[Non-Patent Documents]

[Non-Patent Document 1] Mitsuoka T, Intestinal Flora and Aging, Nutrition Reviews, 1992; 50(12):438-46.

[Non-Patent Document 2] Del Piano M , Clinical Experience With Probiotics in the Elderly on Total Enteral Nutrition , Journal of Clinical Gastroenterology, 2004; 38(6 Suppl): S111-4.

[Non-Patent Document 3] Bouhnik Y *et al.*, The capacity of short-chain fructo-oligosaccharides to stimulate faecal bifidobacteria: a dose-response relationship study in healthy humans, Nutrition Journal, 2006; 5:8.

Summary ~~of the Invention~~

[Problems to be Solved ~~by the Invention~~]

The present ~~invention~~ disclosure was achieved in view of the above circumstances. An objective of the present ~~invention~~ disclosure is to provide nutritional compositions that concurrent with the supplying of nutrients, also promote proliferation of bacteria of the genera *Bifidobacterium* and/or *Lactobacillus* in the intestine (in the intestinal tract).

[Means for Solving the Problems]

As a result of dedicated research to solve the above-mentioned problems, the present inventors discovered that a nutritional composition containing milk protein hydrolysates, fermented milk proteins, phospholipids, oleic acid-containing oils and fats, and isomaltulose has the effect of promoting proliferation of bacteria of the genera *Bifidobacterium* and/or *Lactobacillus*, and thereby completed the present ~~invention~~disclosure.

Specifically, in an *in vivo* experiment using rats, the above-mentioned nutritional composition was found to increase the percentage and bacterial count of *Bifidobacterium* and *Lactobacillus* without changing the total bacterial count in the intestine. The results revealed that the above-mentioned nutritional composition promotes proliferation of bacteria of the genera *Bifidobacterium* and/or *Lactobacillus*. Furthermore, decrease in pH in the cecum, increase in the weight of cecal tissue and cecal contents, and increase in the amount of organic acids in the cecal contents were confirmed. Therefore, the composition of the present ~~invention~~ disclosure is useful for improving intestinal flora.

In an aspect, there is provided a non-therapeutic method for increasing the percentage and bacterial count of bacteria of the genera *Bifidobacterium* and/or *Lactobacillus* without changing the total bacterial count in the intestine, comprising administering a nutritional composition comprising a milk protein hydrolysate and a fermented milk protein as proteins, oleic acid-containing oil and fat as well as milk phospholipid and/or soybean lecithin as lipids, and isomaltulose as a carbohydrate.

Specifically, the present ~~invention~~ disclosure consists of the following:

[1] a nutritional composition for promoting proliferation of bacteria of the genera *Bifidobacterium* and/or *Lactobacillus*, comprising a milk protein hydrolysate and a fermented milk protein as proteins, oleic acid-containing oil and fat as well as milk phospholipid and/or soybean lecithin as lipids, and isomaltulose as a carbohydrate;

[2] the nutritional composition of [1], wherein the milk protein is selected from the group consisting of casein, a milk protein concentrate (MPC), a whey protein concentrate (WPC),

a whey protein isolate (WPI), α-lactoalbumin, β-lactoglobulin, and lactoferrin;

[3] the nutritional composition of [1] or [2], wherein the milk protein hydrolysate is contained at 0.9 g to 5.0 g per 100 mL of the nutritional composition;

[4] the nutritional composition of any one of [1] to [3], wherein the milk protein hydrolysate is obtained by hydrolyzing a whey protein concentrate (WPC) and/or whey protein isolate (WPI) with *Bacillus licheniformis*-derived alcalase or porcine pancreas-derived trypsin;

[5] the nutritional composition of any one of [1] to [4], wherein the milk protein hydrolysate is a permeate fraction obtained by treatment with an ultrafiltration membrane having a cutoff molecular weight of 10,000;

[6] the nutritional composition of any one of [1] to [5], wherein the fermented milk protein is derived from cheese;

[7] the nutritional composition of [6], wherein the cheese is quark;

[8] the nutritional composition of any one of [1] to [7], wherein the fermented milk protein is contained at 0.5 g to 6 g per 100 mL of the nutritional composition;

[9] the nutritional composition of any one of [1] to [8], wherein isomaltulose is contained at 4 g to 15 g per 100 mL of the nutritional composition; and

[10] the nutritional composition of any one of [1] to [9], wherein the lipids contain oleic acid at a proportion of 30% of more of the total fatty acid composition.

[Effects of the Invention]

The nutritional compositions of the present ~~invention~~ disclosure can supply nutrients, and concurrently improve intestinal flora. For example, when a nutritional composition of the present ~~invention~~ disclosure is used for a liquid diet, or oral / enteral / tube feeding, and such, the intestinal flora of an individual who takes it can be improved, in addition to supplying nutrients. Furthermore, since the compositions of the present ~~invention~~ disclosure can be taken safely, they are suitable for nutritional management during long-term care.

Brief Description of the Drawings

Fig. 1 depicts graphs showing the weight of the cecum, etc., and pH in the cecum determined in Example 1. The graphs show mean ± SD. *: $p < 0.05$.

Fig. 2 depicts a graph showing the amount of short-chain fatty acids in cecal contents determined in Example 1. The graph shows mean ± SD. *: $p < 0.05$.

Fig. 3 depicts graphs showing the analysis results of *Bifidobacterium* and *Lactobacillus* in Example 1. The graphs show mean ± SD. *: $p < 0.05$.

Mode for Carrying Out the Invention

CLAIMS

1. A ~~nutritional composition~~ non-therapeutic method for ~~promoting proliferation~~ increasing the percentage and bacterial count of bacteria of the genera *Bifidobacterium* and/or *Lactobacillus* without changing the total bacterial count in the intestine, comprising administering a nutritional composition comprising a milk protein hydrolysate and a fermented milk protein as proteins, oleic acid-containing oil and fat as well as milk phospholipid and/or soybean lecithin as lipids, and isomaltulose as a carbohydrate.

2. The ~~nutritional composition~~ method of claim 1, wherein the milk protein is selected from the group consisting of casein, a milk protein concentrate (MPC), a whey protein concentrate (WPC), a whey protein isolate (WPI), α-lactoalbumin, β-lactoglobulin, and lactoferrin.

3. The method ~~nutritional composition~~ of claim 1 or 2, wherein the milk protein hydrolysate is contained at 0.9 g to 5.0 g per 100 mL of the nutritional composition.

4. The method ~~nutritional composition~~ of any one of claims 1 to 3, wherein the milk protein hydrolysate is obtained by hydrolyzing a whey protein concentrate (WPC) and/or whey protein isolate (WPI) with *Bacillus licheniformis*-derived alcalase or porcine pancreas-derived trypsin.

5. The method ~~nutritional composition~~ of any one of claims 1 to 4, wherein the milk protein hydrolysate is a permeate fraction obtained by treatment with an ultrafiltration membrane having a cutoff molecular weight of 10,000.

6. The method ~~nutritional composition~~ of any one of claims 1 to 5, wherein the fermented milk protein is derived from cheese.

7. The method ~~nutritional composition~~ of claim 6, wherein the cheese is quark.

8. The method ~~nutritional composition~~ of any one of claims 1 to 7, wherein the fermented milk protein is contained at 0.5 g to 6 g per 100 mL of the nutritional composition.

9. The method ~~nutritional composition~~ of any one of claims 1 to 8, wherein isomaltulose is contained at 4 g to 15 g per 100 mL of the nutritional composition.

10. The method ~~nutritional composition~~ of any one of claims 1 to 9, wherein the lipids contain oleic acid at a proportion of 30% of more of the total fatty acid composition.