

Lactubacillus species essay sample



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What is it? Lactobacillus is a type of bacteria. There are lots of different species of lactobacillus. These are “friendly” bacteria that normally live in our digestive, urinary, and genital systems without causing disease.

Lactobacillus is also in some fermented foods like yogurt and in dietary supplements. Lactobacillus is used for treating and preventing diarrhea, including infectious types such as rotaviral diarrhea in children and traveler’s diarrhea. It is also used to prevent and treat diarrhea associated with using antibiotics. Some people use lactobacillus for general digestion problems; irritable bowel syndrome (IBS); colic in babies; Crohn’s disease; inflammation of the colon; and a serious gut problem called necrotizing enterocolitis (NEC) in babies born prematurely. Lactobacillus is also used for infection with *Helicobacter pylori*, the type of bacteria that causes ulcers, and also for other types of infections including urinary tract infections (UTIs), vaginal yeast infections, to prevent the common cold in adults, and to prevent respiratory infections in children attending daycare centers.

It is also being tested to prevent serious infections in people on ventilators. Lactobacillus is used for skin disorders such as fever blisters, canker sores, eczema (allergic dermatitis); and acne. It is also used for high cholesterol, lactose intolerance, Lyme disease, hives, and to boost the immune system. Women sometimes use lactobacillus suppositories to treat vaginal infections and urinary tract infections (UTIs). There are concerns about the quality of some lactobacillus products. Some products labeled to contain *Lactobacillus acidophilus* actually contain no *Lactobacillus acidophilus*, or they contain a different strain of lactobacillus such as *Lactobacillus bulgaricus*. Some products are contaminated with “unfriendly” bacteria.

— Lactobacillus acidophilus belongs to a group of bacteria that normally live in the human small intestine and vagina. *L. acidophilus* is one of the most commonly used probiotics, or “good germs.” These are microorganisms that help to maintain a healthy intestinal tract and aid digestion. Common food sources of *L. acidophilus* include yogurt and fermented soy products, such as miso and tempeh.

Gram-positive bacilli

-Lactobacilli are generally long, slender, large gram-positive bacilli but may be more variable or may be chains or spirals or short and coccobacillary forms; they are seen as normal flora in respiratory and genital sites but rarely cause infection

Lactobacillus

A genus of gram-positive, microaerophilic, rod-shaped bacteria occurring widely in nature. Its species are also part of the many normal flora of the mouth, intestinal tract, and vagina of many mammals, including humans. Pathogenicity from this genus is rare.

Are generally long, slender, large gram-positive bacilli

Lactobacillus spp. | The lactobacilli are nonsporulating, Gram-positive bacilli classified in the large family Lactobacillaceae. Often they are found as long, slender Gram-positive rods in long chains. Usually they are contaminating commensals that are readily recognized from colony morphology and the fact that they are catalase-negative. However, their apparent presence in wound cultures or blood cultures suggests that *Erysipelothrix rhusiopathiae* should be ruled out with inoculation of a TSI

slant (see below). Furthermore, *Leuconostoc* should be excluded in blood cultures, although *Leuconostoc* more closely resembles streptococci on Gram-stain. *Leuconostoc* is PYR-positive, catalase-negative, and resistant to vancomycin; lactobacilli are catalase-negative and PYR-variable.

Microflora-community of microorganisms including algae, fungi, and bacteria

PATHOGENICITY

-For more than a century, science has known that the Döderlein bacilli dominate (to control) the observable microflora of the normal healthy vagina of women of reproductive age; microscopic studies show Gram-positive rods to be predominant (present as the strongest). An altered cultivable flora arises when the number of lactobacilli in the vaginal fluid drastically decreases, and opportunistic bacteria, normally present in minute proportions, overgrow the vaginal epithelium. This leads to a rising pH (> 4, 7) which is conducive to the growth of anaerobes [1]. Maintenance of the normal vaginal flora is supposedly essential because it not only occupies the epithelial surface, but also constitutes a milieu hostile to attacks of pathogens [2]. A prevailing assumption is that the dominating normal vaginal flora comprises the genus *Lactobacillus* more specifically now known as the *L. acidophilus* complex. This assumption is based on earlier literature describing studies using phenotypic methods for typing bacteria and a line of reasoning about the bacterial ecology of normal niches in humans [1]. To acquire further insight into microbial variation of normally occurring bacterial population in defined biological niches, it is important to look closely at the

physiology of the particular niche [3]. Conditions making up the niche must be defined.

The clinical criteria of Amsel [4] and the scoring system of Nugent [5] provide means for categorizing vaginal flora as normal or otherwise, though mainly in relation to the clinical entity bacterial vaginosis (BV) [6]. Certain physiological conditions are generally assumed necessary if lactobacilli are to thrive in the healthy vagina of a woman of childbearing age. One such factor is the glycogen contents of the vaginal epithelium that co-varies with estrogen levels. During stimulation for in vitro fertilization (IVF), estrogen levels can range from extremely low at the start of treatment to high during pregnancy. This provides an opportunity, to study vaginal flora variation in circumstances that mirror the normal hormonal variation occurring a woman's lifetime. We have previously published studies on healthy women whose vaginal flora status is deemed normal according to Amsel and Nugent [6, 7]. Using traditional phenotypic methods, as well as genotypic methods, we confirmed and extended earlier studies implicating *L. crispatus*, *L. gasseri*, *L. jensenii* [1, 8], and adding *L. iners* [9] to the list of vaginal Lactobacilli which normally dominate.

The importance of a true random sample to study the dominant vaginal flora in contrast to bacterial strains from culture collections was also made clear [7]. In a second study [6], we used PCR with pyrosequencing followed by signature matching with published type strain sequences as the chosen method to identify those Gram-positive rods constituting the dominant vaginal flora. Both studies were performed on a defined population of fertile, healthy women scheduled for a regular PAP smear. In the first study, three

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colonies were selected from each sample, in the second, up to ten colonies were studied from each cultured sample. Both studies showed dominance by *L. crispatus*, *L. jensenii* and/or *L. gasseri*, and in some cases, the newly described, *L. iners*. These findings agree with reports from other parts of the world, even those studies having poorly defined inclusion criteria and those including strains from culture collections [1]. Our research also shows that three randomly collected colonies will represent the dominating flora. Using a similar approach and definitions according to Amsel and Nugent criteria, this study aims at further characterizing the normal cultivable vaginal flora present at differing estradiol levels in plasma during ovarian stimulation for IVF treatment.

How effective is it? Natural Medicines Comprehensive Database rates effectiveness based on scientific evidence according to the following scale: Effective, Likely Effective, Possibly Effective, Possibly Ineffective, Likely Ineffective, Ineffective, and Insufficient Evidence to Rate. The effectiveness ratings for LACTOBACILLUS are as follows:

Likely effective for... Diarrhea in children caused by a certain virus (rotavirus). Children with rotaviral diarrhea who are being treated with lactobacillus seem to get over their diarrhea about a half day earlier than they would without this treatment. Larger doses of lactobacillus are more effective than smaller ones. At least 10 billion colony-forming units during the first 48 hours should be used. Possibly effective for... Preventing diarrhea in children caused by antibiotics. Giving children Lactobacillus GG (Culturelle) along with antibiotics seems to reduce the diarrhea that children sometimes experience when taking antibiotics alone. Preventing diarrhea in
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hospitalized adults. Drinking a specific beverage containing *Lactobacillus casei*, *Lactobacillus bulgaricus*, and *Streptococcus thermophilus* (Actimel, Danone) twice daily during antibiotic treatment and for a week afterwards significantly decreases the risk of developing diarrhea. Preventing diarrhea due to traveling. Traveler's diarrhea is caused by bacteria, viruses, or parasites that the traveler has not been exposed to before. Taking a specific strain of *Lactobacillus rhamnosus*, *Lactobacillus GG* (Culturelle) seems to help prevent diarrhea in travelers.

The effectiveness of *Lactobacillus GG* can vary a lot depending on the travel destination because of differences in bacteria in different locations.

Preventing diarrhea due to cancer treatment (chemotherapy). A chemotherapy drug called 5-fluorouracil can cause severe diarrhea and other gastrointestinal (GI) side effects. There is some evidence that patients with cancer of the colon or rectum have less severe diarrhea, less stomach discomfort, shorter hospital care, and require fewer chemotherapy dose reductions due to GI side effects when they take a particular strain of *Lactobacillus rhamnosus*, *Lactobacillus GG* (Culturelle). Colic in babies. Taking a specific *Lactobacillus reuteri* product (Probiotic Drops, BioGaia AB) 100 million CFUs once daily for 21-28 days reduces daily crying time in nursing infants. Taking this *Lactobacillus reuteri* product seems to be more effective than using the drug simethicone. Lung infections. Children ages 1 to 6 years who attend daycare centers seem to get fewer and less severe lung infections when given milk containing *Lactobacillus GG* or a specific combination product containing both *Lactobacillus acidophilus* and *Bifidobacterium* (HOWARU Protect).

Treating a bowel condition called ulcerative colitis. Some research suggests that taking a specific combination product containing lactobacillus, bifidobacteria, and streptococcus might improve symptoms. Taking lactobacillus also seems to help treat chronic pouchitis, a complication of surgery for ulcerative colitis. Continuous treatment for one year with a specific concentrated formulation of lactobacillus, bifidobacterium, and streptococcus (VSL#3) seems to help most patients. Treating irritable bowel syndrome (IBS). There is some research showing that certain strains of lactobacillus, but not others, can improve symptoms of IBS such as bloating, and stomach pain. Treating vaginal infections caused by bacteria (bacterial vaginosis). Clinical research shows certain strains of Lactobacillus might help treat bacterial vaginosis when applied inside the vagina.

Researchers have found Lactobacillus acidophilus suppositories (Vivag, Pharma Vinci A/S, Denmark) and vaginal tablets (Gynoflor, Medinova, Switzerland) may be effective. Researchers also found that vaginal capsules Lactobacillus gasseri and Lactobacillus rhamnosus, seem to lengthen the time between infections. Treating and preventing eczema (atopic dermatitis) in infants and children who are allergic to cow's milk. A combination of freeze-dried Lactobacillus rhamnosus and Lactobacillus reuteri seems to reduce eczema symptoms in children ages 1 to 13 years. Helping prescription medications treat Helicobacter pylori (H pylori) infection, which causes stomach ulcers. Treating diarrhea caused by the bacterium Clostridium difficile. Possibly ineffective for... Vaginal yeast infections after taking antibiotics. There is evidence that taking lactobacillus by mouth or eating yogurt enriched with lactobacillus doesn't prevent vaginal yeast

infections after antibiotics. However, women with yeast infections who use vaginal suppositories containing 1 billion live Lactobacillus GG bacteria twice daily for 7 days in combination with conventional treatment often report their symptoms improve. Crohn's disease.

Lactose intolerance.

Reducing symptoms of too much bacteria in the intestines. Insufficient evidence to rate effectiveness for... Urinary tract infections (UTIs). There is some preliminary evidence that vaginal use of some Lactobacillus species might be helpful for preventing UTIs, but not all studies have agreed.

General digestion problems.

Necrotizing enterocolitis (NEC) in babies born prematurely. High cholesterol.

Sensitivity to milk (lactose-intolerance).

Lyme disease.

Hives.

Fever blisters.

Canker sores.

Acne.

Cancer.

Boosting the immune system.

Common cold.

Preventing infections in people on ventilators.

Other conditions.

More evidence is needed to rate lactobacillus for these uses. How does it work? Return to top

Many bacteria and other organisms live in our bodies normally. “ Friendly”

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bacteria such as lactobacillus can help us break down food, absorb nutrients, and fight off “ unfriendly” organisms that might cause diseases such as diarrhea. Are there safety concerns? Return to top

Lactobacillus is LIKELY SAFE for most people, including babies and children.

Side effects are usually mild and most often include intestinal gas or

bloating. Lactobacillus is also LIKELY SAFE for women to use inside the

vagina. Special precautions & warnings: Pregnancy and breast-feeding:

Using lactobacillus during pregnancy and breast-feeding is POSSIBLY SAFE.

Lactobacillus GG has been used safely in pregnant and breast-feeding

women. But other types of lactobacillus have not been studied during

pregnancy and breast-feeding, so their safety is unknown. Weakened

immune system: There is some concern that lactobacillus from supplements

that contain live bacteria might grow too well in people whose immune

systems are weakened. This includes people with HIV/AIDS or people who

have taken medicines to prevent rejection of a transplanted organ.

Lactobacillus has caused disease (rarely) in people with weakened immune

systems. To be on the safe side, if you have a weakened immune system,

talk with your healthcare provider before taking lactobacillus. Short bowel

syndrome: People with short bowel syndrome might be more likely than

other people to develop lactobacillus infections. If you have this condition,

talk with your healthcare provider before taking lactobacillus. Are there

interactions with medications? Return to top

ModerateBe cautious with this combination.

Antibiotic drugs

Antibiotics are used to reduce harmful bacteria in the body. Antibiotics can also reduce friendly bacteria in the body. Lactobacillus is a type of friendly bacteria. Taking antibiotics along with lactobacillus can reduce the effectiveness of lactobacillus. To avoid this interaction, take lactobacillus products at least 2 hours before or after antibiotics.

Medications that decrease the immune system (Immunosuppressants)

Lactobacillus contains live bacteria and yeast. The immune system usually controls bacteria and yeast in the body to prevent infections. Medications that decrease the immune system can increase your chances of getting sick from bacteria and yeast. Taking lactobacillus along with medications that decrease the immune system might increase the chances of getting sick. Some medications that decrease the immune system include azathioprine (Imuran), basiliximab (Simulect), cyclosporine (Neoral, Sandimmune), daclizumab (Zenapax), muromonab-CD3 (OKT3, Orthoclone OKT3), mycophenolate (CellCept), tacrolimus (FK506, Prograf), sirolimus (Rapamune), prednisone (Deltasone, Orasone), corticosteroids (glucocorticoids), and others.