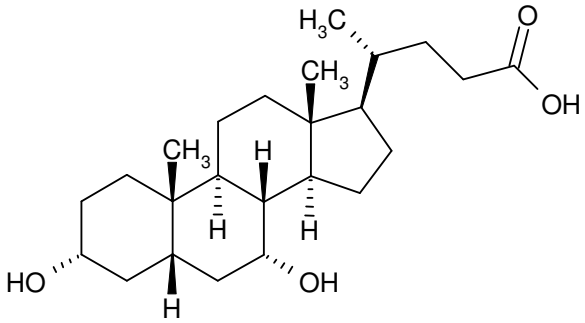
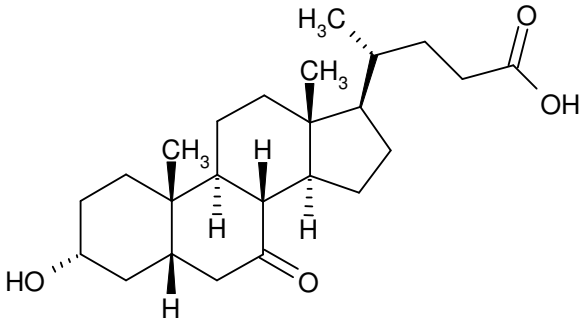


IV

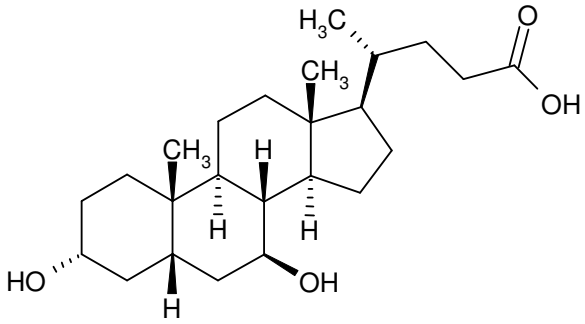
into ketolithocholic acid of formula



V

by oxidation,

and into the stereoisomeric hydroxy compound 3α,7β-dihydroxy-5β-cholanic acid (ursodeoxycholic acid) of formula

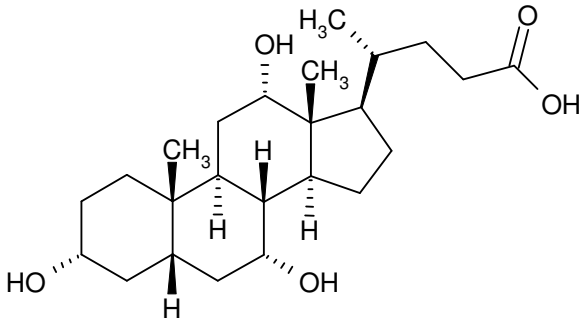


VI

by subsequent reduction,

using two opposite stereospecific hydroxysteroid dehydrogenases, in particular whereby the oxidation reaction is catalyzed by a 7α-hydroxysteroid dehydrogenase from *E. coli*; and/or the reduction reaction is catalyzed by a 7β-hydroxysteroid dehydrogenase from *Ruminococcus torques*.

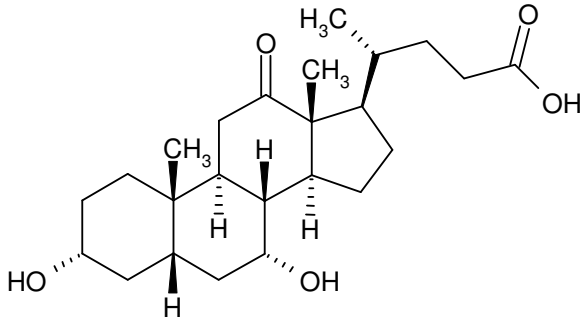
12. A process according to claim 9, characterized in that it is used for the enzymatic ~~zur enzymatischen~~ epimerization of 3α,7α,12α-trihydroxy-5β-cholanic acid (cholanic acid) of formula



IX

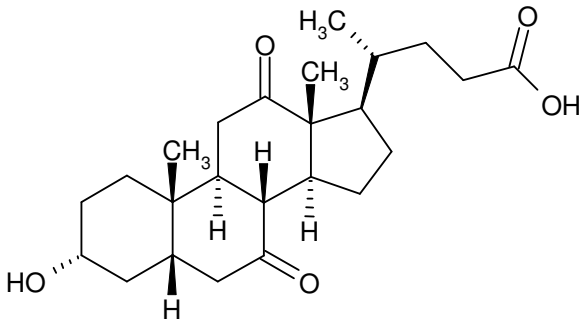
either

A) via oxidation to obtain 3α,7α-dihydroxy-12-oxo-5β-cholanic ~~säure~~ acid (12-oxo-CDC) of formula



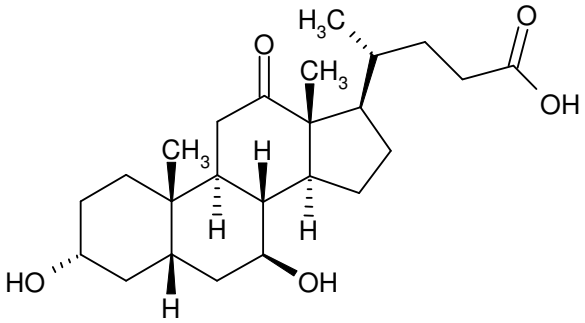
X

which is further reacted to obtain 3α-hydroxy-7,12-dioxo-5β-cholanic acid (12oxo-KLC) of formula



XI

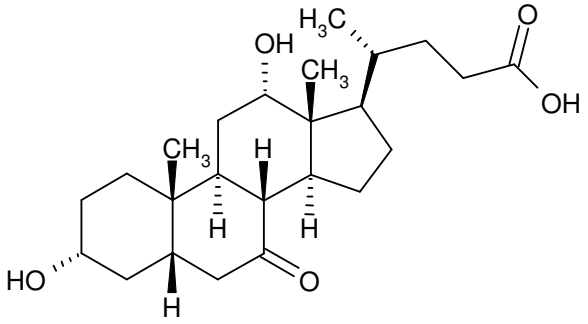
and subsequent reduction to the stereoisomeric hydroxy compound 3α,7β-dihydroxy-12-oxo-5β-cholanic acid (12-keto-ursodeoxycholanic acid) of formula



XII

or

B) via oxidation to obtain 3α,12α-dihydroxy-7-oxo-5β-cholanic acid of formula

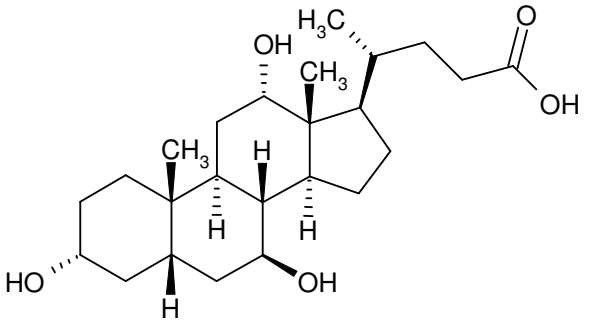


XIII

followed by enzymatic oxidation to obtain 3α-hydroxy-7,12-dioxo-5β-cholanic acid(12oxo-KLC) of formula XI, and subsequent ~~reduktion~~ reduction to obtain the stereoisomeric hydroxy compound 3α,7β-dihydroxy-12-oxo-5β-cholanic acid~~säure~~ (12-keto-~~ursodeoxycholsäure~~ursodeoxycholanic acid) of formula XII,

or

C) via oxidation to obtain 3α,12α-dihydroxy-7-oxo-5β-cholanic acid of formula XIII, followed by enzymatic reduction to obtain 3α,7β,12α-triydroxy-5β-cholanic acid of formula



XIV

and subsequent oxidation to obtain the stereoisomeric hydroxy compound 3α,7β-dihydroxy-12-oxo-5β-cholanic acid (12-keto-ursodeoxycholanic acid) of formula XII;

using 3 stereospecific hydroxysteroid dehydrogenases, 2 of which have opposite stereospecifity.

13. A process according to any of claims 1 to 8, characterized in that it is used for the isomerization of C_5- or C_6-sugars, in particular for the isomerization of glucose via reduction to sorbitol and subsequent oxidation to fructose.

14. A process according to any of claims 1 to 13, characterized in that the substrate(s) for the oxidation reaction(s) involved in the formation of a product is/are provided in the reaction batch at a concentration of at least 5% (w/v) and more, in particular 7% (w/v) and more, in particular 9% (w/v) and more

~~15. A process according to any of claims 1 to 14, characterized in that, on the whole, a turnover of ≥70%, in particular ≥90%, is achieved in the product-forming reactions.~~