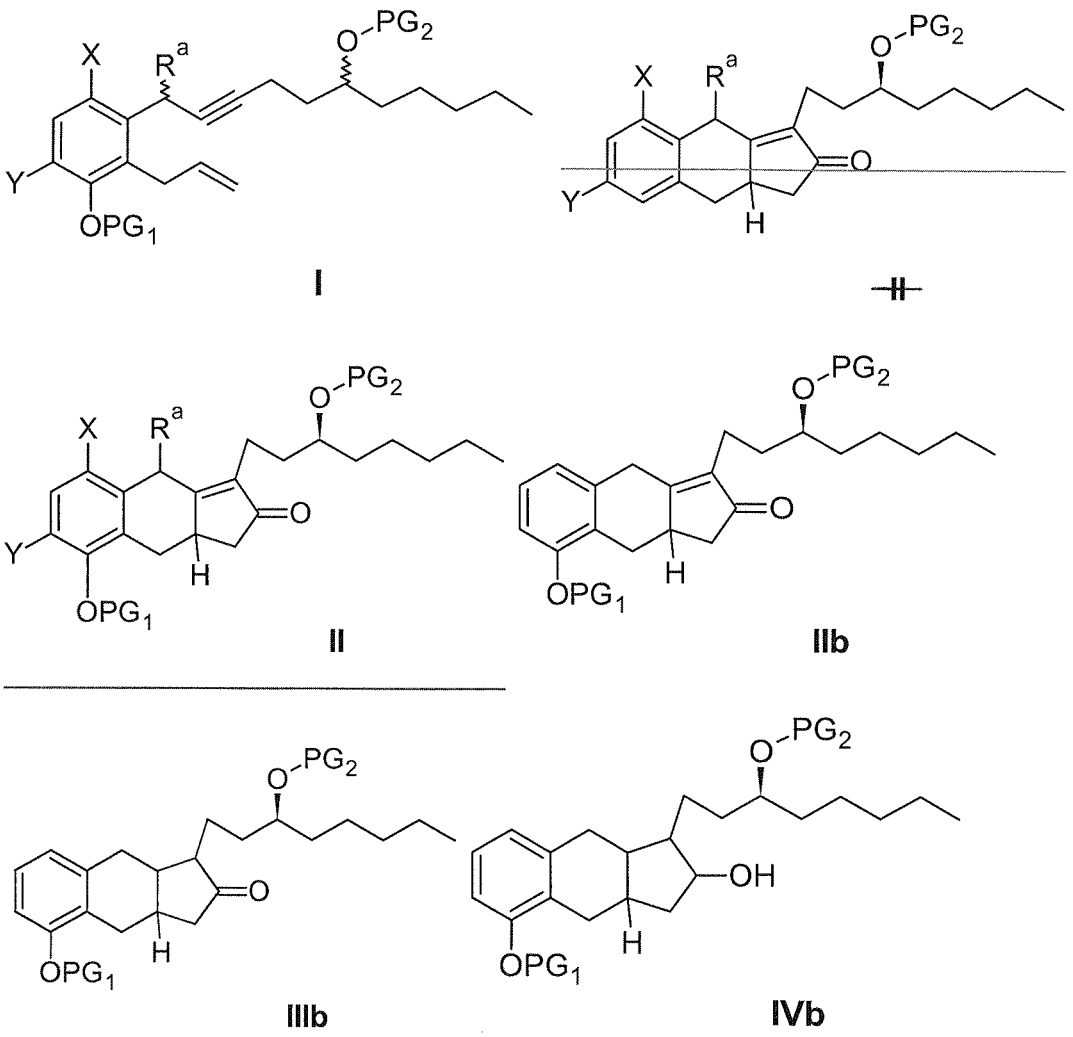
Claims:

1. A compound of formula I, formula II, formula IIb, formula IIIb, or formula IVb



wherein

X and **Y** are independently of one another selected from the group consisting of H, F, Cl, Br, I, and benzyl; and

PG_1 is selected from the group consisting of methyl, methoxymethyl, benzyloxymethyl, methoxyethoxymethyl, benzyl, 4-methoxybenzyl, 2,6-dichlorobenzyl, 3,4-dichloro-benzyl; $-CH_2COOH$, $-CH_2COOR_x$, and $-CH_2CH_2OPG_2$; and

PG_2 is TBDMS; and

R^a is hydrogen, hydroxy $-OR_x$, $-OCOOR_x$, $-OSO_2R_x$, Cl, Br F, I, $-SR_x$, or $-SO_2R_x$;

R_x is C_{1-4}alkyl or aryl; and

wherein at least one of X or Y is not H.

2. A compound according to claim 1, wherein

X and **Y** are independently of one another selected from H, Br or Cl; and at least one of X or Y is not H.

3. A compound according to claim 2, wherein

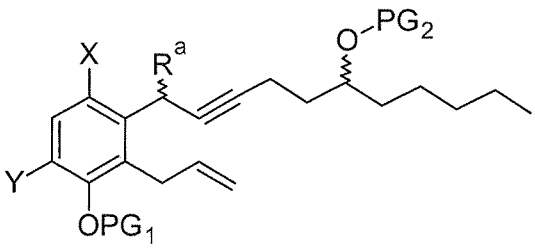
X is Br or Cl; and

Y is H.

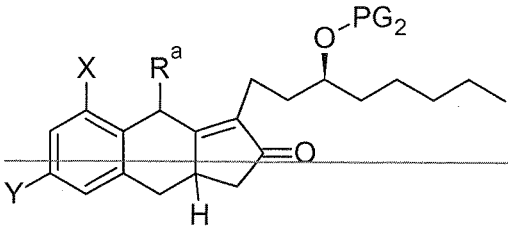
4. A compound according to any one of claims 1 – 3, wherein

X is Br.

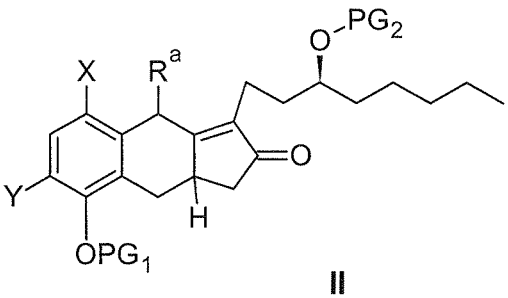
5. A compound of formula I, or formula II,



I



II



II

wherein

X and **Y** are independently of one another selected from the group consisting of H, F, Cl, Br, I, and benzyl; and

PG_1 is selected from the group consisting of methyl, methoxymethyl, benzyloxymethyl, methoxyethoxymethyl, benzyl, 4-methoxybenzyl, 2,6-dichlorobenzyl, 3,4-dichloro-benzyl; $-CH_2COOH$, $-CH_2COOR_x$, and $-CH_2CH_2OPG_2$; and

PG_2 is THP, $SiR_1R_2R_3$; or $-CH_2OR_x$; and

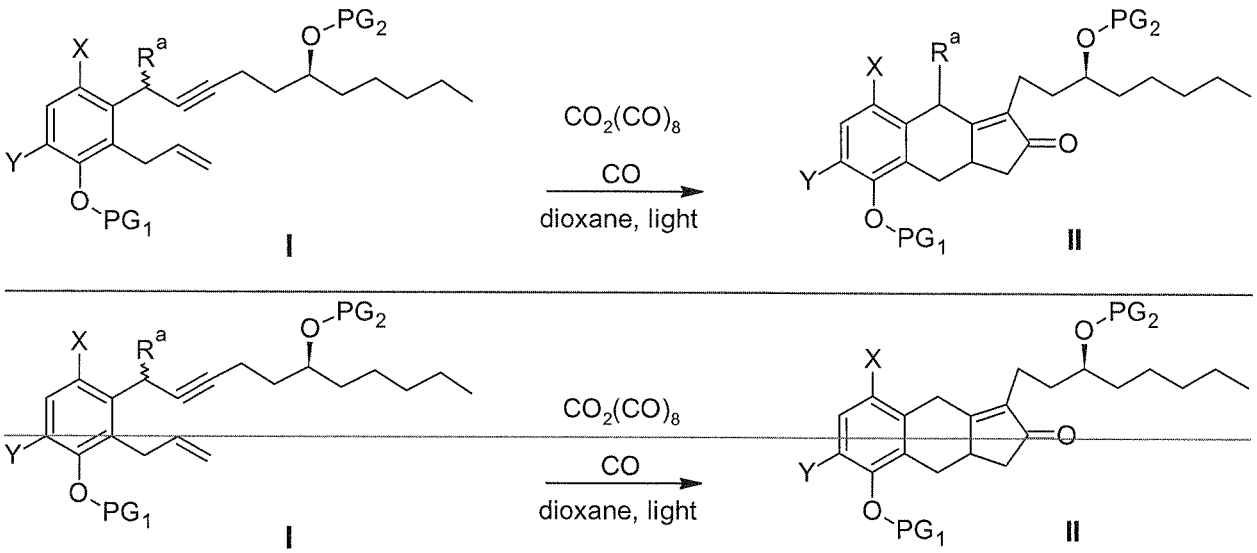
R_1, R_2, and **R_3** are independently from one another selected from the group consisting of methyl, isopropyl, *t*-butyl, and phenyl

R^a is hydrogen, hydroxy $-OR_x$, $-OCOOR_x$, $-OSO_2R_x$, Cl, Br F, I, $-SR_x$, or $-SO_2R_x$;

R_x is $C_{1\text{-}4}$alkyl or aryl; and

wherein at least one of X or Y is not H.

6. A process for making a compound of formula (II), comprising the following step:



wherein

X, Y, R^a, PG_1 and **PG_2** are as defined in claim 1.

7. The process according to claim 6, wherein

PG_2 is TBDMS.

8. The process according to claim 6 or 7, wherein

R^a is hydroxy.

9. The process according to claim 6, wherein

X is Br, and

Y is hydrogen, and

PG_1 is benzyl, and

PG_2 is TBDMS; and

R^a is hydroxy.

10. A process for making a compound of formula IV, comprising the steps of

a) hydrogenating and reducing a compound of formula II to obtain racemic compound of formula III;

b) contacting racemic compound of formula III with Lipase AK in the presence of a solvent; and

c) obtaining an optically pure compound IV;