CLAIMS

1. A method of producing a cell metabolite by culturing *Lactobacillus diolivorans* cells in a cell culture comprising feeding the cell culture in an aerobic reactor system during a production phase using a feed medium comprising a carbon source for biotransformation into the cell metabolite, and isolating the cell metabolite from said cell culture, wherein the *Lactobacillus diolivorans* cells are of any one of the *L. diolivorans* strains deposited as DSM 33056, DSM 33057, DSM 33058, DSM 33059, or DSM 33060, or progeny or derivatives of any of the foregoing, wherein the derivative is engineered to comprises one or more mutations for overexpressing homologous sequences and/or transforming the bacterium with a vector comprising heterologous sequences, to improve production of a cell metabolite.

2. The method of claim 1, wherein the aerobic reactor system does not employ means to protect the cell culture from oxygen.

3. The method of claim 1 or 2, wherein the carbon source comprised in the feed medium is selected from the group consisting of glycerol, crude glycerol, glucose, fructose, lactose, sucrose, starch, biomass hydrolysates, cellulose, lignocellulose, lignocellulosic hydrolysate, sugar beet extract, molasses, organic acid, organic salts, and a combination of any of the foregoing.

4. The method of claim 3, wherein the carbon source comprises a carbohydrate with a purity of less than Technical Grade and an ash content of at least 0.1% (w/w).

5. The method of any one of claims 1 to 4, wherein the cell metabolite is selected from the group consisting of 1,3-propanediol, 1,2-propanediol, 2-amino-1,3-propanediol, 3-hydroxybutyrate, poly-3-hydroxybutyrate, ethanol, 1-butanol, 2-butanol, isobutanol, 2,3-butanediol, butanone, lactic acid, citric acid, propionic acid, 3-hydroxy propionaldehyde, 3-hydroxy propionic acid, butyric acid, valeric acid, hexanoic acid, adipic acid, succinic acid, fumaric acid, malic acid, 2,5-furan dicarboxylic acid, aspartic acid, glucaric acid, gluconic acid, glutamic acid, itaconic acid, levulinic acid, acrylic acid, propanol, isopropanol, 1-butanol, 2-butanol, pentanol, hexanol, heptanol, octanol, butanediol, 2,3-butandiol, 3-hydroxybutyrolactone, xylitol, arabinitol, sorbitol, mannitol,

vitamin C, riboflavin, thiamine, tocopherol, cobalamin, pantothenic acid, biotin, pyridoxine, niacin, folic acid, 3-hydroxybutyrolactone, diamino pentane, diamino hexane and dihydroxyacetone.

6. The method of any one of claims 1 to 5, wherein the production phase is carried out in a fed-batch mode or continuous mode, preferably wherein the feed medium is continuously added to the cell culture during the production phase.

7. The method of any one of claims 1 to 6, wherein prior to the production phase, the cell culture is carried out in a batch mode using a growth medium to accumulate biomass.

8. A *L. diolivorans* strain which is any one of the *L. diolivorans* strains deposited as DSM 33056, DSM 33057, DSM 33058, DSM 33059, or DSM 33060, or progeny or derivatives of any of the foregoing, wherein the derivative is engineered to comprise one or more mutations for overexpressing homologous sequences and/or transforming the bacterium with a vector comprising heterologous sequences, to improve production of a cell metabolite.

9. Use of *L. diolivorans* cells in a cell culture for biotransformation of a carbon source into a cell metabolite by an aerobic feeding fermentation process, wherein the *L. diolivorans* cells are of any one of the *L. diolivorans* strains deposited as DSM 33056, DSM 33057, DSM 33058, DSM 33059, or DSM 33060, or progeny or derivatives of any of the foregoing, wherein the derivative is engineered to comprise one or more mutations for overexpressing homologous sequences and/or transforming the bacterium with a vector comprising heterologous sequences, to improve production of a cell metabolite.

10. The use of claim 9, wherein the carbon source is glycerol or a carbohydrate with a purity of less than Technical Grade and an ash content of at least 0.1% (w/w).

11. The use of claim 10, for biotransformation of glycerol into 1,3-propanediol, preferably wherein the glycerol is crude glycerol.

12. The use of claim 10 or 11, wherein the *L. diolivorans* cells are of any one of the *L. diolivorans* strains deposited as DSM 33056, DSM 33057, DSM 33058, DSM 33059, or DSM 33060, or progeny or derivatives of any of the foregoing, wherein the derivative is engineered to comprise one or more mutations for overexpressing homologous sequences and/or transforming the bacterium with a vector comprising heterologous sequences, to improve production of a cell metabolite.