

Those of us in favor of raw milk can recite the many amazing properties in raw milk—it contains components that protect against pathogens, builds a healthy gut wall, supports the immune system, and ensures the assimilation of 100 percent of the vitamins and minerals in nature’s perfect food. But those in favor of pasteurization begin with a different point of view. They assume that nature is not perfect, is wild and can be dangerous. Some seem to say that raw milk, the magic elixir that has nourished every mammal baby in the world since the dawn of time—is not just risky, but downright toxic.

“When health officials assume that nature is imperfect and dangerous, we end up with all kinds of inappropriate procedures—from pasteurization to routine antibiotics to vaccinations. Unfortunately, these are not minor mistakes, but strategies that have led us to the greatest health crisis in the history of the world, and one that has disproportionately impacted our children in tragic ways.”

(Cowan, Thomas. *Vaccines, Autoimmunity, and the Changing Nature of Childhood Illness*. Chelsea Green Publishing. Kindle Edition.)

1. Is Raw Milk Safe?

Consider the calf, born in a muddy pasture, which then suckles on its mother’s often manure-covered teat. How can that calf, or any mammal survive?

Because raw milk contains multiple, natural, redundant systems of bioactive components that can reduce or eliminate populations of pathogenic bacteria.

Built-In Protective Systems in Raw Milk:

Lactoperoxidase

Uses small amounts of H₂O₂ and free radicals to seek out and destroy bad bacteria

Found in all mammalian secretions—breast milk, tears, saliva, etc.

Other countries are looking into using lactoperoxidase instead of pasteurization to ensure safety of commercial milk as well as for preserving other foods.

(1. Indian J Exp Biology, 1998;36: 808-810.

2. British J Nutrition, 2000;84(Suppl. 1.): S19-S25.

3. J Dairy Sci, 1991;74:783-787.

4. Life Sciences, 2000;66(25):2433-2439.

5. Trends in Food Science & Technology 16 (2005) 137-154)

Lactoferrin:

Plentiful in raw milk; effectiveness greatly reduced by pasteurization

Steals iron away from pathogens and carries it through the gut wall into the blood stream; has anti-inflammatory properties; stimulates the immune system

Kills wide range of pathogens including viruses; does not kill beneficial bacteria.

In a study involving mice bred to be susceptible to tuberculosis, treatment with lactoferrin significantly reduced the burden of tuberculosis organisms.

Mice injected with *Candida albicans*, another iron-loving organism, had increased survival time when treated with lactoferrin.

Believed to cut visceral fat levels by as much as 40%. Many other health benefits—is sold as a supplement!

FDA approved for use in anti-microbial spray to combat *E. coli* contamination in meat industry.

(1. British J Nutrition, 2000;84(Suppl. 1):S11-S17; JACN 2001 20(5):389S-395S.

2. Zimecki and Kruzel. J Exp Ther Oncol. 2007;6(2):89-106; International Dairy Journal 2006 16:1252-1261

3. J Experimental Med, 2002 DEC 02;196(11):1507-1513.

4. Infection and Immunity, 2001 JUN;69(6):3883-3890.

5. MSN-Mainichi Daily News, 2007 APR 11.

6. FDA News, August 22, 2004)

Other Bioactive Components I – Components of Blood

Leukocytes—Eat all foreign bacteria, yeast and molds (phagocytosis). Destroyed at 56C (132 F) and by pumping milk. Produce H₂O₂ to activate the lacto-peroxidase system. Produce anaerobic CO₂ that blocks all aerobic microbes. Basis of immunity.

B-lymphocytes – Kill foreign bacteria; call in other parts of the immune system^{1,2}

Macrophages – Engulf foreign proteins and bacteria²

Neutrophils – Kill infected cells; mobilize other parts of the immune system¹

T-lymphocytes – Multiply if bad bacteria are present; produce immune-strengthening compounds¹

Immunoglobulins (IgM, IgA, IgG1, IgG2)--Transfer of immunity from cow to calf/person in milk and especially colostrum; provides “passive immunization”²

Antibodies—Bind to foreign microbes and prevent them from migrating outside the gut; initiate immune response.

(1. Scientific American, December 1995.2. British J of Nutrition, 2000:84(Suppl. 1):S3-S10, S75-S80, S81-S89, S135-136)

Other Bioactive Components II – Fats and Carbohydrates

Polysaccharides—Encourage the growth of good bacteria in the gut; protect the gut wall

Oligosaccharides – Protect other components from being destroyed by stomach acids and enzymes; bind to bacteria and prevent them from attaching to the gut lining; other functions just being discovered.

Medium-Chain Fatty Acids—Disrupt cell walls of bad bacteria; levels so high in goat milk that the test for the presence of antibiotics had to be changed; may reduce intestinal injury and protect the liver.

Phospholipids and Spingolipids—bind to intestinal cells, prevent absorption of pathogens and toxins.³ Spingolipids are important components in cell membranes, protect cells against toxins, support digestion and protect against cancer.

(1. British J Nutrition, 2000:84(Suppl. 1):S3-S10.

2. Scientific American, December 1995.

3. International Dairy Journal 2006 16:1374-1382 and 1362-1373

4. Spingolipids and Cancer, scitopics.com; Koopman, J S, et al, AJPH, 1984, 74:12:1371-1373)

Other Bioactive Components

Enzymes, e.g. Complement & Lysozyme—Disrupt bacterial cell walls.

Complement destroyed at 56C; Lysozyme at 90C.

Hormones & Growth Factors – Stimulate maturation of gut cells; prevent “leaky” gut.

Mucins – Adhere to bacteria and viruses, preventing those organisms from attaching to the mucosa and causing disease.

Fibronectin – Increases anti-microbial activity of macrophages and helps to repair damaged tissues.

Glycomacropeptide – Inhibits bacterial/viral adhesion, suppresses gastric secretion, and promotes bifido-bacterial growth; supports immune system.

(1. British J Nutrition, 2000:84(Suppl. 1):S3-S10.

2. Scientific American, December 1995.

3. British J Nutrition, 2000:84(Suppl. 1):S3-S10, S39-S46)

Other Bioactive Components

Beneficial Bacteria – Lactobacilli and bifidus bacteria, crowd out bad bacteria, produce lactic acid that kills bad bacteria.

Bifidus Factor – Promotes growth of Lactobacillus bifidus, a helpful bacteria in baby's gut, which helps crowd out dangerous germs

B12 Binding Protein – Reduces Vitamin B12 in the colon, which harmful bacteria need for growth

Lactoglobulins: Carry vitamins A and D and possibly other nutrients.

(1. Scientific American, December 1995.

2., British J Nutrition, 2000:84(Suppl. 1):S3-S10, S39-S46.

3. FEBS Journal 2009 276:2251-2265.)

So, there you have the fivefold protective system in raw milk

Destroys pathogens in the milk.

Stimulates the Immune system.

Builds healthy gut wall.

Prevents absorption of pathogens and toxins in the gut.

Ensures assimilation of all the nutrients.

Destruction of Built-In Safety Systems by Pasteurization

Milk's anti-microbial properties have been detailed only recently, but the destruction of protective properties was recognized as early as 1938 in studies showing that raw milk did not support the growth of a wide range of pathogens.

Researchers noted that heating milk supports the growth of harmful bacteria by inactivating "inhibins" (factors that inhibit bacterial growth)

The Drug and Cosmetic Industry, 1938:43:1

What is Pasteurization?

PASTEURIZATION is a process that slows microbial growth in food.

NOT INTENDED TO KILL ALL PATHOGENS: Pasteurization is not intended to kill all pathogenic micro-organisms in the food or liquid, but aims to reduce the number of viable pathogens so they are unlikely to cause disease.

<http://en.wikipedia.org/>

| Component | Breast Milk | Raw Milk | Pasteurized Milk |
|---------------------------------------|--------------------|-----------------|-------------------------|
| B-lymphocytes | active | active | inactivated |
| Macrophages | active | active | inactivated |
| Neutrophils | active | active | inactivated |
| Lymphocytes | active | active | inactivated |
| IgA/IgG Antibodies | active | active | inactivated |
| B₁₂ Binding Protein | active | active | inactivated |
| Bifidus Factor | active | active | inactivated |
| Medium-Chain Fatty Acids | active | active | reduced |
| Fibronectin | active | active | inactivated |
| Gamma-Interferon | active | active | inactivated |
| Lactoferrin | active | active | reduced |
| Lactoperoxidase | active | active | reduced |
| Lysozyme | active | active | reduced |

| | | | |
|--------------------------------------|---------------|---------------|----------------|
| Mucin A/Oligosaccharides | active | active | reduced |
| Hormones & Growth Factors | active | active | reduced |

Destruction of Built-In Safety Systems by Pasteurization

1. Scientific American, December 1995.
2. The Lancet, 17 NOV 1984;2(8412):1111-1113.

Listeria monocytogenes – Deadly food pathogen

Raw milk is often blamed for causing infection with Listeria Monocytogenes, a deadly food pathogen that can cause severe illness and fetal death, premature birth or neonatal illness and death.

In a 2003 USDA/FDA report: Compared to raw milk

515 times more illnesses from L-mono due to deli meats

29 times more illness from L-mono due to pasteurized milk

On a PER-SERVING BASIS, deli meats were TEN times more likely to cause illness

FDA: “Raw milk is inherently dangerous and should not be consumed.”

Where are the FDA’s charges that deli meats are “inherently dangerous and should not be consumed? Where is the FDA’s exhortation to “everyone charged with protecting the public health” to “prevent the sale of deli meats to consumers”?

Resources: Interpretive Summary – Listeria Monocytogenes Risk Assessment,

Center for Food Safety and Applied Nutrition,

FDA, USDHHS, USDA, Sept. 2003, page 17

Raw Milk Challenge Tests

Seven strains of E. coli O157:H7 in amounts of 1 million/ml added to raw milk.

The pathogen failed to grow and died off gradually.¹

L. mono added to raw milk at 98.6o F. After 56 hours, no viable cells of L. mono were detectible.²

“The growth of Staph. Aureus, S. Enteritidis and L. monocytogenes in raw milk at 99o F was reduced markedly compared to the growth of these organisms in pasteurized milk.”

Five strains of E. coli O157:H7 did not grow at 41o F and decreased over days.4

Resources

1. Letters in Applied Microbiology 1999 28(1):89-92
2. Australian Journal of Dairy Technology 1999 54(2):90-93
3. Milchwissenschaft 2000 55(5):249-252
4. Journal of Food Protection 1997 60(6):610-613

Conclusion:

Raw milk is safe. Raw milk contains multiple, natural, redundant systems of bioactive components that can reduce or eliminate populations of pathogenic bacteria.

1. Destroys pathogens in the milk.
2. Stimulates the Immune system.
3. Builds healthy gut wall.
4. Prevents absorption of pathogens and toxins in the gut.

5. Ensures assimilation of all the nutrients.

Pasteurized milk does none of these things. The components in raw milk responsible for all these benefits are destroyed by the heat of pasteurization.

American consumers are intelligent enough and have the right to choose the foods they and their families will consume.

Therefore, I am opposed to SB 300.

Thank you for listening. Any questions?

Allen Loomis