

Gut biology and probiotics in food - Sample

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Objective

To create a patent landscape report on **Gut Biology and Probiotic microorganisms in food**

Search methodology

| | |
|------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Search strategy | 1. Various keywords are retrieved for conducting the search related to gut biology and probiotics in food from pubmed mesh, relevant patents, scientific articles and thesaurus. 2. The database used for patent search is Thomson innovation. |
| Keywords | Gut biology, Probiotics, food, etc. |

Background

Definition

Etymologically, the term probiotic appears to be a composite of the Latin preposition **pro** ("for") and the Greek adjective ???????? (biotic), the latter deriving from the noun ???? (bios, "life"). Miller et al *British Journal of Nutrition*, 2003 Lilly and Stillwell coined the term probiotic in 1965 and defined it as "a substance produced by one microorganism stimulating the growth of another microorganism" and understood a probiotic as opposite to an antibiotic. Rusch 2002 Over the course of time various definitions of probiotics have surfaced and the internationally adopted FAO/WHO definition was coined in 2001 which describes probiotics as

"Live microorganisms which when administered in adequate amounts confer a health benefit on the host" *FAO report 2002*

The International Study Group on New Antimicrobial Strategies (ISGNAS), developed a concept for the detailed definition of probiotics in three categories.

1. Medical probiotics (drugs) - a microbial preparation which contains live and/or dead microorganisms including their components and products determined to be employed as a drug for therapeutic purposes.

2. Pharmaceutical probiotics (food supplements) - a microbial preparation designed for manufacture of food supplements.

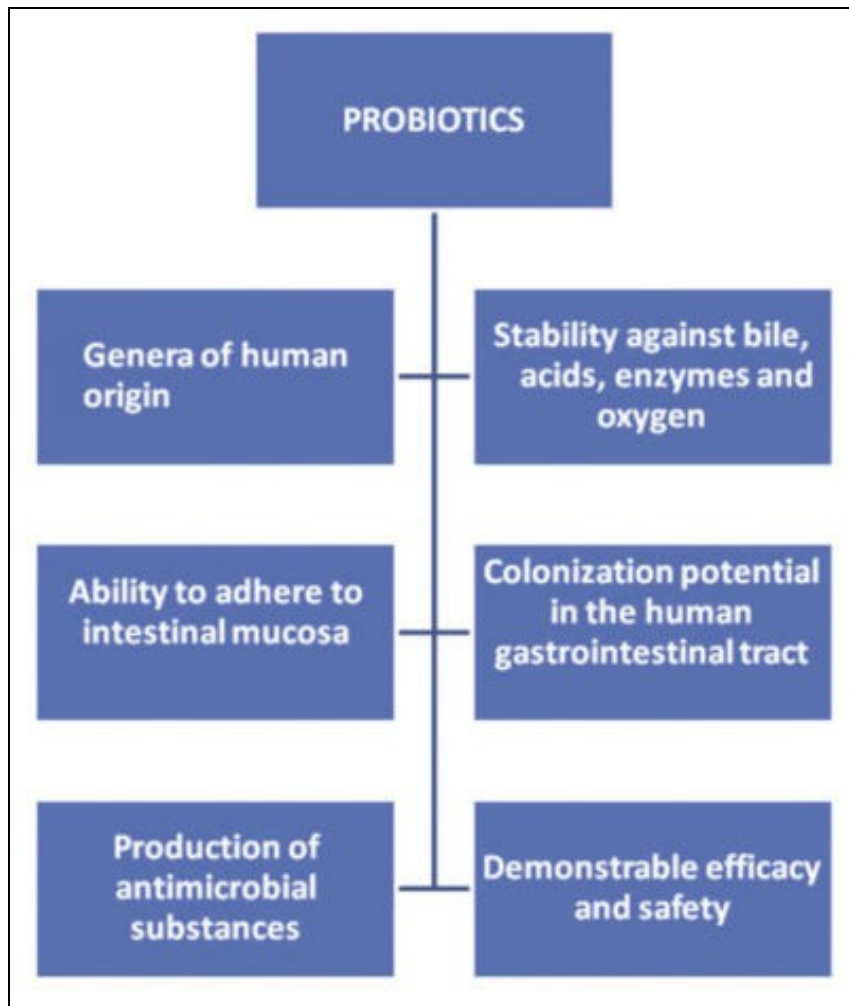
3. Alimentary probiotics (food) - a microbial preparation designed for use in food fermentation or food production. The mode of action includes immunomodulation, host microflora modulation, and the modulation of metabolic processes. *Rusch 2002*



[Please click here to view the Common probiotic microorganisms](#)

Science behind probiotics

An organism may be classified as a probiotic(in human beings) based on the following criteria.



Therapeutical use of probiotic formulations in clinical practice [T.Lannitti et al Clinical Nutrition Journal, 2010](#)

Of the probiotic microbes, the genera *Bifidobacter* and *Lactobacillus* are very prevalent. They restore the normal intestinal microflora after antibiotic treatment, produce digestive enzymes, improves food digestibility, suppresses food-borne pathogens.

Probiotics as food

Probiotics essentially work by helping to maintain and replenish these colonies of beneficial bacteria. They can be ingested through a variety of means, including daily capsules, yogurt shots, or enhanced dairy products. Capsules of probiotics are similar to capsules of any nutrient, and contain live bacteria within an easily digestible shell. Small yogurt shots, which contain less than one ounce of yogurt infused with high numbers of probiotics, can be taken once a day instead of the capsule. Significant numbers of probiotics have also become included in many types of milk, cheeses, and yogurts to help keep numbers of gut flora high. [Probiotic effects ehow.com](#)

Health benefits of probiotics

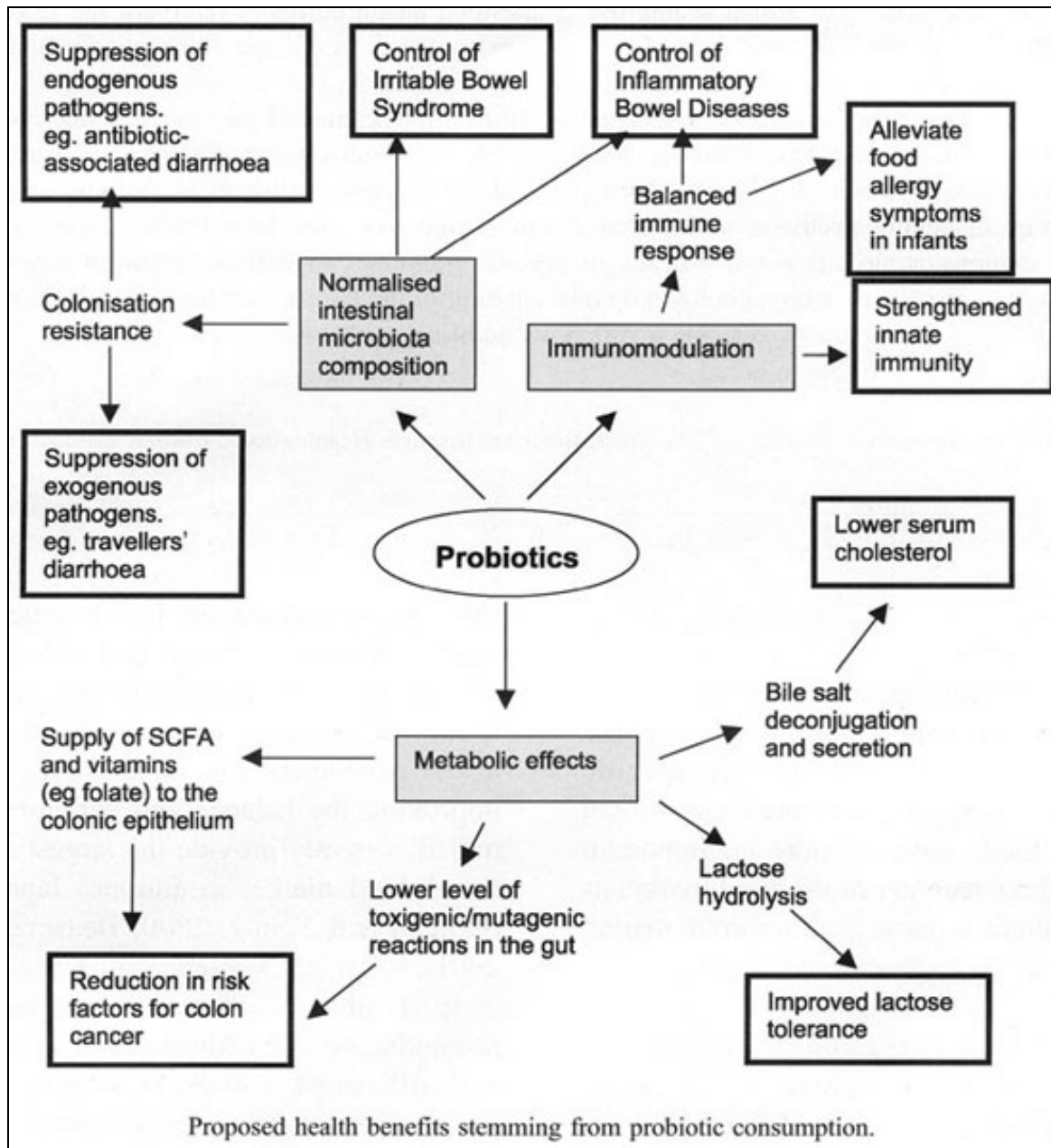
The world is full of microorganisms (including bacteria), and so are people's bodies -- in and on the skin, in the gut, and in other orifices. Friendly bacteria are vital to proper development of the immune system, to protection against microorganisms that could cause disease, and to the digestion and absorption of food and nutrients. Each person's mix of bacteria varies. Interactions between a person and the microorganisms in his body, and among the microorganisms themselves, can be crucial to the person's health and well-being.

This bacterial "balancing act" can be thrown off in two major ways:

1. By antibiotics, when they kill friendly bacteria in the gut along with unfriendly bacteria. Some people use probiotics to try to offset side effects from antibiotics like gas, cramping, or diarrhea. Similarly, some use them to ease symptoms of lactose intolerance -- a condition in which the gut lacks the enzyme needed to digest significant amounts of the major sugar in milk, and which also causes gastrointestinal symptoms.
2. "Unfriendly" microorganisms such as disease-causing bacteria, yeasts, fungi, and parasites can also upset the balance. Researchers are exploring whether probiotics could halt these unfriendly agents in the first place and/or suppress their growth and activity in conditions like:

- Infectious diarrhea
- Irritable bowel syndrome
- Inflammatory bowel disease (e.g., ulcerative colitis and Crohn's disease)
- Infection with *Helicobacter pylori* (*H. pylori*), a bacterium that causes most ulcers and many types of chronic stomach inflammation
- Tooth decay and periodontal disease
- Vaginal infections
- Stomach and respiratory infections that children acquire in daycare
- Skin infections
- Tumours [Probiotics medicinenet.com](#)

Probiotics contribute to well-being in various ways as shown in the figure



 Health benefits of probiotic consumption customprobiotics.com

Concept table

| S.No | English Keywords | | | | German Keywords | | | |
|------|------------------|-----------|---------------------|------|---------------------------------------|-----------------|-----------------------------------------|------------------------------------------------------|
| | Gut | Biology | Probiotic | Food | Gut | Biology | Probiotic | Food |
| 1 | Gut | Biology | Probiotic | Food | Darm | Biologie | Probiotischen | Lebensmittel, Essen, Nahrung, Nahrungsmittel, Futter |
| 2 | Stomach | Mechanism | Probiotics | Feed | Magen | Mechanismus | Probiotika | füttern, Zuführung, Beschickung, Viehfutter |
| 3 | Abdomen | Action | Probiotic organisms | Diet | Abdomen, Bauch, Unterleib, Hinterleib | Aktion, Vorgang | probiotischer organismus, probiotischer | Diät, Schlankheitskur |

| | | | | | | | | |
|----|-----------------|-----------|---------------------|------------------------|----------------------------------|-------------------------------------|-------------------------|---------------------------------------------------|
| | | | | | | | organismen | |
| 4 | Intestine | Function | Beneficial microbes | Infant Formula | Darm | Funktion | nützlichen Mikroben | Säuglingsanfangsnahrung, Säuglingsfertignahrung, |
| 5 | Bowel | Effect | Useful microbes | Nutritional Supplement | Darm | Wirkung | nützlichen Mikroben | Nahrungsergänzung, |
| 6 | Viscera | Influence | Microbiota | Oral Supplement | eingeweide | Einfluss, Beeinflussung, Einwirkung | Mikrobiota | Mundergänzung |
| 7 | Duodenum | Health | Synbioitc | Dietary Supplement | Zwölffingerdarm | Gesundheit, Gesundheitszustand | Synbiotikum, Synbiotika | Nahrungsergänzungsmittel, Nahrungsmittelergänzung |
| 8 | Colon | | Microflora | | Kolon, Doppelpunkt, Dickdarm | | Mikroflora | |
| 9 | Gastro | | Miocobiome | | gastro | | Microbiome, Mikrobiom | |
| 10 | Gastric | | | | gastrisch | | | |
| 11 | Digestive tract | | | | Verdauungstrakt, Verdauungskanal | | | |

Class codes & Definitions



[Click here to view the Class codes and their definitions](#)

Search Strategy

- **Search Engine:** Thomson Innovation
- **Databases covered:** US, Europe, German, Japanese and Korean applications and granted patents
- **Coverage:** Title, Abstract and Claims
- **Timeline:** 1991- 20th Sep 2011

| S.No | Concept | Search Query | Number of hits |
|------|---------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------|
| | | English keyword search | |
| 1 | Keywords for probiotic + IPC class codes for food | (probiotic*1 OR synbiotic*1 OR symbiotic*1 OR (probiotic ADJ2 (microorganism*1 OR micro ADJ2 organism*1 or microbe*1)) OR (Commens*3) OR (Beneficial ADJ2 (microorganism*1 OR micro ADJ2 organism*1 or microbe*1)) OR (useful ADJ2 (microorganism*1 OR micro ADJ2 organism*1 or microbe*1)) AND ((Gut OR stomach OR Abdom*4 OR Intestin*2 OR Bowel* OR Viscera OR Duodenum OR colon) NEAR8 (biology OR Mechanism*1 OR Action*1 OR Function*1 OR Therap*3 OR Effect*1))) AND A23C009123 OR A23L000100 OR A23L000128 OR A23L00129 OR A23L000130 OR A23K000100 OR C12N000100 | 6246 |
| 2 | Keywords for probiotic + US class codes for food | (probiotic*1 OR synbiotic*1 OR symbiotic*1 OR (probiotic ADJ2 (microorganism*1 OR micro ADJ2 organism*1 or microbe*1)) OR (Commens*3) OR (Beneficial ADJ2 (microorganism*1 OR micro ADJ2 organism*1 or microbe*1)) OR (useful ADJ2 (microorganism*1 OR micro ADJ2 organism*1 or microbe*1)) AND ((Gut OR stomach OR Abdom*4 OR Intestin*2 OR Bowel* OR Viscera OR Duodenum OR colon) NEAR8 (biology OR Mechanism*1 OR Action*1 OR Function*1 OR Therap*3 OR Effect*1))) AND 424439 OR 426620 OR 426623 OR 426625 OR 426805 OR 42652 OR 426062 OR 426656 OR 426034 OR 426036 OR 426037 OR 426042 OR 426043 OR 426053 OR 426054 OR 426056 OR 426060 OR 426062 OR 426583 OR 426588 | 328 |
| 3 | | 1 OR 2 | 6358 |

| | | | |
|-------------------------------------|---------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------|
| 4 | Keywords for food + IPC class codes for probiotic | Food OR (Food ADJ2 stuff*1) OR Feed OR (Feed ADJ2 stuff*1) OR diet OR (infant*2 ADJ2 formula*4) OR ((food OR Feed OR nutritional OR oral*2 OR diet) ADJ2 supplement*1) AND C12R000146 OR A61K003574 OR A23C000912 OR C12R001225 OR C12N000120 OR A01N006300 OR A61Q 001100 OR A01N006302 OR C12R000107 OR C12R000108 OR C12R001085 OR C12R000110 OR C12R001125 OR C12R000113 OR C12R000119 OR C12R000123 OR C12R000124 OR C12R001245 OR C12R000125 OR C12R001865 OR C12R000187 OR A61K000899 | 36750 |
| 5 | Keyword for food + US class code for probiotic | Food OR (Food ADJ2 stuff*1) OR Feed OR (Feed ADJ2 stuff*1) OR diet OR (infant*2 ADJ2 formula*4) OR ((food OR Feed OR nutritional OR oral*2 OR diet) ADJ2 supplement*1) AND 424931 OR 424933 OR 42409344 OR 42409345 OR 42409348 OR 426071 OR 426061 OR 4352529 OR 435853 OR 435854 OR 435170 OR 4352521 OR 435849 OR 435855 OR 435856 OR 435857 OR 435885 OR 435942 OR 435943 | 3177 |
| 6 | 4 OR 5 | | 37612 |
| 7 | Final English query- 3 OR 6 | | 40,801(9993 unique hits) |
| German keyword search | | | |
| 8 | Keywords for probiotic + IPC class codes for food | (Probiotischen OR symbioti*3 OR synbiotik*2 OR Probiotika OR (probiotischer ADJ2 organismus) OR (probiotischer ADJ2 organismen) OR (nützlichen ADJ2 Mikroben) OR (nützlichen ADJ2 Mikroben) OR Mikrobiota OR Synbiotikum OR Synbiotika OR Mikroflora OR Microbiome OR Mikrobiom) AND ((Darm OR Magen OR Abdomen OR Bauch OR Unterleib OR Hinterleib OR eingeweide OR Zwölffingerdarm OR Kolon OR Doppelpunkt OR Dickdarm OR gastro OR gastrisch OR Verdauungstrakt OR Verdauungskanal) NEAR8 (Biologie OR Mechanismus OR Aktion OR Vorgang OR Funktion OR Wirkung OR Einfluss OR Beeinflussung OR Einwirkung OR Gesundheit OR Gesundheitszustand)) AND A23C009123 OR A23L000100 OR A23L000128 OR A23L00129 OR A23L000130 OR A23K000100 OR C12N000100 | 3 |
| 9 | Keywords for food + IPC class codes for probiotic | (Säuglingsanfangsnahrung OR Säuglingsfertignahrung OR Nahrungsergänzung OR Mundergänzung OR Nahrungsergänzungsmittel OR Nahrungsmittelergänzung) AND C12R000146 OR A61K003574 OR A23C000912 OR C12R001225 OR C12N000120 OR A01N006300 OR A61Q 001100 OR A01N006302 OR C12R000107 OR C12R000108 OR C12R001085 OR C12R000110 OR C12R001125 OR C12R000113 OR C12R000119 OR C12R000123 OR C12R000124 OR C12R001245 OR C12R000125 OR C12R001865 OR C12R000187 OR A61K000899 | 98 |
| 10 | Final German query- 8 OR 9 | | 101 |
| French keyword search | | | |
| 11 | Keyword for probiotic + IPC class codes for food | (probiotique OR synbiot*4 OR symbiotic*4 OR (des ADJ2 probiotique) OR (les ADJ2 probiotique) OR (de ADJ2 probiotique) OR probiotiques OR (des ADJ2 probiotiques) OR (les ADJ2 probiotiques) OR (de ADJ2 probiotiques) OR (organisme ADJ2 probiotique) OR (organismes ADJ2 probiotiques) OR (microbes ADJ2 bénéfiques) OR ((des ADJ2 microbes) ADJ2 bénéfiques) OR (bactéries ADJ2 bénéfiques) OR (microbes ADJ2 utiles) OR ((des ADJ2 microbes) ADJ2 utiles) OR microbiote OR synbiotique OR synbiotiques OR (flore ADJ2 microbienne) OR microflore) AND ((intestin OR intestin OR viscères OR duodénum OR Colon OR côlon OR Gastro OR gastriques OR stomacal OR tractus digestif) NEAR8 (biologie OR (la ADJ2 biologie) OR (de ADJ2 biologie) OR (mécanisme ADJ2 de) OR mécanismes OR mécanisme de OR l'action OR d'action OR (une ADJ2 action) OR fonction OR (la ADJ2 fonction) OR (fonction ADJ2 de) OR fonctions OR l'effet OR effet de OR effets OR l'influence OR d'influence OR (une ADJ2 influence) OR influencent OR santé OR (la ADJ2 santé) OR ((de ADJ2 la) ADJ2 santé) OR (de ADJ2 santé) OR sanitaires) AND A23C009123 OR A23L000100 OR A23L000128 OR A23L00129 OR A23L000130 OR A23K000100 OR C12N000100 | 22 |
| 12 | Keywords for food + IPC class codes for probiotic | ((formule ADJ2 pour) ADJ2 bébé) OR ((préparations ADJ2 pour) ADJ2 nourrissons) OR (((les ADJ2 préparations) ADJ2 pour) ADJ2 nourrissons) OR (((des ADJ2 préparations) ADJ2 pour) ADJ2 nourrissons) OR (supplément ADJ2 nutritionnel) OR (complément ADJ2 nutritionnel) OR (supplément ADJ2 nutritif) OR (supplément ADJ2 oral) OR (supplémentation ADJ2 orale) OR (complément ADJ2 oral) OR (supplément ADJ2 diététique) OR (complément ADJ2 alimentaire) OR (suppléments ADJ2 alimentaires) OR (compléments ADJ2 alimentaires) AND C12R000146 OR A61K003574 OR A23C000912 OR C12R001225 OR C12N000120 OR A01N006300 OR A61Q 001100 OR A01N006302 OR C12R000107 OR C12R000108 OR C12R001085 OR C12R000110 OR C12R001125 OR C12R000113 OR C12R000119 OR C12R000123 OR C12R000124 OR C12R001245 OR C12R000125 OR C12R001865 OR C12R000187 OR A61K000899 | 337 |
| 13 | Final French query- 11 OR 12 | | 359 |
| Search with Japanese F terms | | | |
| 14 | Keywords for probiotic + Japanese F term for food | (probiotic*1 OR synbiotik*1 OR symbiotic*1 OR (probiotic ADJ2 (microorganism*1 OR micro ADJ2 organism*1 OR microbe*1)) OR (Commens*3) OR (Beneficial ADJ2 (microorganism*1 OR micro ADJ2 organism*1 OR microbe*1)) OR (useful ADJ2 (microorganism*1 OR micro ADJ2 organism*1 OR microbe*1)) AND ((Gut OR stomach OR Abdom*4 OR Intestin*2 OR Bowel* OR Viscera OR Duodenum OR colon) NEAR8 (biology OR Mechanism*1 OR Action*1 OR Function*1 OR Therap*3 OR Effect*1))) AND 4C087CA07 OR 4B035LG44 OR 4B065CA41 OR 4B065CA42 OR 4B065CA43 OR 4B065CA44 | 11 |
| 15 | Keywords for food + Japanese F-term for probiotic | Food OR (Food ADJ2 stuff*1) OR Feed OR (Feed ADJ2 stuff*1) OR diet OR (infant*2 ADJ2 formula*4) OR ((food OR Feed OR nutritional OR oral*2 OR diet) ADJ2 supplement*1) AND 4B001AC31 OR 4B001AC50 OR 4C087BC56 OR 4C087BC57 OR 4C087BC58 OR 4C087BC59 OR 4C087BC60 OR 4C087BC65 OR 4B065AA80 | 1869 |
| 16 | Final query with F-terms- 14 OR 15 | | 1176 |
| 17 | FINAL SEARCH QUERY- 7 OR 10 OR 13 OR 16 | | 41,426(10216 unique hits) |

Relevant patents

| S.No | Publication No | Title | Abstract | Date of patent | Inventors | Assignee |
|------|-------------------------------|-------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------|-----------------------------------------------------------------------------------------------------|--------------------------------|
| 1 | US20070286888 | Additive For Feeds And Feed Containing The Same | An additive for feeds is provided which is efficacious in preventing and ameliorating digestive disorders such as diarrhea occurring as the side effects of the administration of antibiotics and a feed containing same. More specifically, an additive for feeds which comprises (A) Lactobacillus equi cells and (B) cells of at least one bacterium selected from the group consisting of Lactobacillus salivarius, Lactobacillus crispatus and Lactobacillus johnsonii. | 13-Dec-07 | Kado; Yukiko ; Morotomi; Masami. | Kabushiki Kaisha Yakult Honsha |
| 2 | US7906112 | Canine probiotic Lactobacilli | According to the invention there is provided a strain of lactic acid bacteria of the genus Lactobacilli obtainable by isolation from resected and washed canine gastrointestinal tract having a probiotic activity in animals. Methods of use and compositions comprising the Lactobacilli of the present invention are also provided. | 3-Sep-03 | Reid; Gregor, Bruce; Andrew W. , Han; Victor | Urex Biotech, Inc. |
| 3 | US7288245 | Composition having immunoregulating activities | The invention provides a composition comprising novel lactic acid bacteria having immunoregulating activities. Specifically, the invention provides food, drinks or medicaments containing novel lactic acid bacteria separated from "Shibazuke," one kind of traditional Kyoto pickles, and having immunoregulating activities. The lactic acid bacteria belong to Lactobacillus pentosus and have a weak assimilating activity or no assimilating activity for glycerol. | 30-Oct-07 | Nonaka; Yuji, Izumo; Takayuki, Iida; Keiko | Suntory Limited |
| 4 | US20060121015 | Probiotic bifidobacterium strains | A Bifidobacterium strain, AH208, AH209, AH210, AH211, AH212 or AH214 or mutants or variants thereof are useful in the prophylaxis and/or treatment of inflammatory activity especially undesirable gastrointestinal inflammatory activity, such as inflammatory bowel disease or irritable bowel syndrome. | 8-Jun-06 | Collins; John Kevin; O'Sullivan; Gerald Christopher; O'Mahony; Liam; Shanahan; Fergus; Kiely; Barry | Alimentary Health Limited |
| 5 | US7993903B2 | Cholesterol absorption inhibitor | To provide a bacterium belonging to the genus Bifidobacterium which is excellent in a survival ability in the gastrointestinal tract, has an effect of inhibiting the cholesterol absorption in the intestinal tract, and is excellent in lipid metabolism ameliorating effects including decreasing the blood cholesterol level and the like, and shows a high survival rate after storage, and a cholesterol absorption inhibitor using the same. The invention provides a cholesterol absorption inhibitor containing, as an active ingredient, at least one microorganism selected from Bifidobacterium animalis subsp. animalis YIT 10394, Bifidobacterium animalis subsp. lactis JCM 1253, Bifidobacterium animalis subsp. lactis JCM 7117, and Bifidobacterium pseudolongum subsp. globosum. | 9-Aug-11 | Hayakawa; Hiroko , Iino; Tohru, Ishikawa; Fumiyasu | Kabushiki Kaisha Yakult Honsha |
| 6 | US7427398B2 | Mammalian Animal Composition | The present invention relates to the use of probiotic microorganism in the manufacture of a composition for the prevention or reduction of gastrointestinal Campylobacter infection in a mammalian animal. It also relates to a method for the prevention or reduction of gastrointestinal Campylobacter infection in a mammalian animal, the method comprising administering to said animal, a probiotic microorganism. The invention also relates to a probiotic microorganism, for use in preventing or reducing gastrointestinal | 23-Sep-08 | Marie-Louise Amanda Baillon, Leicestershire; Richard Fulton, Butterwick, Leicestershire | Mars, Inc., McLean, VA (US) |

| | | | | | | |
|----|-----------------------------|-----------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------|---------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------|
| | | | Campylobacter infection in a mammalian animal. | | | |
| 7 | US7427397 | Probiotic Propionibacterium | The present invention relates to probiotic Propionibacterium strains and their use in the preparation of probiotic supplements and foods. The invention relates to the provision of Vitamin B12? propionic acid, folacin and bacteriocins by probiotic strains, stimulation of bifidobacteria growth, production of favourable effects on the lipid metabolism and on the immune system of hosts through immunostimulation, immunomodulation or use of a probiotic strain as an adjuvant, reduction of homocysteine and ~ glucuronidase and the prevention, treatment or amelioration of conditions associated with a need for these activities. The probiotic bacteria of the invention can be used in humans or other animals. In at least some applications, the bacteria can be used dead and parts rather than whole cells may be used. The present invention also relates to the preparation of vaccines for use in protecting patients from infectious diseases, in particular tuberculosis. | 23-Sep-08 | Michelle Catherine Adams, Hamilton (AU); Yang Huang, Marsfield (AU) | University of Newcastle Research Associates (TUNRA) Ltd., Callaghan, New South Wales (AU) |
| 8 | US6203797B1 | Dietary Supplement and method for use as a Probiotic, for alleviating the symptoms associated with Irritable Bowel Syndrome | A dietary supplement for use as a probiotic and for alleviating symptoms of irritable bowel syndrome, comprising freeze-dried aloe, fructo-oligosaccharides, and dahlia inulin juice mixture and optionally vitamin B6 (pyridoxine) manganese and L-glutamine. An additional alternate embodiments specifically for alleviation of symptoms of irritable bowel syndrome, including in the base formula bromelain and papain. Also for specific probiotic functions the following friendly bacteria: Lactobacillus bulgaricus, lactobacillus acidophilus, lactobacillus plantarum, and Bifidobacterium bifidum could be added to the base formula. | 20-Mar-01 | Stephen C. Perry, 205 Churchill Dr., Longwood, FL (US) 32779 | - |
| 9 | US7407652B2 | Probiotic System for Aquaculture | Probiotic bacterial strains are provided which inhibit or prevent growth or pathogenic bacteria in marine organisms. Also provided are methods of culturing marine organisms using the probiotic bacteria. | 5-Aug-08 | Ralph A. Elston, Carlsborg, Arthur Gee, Tacoma, WA (US); Karen L. Humphrey, Sequim, WA (US) | AquaTechnics Inc., Sequim, WA (US) |
| 10 | US7910144 | Pet food composition for treating helicobacter species in pets | The present disclosure provides compositions intended for the prophylaxis or the treatment of disorders related to GHLO infections in pets, the compositions are prepared using at least one strain of lactic bacteria and/or one of its metabolites or a medium fermented by at least one lactic bacteria that has been isolated and selected for its ability to display a strong anti- Helicobacter bactericidal activity in vitro. | 22-Mar-11 | Ballevre; Oliver , Corthesy-Theulaz; Irene, Enslin; Adolphe MarcYves | Nestec S.A. (Vevey, CH) |
| 11 | WO08076696 | The Gut microbiome as a biomarker and therapeutic target for treating obesity or an obesity related disorder | The present invention relates to the gut microbiome as a biomarker and therapeutic target for energy harvesting, weight loss or gain, and/or obesity in a subject. In particular, the invention provides methods of altering and monitoring the relative abundance of Bacteroides and Firmicutes in the gut microbiome of a subject. | 26-Jun-08 | Turnbaugh Peter J; Ley Ruth E; Mahowald Michael A; Gordon Jeffrey I | Saint Louis University [US]; Turnbaugh Peter J [US]; Ley Ruth E [US]; Mahowald Michael A [US]; Gordon Jeffrey I [US] |
| 12 | WO08116916 | Synbiotic to improve Gut Microbiota | The use of a probiotic strain of Lactobacillus rhamnosus and an oligosaccharide mixture which comprises 5-70 wt% of at least one N-acetylated oligosaccharide selected from the group comprising GalNAcGal, 3Galss1, 4Glc and Galss1, 6GalNAcGal, 3Galss1, 4Glc, 20-90 wt% of at least one neutral | 2-Oct-08 | Huber-Haag Karl-Josef; Fichot Marie-Claire; Rochat Florence; Sprenger Norbert | NESTEC SA [CH]; Huber-Haag Karl-Josef [CH]; Fichot Marie-Claire [CH]; Rochat Florence [CH]; Sprenger |

| | | | | | | |
|----|-----------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------|---------------------------------------|---------------------------------------------|
| | | | oligosaccharide selected from the group comprising Galssl,6Gal, Galssl,6Galssl,4Glc Galssl,6Galssl,6Glc, Galssl,3Galssl,3Glc, Galss 1,3Galss 1,4Glc, Galss 1,6Galss 1,6Galss 1,4Glc, Galss 1,6Galss 1,3Galss 1,4Glc Galssl,3Galssl,6Galssl,4Glc and Galss 1,3Galssl,3Galssl, 4Glc and 5-50 wt% of at least one sialylated oligosaccharide selected from the group comprising NeuAca2,3Galssl,4Glc and NeuAca2,6Galssl,4Glc in the manufacture of a medicament or therapeutic nutritional composition for promoting the development of an early bifidogenic intestinal microbiota in infants delivered by caesarean section is disclosed. | | | Norbert [CH] |
| 13 | WO10096564 | Dietary Supplements containing Polyunsaturated Omega-3 Fatty acids and Probiotic Bacteria with potential Gastrointestinal and Dermatological benefits | This invention provides a new family of dietary supplements containing polyunsaturated fatty acids, a probiotic culture, and optionally hydrolyzed collagen. The prototype supplement contains cranberry seed oil as a source of omega-3 and omega-6 fatty acids, along with Vitamin E. The prototype supplement also contains a special strain of Lactobacillus casei as well as fish collagen. Nutritional supplements of this invention can be provided in capsule or tablet form, or as a food item such as a chocolate confectionary. Each of the three ingredients confers benefits on their own, allowing the consumer to get three nutritional supplements in the convenience of a single product. The ingredients are also believed to work synergistically to achieve a wider and more durable overall effect.; In human clinical trials, consumption of the dietary supplement was associated subjective observations of improvement in softness and moisture of facial skin, reduction in wrinkles, and improvement in function of the gastrointestinal tract. | 26-Aug-10 | Koide Yoshiteru | Probiohealth LLC [US]; Koide Yoshiteru [US] |
| 14 | US6783780BI | Preparation that contains oligosaccharides and probiotics | A preparation having a health-promoting action for the prevention and/or treatment of disorders of the digestive tract, contains one or more probiotics and one or more non-digestible oligosaccharides. The probiotics are preferably chosen from bacterial strains such as a strain of a Lactobacillus or a Bifido bacterium species and from yeast strains such as a strain of a Saccharomyces species. | 31-Aug-04 | De Jong; Patricia, Van Laere; Katrien | N.V. Nutricia (Zoetermeer, NL) |

Taxonomy

Upload Taxonomy file [Gutbiotaxonomy.mm](#)

```
.markmap-node {
  cursor: pointer;
}

.markmap-node-circle {
  fill: #fff;
  stroke-width: 1.5px;
}

.markmap-node-text {
  fill: #000;
  font: 10px sans-serif;
}

.markmap-link {
  fill: none;
}

pre, .mw-code{
  background-color: transparent;
}
d3.xml("", function(error, data) {
  if (error) throw error;

  markmap("svg#mindmap_6951f2f62782de2e33eabd2870f18035", data, {
    preset: "colorful",
    linkShape: "diagonal"
  }, "xml");
});
```

Sample Patent Analysis Sheet

[Click here to download the sample patent analysis sheet](#)

Assignee analysis and IP activity

Top Assignees

- NESTLE SA, AJINOMOTO and VALIO LTD are the amongst the major players in the field of Probiotic foods

File:Majorplayer.jpg

Top Assignees

Geographical distribution

- Based on patent number

File:Newgdistribut of patentsn.jpg

Based on relevant patents

Note: Countries with lesser than 14 patents are included in others

- Including all family members

File:Gdistribut of familym.jpg

Based on patent family members

Note: Countries with less than 187 patents are included in others

IP Activity

File:Yearwiseactvtn.jpg

IP activity

File:Priorityyern.jpg

IP activity

Top Cited patents

- Patents with the maximum number of forward citations were determined and the graph shows the top 13 patents with corresponding assignees.

File:Citatom.jpg


Top cited patents



Dashboard

Assignees were categorized based on the type of their products viz. food,feed or beverage, biotech, pharma,other industries and research and educational institutions

| | |
|--------------------------------------------------------|---------------------------|
| Assignee categorization Dashboard link | File:Dashboardt thumb.png |
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Patent to product mapping

| S.No | Patent no | Title | Assignee | Products | Snapshot |
|------|-----------------|-----------------------------------------------------------------------|-----------|------------------------------------------------|---------------------------------------------------------------------------------------|
| 1 | US20110014248A1 | Cosmetic use of microorganism(s) for the treatment of scalp disorders | NESTLE SA | INNEOV HAIR HEALTH DS DANDRUFF |  |

| | | | | | |
|----|-----------------|----------------------------------------------------------------------------------------------------------------------------|---------------------|-------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| 2 | WO2011012655A1 | Nutritional composition for breast-fed infants or pets with probiotics and selected nutrients | NESTLE SA | FortiFlora® Canine Nutritional Supplements |  |
| 3 | US5603930A | Lactobacillus johnsonii CNCM I-1225 | NESTLE SA | LC1 yoghurt |  |
| 4 | US20050084483A1 | Farm animal product with probiotic enterococcus bacteria | CHR HANSEN AS | Probios® Precise | 150px |
| 5 | JP7250670A | Lactic acid bacteria of genus Lactobacillus | AJINOMOTO CO INC | Ready to Drink® CALPICO, CALPICO Concentrate, CALPIS LACTO, Calsporin, Finelact | 120px |
| 6 | US20060269534A1 | Feline probiotic bifidobacteria | PROCTER & GAMBLE CO | Prostora? Max | 150px |
| 7 | US20060002907A1 | Method of improving immune function in mamals using lactobacillus reuteri strains | BIOGAIA AB | BioGaia ProTectis | 100px |
| 8 | US7507572B2 | Compositions comprising lactobacillus plantarum strains in combination with tannin and new lactobacillus plantarum strains | PROBI AB | ProViva | 150px |
| 9 | KR993562B1 | Lactobacillus strains | BIFODAN AS | EcoVag Balance® | 150px |
| 10 | EP2349295A1 | Pharmaceutical preparation comprising a combination of Streptococcus strains and Lactobacillus strains | ESSUM AB | VERUM HÄLSOFIL and VERUM® HALSOYOGHURT | 100px |
| 11 | US20100074878A1 | Probiotic bacterium: lactobacillus fermentum | PROBIOMICS LTD | PCC®, proTract®, proTract® IBS, proTract® | 150px |
| 12 | US20050271640A1 | Method for inhibiting yeast growth | VALIO LTD | Culturelle | 110px |
| 13 | US6399055B1 | Method and composition for treatment of infant diarrhea | GROUPE DANONE | Actimel | 50px |
| 14 | US20040047849A1 | Use of some lactobacillus strains in treating allergy | GENMONT BIOTECH INC | Probiotic AAP-1 | 150px |

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