
Biotechnological preparation
of 3-hydroxyisobutyric acid

Abstract

The invention relates to a method comprising the steps a) providing isobutyric acid, b) bringing
5 isobutyric acid into contact with the combination of isobutyrate kinase and
phosphotransisobutyrylase and/or isobutyryl-coenzyme A synthetase/ligase and/or isobutyrate-
coenzyme A transferase, c) bringing the product from step a) into contact with isobutyryl-
coenzyme A dehydrogenase, d) bringing the product from step b) into contact with methacrylyl-
coenzyme A hydratase, and e) hydrolyzing the product from step d) to form 3-hydroxyisobutyric
10 acid, where at least one of the enzymes is used in the form of a cell which, compared to its
wildtype, comprises a reduced activity of a 3-hydroxyisobutyric acid dehydrogenase or a variant
thereof, a cell which has at least one enzyme from the group comprising isobutyryl-coenzyme A
synthetase/ligase, isobutyrate-coenzyme A transferase, isobutyrate kinase,
phosphotransisobutyrylase, isobutyryl-coenzyme A dehydrogenase, methacrylyl-coenzyme A
15 hydratase and 3-hydroxyisobutyryl-coenzyme A hydrolase and, compared to its wildtype, a
reduced activity of a 3-hydroxyisobutyric acid dehydrogenase or a variant thereof, wherein the
cell preferably has, in addition, a monooxygenase, more preferably a monooxygenase of the
alkBGT type or a variant thereof and the use of such a cell for preparing 3-hydroxyisobutyric
acid.

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No suitable figure