product by a propionic acid bacterium.

(2) The composition according to (1), wherein the propionic acid bacterium is *Propionibacterium freudenreichii*.

(3) The composition according to (1) or (2), wherein the antimicrobial agent is at least one selected from the group consisting of a penicillin antimicrobial agent, a cephem antimicrobial agent, a cephalosporin antimicrobial agent, a carbapenem antimicrobial agent, a β-lactamase inhibitor, an oxazolidinone antimicrobial agent, a new quinolone antimicrobial agent, and a macrolide antimicrobial agent.

(4) The composition according to any one of (1) to (3), wherein a dose per day is 0.15 to 200 mg/kg body weight in terms of a dry mass of a fermented whey product by the propionic acid bacterium.

(5) The composition according to any one of (1) to (4), which is a food composition or a pharmaceutical composition.

(6) The composition according to any one of (1) to (5), which is in a form of powder, liquid, or tablet.

(7) Use of a fermented whey product by a propionic acid bacterium for producing a composition for inhibiting reduction of lactic acid bacteria of the genus *Lactobacillus* in the intestine in a subject to whom an antimicrobial agent is administered.

(8) A method for inhibiting reduction of lactic acid bacteria of the genus *Lactobacillus* in the intestine in a subject to whom an antimicrobial agent is administered, the method comprising allowing the subject to take an effective amount of a fermented whey product by a propionic acid bacterium.

(9) The method according to (8), which is a method for improving a disease or condition related to reduction of lactic acid bacteria of the genus *Lactobacillus* in the intestine caused by administration of an antimicrobial agent.

(10) A fermented whey product by a propionic acid bacterium for inhibiting reduction of lactic acid bacteria of the genus *Lactobacillus* in the intestine in a subject to whom an antimicrobial agent is administered.

(11) Use of a fermented whey product by a propionic acid bacterium for inhibiting reduction of lactic acid bacteria of the

administered, which comprises a fermented whey product by a propionic acid bacterium. It is a surprising fact that, when a fermented whey product by a propionic acid bacterium was used as an active ingredient, it was possible to significantly inhibit reduction of lactic acid bacteria of the genus *Lactobacillus* in the intestine in a subject before, during, or after administration of an antimicrobial agent although reduction of intestinal bifidobacteria was not inhibited.

[0014]

"Subject to whom an antimicrobial agent is administered" means a subject to whom an antimicrobial agent will be administered (before administration), a subject to whom an antimicrobial agent is being administered (during administration), or a subject to whom an antimicrobial agent was administered (after administration), preferably a subject in whom lactic acid bacteria of the genus *Lactobacillus* in the intestine will be reduced, are being reduced, or were reduced by an antimicrobial agent. The subject is preferably a human, and may be other than a human (for example, livestock such as a horse and cattle, a rodent, a pet such as a dog and a cat, and an ornamental animal kept in zoos, etc.). Such embodiments are also included in the present invention.

[0015]

An antimicrobial agent of the present invention is not particularly limited as long as it is an antimicrobial agent to which lactic acid bacteria of the genus *Lactobacillus* are sensitive, and preferably an antibiotic to which lactic acid bacteria of the genus *Lactobacillus* are sensitive. More specific examples thereof include a penicillin antimicrobial agent (e.g., amoxicillin (AMPC), ampicillin (ABPC)), a cephem antimicrobial agent (e.g., cefpirome (CPR)), a cephalosporin antimicrobial agent (e.g., ceftazidime (CAZ)), a carbapenem antimicrobial agent (e.g., meropenem (MEPM)), a β-lactamase inhibitor, an oxazolidinone antimicrobial agent (e.g., linezolid (LZD)), a new quinolone antimicrobial agent (e.g., levofloxacin (LVFX), pazufloxacin (PZFX)), and a macrolide antimicrobial agent (e.g., azithromycin (AZM)), as well as a

lincomycin antimicrobial agent, an aminoglycoside antimicrobial agent, a tetracycline antimicrobial agent, a chloramphenicol antimicrobial agent, a peptide antimicrobial agent, a sulfa agent, an antituberculous agent, a quinolone antimicrobial agent, an antiviral agent, and an antifungal agent. The antimicrobial agent is preferably a penicillin antimicrobial agent (e.g., amoxicillin (AMPC), ampicillin (ABPC)), a cephem antimicrobial agent (e.g., cefpirome (CPR)), a cephalosporin antimicrobial agent (e.g., ceftazidime (CAZ)), a carbapenem antimicrobial agent (e.g., meropenem (MEPM)), a β-lactamase inhibitor, an oxazolidinone antimicrobial agent (e.g., linezolid (LZD)), a new quinolone antimicrobial agent (e.g., levofloxacin (LVFX), pazufloxacin (PZFX)), and a macrolide antimicrobial agent (e.g., azithromycin (AZM)).

[0016]

A method for administration of the antimicrobial agent is not particularly limited as long as lactic acid bacteria of the genus *Lactobacillus* in the intestine show sensitivity, and the method can be appropriately selected from, for example, oral intake (or oral administration), enteral administration, percutaneous endoscopic gastrostomy, subcutaneous administration, intravenous administration, and the like, according to the subject to whom an antimicrobial agent is administered and the application (e.g., for treatment or for prevention). A method for using the antimicrobial agent can be appropriately selected by a person skilled in the art according to the disease and condition of the subject and the application, and can be appropriately selected by a person skilled in the art in accordance with the method mentioned in, for example, the JAID/JAS Guide to Clinical Management of Infectious Diseases 2014 (edited by the Committee for Preparation of the JAID/JAS Guide to/Guideline for Clinical Management of Infectious Diseases).

[0017]

Lactic acid bacteria of the genus *Lactobacillus* are Gram-positive bacilli, and are known as one of beneficial bacteria. Preferable specific examples of the lactic acid bacteria of the genus *Lactobacillus* include *Lactobacillus bulgaricus*, *L. johnsonii*, *L. casei*,

CLAIMS

1. A composition for inhibiting reduction of lactic acid bacteria of the genus *Lactobacillus* in the intestine in a subject to whom an antimicrobial agent is administered, comprising a fermented whey product by a propionic acid bacterium.

2. The composition according to claim 1, wherein the propionic acid bacterium is *Propionibacterium freudenreichii*.

3. The composition according to claim 1 or 2, wherein the antimicrobial agent is at least one selected from the group consisting of a penicillin antimicrobial agent, a cephem antimicrobial agent, a cephalosporin antimicrobial agent, a carbapenem antimicrobial agent, a β-lactamase inhibitor, an oxazolidinone antimicrobial agent, a new quinolone antimicrobial agent, and a macrolide antimicrobial agent.

4. The composition according to any one of claims 1 to 3, wherein a dose per day is 0.15 to 200 mg/kg body weight in terms of a dry mass of a fermented whey product by the propionic acid bacterium.

5. The composition according to any one of claims 1 to 4, which is a food composition or a pharmaceutical composition.

6. The composition according to any one of claims 1 to 5, which is in a form of powder, liquid, or tablet.

7. Use of a fermented whey product by a propionic acid bacterium for producing a composition for inhibiting reduction of lactic acid bacteria of the genus *Lactobacillus* in the intestine in a subject to whom an antimicrobial agent is administered.

8. A method for inhibiting reduction of lactic acid bacteria of the genus *Lactobacillus* in the intestine in a subject to whom an