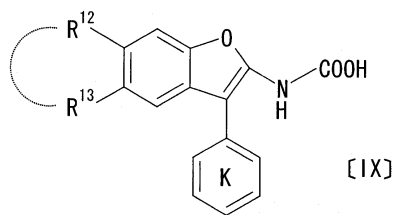
VIII



[ , (12) ];

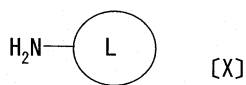
(29) IX (18) X :

IX



[ , (18) ]

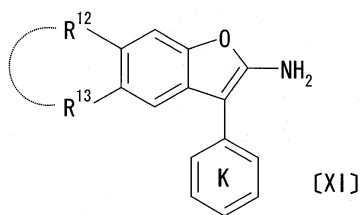
X



[ , (18) ];

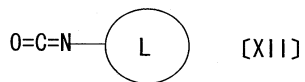
(30) XI  
8)XII , (1  
:

XI



[ , (18) ]

XII



[ , (18) ];

(31) (1) ,  
;(32) (1) ,  
;

- (33) (1) ;
- (34) (1) ;
- (35) (1) ;
- (36) (12) ;
- (37) (18) ;
- (38) , (1) ;
- (39) , (1) ;
- (40) , (1) ;
- (41) , (1) ;
- (42) , (1) ;
- (43) , (12) ;
- (44) , (18) .

[ ]

I , A , C<sub>3-10</sub> ) ; C<sub>5-</sub>  
 8 ( , ( , , , , )  
 , C<sub>5-7</sub> ( , , , , ) , C<sub>5-6</sub>  
 ( , , )가 , 가 .

- (i) C<sub>1-4</sub> ( , , , , , , ) ;  
 , 2- , 2,2,2- , 3,3,3-
- (ii) C<sub>1-4</sub> ( , , 2- ) ;
- (iii) - C<sub>1-4</sub> C<sub>1-4</sub> ( , , , , 2  
 - , 2- ) ;
- (iv) C<sub>1-4</sub> ( , , , ) ;
- (v) C<sub>1-4</sub> - C<sub>1-4</sub> ( , , , ) ;

- (vi) C<sub>1-4</sub> ( , , );
- (vii) C<sub>1-4</sub> C<sub>1-4</sub> C<sub>1-4</sub> ( , , );
- (viii) C<sub>3-6</sub> ( , , , , );
- (ix) ( , , , , );
- (x) ;
- (xi) ;
- (xii) ;
- (xiii) C<sub>1-4</sub> ( , , , , , , , 2,2,2-C<sub>1</sub> -4 ;
- (xiv) C<sub>1-4</sub> ( , , , , , C<sub>1-4</sub> C<sub>1-4</sub> ;
- (xv) :
- (xvi) - C<sub>1-4</sub> ( , , , , , , , );
- (xvii) ( , , 1 3 , , , , 5 - 9 - );
- (xviii) C<sub>1-4</sub> - ( , , , , , );
- (xix) ;
- (xx) - C<sub>1-4</sub> - ( , , , , , );
- (xxi) C<sub>1-4</sub> ( , , , , , );
- (xxii) C<sub>1-4</sub> - ( , , , , , );
- (xxiii) ;
- (xxiv) ;
- (xxv) C<sub>1-6</sub> - ( , , , , , );
- (xxvi) C<sub>3-6</sub> - ( , , , , , );



(xxxxxi) C<sub>1-4</sub> ( , ),

1 " 5 , 1 " 3 가 .

(i) ( , , , ), (ii) C<sub>1-4</sub> ( , , , , , ), (iii) C<sub>3-6</sub> ( , , , , , ), (iv) , (v) C<sub>1-4</sub> ( , , , , , ), (vi) C<sub>1-4</sub> ( , , , , , ), (vii) , (viii) - C<sub>1-4</sub> ( , , , , , ), (ix) C<sub>1-4</sub> - C<sub>1-4</sub> ( , , , , , ), (x) C<sub>6-12</sub> ( , , , , , ) 5- 9- , 4- -1- , 2- , 3- ) C<sub>1-6</sub> ( , , , , , ) (xi) ( , , , , , ), (i) ( , , , , , ), (ii) C<sub>1-4</sub> ( , , , , , ), (iii) C<sub>3-6</sub> ( , , , , , ), (iv) , (v) C<sub>1-4</sub> ( , , , , , ), (vi) C<sub>6-12</sub> ( , , , , , ) 5- 9- , 3,6- -1(2H)- , ( , , , , , ) C<sub>1-6</sub> ( , , , , , ), 4- -1- , 2- , (4- -3,6- -1(2H)- ), 3- ) (vii) 가 .

I , A 1 4 , 1 2 , 5- 9- , 5- 6- .

(monocyclic) , , , , 1,2,3- , 1,2,4- , 1,3,4- , 1,2,5- , 1,2,3- , 1,2,4- , 1,3,4- , 1,2,3- , 1,2,4- , 1,2,3- , 1,2,4- 가 .









4) ( ( , , ( , , - - , 1 3 ) , , ( C 1-  
 5- 9- ( , , , , , , , , ,  
 ), C<sub>6-12</sub> - ( , , ), C<sub>1-4</sub> - ( , , , , ,  
 . R<sup>1</sup> 가 , C<sub>1-4</sub> - C<sub>1-4</sub>  
 C<sub>1-6</sub> ( , , , , n- , n- ) .  
 , , , C<sub>1-16</sub> , , t-  
 ), C<sub>1-6</sub> - ( , , , , , , ) ,  
 , - - C<sub>1-4</sub> .

C<sub>1-4</sub> , , C<sub>1-4</sub> ( C<sub>1-16</sub> , , ) , 1  
 3 , , 5- 9- ( , , , , )- ( ,  
 , 2- ) .  
 , , , C<sub>1-6</sub> - , C<sub>1-4</sub> - ( , , ,  
 ), C<sub>1-4</sub> - ( , , , ), C<sub>1-6</sub> - ( , , ,  
 ), C<sub>3-6</sub> - , - C<sub>1-4</sub> .

; C<sub>1-4</sub> ; ; ; C<sub>1-4</sub> ; C<sub>3-6</sub> ; - C<sub>1-4</sub> ; ;  
 ; C<sub>1-4</sub> ; ; ( , , , 1 3 , , ,  
 5- 9- ; - C<sub>1-4</sub> ;  
 ); C<sub>1-4</sub> - ; ; - C<sub>1-4</sub> ; C<sub>1-6</sub> -  
 ; C<sub>1-4</sub> ; C<sub>1-4</sub> - ; - C<sub>1-4</sub> ; C<sub>1-6</sub> - ; [1]  
 ; C<sub>3-6</sub> - ; - C<sub>1-4</sub> ; C<sub>1-6</sub> ; [1]  
 C<sub>1-4</sub> , [2] C<sub>1-4</sub> , [3] 가 C<sub>6-12</sub> , [4] C<sub>7-15</sub> , [5] C<sub>1-4</sub>  
 - C<sub>1-4</sub> , [6] , 1 3 , , 1 3 , , ,  
 5- 9- , [7] ( , , , 1 3 , , ,  
 ) 1 2 C<sub>1-6</sub> ; C<sub>1-6</sub> - 5-  
 ; C<sub>1-4</sub> , 1 3 , , 5-  
 9- ; C<sub>1-4</sub> C<sub>1-4</sub> - ; C<sub>1-4</sub> C<sub>6-1</sub>  
 2 - ; C<sub>1-6</sub> - ; - C<sub>1-4</sub> - C<sub>1-4</sub> -  
 ; , 1 3 1 4 .

I R<sup>1</sup>, R<sup>2</sup>, R<sup>2a</sup> R<sup>3</sup> , (i) , (ii) C<sub>1-4</sub>  
 ( , , , t- ) , (iii) C<sub>6-10</sub> ( , , , , , , )  
 ) , (iv) C<sub>1-4</sub> - ( , , , ) (vi) C<sub>6-10</sub> -  
 ) ( , , ) C<sub>1-4</sub> ( , , , )  
 , , )가 .

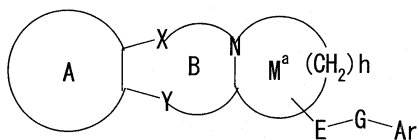
I, R<sup>1</sup>, (i) C<sub>1-4</sub>, (ii) C<sub>1-4</sub>, (iii) C<sub>1-4</sub>, (iv) C<sub>1-4</sub>, (v) C<sub>1-4</sub>, (vi) C<sub>1-4</sub>, (vii) C<sub>1-4</sub>, (viii) C<sub>1-4</sub>가

I, R<sup>3</sup>, C<sub>1-4</sub>가

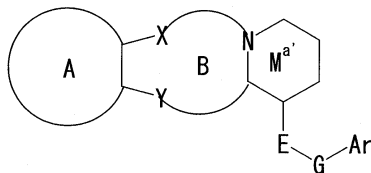
I, D, C<sub>1-3</sub>, C<sub>1-3</sub>, -CH<sub>2</sub>-, -CH<sub>2</sub>CH<sub>2</sub>-, -CH<sub>2</sub>CH<sub>2</sub>CH<sub>2</sub>-, -CH(CH<sub>3</sub>)-CH<sub>2</sub>-, -CH<sub>2</sub>CO-, -CH<sub>2</sub>CH<sub>2</sub>CS-, -CH<sub>2</sub>CS-, -CH<sub>2</sub>CH<sub>2</sub>CO-, -CH<sub>2</sub>CH<sub>2</sub>CS-, C<sub>1-3</sub>, -CO-, -CS-, -CH<sub>2</sub>CO-, -CH<sub>2</sub>CS-, -CH<sub>2</sub>CO-, -CH<sub>2</sub>CH<sub>2</sub>CS-

D, (i) C<sub>1-3</sub>, (ii) -NH-, (iii) -CH<sub>2</sub>NH-

I, D가 B, 5-, 7-, D가 B, 5-, 7-, 가 1 3 B 가 5- 7



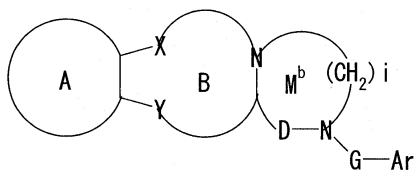
[, M<sup>a</sup>, ; h 3 5 ; ]



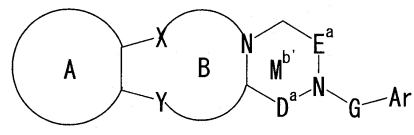
[ , M<sup>a'</sup> ; ].

I E -NR<sup>4'</sup> - ( , R<sup>4'</sup> , C<sub>1-6</sub> , , n- , n- , ) , -CONR<sup>5'</sup> - ( , R<sup>5'</sup> , C , 1-6 , , n- , n- , ) . R<sup>4'</sup> R<sup>5'</sup> 가 , E -CONR<sup>5'</sup> - ( , R<sup>5'</sup> , C<sub>1-6</sub> , , n- , n- , ) .

I , R<sup>4</sup>가 B 5- 7- , R<sup>4</sup>가 B 5- 7- 가 , 2 4 B 5- 7- , 2 5- 6- 가 . R<sup>4</sup>가 B 5- 7-



[ , M<sup>b</sup> ; i 1 3 ; D - (CH<sub>2</sub>)<sup>i</sup> - 2 4 ; ],



[ , D<sup>a</sup> E<sup>a</sup> -CH<sub>2</sub>- -CO- ; ].

I , G C<sub>1-3</sub> , , , . D, E G , (i) D가 -CO- , E가 -NR<sup>4</sup> - ( , R<sup>4</sup> ) , G가 -C H<sub>2</sub>- -CH<sub>2</sub>CH<sub>2</sub>- ; (ii) D가 -CO- , E가 -NR<sup>4</sup> - ( , R<sup>4</sup> ) , G가 ; (iii) D가 -CH<sub>2</sub>CO- -CH<sub>2</sub>CH<sub>2</sub>CO- , E가 -NR<sup>4</sup> - ( , R<sup>4</sup> ) , G가 ; (iv) D가 -CH<sub>2</sub>CO- -CH<sub>2</sub>CH<sub>2</sub>CO- , E가 -NR<sup>4</sup> - ( , R<sup>4</sup> ) , G가 -CH<sub>2</sub>- -CH<sub>2</sub>CH<sub>2</sub>- ; (v) D가 -CH<sub>2</sub>- -CH<sub>2</sub>CH<sub>2</sub>- , E가 -O- , G가 -CH<sub>2</sub>- -CH<sub>2</sub>CH<sub>2</sub>- ; (vi) D가 -CH<sub>2</sub>- -CH<sub>2</sub>CH<sub>2</sub>- , E가 -NR<sup>4</sup> - ( , R<sup>4</sup> ) , G가 -CH<sub>2</sub>- -CH<sub>2</sub>CH<sub>2</sub>- ; (vii) D가 -NH- , E가 -COR<sup>5</sup> - ( , R<sup>5</sup> ) , G가 , (viii) D가 -CH<sub>2</sub>- -CH<sub>2</sub>CH<sub>2</sub>- , E가 -S- -SO- , G가 -CH<sub>2</sub>- -CH<sub>2</sub>CH<sub>2</sub>- .

I, Ar

1 5,  $C_{6-10}$ , 1 3

, (i)

, 2-  $C_{1-4}$ , 2,2,2-

, 3,3,3-), (ii)  $C_{1-4}$

, 2-), (iii) -  $C_{1-4}$   $C_{1-4}$

, 2-), (iv)  $C_{1-4}$   $C_{1-4}$

,), (v)  $C_{1-4}$   $C_{1-4}$

,), (vi)  $C_{1-4}$   $C_{1-4}$

(vii)  $C_{1-4}$   $C_{1-4}$ ), (viii)

$C_{3-6}$ ), (ix)

,), (x)  $C_{1-4}$ , (xi), (xii), (xiii)  $C_{1-4}$

,), (xiv)  $C_{1-4}$ , 2,2,2-

,), (xv), (xvi) -  $C_{1-4}$

1-4  $C_{1-4}$ ), (xvii) 5-

9-), (xix); (xviii)  $C_{1-4}$  -

$C_{1-4}$ ), (xx) -

,), (xxi)  $C_{1-4}$

,), (xxii)  $C_{1-4}$  -

,), (xxiii)  $C_{1-4}$

,), (xxiv), (xxv)  $C_{1-6}$  -

(, (xxvi)  $C_{3-6}$  -

,), (xxvii) -  $C_{1-4}$  (

,), (xxviii) -  $C_{1-4}$  (xxix)

$C_{1-6}$  (, 가

Ar

1 3 5- 6-

(, 1,2,4- , 1,3,4- , 1,2,3- , 1,2,4- , 1,2,3- , 1,3,4-

, 1,2,3- , 1,2,4-

) : (i)  $C_{1-4}$  (, 3,3,3-

, 2-), (ii)  $C_{3-6}$   $C_{1-4}$ , 2,2,2-

(, (iv)  $C_{1-4}$  (, (iii)

, (vi)  $C_{1-4}$  (, 2,2,2-

,), (vii), (viii) -  $C_{1-4}$  (

,), (ix)  $C_{1-4}$  -

(, (x)  $C_{1-6}$

- (.

(i) C<sub>1-4</sub> ( , , , , 3,3,3-  
 , 2- , 2,2,2- , (ii) ( , , , , ), (iii) , (iv) , (v)  
 C<sub>1-4</sub> ( , , , , 2,2,2-  
 ), (vi) , (vii) - C<sub>1-4</sub> C<sub>1-4</sub> ( ,  
 , 2- , 2- ), (viii) - C<sub>1-4</sub>  
 ( , , , , ), (ix) C<sub>1-4</sub> - C<sub>1-4</sub> ( C<sub>1-4</sub>  
 , 2- C<sub>1-4</sub>  
 ), (x) (xi) ( , , , , ) C<sub>1-4</sub> ( , , , )  
 )가 .

l , Ar , 1 4 , 1  
 2 5- 9- , 5-  
 6- .

[1,2,3- , 1,2,4- , 1,2,3- , 1,2,4- , 1,2,3- , 1,2,4-  
 [b] , 1H- , 1,2- , 1H- , - , - , -  
 [1,2-b] , [1,5-a] , [1,2-a] , [1,5-a] ,  
 [1,2-b] , [1,2-a] , 1,2,4- [4,3-a] , 1,2,4- [4,3-  
 b] .

5- 6- 가 , , , , , , , , , ,

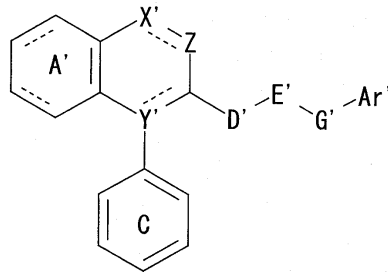
Ar 가가 , (i) C<sub>1-4</sub> ( , , 2,2- ,2,2- ,3,3,3- ), (ii) C<sub>3-6</sub> ( , ), (iv) (v) (vi) (vii) C<sub>1-4</sub> ( , , 2,2,2- ), (viii) C<sub>1-4</sub> ( , , (ix) , (x) - C<sub>1-4</sub> ( 1 3 , 5- 9- ), (xi) ( , ), (xii) C<sub>1-4</sub> - ( , - C<sub>1-4</sub> ( , ), (xiv) C<sub>1-4</sub> ( , , ), ( xv) C<sub>1-4</sub> - ( , , , ), ( xvi) , (xvii) C<sub>1-6</sub> - ( , , , ), ( xviii) C<sub>3-6</sub> ( , , ), (xix) , - C<sub>1-4</sub> ( , , ), (xx) C<sub>1-6</sub> ( , , , ), (xx 가 C i) C<sub>3-6</sub> ( , , , ), (xxii) , n- i- n- , , , 1 3 , , -C<sub>1-4</sub> , C<sub>1-6</sub> , -C<sub>1-4</sub> , -C<sub>1-4</sub> -C<sub>1-4</sub> , -C<sub>1-4</sub> , -C<sub>1-4</sub> , (i) ( , , , ), (ii) C<sub>1-4</sub> ( , , , ), (iii) C<sub>3-6</sub> ( , , , ), (iv) , (v) C 1-4 ( , , , ), (vi) C<sub>1-4</sub> ( , , , ), (vii) , (viii) - C<sub>1-4</sub> ( , , , ), (ix) C<sub>1-4</sub> - ( , , , ) (x) ( , , , ) , C<sub>1-4</sub> ( , , , ), C<sub>3-6</sub> ( , , , ), , C<sub>1-4</sub> ( , , , ) 가 .

Ar ( , , , ), C<sub>1-4</sub> ( , , , C<sub>1-4</sub> , 2,2,2- ) C<sub>1-4</sub> ( , , , , 2,2,2- ) C<sub>1-4</sub> ( , , , ) 1 3 , C<sub>1-4</sub> ( , , , ) C<sub>3-6</sub> ( , , , ) 1 3 ( , , , ) 5- 6- ( , , , )가 .

Ar ( , , , ), C<sub>1-4</sub> ( , , , ) , -C<sub>1-4</sub> 1 4 ( , , , ), C<sub>1-3</sub> ( , , , ) .

I , , II :

[ II]



[ , A' 6- ; C ; X' Z -NR  
 1' - ( , R<sup>1'</sup> , -CO-, -CS- -C(R<sup>2'</sup>)R<sup>2a'</sup> - ( , R<sup>2'</sup> R<sup>2a'</sup> ) , -O- -S- ,  
 -N= , =CR<sup>3'</sup> - ( , R<sup>3'</sup> , , ) ;  
 ; Y' , Y' ) ; Y' -CR<sup>6</sup> ( , R<sup>6</sup> , ; D'  
 ), -O- -S(O)<sub>n</sub> - ( , n 0, 1 2 ) ; E' -NR<sup>7</sup> - ( , R<sup>7</sup> C<sub>1-3</sub> ; Ar'  
 7- , R<sup>7</sup> Z , D' Z , 5- 5-  
 ].

II , A' C가 가 I A  
 가 가 .

II , " " , " " , " C<sub>1-3</sub> " , " C<sub>1</sub>  
 -3 , " .

D' Z " 5- 7- " D가 B  
 " 5- 7- " .

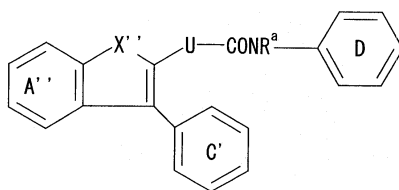
R<sup>7</sup> Z " 5- 7- " R<sup>4</sup>가 B  
 " 5- 7- " .

I , , III

:

[ III]





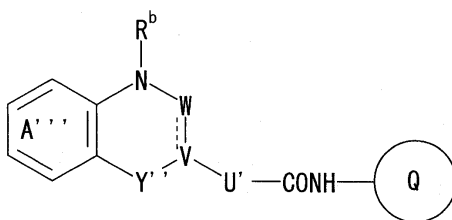
[ , A'', C', D, X'' -NR<sup>8</sup> - ( , R<sup>8</sup> ), -O-, -S-, U - (CH<sub>2</sub>)<sub>m</sub> - ( , m 1 2 ) -NH- , R<sup>a</sup> ].

III , A'', C' D가 가 I A  
가 가

III , " " .

I : , , IV

[ IV]



[ , A''', Q, W -CH<sub>2</sub> -, -CO- -CS  
- , V  $\begin{array}{c} \text{CH} \\ | \\ \text{N} \end{array}$  , W V가  $\begin{array}{c} \text{C} \\ \diagup \quad \diagdown \\ \text{C} \end{array}$  ,

Y'' -CH<sub>2</sub> -, -O-, -S-, -CO-, -CS- -NR<sup>9</sup> ( , R<sup>9</sup> ) , U' -N  
H-, -CH<sub>2</sub> - -CH<sub>2</sub>NH- , R<sup>b</sup> ,  
].

A" , Q .  
, (i) ( , , , , ,  
) , (ii) , (iii) , (iv)  
, (v) C<sub>1-7</sub> ( , C<sub>1-6</sub> ,  
, (vi) C<sub>1-4</sub> ( ,  
- C<sub>1-4</sub> , ,  
) , (vii) C<sub>1-3</sub> ( , , ,  
) , (viii) , (ix) , (x)  
 , , , , , , 1 5 ( ,  
 , , , , , ) , 1 6 ,  
, , 2- , 2,2,2- , , , 3,3,3- ,  
, 2- , , 4,4,4- , , sec - , tert - ,  
, 5,5,5- , 4- , , 6,6,6- , 5-  
, 1 3 , 1 4  
가 , , , 2- , 2,2,2  
- , , 3,3,3- , , 2- , 4,4,4-  
, , sec - , tert -

- 가 , , , , ,  
 , , , , , , 1 5 ,  
1 6 , , , , , ,  
, , 2,2,2- , , , 4,4,4-  
, , sec - , , 1 3  
, 1 4 가 , , ,  
, , 2,2,2- , , , 4,4,4-  
sec -

, 1 6 , , , , , 1 5 ,  
, , , , , , , 4,4,4- ,  
, , , , , , 1 3 , 1 4  
가 , , , ,  
, , , 4,4,4- .

" " 1 3 가

A" , Q (i) , (ii)  
C<sub>1-6</sub> , (iii) C<sub>1-6</sub> , (iv) , (v) C<sub>1-4</sub>  
(vi) C<sub>1-3</sub> . (i) (vi)

A" , Q  
 가 1 4 , 2 3 . A , Q 가 -(CH<sub>2</sub>)<sub>q</sub> - (q 3  
 5 ) 5- 7- 가 III

A , ( , ), 1 3 C<sub>1-4</sub> ( , ) C<sub>1-4</sub> ( , )  
 , 가 , ( ) C<sub>1-4</sub> ( , )

Q 가 5- 6- , 1 4 , 1 2 ,  
 가 5- 6- , (1) , (2) , (3) ,  
 (4) , (5) ,

Q , 1 4 가 , (i) ( , ) , (ii) C<sub>1-4</sub> ( , , , , , ) , (iii) C<sub>1-4</sub> ( , , , , , ) , (iv) -C<sub>1-4</sub> ( , , , , , ) , (v) C<sub>1-3</sub> ( , , , , , ) , (vi) C<sub>1-4</sub> ( , , , , , ) C<sub>1-4</sub> .

III , R<sup>b</sup>

R<sup>9</sup>

IV , W -CH<sub>2</sub> -, -CO- -CS- , -CH<sub>2</sub> -, -CO- .

IV , V  $\begin{array}{c} \text{-CH-} \\ | \\ \text{-N-} \end{array}$  , W V가  $\begin{array}{c} \text{H} \\ | \\ \text{C=C} \end{array}$  ,

V  $\begin{array}{c} \text{-CH-} \\ | \\ \text{-N-} \end{array}$  .

IV , Y" -CH<sub>2</sub> -, -O-, -S-, -CO-, -CS- -NR<sup>9</sup> - ( ,<sup>9</sup> ) , -CH<sub>2</sub> -, -O-, -CO-, -NR<sup>9a</sup> - ( , R<sup>9a</sup> C<sub>1-6</sub> , , , , ) , -CH<sub>2</sub> -, -O- 가 .

IV , U' -NH-, -CH<sub>2</sub> -, -CH<sub>2</sub>NH-, -NH-, -CH<sub>2</sub> - .

I , , V :

[ V]





가 가

"

"

V I

A

J

"

I  
C<sub>1-4</sub>

가

, C<sub>1-6</sub>

J

가

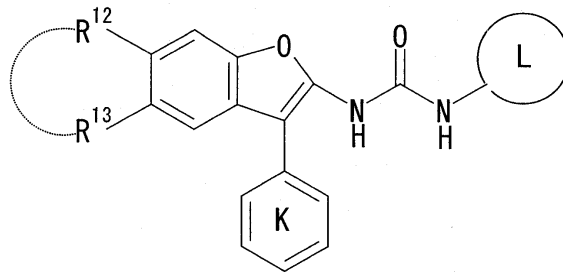
, C<sub>1-4</sub>

I

VI

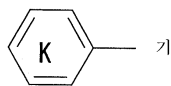
:

[ VI]

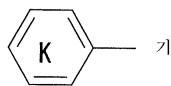


[ , R<sup>12</sup> R<sup>13</sup>

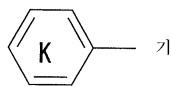
가



( , 2- ( , 2- ) , L



가 , R<sup>13</sup> 가 ,



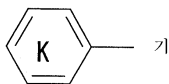
가 2- , R<sup>13</sup> 가 ) ].

VI , R<sup>12</sup> R<sup>13</sup> " " R<sup>10</sup> R<sup>11</sup> "

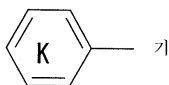
R<sup>12</sup> R<sup>13</sup> " " R<sup>10</sup> R<sup>11</sup> "

R<sup>12</sup> R<sup>13</sup> 7 , , , , , ( , , , , C<sub>5-</sub> ), , C<sub>3-7</sub> ,

R<sup>12</sup> R<sup>13</sup> C<sub>1-3</sub> . VI , " " :



I " " .



VI , C<sub>1-3</sub> .

VI , L " " J "

L , , . L 가

I, II, III, IV, V I, II, III, IV, V VI 가 가 ( , ) , ( , , N,N' - , , , , , )

I, II, III, IV, V VI 가 , ( , , , , , p- ) , ,





2-[7-  
( ) ] -2-  
-4-  
-6-[(4-  
-1- ) ]-2H-  
-3- ]-N-[4-  
-2-(

2-[7-  
( ) ] -2-  
-4-  
-6-[(4-  
-1- ) ]-2H-  
-3- ]-N-[4-  
-2-

2-[7-  
3- ]-N-[4-  
-2-(  
) ] -6-[[4-(4-  
) -3,6-  
-1(2H)- ] ]-2-  
-4-  
-2H-  
-

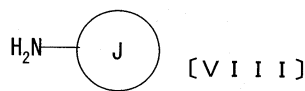
2-[7-  
3- ]-N-[4-  
-2-(  
) ] -6-[[4-(4-  
) -3,6-  
-1(2H)- ] ]-2-  
-4-  
-2H-  
-

2-[7-  
-2-(  
) ] -6-[[4-(3-  
) -1- ] ]-2-  
-4-  
-2H-  
-3- ]-N-[4-

2-[7-  
-2-(  
) ] -6-[[4-(3-  
) -1- ] ]-2-  
-4-  
-2H-  
-3- ]-N-[4-

IV I , EPA585913, EPA602598 JP - A - 6 - 263736 , II, III  
V VI , I  
II, III IV , V VI

II, V , VIII : V  
[ VIII]



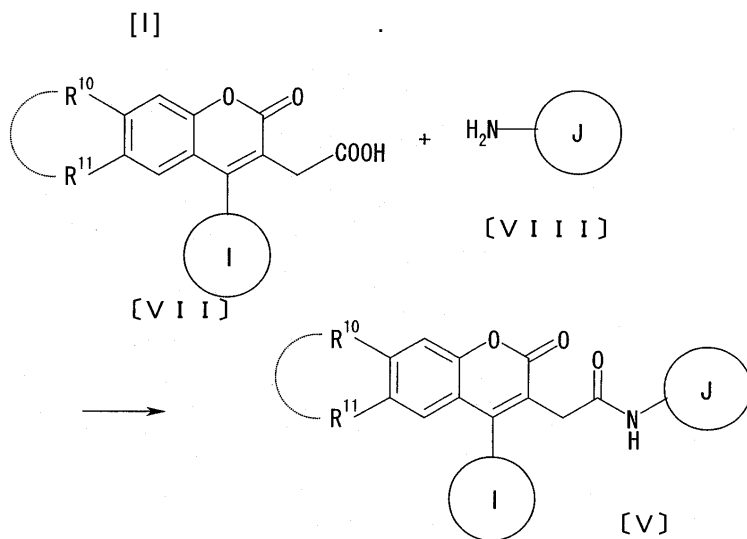
[ , ].

( , , ), ,  
( , , , 1- ,  
, N- ) , -5- -2,3- , p- , 8-  
) , 가 .

V VII VIII  
, N-[3-( ) ]-N'- , , N- -N'-(2- -4-

) , N- -N' - [4 - ( ) ] , N- , N- , 2- , N-  
 -5- -3' - , N- -2' - , 2- -1- -1,2- , ( -N-  
 -1- -1,2- , 2- -1- -1,2- , ( -N-  
 -N- , 가 , 가 N-  
 , 1- , 3- -4- -3,4- -1,2,3- , N-  
 -5- -2,3- , 2- -2- , 2- , N-  
 -2-

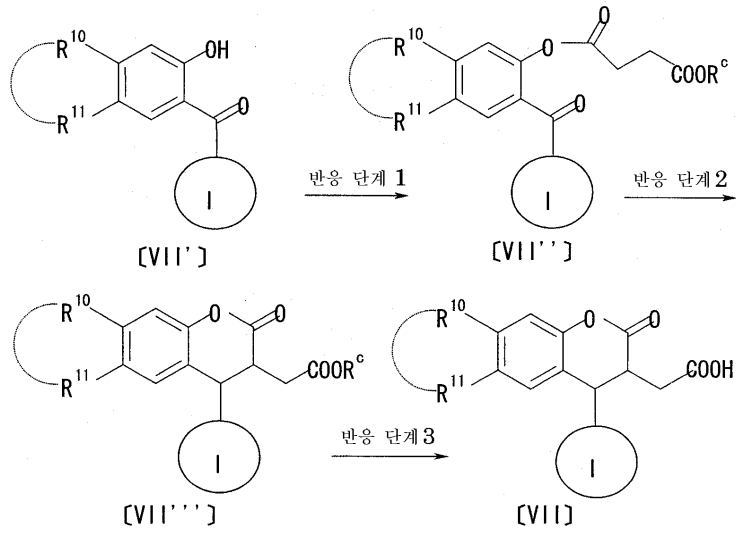
[VII]



( , N,N- , , )  
 -10 120 , 0 100 . 5  
 48 , 0.5 24 , [VIII] [VII]  
 1 , 1 5 , 1 3 , N,N- , N,N-  
 , , [VIII]  
 ] 1 1 5 , 1 3 .  
 , 가 2 (biphasic system) , [VII] 1  
 1 10 , 1 3 . 가 , 1  
 1 5 , 1 2 .

[VIII] , EPA 585913

[VII]



[VII], R<sup>c</sup> ( , , , t- ) , .].

1 [VII']

( , , ) , ( , ) , 가 , 10 , 3 , 3 ( , , , 3 , ; , , , ; , , 3 . [VII'] 10

( , , , ) , ( , , , ) , ( , , , ) , ( , 1,3- , 3,4,5,6- , -2(1H)- ) , ( , , , ) , ml . [VII'] 1g 1 100 ml, 25 10 50 -20 , 100

20 12 . , 10 24  
 2 [VII" ] , 1  
 , 0.1 1 [VII" ] 0.1 10 ,  
 , , , ), ( , , , ( , , , ),  
 ( , 1,3 - -3,4,5,6 - ( , N,N - , , ),  
 ) -2(1H) - , ( , , , )  
 ml [VII" ] 1g 1 100 ml, 10 50  
 20 , 25 120 .

1 12 . , 30 24  
 가 - (Dien - Stark) (azeotropic)

1 2  
 ), ( , , , ) ( , )  
 , [VII" ' ] 3 ( , , , )  
 2 1.5 3 [VII" ] 1.5 10 ,  
 10 , 12 5 [VII" ]

25 1 60 . 20  
 , 30 24 , 30 4 .

3 [VII" ' ] , ( , , ,  
 , , , ) , , p - , ( , , ,  
 , ( , , , , , ) , ( , , , )  
 ( , ( , , , , , ) ) , [V  
 II" ] 1 100 , 1 10 .

, , ), ( , , , ), ( , , , ),  
 1,3- , -3,4,5,6- ( , N,N- , ), ( , ,  
 -2(1H)- ) .

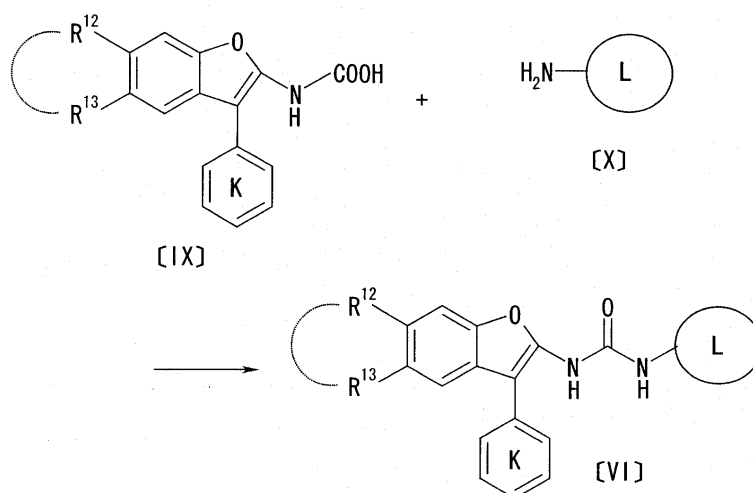
[VII" ' ] 1g 1 100 ml,  
 10 50 ml -20 ,  
 15 120 ,  
 10 24 , 20 12 .

( , A.B. Smith, III, et. al., The Jo  
 urnal of Organic Chemistry, Vol. 50, p3239 - 3241, 1985) ( , , )

[VII' ], [VII" ] [VII" ' ] [I]

[VI] , [1] [2]

[1]



[ , ] .

[IX] , [X]

[IX] ( , , , , ) ,  
 [X] ( , , ) , [IX]  
 , [X]



[ , ].

XII] [XI] ( , , ) , [XII]  
 [XI] 가 .  
 , ( , , , ), ( , , , ), ( , , , ), ( , , , ),  
 , N,N- ( , , , ), ( , , , ) 가 [XII]  
 , N- 3 , N,N-  
 [XII] 1 1 5 , 1 3  
 15 40 -10 180 , 0 120  
 [XI] 1 1 5 , 1 3 [XII]

[IX], [XI] , EPA 602598

[V], [VI]

가

C<sub>1-6</sub> - ( , , , , , ),  
 - ( , , , , , ), N,N- ( , , , , , )  
 , ( , , , , , ), C<sub>1-6</sub> - ( , , , , , )  
 , C<sub>1-6</sub> ( , , , , , n- , i- , n- , tert- ) , ,  
 , ( , , , , , , , ) , C<sub>1-6</sub> - ( , , , , , )  
 - ) , C<sub>7-10</sub> ( , , , , , ) , C<sub>1-6</sub> - ( , , , , , )  
 , C<sub>7-10</sub> - ( , , , , , ) ,  
 C<sub>7-10</sub> ( , , , , , ) , C<sub>1-6</sub> ( , , , , , n- ) , ,  
 1 4 .  
 , UV, , ,  
 N- , , , , ,

[V], [VI]

[V] [VI]

[V] [VI]

( , , )

[I], [II], [III], [IV], [V], [VI]

( , ( )

, , , , , (PTCA), , , , , ( , , , , , )

[V], [VI]

[I], [II], [III], [IV]

ACTA

(microphage), 1 ACAT) 가 , [I], [II], [I], [IV] [V], [VI] ( , , , , , , , , , ) ( , , , , , , , , , )

( HMG - CoA )

가 , HMG - CoA

[ (acipimox) (probcol)], - [ , , , ], HMG - CoA ], [ , NB - 508

[ (actos), (lodigitazon), (kinedak), (penfill), (hum alin), (euglucon), (glimicron), (daonil), (novolin), (monotard), (insulins), (glucobay), (dimelin), (rastinon), (bacilcon), S (de amelin S), (lszilins)]; [ ( ), ( S), ( , ); [ 10 (Predonine)), (Solu medrol)), (rinderon)), [ (Persantin)), (comelian)), , Xa ]; [ , (lasix)), (lunetron)), (diart)], ( , ACE , ( (renivase))) Ca (manidipine)), - , All (ca ndesartan))] 가



[ (warfarin)), Xa ],  
 [ tPA, ], [ (anturan)), ( (persantin)), (panaldine)), (pletal)), GPIIb/IIIa ( (ReoPro))];

: (nifedipine), (diltiazem), (nicorandil), ;

: ATP - K , , , (erixir), )  
 (excipient), (auxilinary) / 가 (adjuvant),

가 / (vehicle),

가

(腸管)

( )

가 , ( ), (D- ),  
 ( ), /  
 가 , ( ), 가  
 (elixir), 가 가  
 가 0.01 99 %, 0.1 90 %, 0.5 50 %

(60 kg) [I] 0.1 100 mg, 1 500 mg, 1 50 mg, 1 10 20 mg, 200 mg,

(1) (concomitant) ( , .),

(2)

(3)

(PTCA)

DL 가 , H  
 , / , / ,  
 , HDL 가 , 가

(1)

HMG - CoA ( , ), ( , ),  
 ( , ), 가 ( , ),  
 , CEPT , 2 - - 3 - [4 - (2 - - 2 -  
 ) ] [Chem. Pharm. Bull., 38, 2792 - 2796 (1990)] .

(2)



, C, , , , 가 ,  
(7)

( ), ( ), (sensitizer) ( ), -  
, ( ) ,

(8) HDL

, CETP , LPL .

(9)

MMP , .

(10)

, , , , , , , .

(11)

, , , , , C, G- .

(13)

[1]

, , , , , .

[2]

, , , , , , , .

[3]

, ( ), p- ( p- ),

[4] - (anti acid - fast - bacteria agent)

, .

[5]

, , , 가 , .



(18)

(19)

가

(20)

(21)

(22)

(22 - 1)

(22 - 2)

[1] ( , , , , ) .

[2] ( , , , , , ) .

(23)







(3)

(PTCA),

: (1)

- (2)
- (3)
- (4)
- (5)

2 2  
2 2  
2

( )

가  
가

/

(

), ( )  
( )  
(病巢)

가

가

가 가

(糖), D-

(輕)

D-

, L-

D-



(enteric property)

, Tween 80, Pluronic F68,

, Eudragit (Rohm, German,

/

) ( , 2 , )

(instantaneous release)

[ , , UITEPSOL (DYNAMITE NOVEL, )],  
(DYNAMITE NOVEL, )], ( , , , )

[ , MIGRIOL

[2]

가 ( , , , , ),

, [1]

, [2]

, [3]

, [4]

[1]

/

/

/

0.5 0.5 50 w/v %, 3 20 w/v %  
0.5 50 w/v %, 3 20 w/v %

( , ( , ), ( 80, ),  
( , ), ( , ), pH ( , ),  
( p- , ), 가 ( , ),  
( 가 , ) , 가 ( , ) ,  
가 가 .

pH pH 2 12, 2.5 8.0 .

가 , /

가 ,

100 121 3 30 .

[2]

, 1 가

/ / / / /  
( ),  
( ), Eudragit RS - 100, RL - 100, R  
S - 30D, RL - 30D, RL - PO, RS - PO ( / / )  
) Eudragit NE - 30D ( / ) Eudragit (Ro  
hm Pharma) - 가 ( , Lubri (FREUND))  
가 ,

H 가 pH pH 가 p

가 pH , Carbomers 934P, 940, 941, 974P, 980,  
1342 , Polycarbophil Carcium polycarbophil (BF Goodrich), HIBIS Wakos 103, 104, 105 304 (Wako  
Pure Chemical) 가 .



1	10 % (w/w),	2	8 % (w/w)	1	15 % (w/w),
---	-------------	---	-----------	---	-------------

II.

, pH 가

% (w/w),	(	5	35 % (w/w)	1	90 % (w/w),	5	50
----------	---	---	------------	---	-------------	---	----

n -	( / , )	1	100 %,	1	30 %
-----	---------	---	--------	---	------

가

(light)

가 가

(hardened)

( , , )	가	( , , )
---------	---	---------

)	, 가	( ,
---	-----	-----

asei, Avicel PH101 ), L - (Asahi K  
%, 30 97 w/w % 4.5 99.4 w/w %, 20 98.5 w/w

0.5 95 %, 1 60 %

(GOTOKUYAKUHIN, ECG505),  
(, BASF, Coridon CL), -  
(Matsutani Chemical Industry K.K.),  
(Asahi Kasei, PCS)

(, Asahi Kasei, Ac - Di - Sol),  
(Shin - Etsu Chemical K.K.),  
(Kimura Industry K.K., EXORITAB),

0.05 30 w/w %,

0.5 15 w/w %

가 (, aerosil (NIPPON AEROSIL)),  
(, (ocher),), (, )  
가

(HATAKE TEKKOSHO),

FD - 5S (Po

wrex)

(, )

[3]

( )







$\mu\text{m}$  , 100 mm , 1  $\mu\text{m}$  , 50 mm , 3  $\mu\text{m}$  , 10 mm , 0.05  $\mu\text{m}$  , 30 mm , 0.1

[1]

; [2]

; [3]

L - 100 - 55

L,

S

E;

RL

RS

4

L

가

가

가

가

가

( : Fluorite RE),  
CYSILIA), /  
C),

, D-  
( : nonpareil),

( : NEUSILIN),  
/

( :  
( : Avicel R

, D-

( : METHOLOSE SM),

( : Pluronic),  
, polysorbate 80,

p-

가

; 2

(1)

(2)

가

(3)

가 가

(4)

(2)

(5)

(2)

(6)

가 가

(7)

(1)

; n-

, n-

가 ,

200

가

가 ,

, 2

가

가

가

가

0.01:1 100:1, 0.02:1 50:1, 0.1:2 20:1,  
0.3:1 10:1, 1:1 10:1, 3 5 ( 4):1 .

가

가

10:1,

1:1 3:1 .

0.1:1 20:1, 0.3:1

(5)

(2)

가 , , , ,

( ) ,

0.1 99 %

1 99.9 %

가  
0 99 %

0.1 100 %

가  
0 99.9 %

100 mg/kg, 0.01 1000 mg/kg, 0.01 ( : 60 kg) 1 0.1  
0.1 50 mg/kg, 1.5 100 mg/kg, 30 mg/kg, 1

가 1

1 2000 mg, 0.01 500 mg, 1 kg 1 0.00  
4 0.1 100 mg, 1

가

15 1

1 3 , 10 1 ,

1 1 , 10 6 , 15 1

0.001 200 mg/kg 1  
0.005 100 mg/kg 1

15

VARIAN GEMINI 200 (200 MHz)

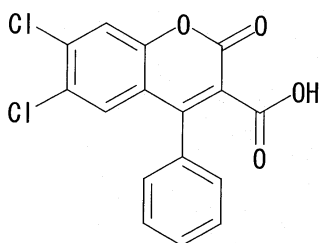
<sup>1</sup>H NMR

ppm

AcOEt: , Me: , Et: , THF: , IPE: , Et<sub>2</sub>O:  
 , decomp.: , s: , d: , t: , q: , dd: , dt: , m: , br:  
 , J: , Py: , DBU: , DMF: , DPPA:  
 , hex: , Ac: , Ph: , Ts: , mCPBA: m- , <sup>t</sup>Bu: tert-

1

6,7- -2- -4- -2H- -3-



(4,5- -2- ) ( ) (1.5 g), (1.28 ml) DBU (0.25 ml)  
 170 30 (50 ml) , , 1 N

6,7- -2- -4- -2H- -3- (10 ml)  
 (5 ml) , 1 가 (10 ml) THF  
 (10 ml) (50 ml)

(0.65 g, : 34 %)

: 233 - 234 .

NMR (CDCl<sub>3</sub>) δ: 7.29-7.40 (3H,m), 7.48-7.58 (4H, m).

IR(KBr): 3400-2400, 1748, 1717 cm<sup>-1</sup>.

C<sub>16</sub> H<sub>8</sub> O<sub>4</sub> Cl<sub>2</sub>

(%): C: 57.34, H: 2.41

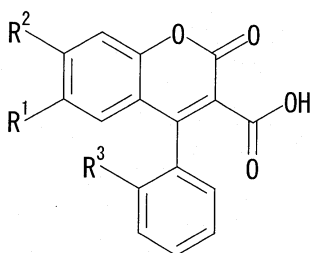
(%): C: 57.30, H: 2.50

2 - 6

1

1

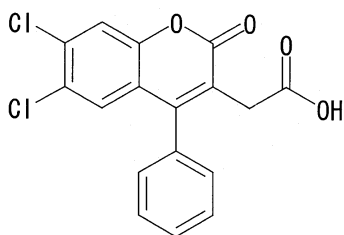
[ 1 ]



참고예 번호	R <sup>1</sup>	R <sup>2</sup>	R <sup>3</sup>	수율 (%)	용융점(°C) (재결정 용매)
2	Cl	Me	H	63	227-228 (AcOEt)
3	Cl	Me	Me	58	226-227 (AcOEt)
4	Me	Me	Me	81	205-206 (AcOEt)
5	Me	Me	Me	27	222-223 (AcOEt)
6	(CH <sub>2</sub> ) <sub>4</sub>		H	7	92-93 (AcOEt)

7

(6,7 - 2 - 4 - 2H - 3 - )



THF (10 ml) 6,7 - 2 - 4 - 2H - 3 - (0.8 g) DMF (1 )  
 (0.31 ml) , 1  
 THF (10 ml) , (30 ml) N - N' - N -  
 (1.68 g) (3.0 g) (50 ml) , , 30 가 가

3- ) : : = 1:4) (5 ml) (6,7- (2.5 ml) - 2 - - 4 - - 2H- 가 (10 ml) (50 ml)  
 (0.52 g, : 62 %)

: 222 - 223 .

NMR (CDCl<sub>3</sub>) δ: 3.43 (2H, s), 7.10 (1H, s), 7.20-7.36 (2H, m), 7.50-7.64 (4H, m).

IR(KBr): 3400-2400, 1725, 1599 cm<sup>-1</sup>.

C<sub>17</sub> H<sub>10</sub> O<sub>4</sub> Cl<sub>2</sub> · 0.3H<sub>2</sub>O

(%): C: 57.59, H: 3.01

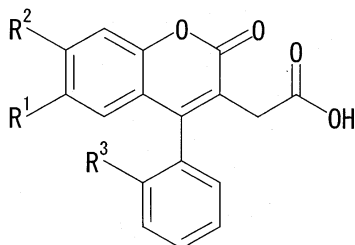
(%): C: 57.44, H: 2.99

8 - 12

7

2

[ 2]

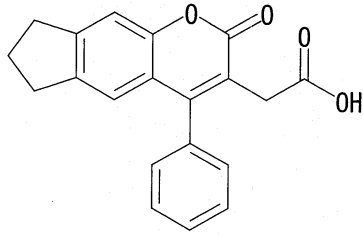


참고예 번호	R <sup>1</sup>	R <sup>2</sup>	R <sup>3</sup>	수율 (%)	용융점 (°C) (재결정 용매)
8	Cl	Me	H	50	216-217 (AcOEt)
9	Cl	Me	Me	45	204-205 (AcOEt)
10	Me	Me	H	43	228-229 (AcOEt)
11	Me	Me	Me	49	205-206 (AcOEt)
12	(CH <sub>2</sub> ) <sub>4</sub>		H	52	196-197 (AcOEt)



(2 - - 4 - - 2,6,7,8 -

[g] - 3 - )



THF (20 ml) (6 - - 2,3 - - 1H - - 5 - ) ( ) (1.0 g) (0.98 m  
 l) (0.55 ml) 0 , 1  
 , DBU (0.25 ml) , 2.5 가 , (10 ml) (60 ml)  
 , 1 N  
 :2) (2 - - 4 - - 2,6,7,8 - [g] - 3 - )  
 (20 ml) (10 ml) , 1 가  
 THF (5 ml) (50 ml)  
 (0.95 g, : 70 %)

: 216 - 218 .

NMR (CDCl<sub>3</sub>) δ: 2.09 (2H, m), 2.81 (2H, d, J=7 Hz), 2.99 (2H,  
 d, J=7 Hz), 3.41 (2H, s), 6.82 (1H, s), 7.20-7.30 (3H, m),  
 7.50-7.60 (3H, m).  
 IR(KBr): 3400-2400, 1714, 1622 cm<sup>-1</sup>.

C<sub>20</sub> H<sub>13</sub> NO<sub>5</sub>

(%): C: 74.99, H: 5.03

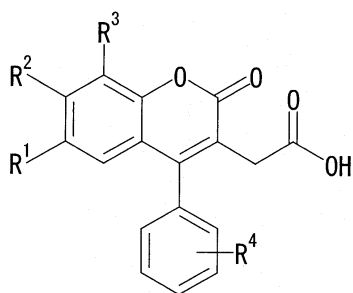
(%): C: 74.75, H: 5.13

14 - 20

13

3

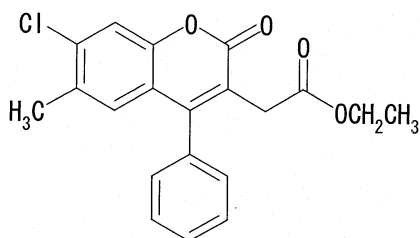
[ 3 ]



참고예 번호					수율 (%)	용융점 (°C) (재결정 용매)
	R <sup>1</sup>	R <sup>2</sup>	R <sup>3</sup>	R <sup>4</sup>		
14	Cl	Cl	Cl	H	13	244-246 (AcOEt)
15	F	F	H	H	64	164-166 (IPE)
16	Me	Cl	H	H	65	222-224 (AcOEt)
17	(CH <sub>2</sub> ) <sub>3</sub>	H	H	3-Me	63	183-184 (AcOEt)
18	(CH <sub>2</sub> ) <sub>3</sub>	H	H	4-Me	81	231-233 (AcOEt)
19	(CH <sub>2</sub> ) <sub>3</sub>	H	H	3,4-di-Me	70	193-194 (AcOEt)
20	(CH <sub>2</sub> ) <sub>3</sub>	H	H	4-F	86	231-234 (AcOEt)

21

2 - (7 -      - 6 -      - 2 -      - 4 -      - 2H -      - 3 - )



THF (100 ml)      (4 -      - 2 -      - 5 - ) (      )      (5.0 g)      (5.65 ml)

(3.47 ml)      0      , 1

1 N      ,

(1.25 ml)      , 2.5      가      (50 ml)      , DBU

1 N      (      :      ,      :      )      (100 ml)

가      -      :      = 1:4

(3.86 g,      : 53 %)

: 132 - 133 .

NMR (CDCl<sub>3</sub>) δ: 1.23 (3H, t, J=7 Hz), 2.28 (2H, s), 3.36 (2H, s), 4.13 (2H, t, J=7 Hz), 6.84 (1H, s), 7.20-7.35 (2H, m), 7.41 (1H, s), 7.45-7.60 (3H, m).

IR(KBr): 1728, 1609, 1366, 1188 cm<sup>-1</sup>.

C<sub>20</sub> H<sub>17</sub> ClO<sub>4</sub>

(%): C: 67.32, H: 4.80

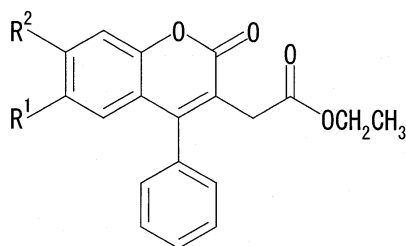
(%): C: 67.55, H: 5.13

22 - 23

21

4

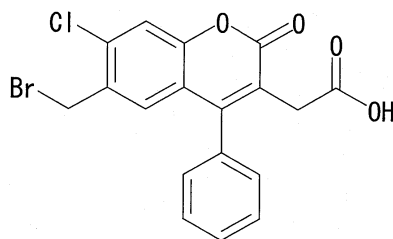
[ 4 ]



참고예 번호	R <sup>1</sup>	R <sup>2</sup>	수율 (%)	용융점 (°C) (재결정 용매)
22	Me	H	78	91-92 (헥산)
23	Cl	Me	71	oil

24

2 - [6 - ( ) - 7 - - 2 - - 4 - - 2H - - 3 - ]



(50 ml) (7- -6- -2- -4- -2H- -3- ) (3.5 g)  
 N- (2.1 g) 2,2' - (48.3 mg) , 1 가  
 : = 1:4) 2 - [6 - ( ) -7 - -2 - -4 - -2H - -3 - ]  
 ( 2.6 g) (50 ml) (25 ml)  
 , 30 가 THF (10 ml)  
 (50 ml)  
 (1.78 g, : 44 %) 가

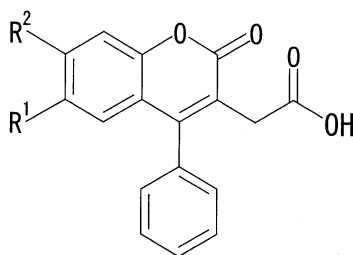
NMR (CDCl<sub>3</sub>) δ: 3.43 (2H, s), 4.58 (2H, s), 7.11 (1H, s),  
 7.20-7.30 (2H, m), 7.48 (1H, s), 7.50-7.65 (3H, m).

25 - 26

24

5

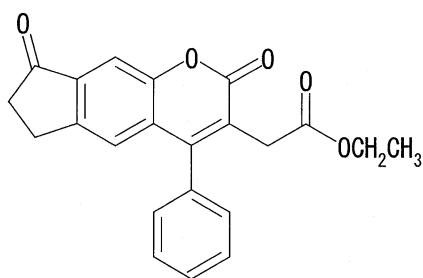
[ 5]



참고예 번호	R <sup>1</sup>	R <sup>2</sup>	수율 (%)	NMR (CDCl <sub>3</sub> )
25	CH <sub>2</sub> Br	H	50	3.44 (2H, s), 4.49 (2H, s), 7.03 (1H, d, J=2H), 7.20-7.35 (1H, m), 7.41 (1H, d, J=8 Hz), 7.50-7.65 (5H, m).
26	Cl	CH <sub>2</sub> Br	43	3.44 (2H, s), 4.71 (2H, s), 7.06 (1H, s), 7.20-7.70 (6H, m).

27

(2,8- -4- -2,6,7,8- [g] -3- )



(300 ml) 15 가 , (33 g) 3,5 - (32 g) - 10  
 ) 가 , (2 - - 4 - - 2,6,7,8 - [g] - 3 -  
 , - 10 2 , ,  
 ( : ) , 가  
 (1.2 g, : 15 %)

: 145 - 148 .

NMR (CDCl<sub>3</sub>) δ: 1.23 (3H, t, J = 9 Hz), 2.75 (2H, t, J = 6 Hz), 3.08 (2H, t, J = 6 Hz), 3.41 (2H, s), 4.14 (2H, q, J = 9 Hz), 7.10 (1H, s), 7.28 (2H, m), 7.55 (3H, m), 7.71 (1H, s).

IR(KBr): 2980, 1715, 1615, 1563 cm<sup>-1</sup>.

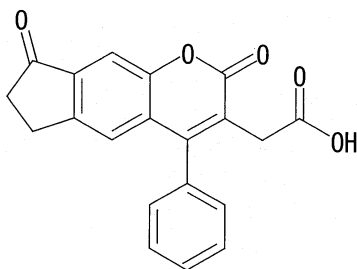
C<sub>22</sub> H<sub>18</sub> O<sub>5</sub>

(%): C: 72.92, H: 5.01

(%): C: 73.15, H: 5.20

28

(2,8 - - 4 - - 2,6,7,8 - [g] - 3 - )



(2,8 - 4 - 2,6,7,8 - ) [g] - 3 - ) (1.2 g) ( 20 ml) (10 ml) , 30 가 (50 ml) , , (0.87 g, : 79 %)

: 240 ( ).

NMR (CDCl<sub>3</sub> + DMSO-d<sub>6</sub> 1 drop) δ: 2.74 (2H, t, J = 6 Hz), 3.08 (2H, t, J = 6 Hz), 3.40 (2H, s), 7.11 (1H, s), 7.32 (2H, m), 7.56 (3H, m), 7.68 (1H, s).  
 IR(KBr): 3400-2400, 1713 cm<sup>-1</sup>.

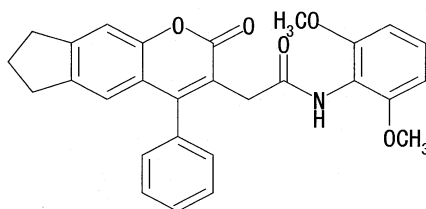
C<sub>20</sub> H<sub>14</sub> O<sub>5</sub>

(%): C:71.85 H:4.22

(%): C:71.40 H:4.50

1

N - (2,6 - ) - 2 - (2 - 4 - 2,6,7,8 - ) [g] - 3 - )



THF (10ml) (2 - 4 - 2,6,7,8 - ) [g] - 3 - ) (150 mg) (DMF, 1 ) (0.06 ml) , 30 , THF (5 ml) 2,6 - (79 mg) (0.1 ml) 가 . 1 , , (146 mg, : 64%).

: 213 - 215 .

NMR (CDCl<sub>3</sub>) δ: 2.09 (2H, m), 2.81 (2H, t, J = 7 Hz), 2.99 (2H, t, J = 7 Hz), 3.46 (2H, br), 3.78 (6H, s), 6.54 (2H, d, J = 8 Hz), 6.85 (1H, s), 7.14 (1H, t, J = 8 Hz), 7.26 (1H, s), 7.43 (2H, m), 7.50 (1H, m).  
IR(KBr): 1707, 1686, 1508 cm<sup>-1</sup>.

C<sub>28</sub> H<sub>25</sub> NO<sub>5</sub> · 0.2H<sub>2</sub>O

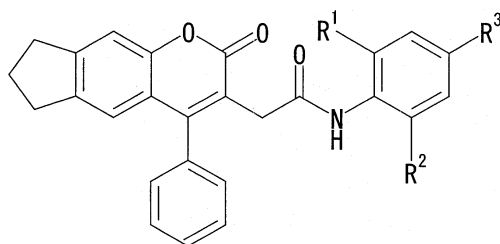
(%): C:73.25 H:5.58 N:3.05

(%): C:73.04 H:5.79 N:3.14

2 - 14

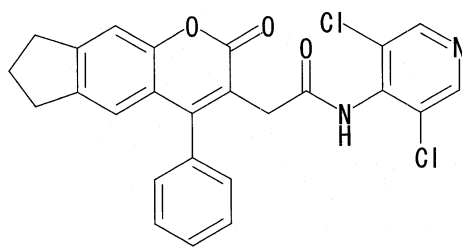
1 (2 - - 4 - - 2,6,7,8 - [g] - 3 - )  
6 .

[ 6]



실시에 번호	R <sup>1</sup>	R <sup>2</sup>	R <sup>3</sup>	수율 (%)	용융점 (°C) (재결정 용매)
2	OEt	OEt	H	64	216-219 (AcOEt-THF)
3	CH(CH <sub>3</sub> ) <sub>2</sub>	CH(CH <sub>3</sub> ) <sub>2</sub>	H	40	261-263 (AcOEt-THF)
4	Et	Et	H	54	279-281 (AcOEt-THF)
5	Me	OMe	H	42	232-237 (AcOEt)
6	Et	H	H	46	234-237 (AcOEt-THF)
7	OMe	H	H	40	219-222 (AcOEt-THF)
8	OMe	OMe	Me	73	237-239 (AcOEt-THF)
9	OMe	OH	H	72	179-181 (AcOEt)
10	OMe	OMe	OH	40	160 (decomp.) (AcOEt)
11	OH	OMe	OMe	32	170-172 (AcOE)
12	OCF <sub>3</sub>	H	H	21	191-194 (AcOEt)
13	OCH(CH <sub>3</sub> ) <sub>2</sub>	OCH(CH <sub>3</sub> ) <sub>2</sub>	H	33	181-186 (AcOEt)
14	시클로헥틸옥시	시클로헥틸옥시	H	47	224-226 (AcOEt)

N - (3,5 - 4 - ) - 2 - (2 - 4 - -2,6,7,8 - [g] - 3 - )



THF (10ml) (2 - 4 - -2,6,7,8 - [g] - 3 - ) (150 mg)  
 DMF (1 ) , (0.06 ml) , 30  
 (100 mg) ( THF (10 ml) , THF 4 - -3,5 -  
 ( 60%) (40 mg) 가 . ,  
 - THF  
 (60 mg, : 28%).

: 257 - 259 .

NMR (CDCl<sub>3</sub>) δ: 2.11 (2H, m), 2.27 (3H, m), 2.90 (2H, t, J = 7 Hz), 2.99 (2H, t, J = 7 Hz), 3.71 (6H, s), 6.54 (1H, s), 6.56 (2H, d, J = 8 Hz), 6.86 (1H, bs), 7.06 (1H, s), 7.15 (1H, t, J = 8 Hz), 7.33 (5H, m).

IR(KBr): 1699, 1655, 1306, 1144 cm<sup>-1</sup>.

C<sub>25</sub> H<sub>18</sub> N<sub>2</sub> O<sub>3</sub> Cl<sub>2</sub> · 0.3H<sub>2</sub>O

(%):C:63.79 H:3.98 N:5.95

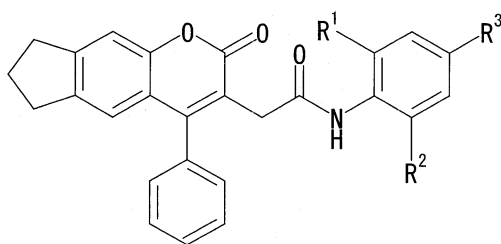
(%):C:63.56 H:4.10 N:5.71

16 - 21

15 (2 - 4 - -2,6,7,8 - [g] - 3 - )  
 7 .

[ 7]





실시예 번호	R <sup>1</sup>	R <sup>2</sup>	R <sup>3</sup>	수율 (%)	용융점 (°C) (재결정 용매)
16	CF <sub>3</sub>	H	Cl	55	198-200 (AcOEt)
17	F	F	F	46	247-249 (THF-IPE)
18	CF <sub>3</sub>	F	H	19	194-196 (AcOEt)
19	OCF <sub>3</sub>	H	Cl	84	189-191 (AcOEt)
20	CF <sub>3</sub>	H	F	57	186-187 (AcOEt)
21	CF <sub>3</sub>	H	CF <sub>3</sub>	38	220-221 (AcOEt)

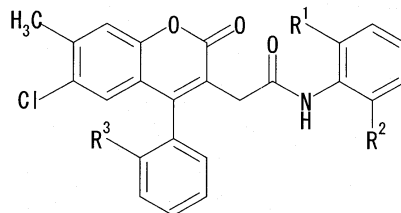
22 - 46

1

8

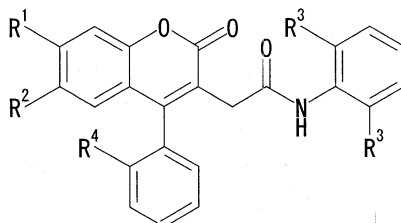
11

[ 8]



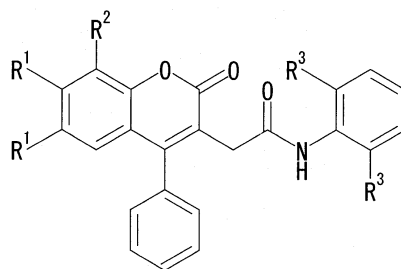
실시예 번호	R <sup>1</sup>	R <sup>2</sup>	R <sup>3</sup>	수율 (%)	용융점 (°C) (재결정 용매)
22	OMe	OMe	H	57	231-232 (AcOEt)
23	OMe	OMe	Me	61	176-177 (AcOEt)
24	OEt	OEt	H	54	235-236 (AcOEt)
25	CH(CH <sub>3</sub> ) <sub>2</sub>	CH(CH <sub>3</sub> ) <sub>2</sub>	Cl	51	245-246 (AcOEt)
26	Et	Et	H	53	250-251 (AcOEt)

[ 9]



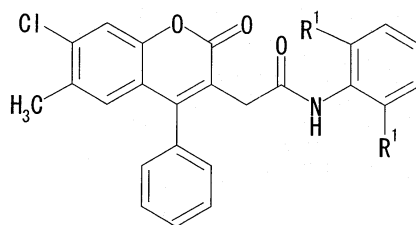
실시예 번호	R <sup>1</sup>	R <sup>2</sup>	R <sup>3</sup>	R <sup>4</sup>	수율 (%)	용융점 (°C) (재결정 용매)
27	Me	Me	OMe	H	75	236-237 (AcOEt)
28	Me	Me	OMe	Me	74	166-167 (AcOEt)
29	Me	Me	OEt	H	75	230-231 (AcOEt)
30	Me	Me	Et	H	74	259-260 (AcOEt)
31	Me	Me	CH(CH <sub>3</sub> ) <sub>2</sub>	H	74	252-253 (AcOEt)
32	(CH <sub>2</sub> ) <sub>4</sub>		OMe	H	63	227-228 (AcOEt)
33	(CH <sub>2</sub> ) <sub>4</sub>		OEt	H	60	196-197 (AcOEt)
34	(CH <sub>2</sub> ) <sub>4</sub>		CH(CH <sub>3</sub> ) <sub>2</sub>	H	53	235-236 (AcOEt)
35	(CH <sub>2</sub> ) <sub>4</sub>		Et	H	55	240-241 (AcOEt)

[ 10]



실시예 번호	R <sup>1</sup>	R <sup>2</sup>	R <sup>3</sup>	수율 (%)	용융점 (°C) (재결정 용매)
36	Cl	H	OMe	48	249-250 (AcOEt)
37	Cl	H	OEt	55	246-247 (AcOEt)
38	Cl	H	Et	48	296-297 (AcOEt)
39	Cl	H	CH(CH <sub>3</sub> ) <sub>2</sub>	55	289-290 (AcOEt)
40	Cl	Cl	OMe	83	289-291 (THF)
41	F	H	OMe	73	196-198 (AcOEt-THF)
42	F	H	CH(CH <sub>3</sub> ) <sub>2</sub>	75	255-256 (AcOEt-THF)
43	F	H	OCH(CH <sub>2</sub> ) <sub>3</sub>	55	249-252 (AcOEt)
44	F	H	시클로헥틸옥시	38	253-254 (AcOEt)

[ 11]



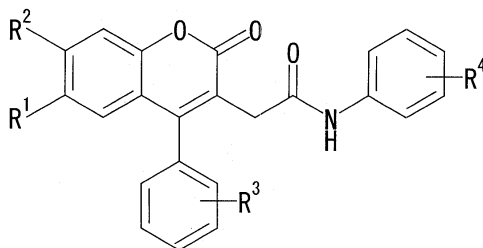
실시예 번호	R <sup>1</sup>	R <sup>2</sup>	수율 (%)	용융점 (°C) (재결정 용매)
45	OMe	H	60	247-249 (THF)
46	CH(CH <sub>3</sub> ) <sub>2</sub>	H	42	280-282 (THF)

47 - 69

15

12

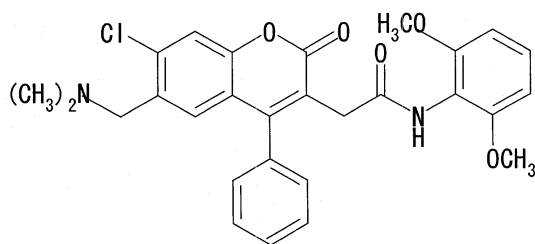
[ 12]



실시예 번호	R <sup>1</sup>	R <sup>2</sup>	R <sup>3</sup>	R <sup>4</sup>	수율 (%)	용융점 (°C) (재결정 용매)
47	F	F	H	2-CF <sub>3</sub> , 4-Cl	55	172-174 (AcOEt)
48	Cl	Cl	H	2-CF <sub>3</sub> , 4-Cl	61	203-206 (AcOEt)
49	Me	Cl	H	2-CF <sub>3</sub> , 4-Cl	74	236-239 (AcOEt-IPE)
50	Me	Cl	H	2-CF <sub>3</sub> , 4-F	78	224-226 (AcOEt-IPE)
51	Me	Cl	H	2, 4-di-(CF <sub>3</sub> )	51	239-240 (AcOEt-IPE)
52	Me	Cl	H	2-OCF <sub>3</sub> , 4-Cl	37	214-215 (AcOEt-IPE)
53	Me	Cl	3-Cl	2-CF <sub>3</sub> , 4-Cl	51	202-204 (AcOEt-IPE)
54	Me	Me	H	2-CF <sub>3</sub> , 4-Cl	65	201-203 (AcOEt)
55	Cl	Me	H	2-CF <sub>3</sub> , 4-Cl	93	214-216 (AcOEt)
56	(CH <sub>2</sub> ) <sub>3</sub>	H	H	2-CF <sub>3</sub>	79	191-193 (AcOEt)
57	(CH <sub>2</sub> ) <sub>3</sub>	3-Me	H	2-CF <sub>3</sub>	68	205-207 (AcOEt)
58	(CH <sub>2</sub> ) <sub>3</sub>	3-Me	H	2-CF <sub>3</sub> , 4-F	77	204-205 (AcOEt)
59	(CH <sub>2</sub> ) <sub>3</sub>	3-Me	H	2-CF <sub>3</sub> , 4-Cl	59	182-184 (AcOEt)
60	(CH <sub>2</sub> ) <sub>3</sub>	4-Me	H	2-CF <sub>3</sub>	64	224-226 (AcOEt)
61	(CH <sub>2</sub> ) <sub>3</sub>	4-Me	H	2-CF <sub>3</sub> , 4-F	68	234-236 (AcOEt)
62	(CH <sub>2</sub> ) <sub>3</sub>	4-Me	H	2-CF <sub>3</sub> , 4-Cl	61	235-236 (AcOEt)
63	(CH <sub>2</sub> ) <sub>3</sub>	3, 5-di-Me	H	2-CF <sub>3</sub>	81	264-265 (AcOEt)
64	(CH <sub>2</sub> ) <sub>3</sub>	3, 5-di-Me	H	2-CF <sub>3</sub> , 4-F	72	226-228 (AcOEt)
65	(CH <sub>2</sub> ) <sub>3</sub>	3, 5-di-Me	H	2-CF <sub>3</sub> , 4-Cl	78	221-223 (AcOEt)
66	(CH <sub>2</sub> ) <sub>3</sub>	4-F	H	2-CF <sub>3</sub>	74	221-223 (AcOEt)
67	(CH <sub>2</sub> ) <sub>3</sub>	4-F	H	2-CF <sub>3</sub> , 4-F	88	234-236 (AcOEt)
68	(CH <sub>2</sub> ) <sub>3</sub>	4-F	H	2-CF <sub>3</sub> , 4-F	71	232-234 (AcOEt)
69	Me	Cl	H	2-CF <sub>3</sub>	63	224-225 (AcOEt-IPE)

70

2 - [7 -        - 6 - {(        )        } - 2 -        - 4 -        - 2H -        - 3 -        ] - N - (2,6 -        )



THF (3ml) 2 - [6 - ( ) - 7 - - 2 - - 4 - - 2H - - 3 - ] (0.13 g)  
 DMF (1 ) (56 ml) , 1  
 , THF (2 ml) , 0 THF (2 ml) 2,6 - (46 ml)  
 (86 ml) 가 . 1 , ,  
 1N , ,  
 THF (2 ml) , THF (1 ml) (200 mg) ,  
 (30 ml) ,  
 ( : - - = 30:1:0.1) , 가  
 (81 mg, : 50%).

: 221 - 223 .

NMR (CDCl<sub>3</sub>) δ: 2.17 (6H, s), 3.41 (2H, s), 3.48 (2H, brs),  
 3.79 (6H, brs), 6.54 (2H, d, J=8 Hz), 7.08 (1H, brs), 7.15  
 (1H, t, J=8 Hz), 7.35-7.60 (8H, m).  
 IR(KBr): 1732, 1661, 1560, 1478 cm<sup>-1</sup>.

C<sub>28</sub> H<sub>27</sub> N<sub>2</sub> O<sub>5</sub> Cl

(%):C:66.33 H:5.37 N:5.53

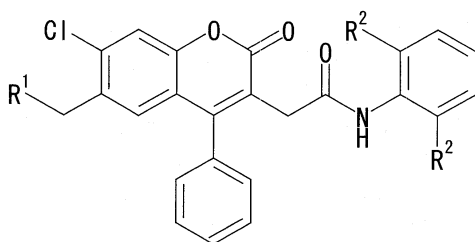
(%):C:66.17 H:5.38 N:5.22

71 - 73

70

13

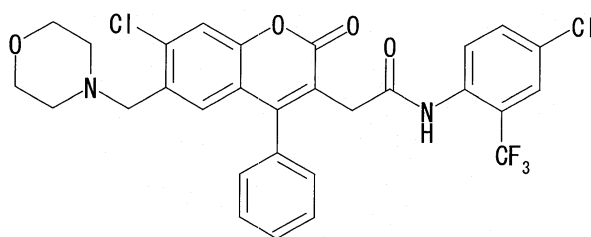
[ 13]



실시예 번호	R <sup>1</sup>	R <sup>2</sup>	수율 (%)	용융점 (°C) (재결정 용매)
71	모르폴린-4-일	OMe	53	209-211 (AcOEt)
72	NMe <sub>2</sub>	CH(CH <sub>3</sub> ) <sub>2</sub>	54	301-303 (AcOEt)
73	모르폴린-4-일	CH(CH <sub>3</sub> ) <sub>2</sub>	53	296-298 (AcOEt)

74

2-[7-(4-(2-(4-(2H-3-)]-N-(4-2-



THF (5 ml) 2-[6-( )-7-( )-2-( )-4-( )-2H-( )-3- ] (0.20 g)  
 DMF (1 ) (86 ml) , 1  
 (69 ml) , THF (3ml) , 0 THF (2 ml) 4- -2-  
 ( 60%) 가 . 12  
 , 1N ,  
 , THF (2 ml) , (0.21 ml)  
 3 , (30 ml)  
 ( : - - = 40:1:0.1) , 가  
 (112 mg, : 57%).

: 205 - 207 .

NMR (CDCl<sub>3</sub>) δ: 2.35-2.45 (4H, m), 3.45-3.65 (8H, m), 7.21  
 (1H, s), 7.30-7.40 (2H, m), 7.45 (1H, s), 7.45-7.65 (5H, m),  
 8.08 (1H, d, J=9 Hz), 8.24 (1H, brs).  
 IR(KBr): 1725, 1663, 1530, 1310 cm<sup>-1</sup>.

C<sub>29</sub> H<sub>23</sub> N<sub>2</sub> O<sub>4</sub> C<sub>12</sub> F<sub>3</sub>

(%):C:58.90 H:3.92 N:4.74

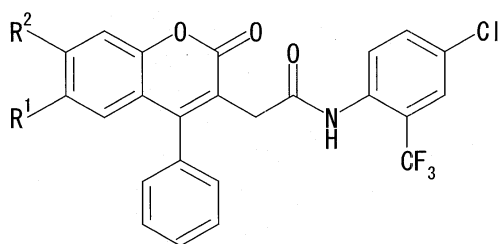
(%):C:58.90 H:3.89 N:4.61

75 - 79

74

14

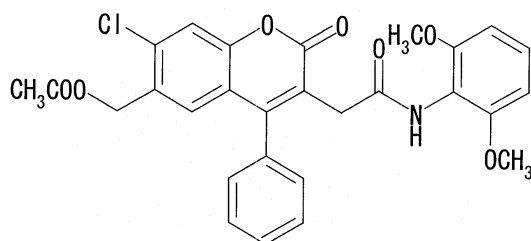
[ 14]



실시예 번호	R <sup>1</sup>	R <sup>2</sup>	수율 (%)	용융점 (°C) (재결정 용매)
75	4-페닐-1-피페라지닐 메틸	H	74	201-203 (AcOEt-IPE)
76	CH <sub>2</sub> NMe <sub>2</sub>	H	35	176-178 (AcOEt-IPE)
77	모르폴린-4-일메틸	H	36	171-172 (AcOEt-IPE)
78	Cl	CH <sub>2</sub> NMe <sub>2</sub>	95	215-217 (AcOEt-IPE)
79	Cl	모르폴린-4-일메틸	69	216-218 (AcOEt-IPE)

80

[7 - -3 - {2 - (2,6 - ) - 2 - } - 2 - -4 - -2H - -6 - ]



THF (3 ml) 2 - [6 - ( ) - 7 - - 2 - - 4 - - 2H - - 3 - ] (0.13 g)  
 DMF (1 ) (56 ml) , 1  
 , THF (2ml) , 0 THF (2 ml) 2,6 - (46 ml)  
 (86 ml) 가 1 , ,  
 1N , ,  
 DMF (2 ml) , (150 mg) , 3 60  
 , , THF  
 (61 mg, : 36%).

: 229 - 231 .

NMR (CDCl<sub>3</sub>) δ: 1.99 (3H, s), 3.50 (2H, brs), 3.78 (6H, brs),  
 5.09 (2H, s), 6.55 (2H, d, J=8 Hz), 7.06 (1H, brs), 7.16  
 (1H, t, J=8 Hz), 7.25-7.60 (8H, m).  
 IR(KBr): 1737, 1732, 1477, 1260 cm<sup>-1</sup>.

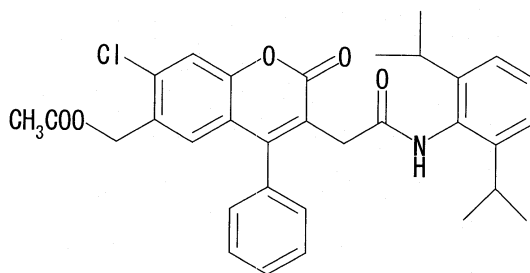
C<sub>28</sub> H<sub>24</sub> N<sub>07</sub> C1

(%):C:64.43 H:4.63 N:2.68

(%): C:64.45 H:4.95 N:2.64

81

[7 - - 3 - {2 - (2,6 - ) - 2 - } - 2 - - 4 - - 2H - - 6 - ]



80

( : 27%).

: 290 - 292 .

NMR (CDCl<sub>3</sub>) δ: 1.15 (12H, d, J=7 Hz), 1.99 (3H, s), 3.03  
 (2H, m), 3.53 (2H, s), 5.10 (2H, s), 7.00-7.60 (11H, m).  
 IR(KBr): 1732, 1647, 1532, 1364 cm<sup>-1</sup>.

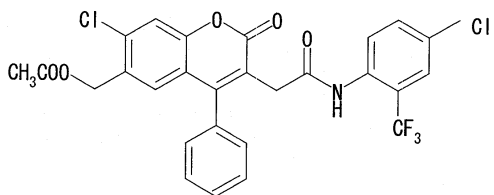
C<sub>32</sub> H<sub>32</sub> N<sub>05</sub> C<sub>1</sub>

(%):C:70.39 H:5.91 N:2.57

(%): C:70.41 H:5.67 N:2.58

82

[7 - 3 - {2 - (4 - 2 - ) - 2 - } - 2 - - 4 - - 2H - - 6 - ]



THF (6 ml) 2 - [6 - ( ) - 7 - - 2 - - 4 - - 2H - - 3 - ] (0.30 g)  
 DMF (1 ) (130 ml) , 1  
 (104 ml) , THF (3 ml) , 0 THF (2 ml) 4 - - 2 -  
 ( 60%) (121 mg) 가 . 1 ,  
 1N , ,  
 , 3 60 . DMF (3 ml) , (121 mg)  
 , ( : - = 1:2) , 가  
 (126 mg, : 45%).

: 186 - 187 .

NMR (CDCl<sub>3</sub>) δ: 1.99 (3H, s), 3.49 (2H, s), 5.10 (2H, s),  
 7.08 (1H, s), 7.30-7.40 (2H, m), 7.45-7.65 (6H, m), 8.08  
 (1H, d, J=9 Hz), 8.17 (1H, brs).  
 IR(KBr): 1725, 1663, 1530, 1310 cm<sup>-1</sup>.

C<sub>27</sub> H<sub>18</sub> N<sub>05</sub> C<sub>12</sub> F<sub>3</sub>

(%):C:57.46 H:3.21 N:2.48

(%):C:57.20 H:3.25 N:2.25

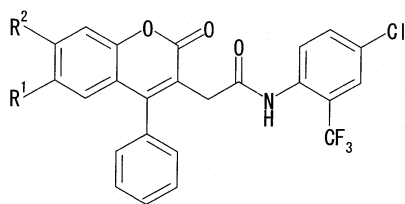
83 - 84



82

15

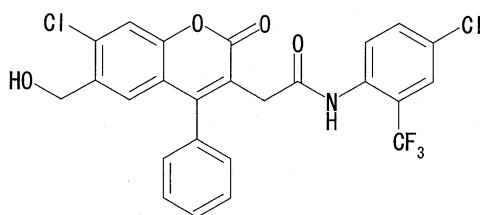
[ 15]



실시예 번호	R <sup>1</sup>	R <sup>2</sup>	수율 (%)	용융점 (°C) (재결정 용매)
83	CH <sub>2</sub> OAc	H	35	184-185 (AcOEt)
84	Cl	CH <sub>2</sub> OAc	56	237-238 (AcOEt-IPE)

85

2-[7-(4-chlorophenyl)-6-(hydroxymethyl)-2-(2-(4-chlorophenyl)-2-hydroxyethyl)-2H-1,4-benzoxazin-3(1H)-ylidene]-N-(4-chlorophenyl)-2-(2-(4-chlorophenyl)-2-hydroxyethyl)acetamide



[7-(4-chlorophenyl)-6-(hydroxymethyl)-2-(2-(4-chlorophenyl)-2-hydroxyethyl)-2H-1,4-benzoxazin-3(1H)-ylidene]-N-(4-chlorophenyl)-2-(2-(4-chlorophenyl)-2-hydroxyethyl)acetamide (81 mg) THF (4 ml) (2 ml) (30 ml), DBU (0.11 ml), 1N NaOH (34 mg, 80%).

: 241 - 243 .

NMR (CDCl<sub>3</sub>) δ: 1.85 (1H, t, J=6 Hz), 3.48 (2H, s), 4.70 (2H, d, J=6 Hz), 7.21 (1H, s), 7.30-7.40 (2H, m), 7.45-7.65 (6H, m), 8.08 (1H, d, J=9 Hz), 8.19 (1H, brs).  
IR(KBr): 1699, 1655, 1306, 1144 cm<sup>-1</sup>.

C<sub>25</sub> H<sub>16</sub> N<sub>04</sub> C<sub>12</sub> F<sub>3</sub>

(%): C:57.49 H:3.09 N:2.68

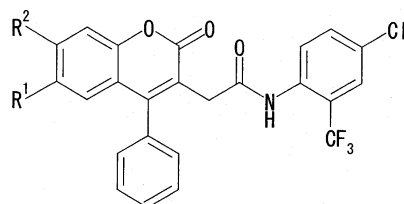
(%): C:57.52 H:3.09 N:2.57

86 - 87

85

16

[ 16]



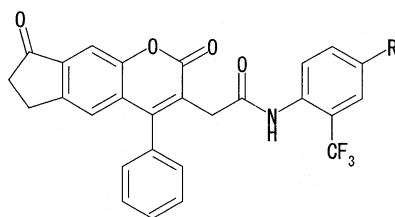
실시예 번호	R <sup>1</sup>	R <sup>2</sup>	수율 (%)	용융점 (°C) (재결정 용매)
86	CH <sub>2</sub> OH	H	37	226-227 (AcOEt)
87	Cl	CH <sub>2</sub> OH	46	220-222 (AcOEt-IPE)

88 - 89

15

17

[ 17]



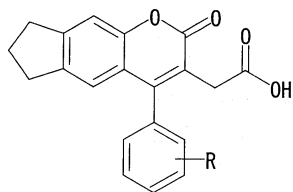
실시예 번호	R	수율 (%)	용융점 (°C) (재결정 용매)
88	F	52	180-183 (AcOEt)
89	Cl	33	189-192 (THF-IPE)

29 - 31

7

18

[ 18]



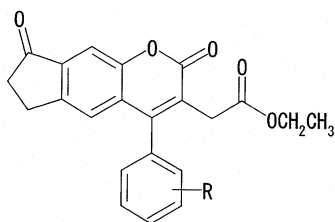
참고예 번호	R	수율 (%)	용융점 (°C) (재결정 용매)
29	3-CF <sub>3</sub>	82	159-161 (Et <sub>2</sub> O-헥산)
30	4-CF <sub>3</sub>	82	202-204 (IPE)
31	3,5-di-(CF <sub>3</sub> )	75	193-195 (IPE-헥산)

32 - 34

27

19

[ 19]



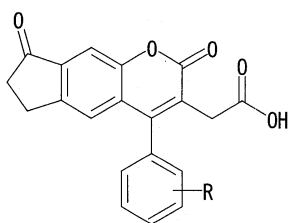
참고예 번호	R	수율 (%)	용융점 (°C) (재결정 용매)
32	3,5-di-Me	16	174-276 (AcOEt)
33	3-Me	12	182-184 (AcOEt)
34	3-CF <sub>3</sub>	22	142-143 (Et <sub>2</sub> O-헥산)

35 - 37

28

20

[ 20]



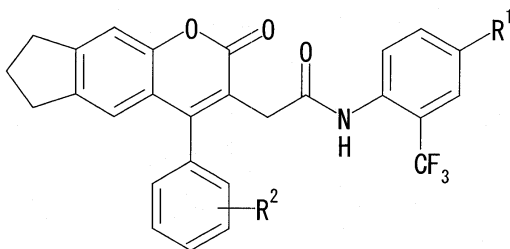
참고예 번호	R	수율 (%)	용융점 (°C) (재결정 용매)
35	3,5-di-Me	70	187-190 (AcOEt)
36	3-Me	89	247 (decomp.) (AcOEt)
37	3-CF <sub>3</sub>	90	200-202 (Et <sub>2</sub> O-IPE)

90 - 95

15

21

[ 21]



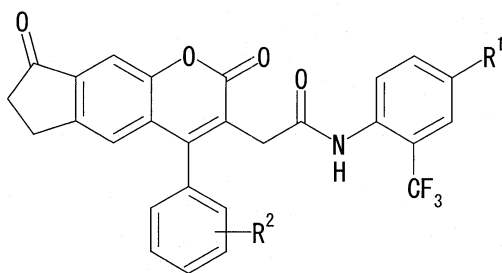
실시예 번호	R <sup>1</sup>	R <sup>2</sup>	수율 (%)	용융점 (°C) (재결정 용매)
90	F	3-CF <sub>3</sub>	58	213-214 (AcOEt-IPE)
91	Cl	3-CF <sub>3</sub>	70	206-207 (THF-IPE)
92	F	4-CF <sub>3</sub>	78	250-252 (THF-IPE)
93	Cl	4-CF <sub>3</sub>	55	249-250 (AcOEt)
94	F	3,5-di-(CF <sub>3</sub> )	58	278-280 (THF-IPE)
95	Cl	3,5-di-(CF <sub>3</sub> )	70	254-256 (THF-IPE)

96 - 101

15

22

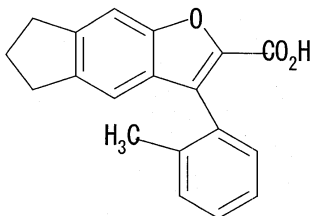
[ 22]



실시에 번호	R <sup>1</sup>	R <sup>2</sup>	수율 (%)	용융점 (°C) (재결정 용매)
96	F	3,5-di-Me	19	274-276 (AcOEt-IPE)
97	Cl	3,5-di-Me	12	274-276 (THF-IPE)
98	F	3-Me	49	216-217 (AcOEt)
99	Cl	3-Me	60	225-227 (AcOEt-IPE)
100	F	3-CF <sub>3</sub>	19	227-229 (AcOEt-IPE)
101	Cl	3-CF <sub>3</sub>	43	122-123 (AcOEt-헥산)

38

3 - (2 - ) - 6,7 - - 5H - [5,6 - b] - 2 -



DMF (50 ml) (6 - - 2,3 - - 1H - - 5 - ) (2 - ) (2.0 g)  
 (1 ml) 60 % (400 mg) 30  
 (50 ml) , DBU (2 ml) 가 , ,  
 (30 ml) 3 ( : , : - = 1:3)  
 THF (50 ml) [5,6 - b] - 2 - , 1 N  
 (30 ml) , 3 , ,

(0.9 g, : 39%).

: 213 - 215 .

NMR (CDCl<sub>3</sub>) δ: 2.13 (2H, m), 2.17 (3H, m), 2.91 (2H, t, J = 8 Hz), 3.04 (2H, t, J = 8 Hz), 7.11 (1H, s), 7.26 (2H, m), 7.32 (2H, m), 7.45 (1H, s).

IR(KBr): 3400-2400, 1720 cm<sup>-1</sup>.

C<sub>19</sub> H<sub>16</sub> O<sub>3</sub>

(%): C:78.06 H:5.52

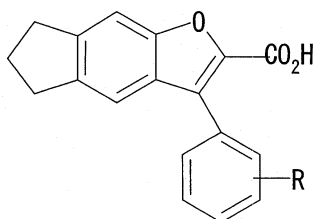
(%): C:77.82 H:5.59

39 - 53

38

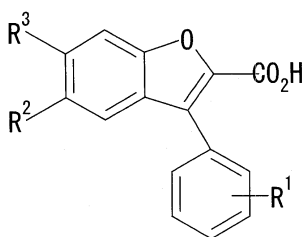
23 24 .

[ 23]



참고예 번호	R	수율 (%)	용융점 (°C) (재결정 용매)
39	3-Me	72	240-244 (AcOEt)
40	4-Me	76	240-244 (AcOEt)
41	H	63	230-231 (AcOEt)
42	4-F	48	215-218 (AcOEt)
43	4-OMe	85	240-243 (AcOEt)

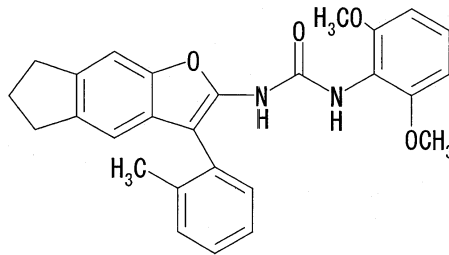
[ 24]



참고예 번호	R <sup>1</sup>	R <sup>2</sup>	R <sup>3</sup>	수율 (%)	용융점 (°C) (재결정 용매)
44	2-Me	Cl	Me	53	224-225 (AcOEt)
45	H	Me	Me	46	268-269 (AcOEt)
46	2-Me	Me	Me	39	218-219 (AcOEt)
47	3-Me	Me	Me	62	224-226 (AcOEt)
48	2-Me	Me	Cl	78	190-220 (AcOEt)
49	3-Me	Me	Cl	33	210-213 (AcOEt)
50	2-Me	Cl	Cl	62	193-195 (AcOEt- Hexan)
51	2-Me	F	F	40	206-208 (AcOEt)
52	2-Me	(CH <sub>2</sub> ) <sub>4</sub>		86	무정형
53	3-Me	(CH <sub>2</sub> ) <sub>4</sub>		34	228-230 (AcOEt)

102

N - (2,6 - ) - N ' - [3 - (2 - ) - 6,7 - - 5H - [5,6 - b] - 2 - ]



(200 ml) 3 - (2 - ) - 6,7 - - 5H - [5,6 - b] - 2 - (3 g),  
 (2.2 ml) DPPA (2.9 ml) 1 , 1 가 .  
 , 2,6 - (1.6 g) 가 , 1 가 .  
 , , . ( : )  
 , 가 THF -  
 (2.4 g, : 53%).

: 270 ( ).

NMR (CDCl<sub>3</sub>) δ: 2.11 (2H, m), 2.27 (3H, m), 2.90 (2H, t, J = 7 Hz), 2.99 (2H, t, J = 7 Hz), 3.71 (6H, s), 6.54 (1H, s), 6.56 (2H, d, J = 8 Hz), 6.86 (1h, bs), 7.06 (1H, s), 7.15 (1H, t, J = 8 Hz), 7.33 (5H, m).  
 IR(KBr): 3241, 1659, 1557 cm<sup>-1</sup>.

C<sub>27</sub> H<sub>26</sub> N<sub>2</sub> O<sub>4</sub>

(%):C:78.28 H:5.92 N:6.33

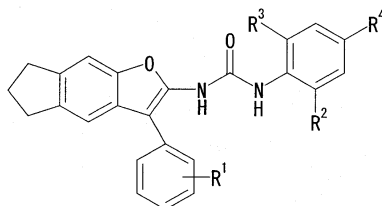
(%): C:73.15 H:6.00 N:6.29

102 - 103

101

25 26

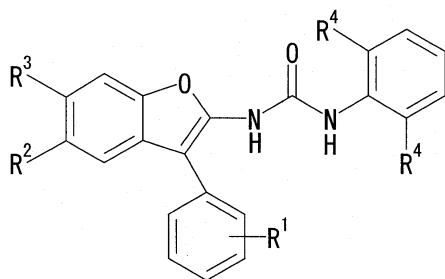
[ 25]



실시예 번호	R <sup>1</sup>	R <sup>2</sup>	R <sup>3</sup>	R <sup>4</sup>	수율 (%)	용융점 (°C) (재결정 용매)
102	3-Me	OMe	OMe	H	19	208 (decomp.) (AcOEt)
103	4-Me	OMe	OMe	H	53	236 (decomp.) (AcOEt)
104	H	OMe	OMe	H	50	238-241 (AcOEt)
105	2-Me	Et	Et	H	28	250 (decomp.) (AcOEt)
106	3-Me	Et	Et	H	23	225-228 (AcOEt)
107	4-Me	Et	Et	H	26	250-254 (AcOEt)
108	H	Et	Et	H	42	248-251 (AcOEt)
109	2-Me	OEt	OEt	H	45	227 (decomp.) (AcOEt)
110	3-Me	OEt	OEt	H	14	210-212 (AcOEt)
111	H	OEt	OEt	H	45	210-212 (AcOEt)
112	2-Me	CH(CH <sub>3</sub> ) <sub>2</sub>	CH(CH <sub>3</sub> ) <sub>2</sub>	H	33	238 (decomp.) (AcOEt)
113	3-Me	CH(CH <sub>3</sub> ) <sub>2</sub>	CH(CH <sub>3</sub> ) <sub>2</sub>	H	34	235 (decomp.) (AcOEt)
114	3-Me	OMe	Me	H	19	208 (decomp.) (AcOEt)
115	2-Me	OMe	OMe	Me	69	280 (decomp.) (AcOEt-hex)
116	2-Me	OMe	OH	H	78	210-212 (THF)
117	2-Me	OMe	OMe	OH	27	224-227 (AcOEt)
118	2-Me	OMe	OH	OMe	36	218-221 (AcOEt)
119	2-Me	OMe	OMe	F	45	280 (decomp.) (CH <sub>2</sub> Cl <sub>2</sub> )
120	4-F	OMe	OMe	H	36	246 (decomp.) (AcOEt)
121	4-OMe	OMe	OMe	H	58	238 (decomp.) (AcOEt)

[ 26]





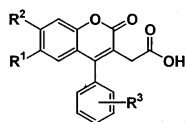
실시예 번호	R <sup>1</sup>	R <sup>2</sup>	R <sup>3</sup>	R <sup>4</sup>	수율 (%)	용융점 (°C) (재결정 용매)
122	2-Me	Cl	Me	OMe	35	282 (decomp.) (THF)
123	H	Me	Me	OMe	28	252 (decomp.) (THF)
124	2-Me	Me	Me	OMe	39	238 (decomp.) (AcOEt)
125	3-Me	Me	Me	OMe	47	230 (decomp.) (AcOEt)
126	2-Me	Me	Cl	OMe	34	242 (decomp.) (AcOEt)
127	3-Me	Me	Cl	OMe	34	238 (decomp.) (AcOEt)
128	3-Me	Me	Cl	Et	23	235-239 (AcOEt)
129	2-Me	Cl	Cl	OMe	17	275-277 (THF)
130	2-Me	F	F	OMe	26	194-196 (THF)
131	2-Me	(CH <sub>2</sub> ) <sub>4</sub>		OMe	26	195 (decomp.) (AcOEt)
132	3-Me	(CH <sub>2</sub> ) <sub>4</sub>		OMe	47	215 (decomp.) (AcOEt)
133	3-Me	(CH <sub>2</sub> ) <sub>4</sub>		Et	32	235 (decomp.) (AcOEt)

54 - 63

13

27

[ 27]



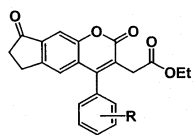
참고예 번호	R <sup>1</sup>	R <sup>2</sup>	R <sup>3</sup>	수율 (%)	용융점 (°C) (재결정 용매)
54	(CH <sub>2</sub> ) <sub>4</sub>		3-Me	89	203-206 (AcOEt-IPE)
55	Me	Cl	3-Cl	58	262-264 (AcOEt-IPE)
56	(CH <sub>2</sub> ) <sub>3</sub>		3-Cl	63	210-213 (AcOEt-IPE)
57	(CH <sub>2</sub> ) <sub>4</sub>		3-Cl	73	233-238 (AcOEt-IPE)
58	Me	Cl	4-CF <sub>3</sub>	96	231-234 (AcOEt-헥산)
59	(CH <sub>2</sub> ) <sub>3</sub>		3,4-Me <sub>2</sub>	87	189-191 (AcOEt)
60	(CH <sub>2</sub> ) <sub>3</sub>		3-Cl, 4-F	97	243-244 (AcOEt)
61	Me	Cl	3,4-Me <sub>2</sub>	86	225-227 (AcOEt)
62	Br	Me	H	82	256-257 (THF)
63	OMe	Cl	H	61	254-257 (AcOH-H <sub>2</sub> O)

64 - 65

27

28

[ 28]



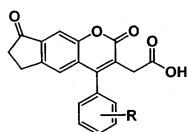
참고예 번호	R	수율 (%)	용융점 (°C) (재결정 용매)
64	3-Cl	82	164-165 (AcOEt)
65	4-CF <sub>3</sub>	37	134-135 (Et <sub>2</sub> O-헥산)

66 - 67

28

29

[ 29]



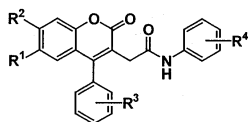
참고예 번호	R	수율 (%)	용융점 (°C) (재결정 용매)
66	3-Cl	89	173 (decomp.) (AcOEt)
67	4-CF <sub>3</sub>	84	245 (decomp.) (Et <sub>2</sub> O-IPE)

134 - 153

1

30

[ 30]



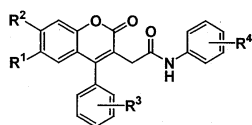
실시예 번호	R <sup>1</sup>	R <sup>2</sup>	R <sup>3</sup>	R <sup>4</sup>	수율 (%)	용융점 (°C) (재결정 용매)
134	(CH <sub>2</sub> ) <sub>2</sub> CO		3-Cl	2,6-(i-Pr) <sub>2</sub>	11	232-234 (THF-AcOEt)
135	(CH <sub>2</sub> ) <sub>2</sub> CO		3-Me	2,6-(i-Pr) <sub>2</sub>	4	203-206 (THF-AcOEt)
136	CO(CH <sub>2</sub> ) <sub>2</sub>		3-Cl	2,6-(OMe) <sub>2</sub>	46	268-271 (THF-AcOEt)
137	Me	Cl	3-Cl	2,6-Me <sub>2</sub> , 4-Cl	16	292-295 (THF-IPE)
138	Me	Cl	3-Cl	2-Me, 4-Cl	42	247-249 (AcOEt-IPE)
139	Me	Cl	3-Cl	2-Me, 4-F	74	242-245 (AcOEt-IPE)
140	Me	Cl	3-Cl	2-CH <sub>2</sub> OH, 4-Cl	41	150 (decomp.) (THF-AcOEt)
141	Me	Cl	3-Cl	2-CH <sub>2</sub> OMe, 4-Cl	34	180-184 (AcOEt-IPE)
142	Me	Cl	3-Cl	2-CH <sub>2</sub> OC <sub>2</sub> H <sub>4</sub> OMe, 4-Cl	48	126-128 (AcOEt-IPE)
143	Me	Cl	3-Cl	2-Me	79	239-240 (AcOEt-IPE)
144	Me	Cl	3-Cl	2-Et	80	201-203 (AcOEt-IPE)
145	Me	Cl	3-Cl	2-iPr	64	205-207 (AcOEt-IPE)
146	Me	Cl	3-Cl	2-Et, 4-Cl	66	228-231 (THF-AcOEt)
147	Me	Cl	3-Cl	2-Et, 4-F	37	226-227 (THF-AcOEt)
148	Me	Cl	3-Cl	2,3-Me <sub>2</sub>	56	250-251 (THF-AcOEt)
149	Me	Cl	3-Cl	2,4-Me <sub>2</sub>	69	220-222 (AcOEt-IPE)
150	Me	Cl	3-Cl	2,5-Me <sub>2</sub>	59	224-226 (AcOEt-IPE)
151	Me	Cl	3-Cl	2,3-(CH <sub>2</sub> ) <sub>4</sub>	48	242-247 (AcOEt-IPE)
152	Me	Cl	3-Cl	2,4-Cl <sub>2</sub>	54	207-210 (AcOEt-IPE)
153	Me	Cl	3-Cl	2-Cl, 4-F	44	211-213 (AcOEt-IPE)

154 - 179

15

31

[ 31 ]



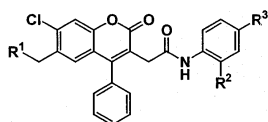
실시에 번호	R <sup>1</sup>	R <sup>2</sup>	R <sup>3</sup>	R <sup>4</sup>	수율 (%)	용융점 (°C) (재결정 용매)
154	(CH <sub>2</sub> ) <sub>2</sub> CO		3-Cl	2-CF <sub>3</sub> , 4-Cl	31	180 (decomp.) (AcOEt)
155	(CH <sub>2</sub> ) <sub>2</sub> CO		3-Cl	2-CF <sub>3</sub> , 4-F	27	150 (decomp.) (AcOEt)
156	CO(CH <sub>2</sub> ) <sub>2</sub>		4-CF <sub>3</sub>	2-CF <sub>3</sub> , 4-F	34	146-148 (THF-IPE)
157	CO(CH <sub>2</sub> ) <sub>2</sub>		H	2-CF <sub>3</sub> , 4-Cl	32	257-260 (THF-AcOEt)
158	CO(CH <sub>2</sub> ) <sub>2</sub>		H	2-CF <sub>3</sub> , 4-F	51	257-259 (THF-AcOEt)
159	(CH <sub>2</sub> ) <sub>4</sub>		H	2-CF <sub>3</sub> , 4-Cl	85	232-234 (THF-AcOEt)
160	(CH <sub>2</sub> ) <sub>4</sub>		H	2-CF <sub>3</sub> , 4-F	47	231-232 (AcOEt)
161	(CH <sub>2</sub> ) <sub>3</sub>		3,4-Me <sub>2</sub>	2-CF <sub>3</sub> , 4-Cl	83	236-238 (AcOEt)
162	(CH <sub>2</sub> ) <sub>3</sub>		3,4-Me <sub>2</sub>	2-CF <sub>3</sub> , 4-F	71	253-254 (AcOEt)
163	(CH <sub>2</sub> ) <sub>3</sub>		3-Cl, 4-F	2-CF <sub>3</sub> , 4-Cl	85	221-223 (AcOEt)
164	(CH <sub>2</sub> ) <sub>3</sub>		3-Cl, 4-F	2-CF <sub>3</sub> , 4-F	57	219-222 (AcOEt)
165	(CH <sub>2</sub> ) <sub>4</sub>		3-Me	2-CF <sub>3</sub> , 4-Cl	42	192-196 (AcOEt-IPE)
166	(CH <sub>2</sub> ) <sub>4</sub>		3-Me	2-CF <sub>3</sub> , 4-F	60	215-216 (AcOEt-IPE)
167	Me		3-Cl	2-CF <sub>3</sub> , 4-F	50	210-211 (AcOEt-헥산)
168	(CH <sub>2</sub> ) <sub>3</sub>		3-Cl	2-CF <sub>3</sub> , 4-Cl	78	215-219 (AcOEt-헥산)
169	(CH <sub>2</sub> ) <sub>3</sub>		3-Cl	2-CF <sub>3</sub> , 4-F	82	219-222 (AcOEt-헥산)
170	(CH <sub>2</sub> ) <sub>4</sub>		3-Cl	2-CF <sub>3</sub> , 4-Cl	40	214-217 (AcOEt-헥산)
171	(CH <sub>2</sub> ) <sub>4</sub>		3-Cl	2-CF <sub>3</sub> , 4-F	45	220-224 (AcOEt-헥산)
172	Me	Cl	4-CF <sub>3</sub>	2-CF <sub>3</sub> , 4-Cl	71	261-264 (AcOEt-IPE)
173	Me	Cl	4-CF <sub>3</sub>	2-CF <sub>3</sub> , 4-F	67	250-252 (AcOEt-IPE)
174	Me	Cl	3,4-Me <sub>2</sub>	2-CF <sub>3</sub> , 4-Cl	67	253-254 (THF-IPE)
175	Me	Cl	3,4-Me <sub>2</sub>	2-CF <sub>3</sub> , 4-F	67	240-241 (THF-IPE)
176	Br	Me	H	2-CF <sub>3</sub> , 4-Cl	58	223-225 (AcOEt)
177	Br	Me	H	2-CF <sub>3</sub> , 4-F	56	237-238 (AcOEt)
178	OMe	Cl	H	2-CF <sub>3</sub> , 4-Cl	81	246-247 (THF-EtOH)
179	OMe	Cl	H	2-CF <sub>3</sub> , 4-F	52	218-220 (THF-EtOH)

180 - 202

74

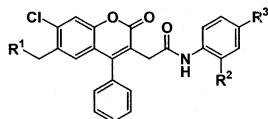
32 33

[ 32]



실시예 번호	R <sup>1</sup>	R <sup>2</sup>	R <sup>3</sup>	수율 (%)	용융점 (°C) (재결정 용매)
180	NHMe	CF <sub>3</sub>	Cl	65	205-207 (AcOEt)
181	NH(CH <sub>2</sub> ) <sub>3</sub> O(CH <sub>2</sub> ) <sub>3</sub> CH <sub>3</sub>	CF <sub>3</sub>	Cl		104-106 (AcOEt-헥산)
182	NEt <sub>2</sub>	CF <sub>3</sub>	Cl	87	163-164 (AcOEt-IPE)
183		CF <sub>3</sub>	Cl	58	159 (AcOEt-IPE)
184		CF <sub>3</sub>	Cl	73	205-208 (AcOEt-IPE)
185		CF <sub>3</sub>	Cl	49	158-160 (AcOEt-IPE)
186		CF <sub>3</sub>	Cl	50	173-175 (AcOEt-IPE)
187		CF <sub>3</sub>	Cl	96	205-207 (AcOEt-IPE)
188		CF <sub>3</sub>	Cl	77	193 (decomp.) (AcOEt-IPE)
189		CF <sub>3</sub>	Cl	74	191-194 (AcOEt-IPE)
190		CF <sub>3</sub>	Cl	86	203-207 (AcOEt)

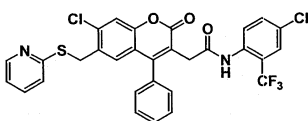
[ 33]



191		CF <sub>3</sub>	Cl	89	194-197 (AcOEt-IPE)
192		CF <sub>3</sub>	Cl	73	196-197 (AcOEt-IPE)
193		CF <sub>3</sub>	Cl	20	201-204 (AcOEt-IPE)
194		CF <sub>3</sub>	Cl	32	186-188 (AcOEt)
195		CF <sub>3</sub>	Cl	20	219-220 (THF-IPE)
196	NEt <sub>2</sub>	CF <sub>3</sub>	F	25	206-207 (AcOEt-헥산)
197		CF <sub>3</sub>	F	87	200-203 (AcOEt-헥산)
198		CF <sub>3</sub>	F	83	203-204 (AcOEt-헥산)
199		CF <sub>3</sub>	F	82	216-218 (AcOEt-IPE)
200		CF <sub>3</sub>	F	84	198-200 (AcOEt-헥산)
201		CF <sub>3</sub>	F	32	207-208 (THF-IPE)
202		Me	Cl	22	239-241 (THF-IPE)

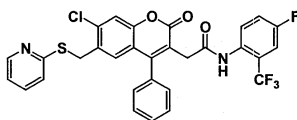
203

2-[7-(2-(4-(6-((2- )]-2H-3-]-N-[4-2-(



204

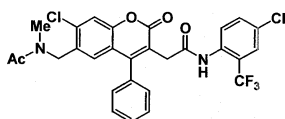
2-[7-(2-(4-(6-((2- )]-2H-3-]-N-[4-2-(



203 ( : 71%). : 195 - 196 (AcOEt - IPE).

205

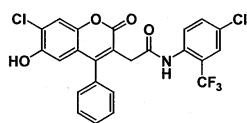
2-[6-[[ ( ) ]]-7-2-4-2H-3-]-N-[4-2-(





208

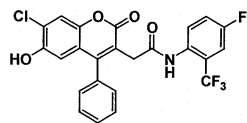
2 - (7 - 6 - 2 - 4 - 2H - 3 - ) - N - [4 - 2 - ( ) ]



(10 ml) 2 - (7 - 6 - 2 - 4 - 2H - 3 - ) - N - [4 -  
 - 2 - ( ) ] ( 178) (3.20 g) / (31.6  
 ml, 13.6 mmol) 1 M , 3 . ,  
 가 , ,  
 (2.05 g, 64%). THF - . : 246 - 247 .

209

2 - (7 - 6 - 2 - 4 - 2H - 3 - ) - N - [4 - 2 - ( ) ]

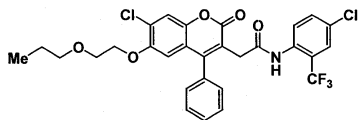


208

( : 58%). : 240 - 243 (AcOEt - ).

210

2 - (7 - 2 - 4 - 6 - (2 - ) - 2H - 3 - ) - N - [4 - 2 - ( ) ]



DMF (5 ml) 2 - (7 - 6 - 2 - 4 - 2H - 3 - ) - N - [4 - 2 - ( ) ]  
 ( 208) (0.30 g) 2 - (0.31 ml), (0.  
 23 g) (0.15 g) , 120 30 . , , .

(151 mg, : 43%). : 170 - 171 .

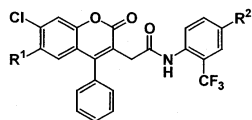


211 - 213

210

34

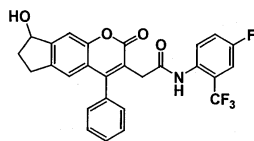
[ 34]



실시에 번호	R <sup>1</sup>	R <sup>2</sup>	수율 (%)	용융점 (°C) (재결정 용매)
211	O(CH <sub>2</sub> ) <sub>2</sub> O(CH <sub>2</sub> ) <sub>2</sub> CH <sub>3</sub>	F	32%	161-162 (AcOEt-IPE)
212	O(CH <sub>2</sub> ) <sub>2</sub> OPh	Cl	54%	176-177 (AcOEt-IPE)
213	O(CH <sub>2</sub> ) <sub>2</sub> OPh	F	52%	189-190 (AcOEt-IPE)

214

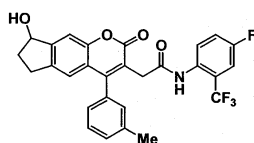
N - [4 - 2 - ( ) ] - 2 - (8 - 2 - 4 - 2,6,7,8 -  
[g] - 3 - )



DME (2 ml) NaBH<sub>4</sub> (30 mg) 2 - (2,8 - 4 - 2,6,7,8 - [g]  
- 3 - ) - N - [4 - 2 - ( ) ] ( 88) (170 mg)  
, 가 , 10 , ,  
(110 mg, : 65%).  
: 217 - 218 .

215

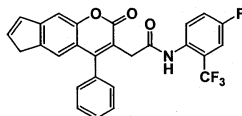
N - [4 - 2 - ( ) ] - 2 - [8 - 4 - (3 - ) - 2 - 2,6,7,8 -  
[g] - 3 - ]



214 ( : 82%). : 225 - 227 (AcOEt).

216

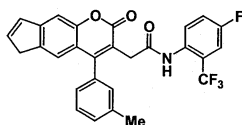
N - [4 - - 2 - ( ) ] - 2 - (4 - - 2 - - 2,6 - [g] - 3 - )



(50 ml) N - [4 - - 2 - ( ) ] - 2 - (8 - - 2 - - 4 - - 2,6,7,8 -  
 g) , 30 [g] - 3 - ) ( 214) (250 mg) p - TsOH (300 m  
 : - 가 . , (200 mg, : 74%).  
 THF = 3:1 . : 217 - 218 .

217

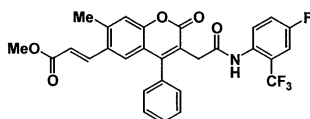
N - [4 - - 2 - ( ) ] - 2 - [4 - (3 - ) - 2 - - 2,6 - [g]  
 - 3 - ]



216 ( : 55%). : 196 - 197 (AcOEt - ).

218

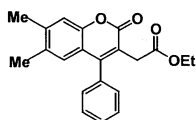
(2E) - 3 - [3 - [2 - [[4 - - 2 - ( ) ] ] - 2 - ] - 7 - - 2 - - 4 -  
 - 2H - - 6 - ]



DMF (5 mL) 2 - (6 - 7 - 2 - 4 - 2H - 3 - ) - N - [ 4 - 2 - ( (0.14 mL), Et<sub>3</sub>N (0.21 mL), Pd(OAc)<sub>2</sub> (5 mg) (177) (500 mg) (10 mg) , 120 10 가 NaHCO<sub>3</sub> (360 mg, : 72%). : 233 - 236 .

68

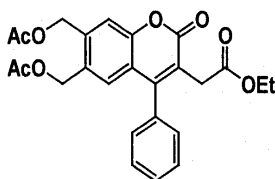
2 - (6,7 - 2 - 4 - 2H - 3 - )



21 ( : 75%). : 127 - 128 (AcOEt - ).

69

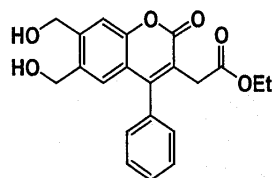
2 - [6,7 - ( ) - 2 - 4 - 2H - 3 - ]



N - (20 ml) 2 - (6,7 - 2 - 4 - 2H - 3 - ) (0.50g) (0.66 g) 2,2' - (24.4 mg) , 1 가 , (488 mg) , 60 5 DMF (10 ml) , ( : (281 mg, : 42%) ) : 95 - 96 .

70

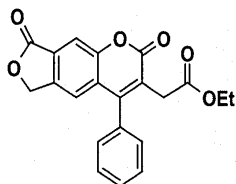
2 - [6,7 - ( ) - 2 - 4 - 2H - 3 - ]



(4 ml) 2 - [6,7 - ( ) - 2 - - 4 - - 2H - - 3 - ] (240 mg)  
 DBU (0.4 ml) , 30 (30 ml)  
 , 1 N , , ,  
 (167 mg, : 86%) . : 130 - 131 .

71

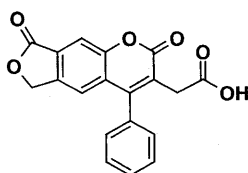
2 - (2,8 - - 4 - - 6,8 - - 2H - [3,4 - g] - 3 - )



(3 ml) 2 - [6,7 - ( ) - 2 - - 4 - - 2H - - 3 - ] (15  
 0 mg) (1.5 g) ,  
 THF (98 mg, : 66%) , : 2  
 22 - 223 .

72

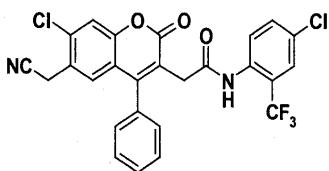
2 - (2,8 - - 4 - - 6,8 - - 2H - [3,4 - g] - 3 - )



2 - (2,8 - - 4 - - 6,8 - - 2H - [3,4 - g] - 3 - ) (58 mg) ( )  
 2 ml) (1 ml) , 30 가 .  
 , THF (10 ml) (50 ml) , , TH  
 F - (72 mg, : 92%) . : 226 - 227 .

219

2 - [7 - - 6 - ( ) - 2 - - 4 - - 2H - - 3 - ] - N - (4 - - 2 - )



THF (40 ml) 2-[6-( )-7-( )-2-( )-4-( )-2H-( )-3-( )] (1.6 g)  
 DMF (5 ) (0.7 ml) , 1 .

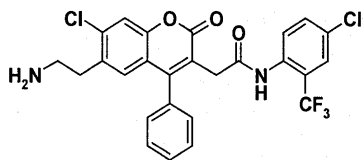
(0.55 ml) , THF (20 ml) , THF (20 ml) 2- -4-  
 (60%, ) (176 mg) 0 가 . 12  
 , 1 N

-4- -2H- -3-- ]-N-(4- -2- 2-[6-( )-7- -2-  
 (0.13 g) , 3 ) DMF (6 ml)

( : - - = 5:1:4) , 가 THF -  
 (480 mg, : 55%) : 247 - 248 .

220

2-[6-( )-7-( )-2-( )-4-( )-2H-( )-3-( )]-N-(4- -2- )

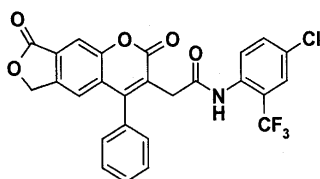


THF (5 ml) 2-[7- -6-( )-2-( )-4-( )-2H-( )-3-( )]-N-(4- -2-  
 ) (100 mg) - (100 mg) (4.5 atm)

7 . (27 mg, : 27%) . : 165 - 167 .

221

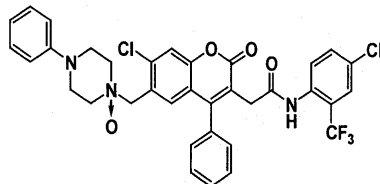
2-(2,8- -4- -6,8- -2H- [3,4-g] -3- )-N-[4- -2-( )]



( : 71%) 15 . : 253 - 254 (AcOEt - IPE).

222

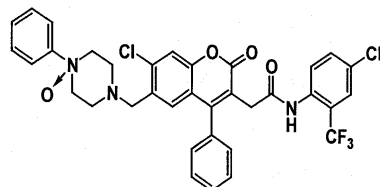
2 - [7 - - 6 - [(1 - - 4 - - 1 - ) ] - 2 - - 4 - - 2H - - 3 - ] - N - [4 -  
- 2 - ( ) ]



(5 ml) 2 - [7 - - 2 - - 4 - - 6 - [(4 - - 1 - ) ] - 2H - - 3 -  
] - N - [4 - - 2 - ( ) ] (1.0 g) mCPBA (0.41 g) , 3  
0 ( : - -  
= 85:15:1) , - (218  
mg, : 21%) . : 157 - 159 .

223

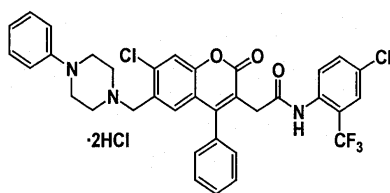
2 - [7 - - 6 - [(4 - - 4 - - 1 - ) ] - 2 - - 4 - - 2H - - 3 - ] - N - [4 -  
- 2 - ( ) ]



(5 ml) 2 - [7 - - 2 - - 4 - - 6 - [(4 - - 1 - ) ] - 2H - - 3 -  
] - N - [4 - - 2 - ( ) ] (1.0 g) mCPBA (0.41 g) , 3  
0 ( : - -  
= 85:15:1) 2 - [7 - - 6 - [(1 - - 4 - - 1 - ) ] ] - 2 - - 4 - - 2H  
- - 3 - ] - N - [4 - - 2 - ( ) ] ( 222) ,  
가 HPLC (CHIRALCEL OD, - = 8:2) (71 mg, :  
7%) . : 183 - 184 .

224

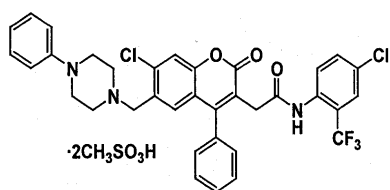
2-[7-(2-(4-(6-((4-(1-)))-2H-3-]-N-[4-2-(



THF (10 ml) 2-[6-( )-7-( )-2-( )-4-( )-2H-( )-3- ] (0.41 g)  
 DMF (1 ) (0.2 ml) , 1  
 (0.14 ml) , THF (5 ml) , THF (5 ml) 2- -4- 12  
 (60%, ) (44 mg) 0 가 . 1 N  
 , ,  
 )-7- -2- -4- -2H- -3- ]-N-(4- -2- ) DMF (10 ml) 2-[6-( )  
 1- - (0.166g) (0.285 g) , 80 30 .  
 (5 ml) , (120 ml) . (20 m  
 l) , (10 ml) THF (6 ml) , (0.26 ml)  
 , 20 (491 mg, : 70%)  
 : 238 - 239 .

225

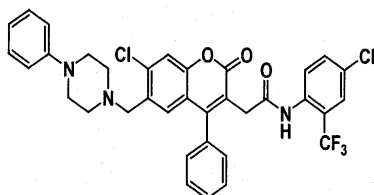
2-[7-(2-(4-(6-((4-(1-)))-2H-3-]-N-[4-2-(



( : 67%) 224 . : 198 - 204 (THF - EtOH).

226

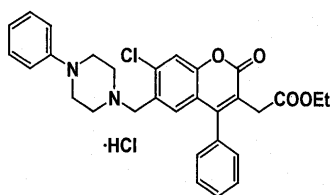
2-[7-(2-(4-(6-((4-(1-)))-2H-3-]-N-[4-2-(



THF (10 ml) 2 - [6 - ( ) - 7 - - 2 - - 4 - - 2H - - 3 - ] (0.41 g)  
 DMF (1 ) (0.2 ml) , 1  
 (0.14 ml) , THF (5 ml) , THF (5 ml) 2 - - 4 -  
 (66%, ) (44 mg) 0 가 . 12  
 , , 1 N  
 , ,  
 ) - 7 - - 2 - - 4 - - 2H - - 3 - ] - N - (4 - - 2 - ) DMF (10 ml) 2 - [6 - ( )  
 l - (0.166 g) , 80 30 , , (20 m  
 (5 ml) , (120 ml) .  
 l) (10 ml) THF (6 ml) (0.26 ml) ,  
 20 (10 ml) (10 ml)  
 (30 ml) , 20 , (20 ml)  
 (10 ml) THF (20 ml) ,  
 THF - (0.431 g, : 63  
 %) : 201 - 203 .

73

[7 - - 2 - - 4 - - 6 - [(4 - - 1 - ) ] - 2H - - 3 - ] .



(7 - - 6 - - 2 - - 4 - - 2H - - 3 - ) (100 g), N - (59.9  
 g) 2 - 2 ' - - 2,4 - (3.48 g) AcO <sup>t</sup>Bu (700 ml) , 80  
 2 (34.03 g) 25 10  
 가 , (45.47 g) 40 15 가 가 , 가  
 2 (500 ml) 15 가 , 가 (200 ml) 15  
 가 . 가 , 30 , 가 1  
 , 50% [7 - - 2 - - 4 - - 6 - [(4 -  
 - 1 - ) ] - 2H - - 3 - ] (100 g, : 69%) .

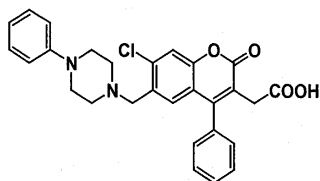


0 (70 g) (280 ml) AcC tBu (280 ml) (12.2 ml) 4  
 . 40 30 , 가 1  
 , 50% (72 g, : 96%)

NMR (CDCl<sub>3</sub>) δ: 1.23 (3H, t, J = 7 Hz), 3.20-3.50 (4H, m), 3.41 (2H, s), 3.50-3.65 (2H, m), 3.70-3.90 (2H, m), 4.14 (2H, q, J = 7 Hz), 4.20-4.35 (2H, m), 6.95-7.10 (3H, m), 7.20-7.40 (5H, m), 7.52 (1H, s), 7.50-7.65 (3H, m), 7.80-7.90 (1H, brs).

74

[7- -2- -4- -6- [(4- -1- ) ] -2H- -3- ]

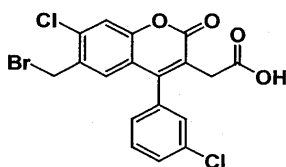


[7- -2- -4- -6- [(4- -1- ) ] -2H- -3- ]  
 (40 g) (120 ml) , 2 N (144.5 ml) . 70 1  
 (40 ml) 6 N (49.4 ml) 45 가  
 pH 5.5 6.0 40 . pH 가  
 35 40 15 , , 30  
 30% (34g, : 96%)

NMR (CDCl<sub>3</sub>) δ: 2.45-2.70 (2H, m), 2.90-3.25 (3H, m), 3.39 (2H, s), 3.40-3.85 (4H, m), 4.20-4.40 (2H, m), 6.80-7.00 (2H, m), 7.10-7.70 (10H, m).

75

[6- ( ) -7- -4- (3- ) -2- -2H- -3- ]

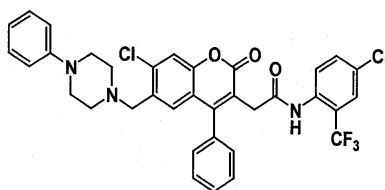


24

NMR (CDCl<sub>3</sub>) δ: 3.36 (1H, d, J = 17 Hz), 3.47 (1H, d, J = 17 Hz), 4.60 (2H, s), 7.07 (1H, s), 7.18 (1H, m), 7.28 (1H, m), 7.48 (1H, s), 7.55 (2H, m).

227

2-[7-(2-(4-(6-((4-(1-(75)))-2H-3-)]-N-[4-2-(

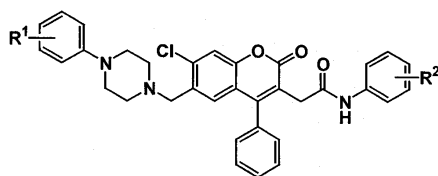


[7-(2-(4-(6-((4-(1-(75)))-2H-3-)]-N-[4-2-(500 g) THF (5 L) DMF (5 ml) (150 ml) 가 . 가 , 가 , 25 30 5 THF (5 L) 4-2-( (250 g) , 80 5 40 (5 L) (2.5 L) . 25% pH 7.6 , 15 20 30 (487 g, : 71%) . : 201 - 203 .

228 - 248

35 74

[ 35]



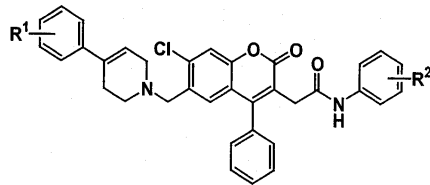
실시예 번호	R <sup>1</sup>	R <sup>2</sup>	수율 (%)	용융점 (°C) (체결정 용매)
228	4-Cl	2-CF <sub>3</sub> , 4-Cl	47	215-217 (AcOEt- Hexan)
229	4-Cl	2-CF <sub>3</sub> , 4-F	22	185-187 (THF-AcOEt)
230	3-Cl	2-CF <sub>3</sub> , 4-Cl	42	203-205 (AcOEt- Hexan)
231	3-Cl	2-CF <sub>3</sub> , 4-F	59	180-182 (THF-AcOEt)
232	4-F	2-CF <sub>3</sub> , 4-Cl	48	205-208 (AcOEt- Hexan)
233	4-F	2-CF <sub>3</sub> , 4-F	43	201-202 (THF-AcOEt)
234	3-F	2-CF <sub>3</sub> , 4-Cl	86	196-199 (THF-AcOEt)
235	3-F	2-CF <sub>3</sub> , 4-F	61	180-182 (THF-AcOEt)
236	3, 4-F <sub>2</sub>	2-CF <sub>3</sub> , 4-Cl	55	192-195 (THF-AcOEt)
237	3, 4-F <sub>2</sub>	2-CF <sub>3</sub> , 4-F	46	196-199 (THF-AcOEt)
238	3, 4-F <sub>2</sub>	2-Me, 4-Cl	55	203-206 (THF-AcOEt)
239	3-Me	2-CF <sub>3</sub> , 4-Cl	58	190-192 (THF-AcOEt)
240	3-Me	2-CF <sub>3</sub> , 4-F	49	168-170 (THF-AcOEt)
241	3-Me	2-Me, 4-Cl	67	235-238 (THF-AcOEt)
242	3, 4-(Me) <sub>2</sub>	2-CF <sub>3</sub> , 4-Cl	70	208-211 (THF-AcOEt)
243	3, 4-(Me) <sub>2</sub>	2-CF <sub>3</sub> , 4-F	77	186-187 (THF-AcOEt)
244	3-CF <sub>3</sub>	2-CF <sub>3</sub> , 4-Cl	41	183-186 (AcOEt- Hexan)
245	3-CF <sub>3</sub>	2-CF <sub>3</sub> , 4-F	62	198-201 (THF)
246	3-CF <sub>3</sub>	2-Me, 4-Cl	89	232-234 (THF)
247	2, 3, 5-(Me) <sub>3</sub> , 4-OH	2-CF <sub>3</sub> , 4-Cl	22	216-218 (THF-AcOEt)
248	2, 3, 5-(Me) <sub>3</sub> , 4-OH	2-CF <sub>3</sub> , 4-F	22	220-221 (THF-AcOEt)

249 - 268

36

74

[ 36]



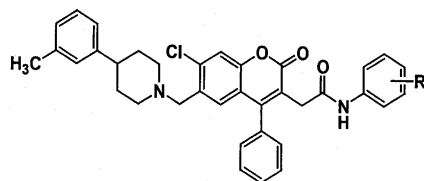
실시예 번호	R <sup>1</sup>	R <sup>2</sup>	수율 (%)	용융점 (°C) (재결정 용매)
249	H	2-Me, 4-Cl	66	213-216 (AcOEt-IPE)
250	H	2, 3, 4-F <sub>3</sub>	47	169-174 (AcOEt-IPE)
251	4-Cl	2-CF <sub>3</sub> , 4-Cl	49	194-197 (THF-AcOEt-헥산)
252	4-Cl	2-CF <sub>3</sub> , 4-F	49	178-184 (THF-AcOEt-헥산)
253	4-Cl	2-Me, 4-Cl	55	218-220 (THF-AcOEt-헥산)
254	3-Cl	2-CF <sub>3</sub> , 4-Cl	51	193-195 (AcOEt-헥산)
255	3-Cl	2-CF <sub>3</sub> , 4-F	37	170-174 (AcOEt-헥산)
256	3-Cl	2-Me, 4-Cl	41	199-200 (AcOEt-헥산)
257	3-F	2-CF <sub>3</sub> , 4-Cl	49	110-114 (AcOEt-헥산)
258	3-F	2-CF <sub>3</sub> , 4-F	40	184-187 (AcOEt-헥산)
259	3-F	2-Me, 4-Cl	52	211-217 (AcOEt-헥산)
260	4-Me	2-CF <sub>3</sub> , 4-Cl	56	217-222 (THF-AcOEt-헥산)
261	4-Me	2-CF <sub>3</sub> , 4-F	45	210-219 (THF-AcOEt-헥산)
262	4-Me	2-Me, 4-Cl	27	189-191 (THF-AcOEt-헥산)
263	3-Me	2-CF <sub>3</sub> , 4-Cl	47	183-188 (AcOEt-헥산)
264	3-Me	2-CF <sub>3</sub> , 4-F	37	134-135 (AcOEt-헥산)
265	3-Me	2-Me, 4-Cl	28	196-200 (AcOEt-헥산)
266	3-CF <sub>3</sub>	2-CF <sub>3</sub> , 4-Cl	10	194-196 (AcOEt)
267	3-CF <sub>3</sub>	2-CF <sub>3</sub> , 4-F	53	164-167 (AcOEt-헥산)
268	3-CF <sub>3</sub>	2-Me, 4-Cl	14	120 (decomp.) (AcOEt)

269 - 271

37

74

[ 37]



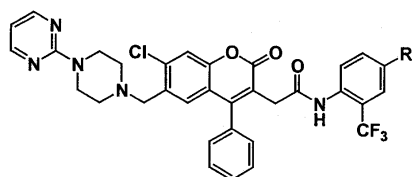
실시예 번호	R	수율 (%)	용융점 (°C) (재결정 용매)
269	2-CF <sub>3</sub> , 4-Cl	33	208-211 (AcOEt-헥산)
270	2-CF <sub>3</sub> , 4-F	37	182-184 (AcOEt-헥산)
271	2-Me, 4-Cl	34	177-180 (AcOEt-헥산)

272 - 273

38

74

[ 38]



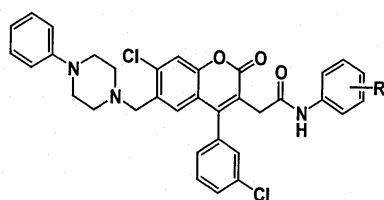
실시예 번호	R	수율 (%)	용융점 (°C) (재결정 용매)
272	Cl	52	214-217 (AcOEt-IPE)
273	F	55	203-205 (AcOEt-IPE)

274 - 276

39

74

[ 39]



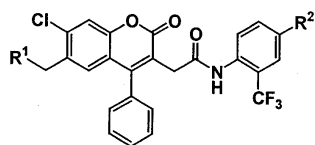
실시예 번호	R	수율 (%)	용융점 (°C) (재결정 용매)
274	2-CF <sub>3</sub> , Cl	4- 67	216-218 (THF-AcOEt)
275	2-CF <sub>3</sub> , F	4- 64	227-229 (THF-AcOEt)
276	2-Me, Cl	4- 73	240-242 (THF-AcOEt)

277 - 283

40

203

[ 40]



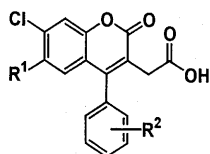
실시예 번호	R <sup>1</sup>	R <sup>2</sup>	수율 (%)	용융점 (°C) (재결정 용매)
277		Cl	64	227-230 (THF-AcOEt)
278		Cl	57	262-264 (THF-AcOEt)
279		F	24	212-215 (THF-AcOEt)
280		F	43	245-247 (THF-AcOEt)
281		Cl	72	254-256 (THF-AcOEt)
282		F	59	251-253 (THF-AcOEt)
283	CH <sub>3</sub> (CH <sub>2</sub> ) <sub>11</sub> S	Cl	6	120-122 (THF-AcOEt)

76 - 87

41

13

[ 41]



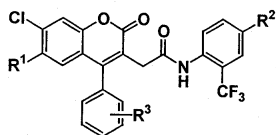
참고예 번호	R <sup>1</sup>	R <sup>2</sup>	수율 (%)	용융점 (°C) (재결정 용매)
76	Me	3-Me	80	250-253 (AcOEt)
77	Me	3,5-Me <sub>2</sub>	61	228-230 (AcOEt-IPE)
78	Me	4-F	80	253-257 (AcOEt)
79	Me	4-Cl	87	238-241 (AcOEt)
80	Me	3-Cl, 4-F	88	258 (decomp.) (AcOEt)
81	Me	3,4-F <sub>2</sub>	77	262-264 (AcOEt)
82	Me	3-Br	93	270 (decomp.) (AcOEt)
83	Me	4-OCF <sub>3</sub>	93	183-186 (AcOEt)
84	Me	3-OCF <sub>3</sub>	71	187-191 (AcOEt)
85	F	H	92	209-210 (AcOEt-헥산)
86	F	3-Cl	77	213-215 (IPE-헥산)
87	Me	3-NO <sub>2</sub>	74	260 (decomp.) (AcOEt)

284 - 307

44

15

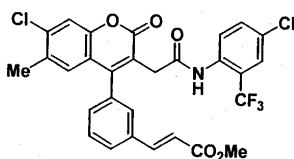
[ 44 ]



실시예 번호	R <sup>1</sup>	R <sup>2</sup>	R <sup>3</sup>	수율 (%)	용융점 (°C) (재결정 용매)
284	Me	Cl	3-Me	85	235-237 (THF-AcOEt)
285	Me	F	3-Me	67	218-220 (THF-AcOEt)
286	Me	Cl	3, 5- (Me) <sub>2</sub>	65	266-267 (THF)
287	Me	F	3, 5- (Me) <sub>2</sub>	68	274-275 (THF)
288	Me	Cl	4-Cl	80	284-286 (THF-AcOEt)
289	Me	F	4-Cl	77	272-273 (THF-AcOEt)
290	Me	Cl	4-F	73	272-273 (THF-AcOEt)
291	Me	F	4-F	70	271-272 (THF-AcOEt)
292	Me	Cl	3-Cl, 4-F	83	240-241 (THF-AcOEt)
293	Me	F	3-Cl, 4-F	86	230-231 (THF-AcOEt)
294	Me	Cl	3, 4-F <sub>2</sub>	69	248-251 (THF-AcOEt)
295	Me	F	3, 4-F <sub>2</sub>	71	253-255 (THF-AcOEt)
296	Me	Cl	3-Br	81	221-222 (THF-AcOEt)
297	Me	F	3-Br	80	222-223 (THF-AcOEt)
298	Me	Cl	4-OCF <sub>3</sub>	76	239-241 (THF-AcOEt)
299	Me	F	4-OCF <sub>3</sub>	70	239-240 (THF-AcOEt)
300	Me	Cl	3-OCF <sub>3</sub>	40	171-175 (THF-AcOEt)
301	Me	F	3-OCF <sub>3</sub>	51	166-169 (THF-AcOEt)
302	Me	Cl	3-NO <sub>2</sub>	80	234-236 (THF-AcOEt)
303	Me	F	3-NO <sub>2</sub>	80	235-238 (THF-AcOEt)
304	F	Cl	H	63	199-203 (AcOEt-헥산)
305	F	F	H	68	204-206 (AcOEt-헥산)
306	F	Cl	3-Cl	67	200-201 (AcOEt-헥산)
307	F	F	3-Cl	77	206-207 (AcOEt-헥산)

308

(2E) - 3 - { 3 - 7 -      - 3 - ( 2 - [ [ 4 -      - 2 - (      )      ]      ] - 2 -      ) - 6 -      - 2 -  
 -      - 2H -      - 4 -      ]      ] - 2 -

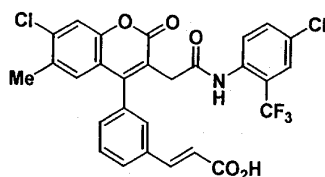


DMF (5 ml) 2-[4-(3-(5-chloro-2-methyl-4-(2-(4-chloro-3-(trifluoromethyl)phenyl)phenyl)phenyl)phenyl)phenyl)acetic acid (500 mg) (10 mg), 120, 3 가 . (0.14 ml), (0.21 ml), p d(OAc)<sub>2</sub> (5 ml) ( : =2:1), THF - (333 mg, : 67%) . : 202

- 204 .

309

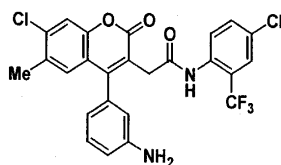
(2E)-3-[3-[7-(2-(4-chloro-3-(trifluoromethyl)phenyl)phenyl)phenyl)phenyl]acetic acid (200 mg)



(5 ml) THF (2 ml) (2E)-3-[3-[7-(2-(4-chloro-3-(trifluoromethyl)phenyl)phenyl)phenyl)phenyl]acetic acid (200 mg) 1 N (3 ml), 4 . 1 N (10 ml) 가 , THF - (137 mg, : 70%) . : 191 - 194 .

310

2-[4-(3-(5-chloro-2-methyl-4-(2-(4-chloro-3-(trifluoromethyl)phenyl)phenyl)phenyl)phenyl)phenyl]acetic acid (300 mg) (50 mg), ( : =2:1), THF - (166 mg, : 59%) . : 206 - 207



(2 ml) THF (5 ml) 2-[7-(2-(4-chloro-3-(trifluoromethyl)phenyl)phenyl)phenyl]acetic acid (300 mg) (50 mg), ( : =2:1), THF - (166 mg, : 59%) . : 206 - 207

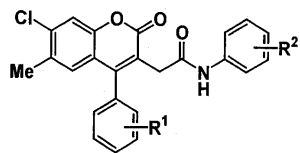


311 - 316

43

1

[ 43]



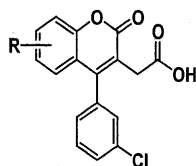
실시예 번호	R <sup>1</sup>	R <sup>2</sup>	수율 (%)	용융점 (°C) (재결정 용매)
311	3-Cl	3, 5-(CF <sub>3</sub> ) <sub>2</sub>	72	236-237 (THF-AcOEt)
312	3-Cl	2, 5-(CF <sub>3</sub> ) <sub>2</sub>	64	242-244 (THF-AcOEt)
313	3, 5-(Me) <sub>2</sub>	2-Me, 4-Cl	64	275-276 (THF)
314	Me	2, 3, 5-(Me) <sub>3</sub> , 4-OH	49	150-151 (THF-AcOEt)
315	Me	2, 3, 5-(Me) <sub>3</sub> , 4-OH	70	173-176 (THF-AcOEt)
316	Me	2, 3, 5-(Me) <sub>3</sub> , 4-OH	73	248 (decomp.) (THF-IPE)

88 - 93

44

13

[ 44]



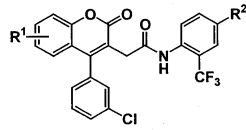
참고예 번호	R	수율 (%)	용융점 (°C) (재결정 용매)
88	7-Cl	83	178-181 (AcOEt-IPE)
89	6-OMe, 7-Cl	86	226-229 (AcOH-H <sub>2</sub> O)
90	6, 7-Me <sub>2</sub>	90	213-215 (AcOH)
91	6-Cl, 7-Me	85	218-220 (AcOH)
92	6, 7-Cl <sub>2</sub>	79	231-233 (AcOH)
93	6, 7-F <sub>2</sub>	80	199-201 (AcOH)

317 - 328

45

15

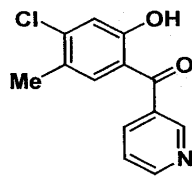
[ 45]



실시예 번호	R <sup>1</sup>	R <sup>2</sup>	수율 (%)	용융점 (°C) (재결정 용매)
317	7-Cl	Cl	70	160-164 (AcOEt-헥산)
318	7-Cl	F	61	170-175 (AcOEt-헥산)
319	6-OMe, 7-Cl	Cl	78	209-211 (AcOEt-헥산)
320	6-OMe, 7-Cl	F	78	202-206 (AcOEt-헥산)
321	6,7-Me <sub>2</sub>	Cl	76	206-208 (AcOEt-헥산)
322	6,7-Me <sub>2</sub>	F	76	200-202 (AcOEt-헥산)
323	6-Cl, 7-Me	Cl	82	222-225 (AcOEt-헥산)
324	6-Cl, 7-Me	F	85	196-199 (AcOEt-헥산)
325	6,7-Cl <sub>2</sub>	Cl	82	213-215 (AcOEt-헥산)
326	6,7-Cl <sub>2</sub>	F	87	222-224 (AcOEt-헥산)
327	6,7-F <sub>2</sub>	Cl	85	192-194 (AcOEt-헥산)
328	6,7-F <sub>2</sub>	F	70	176-178 (AcOEt-헥산)

94

(4 - - 2 - - 5 - ) ( - 3 - )

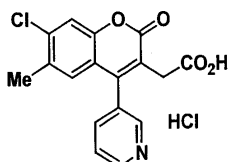


THF (50 ml) 3 - (2.2 g) THF 1 - - 4 - - 2 - - 5 -  
 (5.0 g) (0.8 g) (50 ml) 0 가 , 1  
 (150 ml) (15 g) , Deen Stark 1 가  
 (50 ml) BBr<sub>3</sub>/ (60 ml) 1 N 가  
 가 , 가  
 ( : ) (2.  
 4 g)

NMR (CDCl<sub>3</sub>)  $\delta$ : 2.28 (3H, s), 7.14 (1H, s), 7.37 (1H, s),  
7.50 (1H, dd, J = 8 Hz, 4 Hz), 8.00 (1H, m), 8.84 (1H, dd,  
J=4Hz, 2H), 8.90 (1H, d, J=2 Hz), 11.75 (1H, s).

95

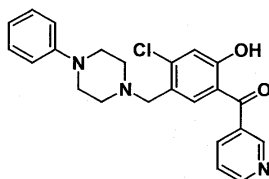
(7 - -6 - -2 - -4 - -3 - -2H - -3 - ) .



( : 67%) 13 . : 279 - 281 ( )

96

[4 - -2 - -5 - [(4 - -1 - ) ] ] ( -3 - )

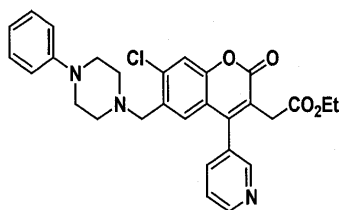


( : 63%) 93 .

NMR (CDCl<sub>3</sub>)  $\delta$ : 2.65 (4H, t, J = 5 Hz), 3.14 (4H, t, J = 5  
Hz), 3.59 (2H, s), 6.80-9.00 (12H, m).

97

[7 - -2 - -6 - [(4 - -1 - ) ] -4 - -3 - -2H - -3 - ]



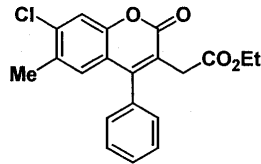
( : 22% )

21

: 153 - 157 (

98

[7 - -6 - -2 - ] -4 - -3 - -2H - -3 - ] ( 21 )



(4 - -2 - -5 - ) ( ) (130 g) (325 ml) , DBU (21  
 7 g) . 40 가 , (234 ml) ( )  
 147 g) 40 45 가 , 40 45  
 30 , 40 30 , 가 0  
 5 1 , , CH<sub>3</sub>CN - H<sub>2</sub>O  
 =3:2 (140 g, : 74%)

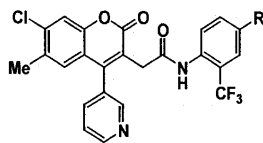
NMR (CDCl<sub>3</sub>) δ: 1.23 (3H, t, J=7 Hz), 2.28 (2H, s), 3.36 (2H, s), 4.13 (2H, t, J=7 Hz), 6.84 (1H, s), 7.20-7.35 (2H, m), 7.41 (1H, s), 7.45-7.60 (3H, m).

329 - 330

46

15

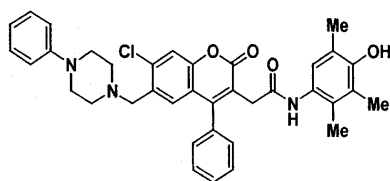
[ 46]



실시예 번호	R	수율 (%)	용융점(°C) (재결정 용매)
329	Cl	64	212-215 (THF-AcOEt)
330	F	53	213-215 (THF-AcOEt)

331

2-[7-(2-(4-(6-((4-(1-( ) )]-2H)-3-]-N-(4-2,3,5-)))]

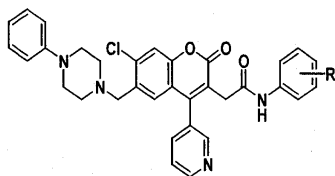


DMF (2ml) 2-[7-(2-(4-(6-((4-(1-( ) )]-2H)-3-]-N-(4-2,3,5-)))] (200 mg) 4-(2,3,6- (68 mg), 1-(3-(3-)) (118 mg) 1-(83 mg), ( : - =1:1) , 가 (84 mg, :33%) . : 193 (decomp.).

332 - 333

47 331

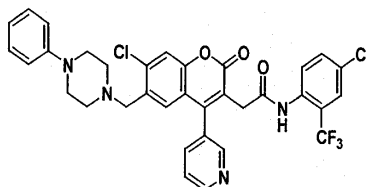
[ 47]



실시예 번호	R	수율 (%)	용융점 (°C) (재결정 용매)
332	2-Me, 4-Cl	20	290-292 (AcOEt-IPE)
333	2,3,5-(Me) <sub>3</sub> , 4-OH	36	242-246 (AcOEt-IPE)

334

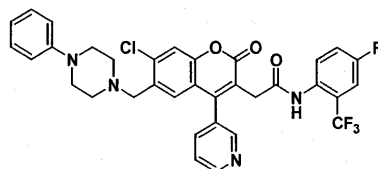
2-[7-(2-(6-((4-(1-( ) )]-4-(3-))-2H)-3-]-N-[4-2-( )])]



(10 ml) 7- (500 mg, 0.97 mmol) -2- -6- [(4- -1- ) ] -4- (3- ) -2H-  
 -3- ] 1 N (3 ml) 2N (1.5 ml) ,가 , 70  
 50 mg) THF (5 ml), DMF (1 ) (0.22 ml) , 2 (3  
 1 mmol) , 80 15 THF (15 ml) 2- -5- (0.38 ml, 2.  
 , 가 ( : - =1:1)  
 : 214 - 216 . (102 mg, : 21%)

335

2- [7- -2- -6- [(4- -1- ) ] -4- (3- ) -2H- -3- ] -N- [4-  
 -2- ( ) ]



( : 21%) )

334

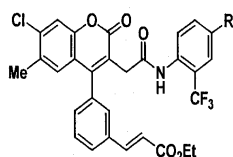
: 202 - 205 . ( -

336 - 337

48

308

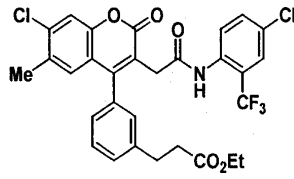
[ 48]



실시에 번호	R	수율 (%)	용융점 (°C) (재결정 용매)
336	Cl	64	118 (decomp.) (AcOEt)
337	F	39	193-196 (AcOEt)

338

3 - [3 - [7 - 2H - 4 - ] - 2 - ] - 3 - (2 - [[4 - 2 - ( ) ] - 2 - ] - 6 - - 2 -

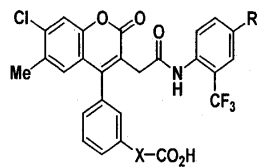


(5 ml) THF (2 ml) (2E) - 3 - [3 - [7 - 2H - 4 - ] - 2 - ] - 3 - (2 - [[4 - 2 - ( ) ] - 2 - ] - 6 - - 2 - (138 mg)  
 ( 100 mg) , 4 ( : - =2:1)  
 (131 mg, : 95%)  
 : 116 (decomp.).

339 340

49 309

[ 49]



실시예 번호	R	X	수율 (%)	용융점 (°C) (재결정 용매)
339	F	CH=CH	80	260-262 (AcOEt)
340	Cl	CH <sub>2</sub> -CH <sub>2</sub>	89	170-172 (AcOEt)

, A, B C

A : 2 - [6 - 2 - 4 - (2 - ) - 2H - 3 - ] - N - (2,6 - )

;

B : N - (2,6 - ) - N' - [3 - (2 - ) - 6,7 - 5H - [5,6 - b] - 2 - ]

;

C : N - (4 - 2 - ) - 2 - (2 - 4 - - 2,6,7, 8 - ) [g  
 - 3 - )

]

(involuting agent) [I], [II], [III], [IV], [V] [VI]

1.

(1) A 10 mg

(2) 90 mg

(3) 70 mg

(4) 10 mg

1 180 mg

(1), (2) (3) (4) 1/2 (4) 가 ,

2.

(1) A 10 mg

(2) 35 mg

(3) 150 mg

(4) 30 mg

(5) 5 mg

1 230 mg

(1), (2), (3), (4) 2/3 (5) 1/2 , (4) (5) 가

3.

(1) A 10 mg

(2) 100 mg

(3) 20 mg

1 130 mg

(1), (2) (3) 2 ml ,



4.

(1) B 10 mg

(2) 90 mg

(3) 70 mg

(4) 10 mg

1 180 mg

(1), (2) (3) (4) 1/2 . (4) 가 ,

5.

(1) B 10 mg

(2) 35 mg

(3) 150 mg

(4) 30 mg

(5) 5 mg

1 230 mg

(1), (2), (3), (4) 2/3 (5) 1/2 . , (4) (5) 가

6.

(1) B 10 mg

(2) 100 mg

(3) 20 mg

1 130 mg

(1), (2) (3) 2 ml , .

7.

(1) C 10 mg

(2) 90 mg

(3) 70 mg

(4) 10 mg

1 180 mg

(1), (2) (3) (4) 1/2 . , (4) 가 ,

8.

(1) C 10 mg

(2) 35 mg

(3) 150 mg

(4) 30 mg

(5) 5 mg

1 230 mg

(1), (2), (3), (4) 2/3 (5) 1/2 . , (4) (5) 가 ,

9.

(1) C 10 mg

(2) 100 mg

(3) 20 mg

1 130 mg

(1), (2) (3) 2 ml , .

10.

(1) C 10 mg

(2) 90 mg

(3) 70 mg

(4) 10 mg

1 180 mg

(1), (2) (3) (4) 1/2 . , (4) 가 ,

11.

(1) C 10 mg

(2) 35 mg

(3) 150 mg

(4) 30 mg

(5) 5 mg

1 230 mg

(1), (2), (3), (4) 2/3 (5) 1/2 . , (4) (5) 가 ,

12.

(1) C 10 mg

(2) 90 mg

(3) 70 mg

(4) 10 mg

1 180 mg

(1), (2) (3) (4) 1/2 . , (4) 가 ,

13.

(1) B 10 mg

(2) 35 mg

(3) 150 mg

(4) 30 mg

(5) 5 mg

1 230 mg

(1), (2), (3) (4) 2/3 (5) 1/2 . , (4) (5) 가

14.

(1) B 10 mg

(2) 90 mg

(3) 70 mg

(4) 10 mg

1 180 mg

(1), (2) (3) (4) 1/2 . , (4) 가 ,

15.

(1) A 10 mg

(2) 35 mg

(3) 150 mg

(4) 30 mg

(5) 5 mg

1 230 mg

(1), (2), (3), (4) 2/3 (5) 1/2 . , (4) (5) 가

16.

, 175 g C, 175 g D - , 118.65 g 105 g  
 (Model FM - VG - 10, Powrex) , 19.25 g  
 가 ( : 400 rpm, 10 ).  
 (FD - 3S, Powrex) 60 30 (model P - 3S, SH  
 OWAKAGAKU KIKAI KOSAKUSHO) 1.5 mm . 525.14 g ,  
 31 g 가 , (model TM - 15, SHOWAKAGA  
 KU KIKAI KOSAKUSHO) 5 0.7 ton/cm<sup>2</sup> 8.0 mm  
 (edged plain mallet) (Correct 19K, KIKUSUI SEISAKUSHO) 18mg  
 , 2,350 .

C 50 mg

D - 50 mg

33.9 mg

40 mg

5.5 mg

0.6 mg

180.0 mg ( )

17. A

75 0.4 g

1.4 g

0.2 g

2.0 g

75 (0.4 g) (24 ml) (16 ml) , , (0.  
 (HP - SO, SHINETSUKAGAKU, 1.4 g) 가 . , (0.  
 2 g) 가 , (YAMATO KAGAKU)  
 14 75 (1.4 g)

18. B

75 0.6 g

1.2 g

0.2 g

2.0 g

75 (0.6 g) (24 ml) (16 ml) , ,  
 (HP - 50, SHINETSUKAGAKU, 1.2 g) 가 . ,  
 (0.2 g) 가 , (YAMATO KAGAKU)  
 14 75 (1.4 g)

19.

(1) A 50 mg

(2) 34 mg

- (3) 10.6 mg
- (4) ( ) 5 mg
- (5) 0.4 mg
- (6) 20 mg

120 mg

B , (1) (6) , A

[I], [II], [III], [IV], [V] [VI]

1

[ ] apoE 1.25% CE - 2 ( , NIPPON CLEA) CE - 2 ( = 8) A CE - 2 ( = 8) 9 12 12 O (Sigma Aldrich Japan) (GT - 6000, EPSON) 2 -  
 , Nikkor (NIKON) ,  
 , Adobe Photoshop , 2 -

2 - NIH (National Institute of Health) ,  
 %

[ ] 9 ( ) 31% ,  
 A (27 mg/kg/ ) 15% 가 ,  
 (p < 0.01, )

2

[ ] apoE KO 1.25% CE - 2 ( , NIPPON CLEA) B  
 (0.5% : 30mg/kg/ ) CE - 2 ,  
 12 ,  
 O (Sigma Aldrich Japan) , 1 ,  
 % Hara Radin ( , Anal. Biochem., 90:420 - 426, 1978)  
 , , O :

(3:2) , TESIT: (1:1)  
 C , WAKO) ( C , WAKO)  
 (CE) (wet)  
 0  
 ( 0 )

[ ]

50

[ 50]

[ 1]

	(n=8)	B (n=4)
%	22.6 ± 3.0	16.9 ± 1.6
(µg/mg)	9.42 ± 0.66	4.76 ± 0.46**
n: ** : P < 0.05% (Dunnett )		

apoE KO 8 , 4 % 22.  
 6 % , 9.42 µg/ml ( ) , 8 , 4  
 B (30 mg/kg/ ) , 16.9 % ,  
 4.76 µg/ml ,  
 3

[ ] E 가 6 ( ,  
 apoE KO ) 1.25% CE - 2 ( , NIPPON CLEA)  
 8 , 9 12 , CE - 2 , C  
 (0.5% : 10mg/kg/ ) . CE - 2 .  
 12 ,  
 O (Sigma Aldrich Japan) , 1 ,  
 % ,  
 2 ,

[ ] 51 .

[ 51]

[ 2 ]

	(n=10)	B (n=10)
%	31.2 ± 1.6	23.3 ± 1.8*
(µg/mg)	6.83 ± 0.42	5.30 ± 0.37
n: **:P < 0.05%(Dunnett )		

apoE KO 8 , 4 % 31.  
 2 % , 6.83 µg/ml ( ). , 8 ,  
 4 B (30 mg/kg/ ) , 23.3 % ,  
 5.30 µg/ml , .

가

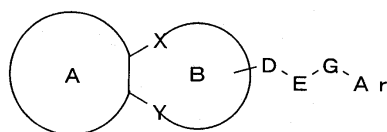
I, II, III, IV, V VI , , .

(57)

1.

I :

[ I ]



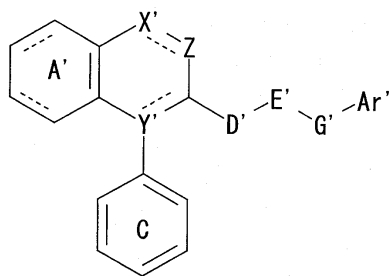
[ , A (homocyclic) ; X Y (heterocyclic) ; B 5-  
 6- ; X Y -NR<sup>1</sup> - ( , R<sup>1</sup> ,  
 ), -O-, -S-, -CO-, -CS-, -C(R<sup>2</sup>)  
 R<sup>2a</sup> - ( , R<sup>2</sup> R<sup>2a</sup> , ,  
 CR<sup>3</sup> - ( , R<sup>3</sup> , ,  
 ) ; D C<sub>1-3</sub> , -NH  
 -CH<sub>2</sub>NH- ; E -NR<sup>4</sup> - ( , R<sup>4</sup> ,  
 (n 0, 1 2 ) -CONR<sup>5</sup> - ( , R<sup>5</sup> ,  
 ) ; G  
 C<sub>1-3</sub> ; Ar , D가 B ,  
 5- 7- , R<sup>4</sup>가 B  
 , 5- 7- , B -D-E-G-  
 Ar 가 가 ] .

2.

1 , II :

[ II ]



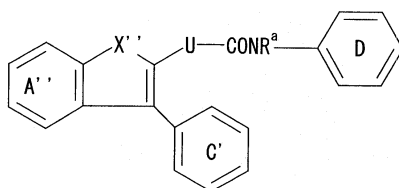


[ , A' 6- ; C ; X' Z  
 -NR<sup>1'</sup> - ( , R<sup>1'</sup> ) , -O- -S- ,  
 ) , -CO-, -CS- -C(R<sup>2'</sup>)R<sup>2a'</sup> - ( , R<sup>2'</sup> R<sup>2a'</sup>  
 ) ;  
 ) ; Y' , Y' -CR<sup>6</sup> ( , R<sup>6</sup>  
 ; D' )  
 ) , -O- -S(0)<sub>n</sub> - ( , n 0, 1 2 ) ; E' -NR<sup>7</sup> - ( , R<sup>7</sup>  
 ; Ar' ) , D' Z C<sub>1-3</sub>  
 5- 5- 7- , R<sup>7</sup> Z ,  
 7- ] .

3.

1 , III :

[ III]

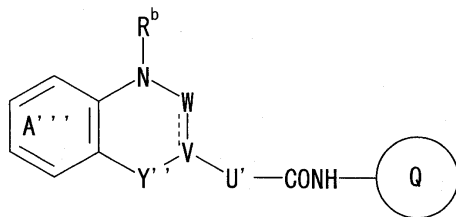


[ , A'' , C' D  
 ) , -O- -S- , U - (CH<sub>2</sub>)<sub>m</sub> - ( , m 1 2 ) -NH- , R<sup>8</sup>  
 a ] .

4.

1 , IV :

[ IV]

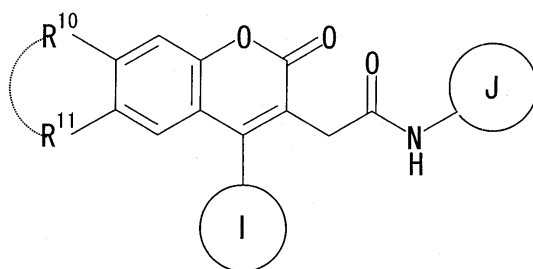


[ , A'' , Q , W , Y'' , U' , R^b ]  
 - , V -CH- -N- , W V가 ( ) , U' -NH- , -CH<sub>2</sub>- -CH<sub>2</sub>NH- , R^b  
 S- -NR<sup>9</sup>( , R<sup>9</sup> ) , W -CH<sub>2</sub>-, -CO- -CS  
 , Y'' -CH<sub>2</sub>-, -O-, -S-, -CO-, -C  
 ] .

5.

1 , V :

[ V]



[ , R<sup>10</sup> R<sup>11</sup> , 가 , I ]  
 , J ] .

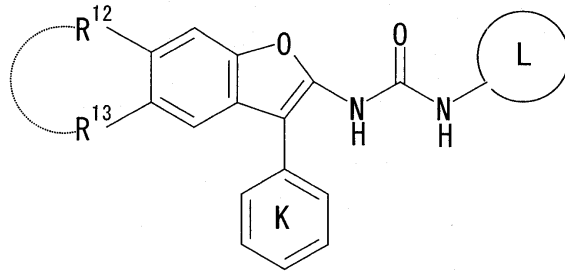
6.

5 , R<sup>10</sup> R<sup>11</sup> , 가 .

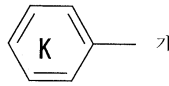
7.

1 , VI :

[ VI]



[ , R<sup>12</sup> R<sup>13</sup> , 가



, L ].

8.

1 ,

9.

1 ,

10.

1 ,

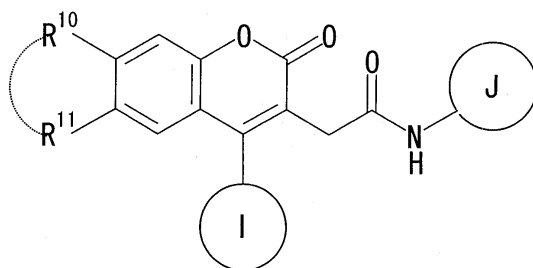
11.

1 ,

12.

V :

[ VI]



[ , R<sup>10</sup> R<sup>11</sup> , , 가 , I , , R<sup>10</sup> , R<sup>11</sup> , J ] .

13.

12 , R<sup>10</sup> R<sup>11</sup> , , 가 .

14.

12 , R<sup>10</sup> R<sup>11</sup> C<sub>1-7</sub> .

15.

12 , 가 C<sub>5-7</sub> .

16.

12 , J가 / .

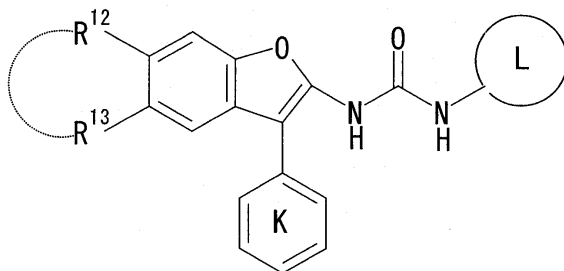
17.

12 , I가 , .

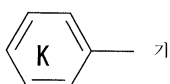
18.

VI :

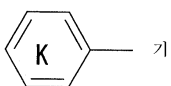
[ VI]



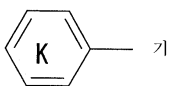
[ , R<sup>12</sup> R<sup>13</sup> , , 가



( , 2- 2- ), L  
, ,



가 , R<sup>13</sup> 가 ,



가 2- , R<sup>13</sup> 가 ].

19.

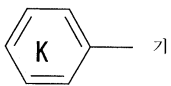
18 , R<sup>12</sup> R<sup>13</sup> C<sub>1-3</sub> .

20.

18 , 가 C<sub>5-7</sub> .

21.

18 ,



가 C<sub>1-3</sub> .

22.

18 , L .

23.

2 - [ 7 - 4 - ( 3 - ) - 6 - 2 - 2H - 3 - ] - N - [ 4 - 2 - ( ) ] ;

2 - [ 7 - 4 - ( 3 - ) - 6 - 2 - 2H - 3 - ] - N - [ 4 - 2 - ( ) ] ;

2 - [ 7 - 4 - ( 3 - ) - 6 - 2 - 2H - 3 - ] - N - [ 4 - 2 - ( ) ] ;

- 2-[7- -4-(3- -4- )-6- -2- -2H- -3- ]-N-[4- -2-(
- 2-[7- -6- -4-(3- )-2- -2H- -3- ]-N-[4- -2-(
- 2-[7- -6- -4-(3- )-2- -2H- -3- ]-N-[4- -2-(
- 2-[7- -2- -4- -6-[(4- -1- ) ]-2H- -3- ]-N-[4- -2-(
- 2-[7- -2- -4- -6-[(4- -1- ) ]-2H- -3- ]-N-[4- -2-
- 2-[7- -6-[[4-(4- )-3,6- -1(2H)- ] ]-2- -4- -2H- -
- 2-[7- -6-[[4-(4- )-3,6- -1(2H)- ] ]-2- -4- -2H- -
- 2-[7- -6-[[4-(3- ) -1- ] ]-2- -4- -2H- -3- ]-N-[4-
- 2-[7- -6-[[4-(3- ) -1- ] ]-2- -4- -2H- -3- ]-N-[4-

24.

12 , 18 23 (prodrug).

25.

12 , 18 23 .

26.

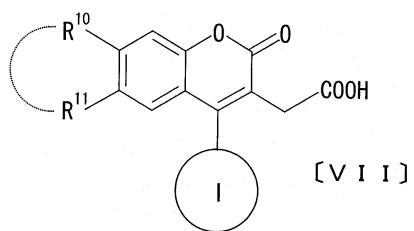
27.

26 , HMG - CoA .

28.

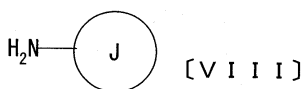
VII VIII  
 , 12 :

[ VII]



[ , 12 ]

[ VIII]



[ , 12 ].

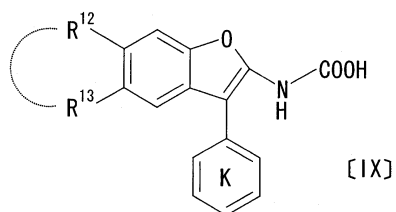
29.

IX  
, 18

X

:

[ IX]



[ , 18 ]

[ X]



[ , 18 ].

30.

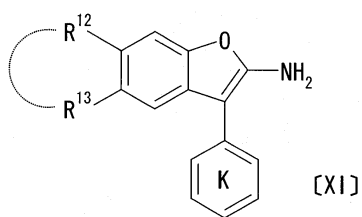
XI

XII

, 18

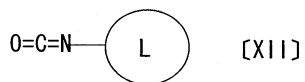
:

[ XI]



[ , 18 ]

[ XII]



[ , 18 ]

31.

1

32.

1

33.

1

34.

1

35.

1



- 36.  
12 . ,
- 37.  
18 . ,
- 38.  
 , 1 .
- 39.  
 , 1 .
- 40.  
 , 1 .
- 41.  
 , 1 .
- 42.  
 , 1 .
- 43.  
 , 12 , .
- 44.  
 , 18 , .