Frequently Asked Questions

1) What is Acidophilus Milk?

Ans. Acidophilus milk is cultured milk; sometimes called sweet acidophilus milk that has a therapeutic value.This cultured product is usually low in fat and has a longer shelf life than ordinary milk. The bacterium *Lactobacillus acidophilus*is added to it, giving it a tangy flavour and thickened texture and may be readily implanted in the intestinal tract if adequate amounts of the cultured milk are consumed over a period of time.

2) Write a note on Lactobacillus acidophilus.

Ans. *L. acidophilus* is a homofermentative, microaerophilic species fermenting sugars into lactic acid, and grows readily at rather low pH values (below pH 5.0) and has an optimum growth temperature of around 37 °C (99 °F). *L. acidophilus* occurs naturally in the human and animal gastrointestinal tract and mouth. Some strains of *L. acidophilus* may be considered to have probiotic characteristics.These strains are commercially used in many dairy products, sometimes together with *Streptococcus thermophilus* and *Lactobacillus delbrueckii subsp. bulgaricus* in the production of acidophilus-type yogurt. Its genome has been sequenced. ***Lactobacillus acidophilus*** in Latin 'acid-loving milk-bacillus' is a species of gram positive bacteria in the genus *Lactobacillus*.

L. acidophilus has been tested, grading the evidence for each use from strong evidence of effectiveness, through unclear, down to strong evidence of ineffectiveness. According to the list there is good (rather than strong) evidence supporting the use of *L. acidophilus* or yogurt enriched with it for the treatment of some vaginal infections; effectiveness for other conditions ranges from unclear to fair negative evidence.

Some *L. acidophilus* strains may be able to survive gastrointestinal transit, being resistant to bile, low pH, and digestive enzymes. They may then be able to adhere to human epithelial cell lines and human intestinal mucus.

A blend of bacterial strains including *L. acidophilus NCFM* decreased the incidence of paediatric diarrhoea. *L. acidophilus* led to a significant decrease in levels of toxic amines in the

blood of dialysis patients with small bowel bacterial overgrowth. At adequate daily feeding levels, *L. acidophilus* may facilitate lactose digestion in lactose-intolerant subjects.

3) Write a note on the procedure for preparation of Acidophilus Milk.

Ans. The procedure for preparation of Acidophilus milk is done by carefully clean a quart thermos bottle by allowing it to stand overnight full of water containing some washing powder or a little household ammonia; then scald it. Place the cork, a can opener and thermometer in a pan and pour boiling water over them. Wipe the top of a one-pound can of evaporated milk free from dust and pour boiling water over it. Open the can and pour contents into the pan that has been scalded. Fill the can with boiling water and pour into the evaporated milk. Immerse the pan in cool water and stir the mixture with the thermometer until the temperature comes down to about 105°F. Add 2 or 3 ounces of commercial *B. acidophilus* culture, mix, and transfer to the thermos bottle. (The temperature should now be between 1000 and 1020 F.) Cork and let stand for 24 hours, or until the milk has acquired a pleasantly sour taste. When this is attained, transfer to a clean milk bottle and place in the refrigerator. Succeeding cultures of acidophilus are prepared by using about a teacupful (6 ounces) of milk culture previous made to inoculate the diluted evaporated milk for the next run. Proceeding in such a manner, it will be found that acid is produced at a more rapid rate than when the first quart was prepared using the commercial broth culture as a starter. 13 to 17 hours is now quite sufficient. If fermentation is allowed to proceed for a longer time so much acid is developed that the taste becomes unpleasantly sour. After a little experience one may stop the action of the bacteria at any desired degree of sourness. This is affected by merely transferring the milk to a clean glass bottle and placing in the refrigerator. It is perfectly safe to keep the culture at room temperature, but, as has already been mentioned, a considerable increase in acidity may be expected. This is of little consequence, however, if the product is consumed within 24 hours. On the other hand, if the milk is kept in a refrigerator it should be consumed within 48 hours for the reason that the organisms rapidly die out at such low temperatures. One or two tablespoonful of lactose or dextrin maybe added to each glass of milk consumed, though the pleasant tart taste of the sour milk is to some extent injured by this addition. Most people prefer to take the carbohydrate separately. Typical acidophilus milk has a fine grained curd. It is rather viscous, especially at low temperatures, but not "stringy." It does not develop so high acidity as is produced by the *B. bulgaricus*. When a culture becomes rapidly very sour or bitter and is extremely viscous so that when poured, from a bottle it runs out in

strings, it is an indication that the culture used was *B. bulgaricus*. This should be discarded and a new commercial culture obtained from a different source. At any time when souring does not seem to be taking place normally a new start should be made. This process is similar to the one used to make yogurt but results in a thinner, drinkable product. It is possible to make acidophilus milk at home, as long as the cook has the correct bacteria. Starter cultures that contain *L. acidophilus* are available, although they often contain other strains, including *Streptococcus thermophilus* and *Lactobacillus bulgaricus* that are commonly used to make yogurt. If fermented too long, the milk will turn into yogurt.

4) Explain the starter culture used in Acidophilus milk.

Ans. It is now possible to obtain a pure broth culture of *Lactobacillus acidophilus* at, or through, all drug stores, although they often contain other strains, including *Streptococcus thermophilus* and *Lactobacillus bulgaricus* that are commonly used to make yogurt. If fermented too long, the milk will turn into yogurt. The product of a reliable manufacturer should be specified. *Lactobacillus acidophilus* is a member of the *Lactobacillus* genus of bacteria. These bacteria can be found in the mouth, intestine, and vagina. *L. acidophilus* is thought to benefit health, since it produces vitamin K and lactase. However, *L. acidophilus* cannot make many other vitamins and amino acids. Because of this, *L. acidophilus* is mostly found in the upper gastrointestinal (GI) tract where there are higher amounts of these nutrients. *L. acidophilus* is commonly used in food, such as yogurt, other dairy products, and fermented soy products, such as miso and tempeh.

L. acidophilus is one of the most commonly used probiotics, microorganisms that are used to promote health. Probiotics are different from prebiotics, which are complex sugars that may support the growth of "good" bacteria in the intestinal tract. The word "synbiotic" means that a product has both a probiotic and a prebiotic. There is good evidence for the use of *L. acidophilus* in treating vaginal infections. However, there is unclear evidence for other medicinal uses of *L. acidophilus*, such as in irritable bowel syndrome, brain disorders, asthma, high cholesterol, lactose digestion, or diarrhea.

5) Write a short note on the control of temperature during the preparation of acidophilus milk.

Ans. The acidophilus organism grows best at 90° to 105° F. It exhibits less growth at lower temperatures, though it has been found that the organism produces acid at a considerable rate even at room temperature. (Four observations showed an average increase of 0.65 per cent lactic acid in 24 hours at 680 F.) Milk that has been inoculated can be warmed to 1000 to 1050 F and transferred to a thermos bottle where it will maintain a temperature high enough to permit very satisfactory growth in 15 to 24 hours. The rate at which the temperature falls off depends upon the quality of the bottle and also, of course, on the temperature of the surrounding air. But it has been found that beginning with a temperature of 1000 F., a quart thermos bottle of average quality will permit the temperature to drop no more than 100 to 150 in 24 hours. Such temperatures are found quite satisfactory for the rapid production of acidophilus milk.

6) Explain the preparation of mother culture for acidophilus milk.

Ans. Fill two 1000 cc Erlenmeyer flasks half full with skim milk and plug tightly with cotton sterilize in a pressure cooker or in a steam autoclave for 30 minutes at 15 pounds pressure. The sterilized milk should show a slight brown colour and should have a caramelized odour. As a check on the efficiency of sterilization, keep the sterilized milk at room temperature for several daysafter it has been removed from the sterilizer. During this period there will be growth of bacteria that were not killed by the heating, with the result that an undesirable fermentation will take place in the milk. For inoculation of the milk use a wire needle that has been sterilized in a flame. The mouth of the flask containing the sterilized milk and the mouth of the flask containing the culture should be sterilized immediately after removing the cotton plugs by passing them through an open flame. Care must be taken to avoid contaminating the cotton plugs. The inoculated milk is incubated at 98 6° F. for about 36 hours. At the end of this period a solid coagulum should have formed, free from any gas holes.

7) **Write a note on Preparation of bulk culture for acidophilus milk.**

Ans. Use high quality skim milk containing a minimum number of bacteria. Place the milk in 5-gallon stainless steel cans. The cans should be filled to within 6 inches of the top. A straight-sided, shotgun type of can is convenient. The lid should be of the overhanging type, a sheet of parchment paper may be placed over the top of the can before the lid is placed in position. A pressure cooker of a size large enough to accommodate three or four 5-gallon cans is convenient

to use for sterilizing the milk. Before sterilizationthe milk should be preheated to a temperature of approximately 100° F. Sterilization consists of heating for a period of from 13 to 15 minutes after the air has been expelled from the cooker, at 15 pounds per square inch gauge pressure.This gives a temperature of 249.8°F. The sterilized milk should have a slightly brown colour and caramelized flavour.The sterilized milk should be placed in a tank of water and cooled to atemperature of 100° F. It then can be inoculated with mother culture, using approximately 2 ounces for 412 gallons of milk. A steam-sterilized metal rod may be used for stirring the milk briefly after inoculation, or this stirring may be omitted.

The water in the tank should be maintained at 98 6° F. ± 1 ° F. by means of an electric heater thermostatically controlled. Normally the milk will show a good coagulation without wheying off after 36 hours of incubation. Cool the acidophilus milk by means of cold running water to a temperatureof 50° to 60° F. It is now ready for marketing. Agitate the coagulum vigorously, using a sterilized stirring rod, until it is of a creamy consistency. Placethe milk in bottles, jars, or lacquered tin cans. The milk may be stored at room temperature for a period not exceeding 14 days. If stored longer there will be a marked decrease in the number of bacteria present.

8) Explain the Nutritional value of Acidophilus Milk.

Ans. The nutritive value of this product is exactly the same as that of ordinary cow's milk. Evaporated milk is whole cow's milk evaporated down to one-half its bulk. Therefore, by diluting a can of it with an equal amount of water the composition will be the same as that of normal cow's milk. The evaporated milk flavour, which is objectionable to some people, is scarcely noticeable in acidophilus milk prepared from that product.

Most of the commercially available products have about 1% milk fat, providing about 110 calories per 8 ounces (236 mL); regular 1% milk has about 102 calories. Both have about the same amount of protein (8 grams) and calcium (about 30% of the recommended daily allowance).

Nutrition Facts of Serving Size 1 cup: Calories from Fat 43 / Calories 122

Ingredients		% Daily Values*
Total Fat	4.83g	7%
Saturated Fat	3.08g	
Polyunsaturated Fat	0.179g	15%
Monounsaturated Fat	1.372g	

Cholesterol	20mg	7%
Sodium	100mg	4%
Potassium	368mg	
Total Carbohydrate Dietary Fiber Sugars	11.47g 0g 12.4g	4% 0%
Protein	8.08g	
Vitamin A Vitamin C Calcium Iron		9% 1% 29% 0%

9) Explain the Storage conditions for acidophilus milk.

Ans. Like other milk products, acidophilus milk should be checked regularly for changes in texture, color, or smell. If the milk begins to smell different or change color, it should be discarded. Active bacteria in the milk can continue reproducing as the product ages, causing it to become dangerous to consume. It is important to keep this type of milk chilled to minimize bacterial activity. When homemade, this milk should be used within a week; commercial products may have a longer expiration date.

10) Write a note on health benefits of acidophilus milk.

Ans. From the earliest times in 'Europe and the East, the use of a variety of soured milk preparations has been reputed to maintain health. Metchnikoff and others established the fact that it reduced the intestinal putrefactive bacterial flora, including colon, and that this materially reduced intestinal toxaemia.

Acidophilus Milk is used in place of regular cow's milk for some individuals who are lactose intolerant. During fermentation, the bacteria feed on the lactose sugar in the milk, breaking some of it down. For people who are lactose intolerant, that means their bodies may have an easier time digesting this milk. Acidophilus milk is only lightly fermented, however, so it does still contain milk sugar; this can cause gas and bloating in some people.

Acidophilus milk is also sometimes recommended for use with infants who are old enough to drink cow's milk. One theory holds that, when consumed by infants, acidophilus milk might reduce the chances of the child of developing allergies later in life. There is no proof that

drinking this milk will cure an already existing allergy. Some studies also suggest that this type of milk may help lower cholesterol levels. The bacteria in the intestines may help prevent cholesterol in food from being absorbed so it does not enter the bloodstream.

11) Explain the side effects of the use of acidophilus milk.

Ans. Although it is thought to be safe with few side effects, *L. acidophilus* by mouth should be avoided in people who have intestinal damage, immune problems, or an overgrowth of bacteria in the intestines. These people may have a higher risk of having the bacteria leave the GI tract and possibly cause multiple organ failure. There have been reports that some *Lactobacillus* species, such as *L. rhamnosus* and *L. casei*, may be involved in infections, such as abscesses, meningitis, and septic arthritis.

Some of the health disorders caused are:

- **Digestive Disorders:** Acidophilus products may prevent or treat a number of digestive problems.
- **Respiratory Infections:** In young children who attend day care, drinking acidophilus milk may reduce the number and severity of lung infections.

12) Write a note on digestive disorders of Acidophilus milk.

Ans. Acidophilus products may prevent or treat a number of digestive problems. They can ward off the traveller's diarrhea you may be prone to when eating unfamiliar or contaminated foods away from home, and they may be helpful in relieving the stomach pain and bloating associated with irritable bowel syndrome. Acidophilus can help restore normal intestinal bacteria following a course of antibiotics, which can kill off beneficial as well as harmful microorganisms. In addition, drinking acidophilus milk can help prevent digestive upset if you are lactose intolerant. The process of manufacturing this type of milk reduces its lactose, or milk sugar, content, resulting in a product less likely to cause the stomach cramps and diarrhea associated with regular milk.

13) Explain the respiratory infections of acidophilus milk.

Ans. In young children who attend daycare, drinking acidophilus milk may reduce the number and severity of lung infections. This preventive effect appears when live cultures of the probiotic are consumed once or twice a day with another microbe called *Bifidobacterium.*

14) **Describe Lactose intolerance**.

Ans. If your toddler is lactose intolerant, sweet acidophilus milk won't necessarily reduce his symptoms. Most studies don't show that adding acidophilus to milk reduces the lactose content of the milk, probably because of the low concentration of acidophilus in the milk, according to "Nutrition in the Prevention and Treatment of Disease." In studies that did show a benefit, the amount of acidophilus given was higher than that typically found in sweet acidophilus milk.

15) Explain Caveats.

Ans. Some toddlers should not drink sweet acidophilus milk. If your child has a milk allergy, sweet acidophilus milk, which contains cow's milk, will not be a safe alternative. Acidophilus does not alter the proteins in milk, which cause allergic reactions in susceptible children. Children with a compromised immune system also should not consume probiotics such as acidophilus unless approved by their physician, the University of Maryland Medical Centre cautions.