In addition, the present inventors discovered that 2,3-butanediol can be produced from pentose by using a *Zymobacter* bacterium having a capacity to metabolize pentose.

[0014]

That is, the present invention is as described in (1) to (16~~5~~) below.

(1) A method for producing 2,3-butanediol, comprising the steps of:

culturing a microorganism belonging to the genus *Zymobacter* in a fermentation feedstock containing a carbon source (Step A); and

purifying 2,3-butanediol from culture liquid obtained in the above step (Step B).

(2) The method according to (1), wherein the microorganism is *Zymobacter palmae*.

(3) The method according to (1) or (2), wherein the Step A is culturing under aerated conditions.

(4) The method according to any one of (1) to (3) wherein the Step A is culturing at a volumetric oxygen transfer coefficient (kLa) of not less than 9 h^{-1}.

(5) The method for producing 2,3-butanediol according to any one of (1) to (4), wherein the Step A is culturing at a pH of 5 to 7.

(6) The method according to any one of (1) to (5), wherein the Step A is culturing in a medium whose total sugar concentration is not less than 20 g/L.

(7) The method according to any one of (1) to (6), wherein the carbon source contains pentose, and the microorganism belonging to the genus *Zymobacter* has a capacity to metabolize pentose.

(8) The method according to any one of (1) to (7), wherein the microorganism is a transformed microorganism belonging to the genus *Zymobacter* in which an exogenous gene(s) encoding at least one enzyme selected from the group consisting of xylose isomerase, xylulokinase, transaldolase, and transketolase is/are introduced.

The activity of transketolase can be confirmed by performing enzyme reaction in the presence of xylulose-5-phosphate and erythrose-4-phosphate, and measuring, by HPLC or the like, glyceraldehyde-3-phosphate produced, or measuring a decrease in NADH or the like using an auxiliary enzyme reaction. For example, the measurement can be carried out by the method disclosed in Sprenger GA, Schorken U, Sprenger G, Sahm H. Transketolase A of *Escherichia coli* K12. Purification and properties of the enzyme from recombinant strains. Eur J Biochem. 1995 Jun 1; 230 (2): 525-32.

[0045]

Transaldolase is defined as an enzyme which catalyzes a reaction to convert sedoheptulose-7-phosphate and glyceraldehyde-3-phosphate to erythrose-4-phosphate and fructose-6-phosphate, and the reverse reaction thereof. The ~~transketolase~~ transaldolase used in the present invention is not limited as long as it has the catalytic activity described above. For example, EC2.2.1.2 corresponds the ~~transketolase~~ transaldolase.

[0046]

The activity of transaldolase can be confirmed by performing enzyme reaction in the presence of fructose-6-phosphate and erythrose-4-phosphate, and then measuring, by HPLC or the like, glyceraldehyde-3-phosphate produced, or measuring a decrease in NADH or the like using an auxiliary enzyme reaction. For example, the measurement can be carried out by the method disclosed in GA. Sprenger, U. Schorken, G. Sprenger & H. Sahm Transaldolase B of *Escherichia coli* K-12: cloning of its gene, talB, and characterization of the enzyme from recombinant strains (J. Bacteriol., 1995, 177: 20: 5930-6).

[0047]

Examples of organisms which may be used as the donor of the transaldolase and/or ~~transaldolase~~ transketolase include microorganisms belonging to the family Enterobacteriaceae such as the genera *Enterobacter*, *Escherichia*, *Klebsiella*, *Erwinia*,