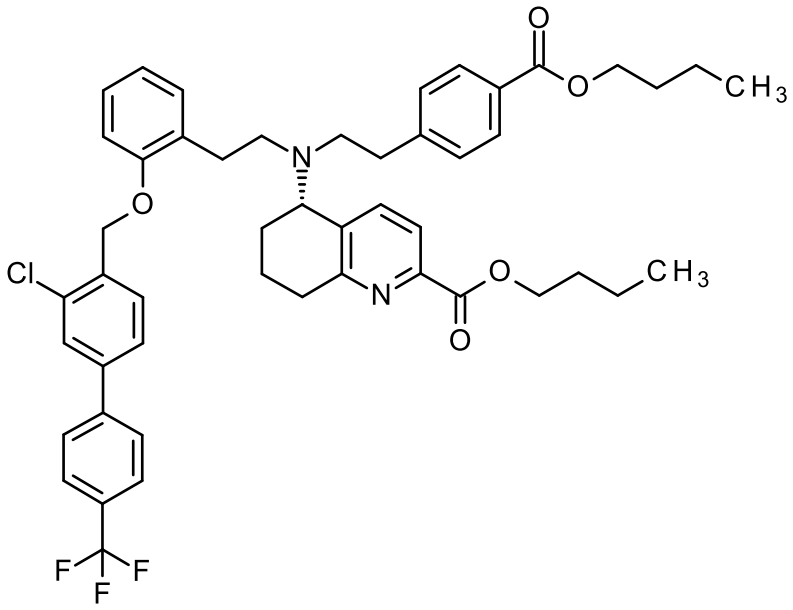
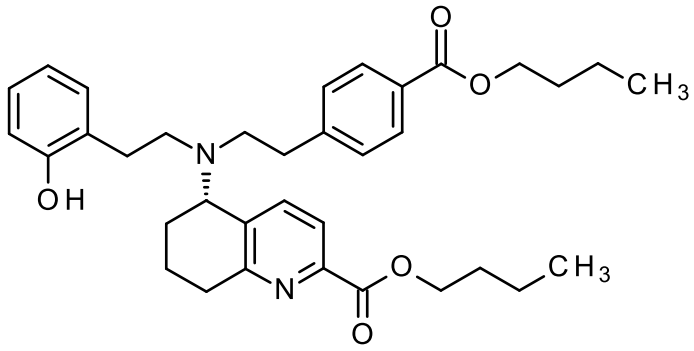
Claims

1. Process for preparing the compound of the formula (XII)



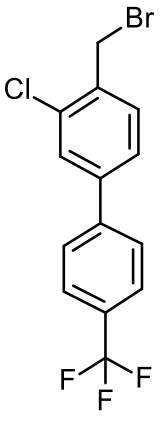
(XII),

characterized in that the compound of the formula (X)



(X)

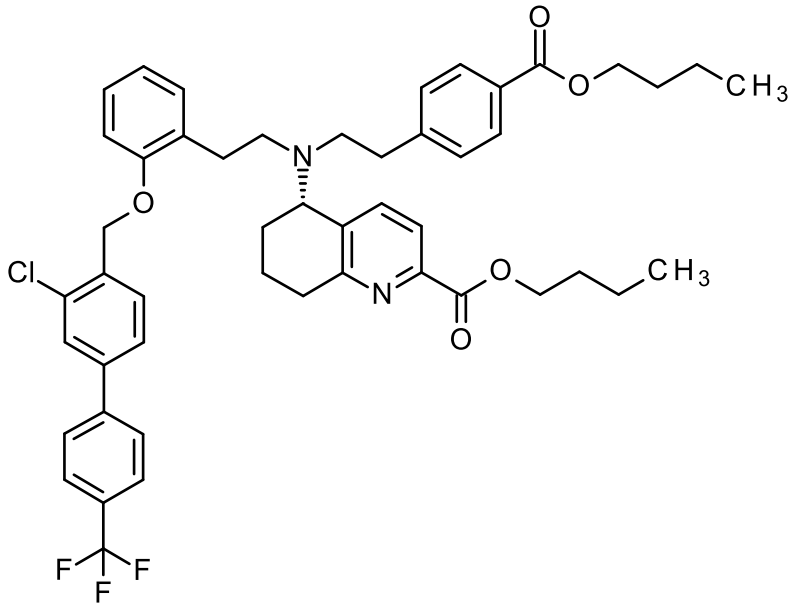
in the presence of an alkali metal carbonate, alkali metal hydroxide or tetraalkylammonium carbonate is reacted with the compound of the formula (XI)



(XI).

2. Process for preparing the compound of the formula (XII) according to Claim 1, wherein the alkali metal carbonate is caesium carbonate.

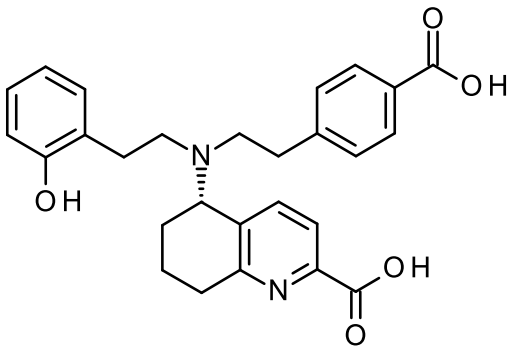
3. Butyl (5S)-5-({2-[4-(butoxycarbonyl)phenyl]ethyl}[2-(2-{[3-chloro-4'-(trifluoromethyl)[biphenyl]-4-yl]methoxy}phenyl)ethyl]amino)-5,6,7,8-tetrahydroquinoline-2-carboxylate of the formula (XII)



(XII)

and the salts thereof.

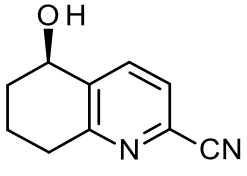
4. Process for preparing the compound of the formula (X), characterized in that the compound of the formula (IX)



(IX)

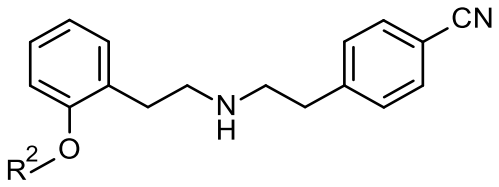
is reacted with butanol in the presence of a mineral acid.

5. Process for preparing the compound of the formula (X), characterized in that, in a first step at a temperature of -90°C to -50°C, it is added to the compound of the formula (III)



(III)

in the presence of a base selected from a list consisting of sterically hindered secondary amines and 2,6-disubstituted pyridines, trifluoromethanesulfonic anhydride, and in a second step is reacted at a temperature of -90°C to -50°C with the compound of the formula (XIV-1)



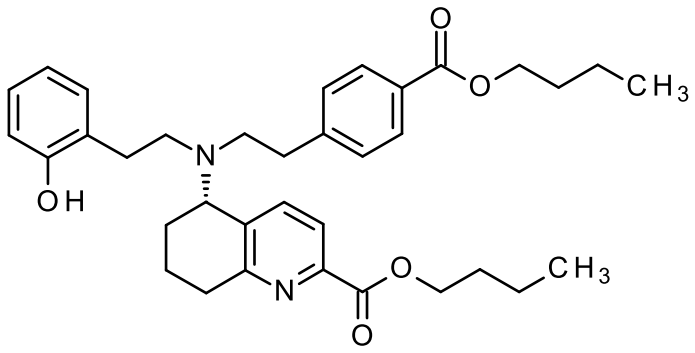
(XIV-1)

where

R^2 is a silyl protecting group,

in a third step the reaction product is reacted with hydrochloric acid, and in a fourth step the reaction product is reacted with butanol in the presence of a mineral acid.

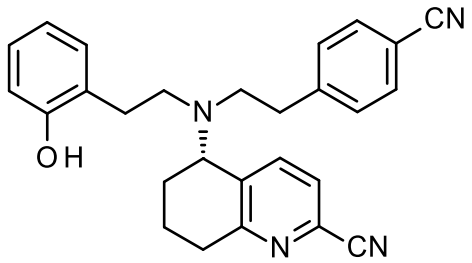
6. Butyl (5S)-5-({2-[4-(butoxycarbonyl)phenyl]ethyl}[2-(2-hydroxyphenyl)ethyl]amino)-5,6,7,8-tetrahydroquinoline-2-carboxylate of the formula (X)



(X)

and the salts thereof.

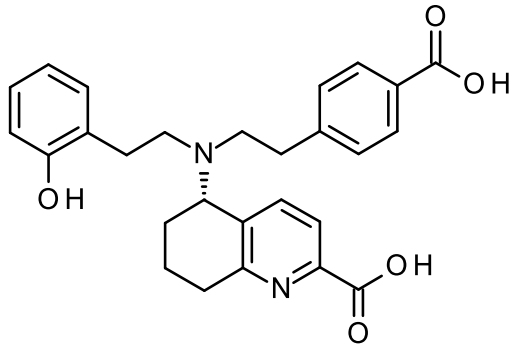
7. Process for preparing the compound of the formula (IX), characterized in that the compound of the formula (XVI)



(XVI)

is reacted with a mineral acid.

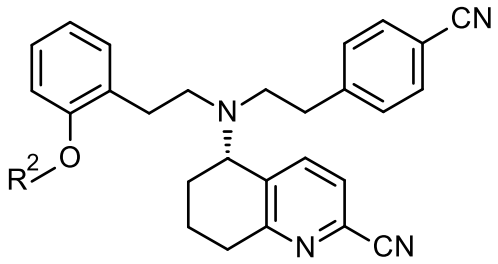
8. (5S)-5-{[2-(4-Carboxyphenyl)ethyl][2-(2-hydroxyphenyl)ethyl]amino}-5,6,7,8-tetrahydroquinoline-2-carboxylic acid of the formula (IX)



(IX)

and the salts thereof.

9. Process for preparing the compound of the formula (XVI), characterized in that the compound of the formula (XV-1)



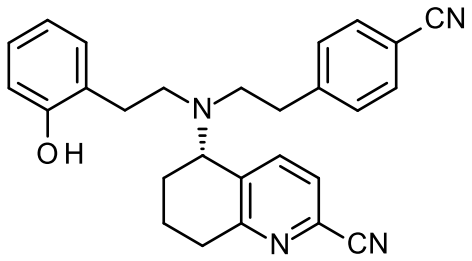
(XV-1)

where

R^2 is a silyl protecting group

is reacted with a mineral acid.

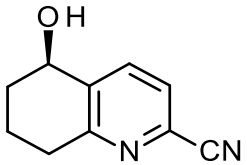
10. (5S)-5-{[2-(4-Cyanophenyl)ethyl][2-(2-hydroxyphenyl)ethyl]amino}-5,6,7,8-tetrahydroquinoline-2-carbonitrile of the formula (XVI)



(XVI)

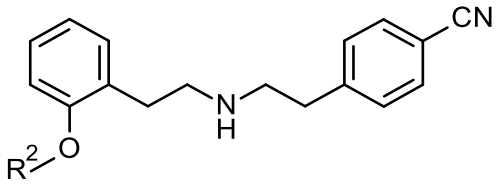
and the salts thereof.

11. Process for preparing the compound of the formula (XV-1), characterized in that, at a temperature of -90°C to -50°C in a first step, it is added to the compound of the formula (III)



(III)

in the presence of a base selected from a list consisting of sterically hindered secondary amines and 2,6-disubstituted pyridines and trifluoromethanesulfonic anhydride, and in a second step is reacted with the compound of the formula (XVI-1)

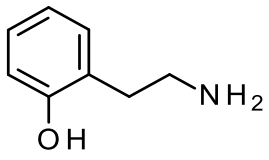


(XIV-1)

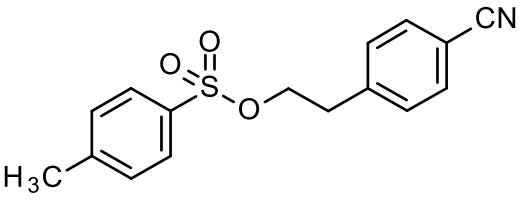
where

R^2 is a silyl protecting group.

12. Process for preparing the compound of the formula (XIV-1), characterized in that the compounds of the formulae (XVII) and (V)



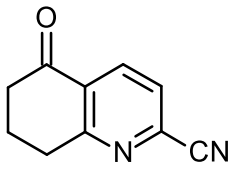
(XVII) and



(V)

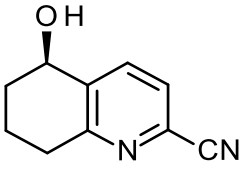
in a first step are coupled in the presence of an amine base, and the reaction product in a second step is reacted with the appropriate silyl chloride, likewise in the presence of an amine base.

13. Process for preparing the compound of the formula (III), characterized in that the compound of the formula (II)



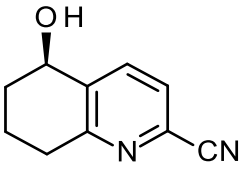
(II)

is reacted with a tertiary amine base, ruthenium-p-cymene-R,R-TsDPEN and formic acid to give the compound of the formula (III)



(III).

14. (5R)-5-Hydroxy-5,6,7,8-tetrahydroquinoline-2-carbonitrile of the formula (III)



(III)

and the salts thereof.