

Our understanding of the influence of nutrition on bone health has focused on studies of the role of calcium, but new research published in *The American Journal of Clinical Nutrition* points to other minerals and vitamins that may be important in the prevention of osteoporosis. In a study of a group of middle-aged women, Dr. New and colleagues at the University of Surrey, UK identified several key micronutrients commonly found in fruits and vegetables which make a significant contribution to bone health. Women who had high current and previous consumption of zinc, magnesium, potassium, fiber and vitamin C had greater bone mineral density once they had reached middle age.

The 62 healthy Scottish women volunteers were aged 45-55 years and had previously taken part in an osteoporosis screening study. The state of their bone health was assessed by measurements of the bone mineral density of the femoral neck and lumbar spine, as well as urinary and blood markers of bone formation and dissolution. Each woman also completed a detailed dietary profile focusing on foods consumed most frequently in the past twelve months, as well as during childhood and early adulthood. Those who reported the highest consumption of foods containing zinc, magnesium, potassium, fiber and vitamin C were the most likely to have higher bone mineral density, as well as less evidence of bone loss (as measured in the blood and urine). Also, moderate alcohol intake appeared to have a positive effect on bone health.

These findings point to an important role for fruits and vegetables in the diet in the prevention of osteoporosis, since these foods are primary sources of the micronutrients that assist in maintaining healthy bones. The best overall sources of zinc, magnesium and potassium in the average diet include baked potato with skin, green peas, bananas, enriched cereal, and beef.

Contact: Lorali Barber
Lbarber@ASCN.faseb.org
301-530-7038
American Journal of Clinical Nutrition
29-Dec-1999

THE MILK LETTER : A MESSAGE TO MY PATIENTS

Robert M. Kradjian, MD
Breast Surgery Chief Division of General Surgery,
Seton Medical Centre #302 - 1800 Sullivan Ave.
Daly City, CA 94015 USA

"MILK" Just the word itself sounds comforting! "How about a nice cup of hot milk?" The last time you heard that question it was from someone who cared for you--and you appreciated their effort.

The entire matter of food and especially that of milk is surrounded with emotional and cultural importance. Milk was our very first food. If we were fortunate it was our mother's milk. A loving link, given and taken. It was the

only path to survival. If not mother's milk it was cow's milk or soy milk "formula"--rarely it was goat, camel or water buffalo milk.

Now, we are a nation of milk drinkers. Nearly all of us. Infants, the young, adolescents, adults and even the aged. We drink dozens or even several hundred gallons a year and add to that many pounds of "dairy products" such as cheese, butter, and yogurt.

Can there be anything wrong with this? We see reassuring images of healthy, beautiful people on our television screens and hear messages that assure us that, "Milk is good for your body." Our dieticians insist that: "You've got to have milk, or where will you get your calcium?" School lunches always include milk and nearly every hospital meal will have milk added. And if that isn't enough, our nutritionists told us for years that dairy products make up an "essential food group." Industry spokesmen made sure that colourful charts proclaiming the necessity of milk and other essential nutrients were made available at no cost for schools. Cow's milk became "normal."

You may be surprised to learn that most of the human beings that live on planet Earth today do not drink or use cow's milk. Further, most of them can't drink milk because it makes them ill.

There are students of human nutrition who are not supportive of milk use for adults. Here is a quotation from the March/April 1991 Utne Reader:

If you really want to play it safe, you may decide to join the growing number of Americans who are eliminating dairy products from their diets altogether. Although this sounds radical to those of us weaned on milk and the five basic food groups, it is eminently viable. Indeed, of all the mammals, only humans--and then only a minority, principally Caucasians--continue to drink milk beyond babyhood.

Who is right? Why the confusion? Where best to get our answers? Can we trust milk industry spokesmen? Can you trust any industry spokesmen? Are nutritionists up to date or are they simply repeating what their professors learned years ago? What about the new voices urging caution?

I believe that there are three reliable sources of information. The first, and probably the best, is a study of nature. The second is to study the history of our own species. Finally we need to look at the world's scientific literature on the subject of milk.

Let's look at the scientific literature first. From 1988 to 1993 there were over 2,700 articles dealing with milk recorded in the 'Medicine' archives. Fifteen hundred of these had milk as the main focus of the article. There is no lack of scientific information on this subject. I reviewed over 500 of the 1,500 articles, discarding articles that dealt exclusively with animals, esoteric research and inconclusive studies.

How would I summarize the articles? They were only slightly less than horrifying. First of all, none of the authors spoke of cow's milk as an excellent food, free of side effects and the 'perfect food' as we have been led to believe by the industry. The main focus of the published reports seems to be on intestinal colic, intestinal irritation, intestinal bleeding, anemia, allergic reactions in infants and children as well as infections such as salmonella. More ominous is the fear of viral infection with bovine leukemia virus or an AIDS-like virus as well as concern for childhood diabetes. Contamination of milk by blood and white (pus) cells as well as a variety of chemicals and insecticides was also discussed. Among children the problems were allergy, ear and tonsillar infections, bedwetting, asthma, intestinal bleeding, colic and childhood diabetes. In adults the problems seemed centered more around heart disease and arthritis, allergy, sinusitis, and the more serious questions of leukemia, lymphoma and cancer.

I think that an answer can also be found in a consideration of what occurs in nature & what happens with free living mammals and what happens with human groups living in close to a natural state as 'hunter-gatherers'.

Our paleolithic ancestors are another crucial and interesting group to study. Here we are limited to speculation and indirect evidences, but the bony remains available for our study are remarkable. There is no doubt

whatever that these skeletal remains reflect great strength, muscularity (the size of the muscular insertions show this), and total absence of advanced osteoporosis. And if you feel that these people are not important for us to study, consider that today our genes are programming our bodies in almost exactly the same way as our ancestors of 50,000 to 100,000 years ago.

WHAT IS MILK?

Milk is a maternal lactating secretion, a short term nutrient for new-borns. Nothing more, nothing less. Invariably, the mother of any mammal will provide her milk for a short period of time immediately after birth. When the time comes for 'weaning', the young offspring is introduced to the proper food for that species of mammal. A familiar example is that of a puppy. The mother nurses the pup for just a few weeks and then rejects the young animal and teaches it to eat solid food. Nursing is provided by nature only for the very youngest of mammals. Of course, it is not possible for animals living in a natural state to continue with the drinking of milk after weaning.

IS ALL MILK THE SAME?

Then there is the matter of where we get our milk. We have settled on the cow because of its docile nature, its size, and its abundant milk supply. Somehow this choice seems 'normal' and blessed by nature, our culture, and our customs. But is it natural? Is it wise to drink the milk of another species of mammal?

Consider for a moment, if it was possible, to drink the milk of a mammal other than a cow, let's say a rat. Or perhaps the milk of a dog would be more to your liking. Possibly some horse milk or cat milk. Do you get the idea? Well, I'm not serious about this, except to suggest that human milk is for human infants, dogs' milk is for pups, cows' milk is for calves, cats' milk is for kittens, and so forth. Clearly, this is the way nature intends it. Just use your own good judgement on this one.

Milk is not just milk. The milk of every species of mammal is unique and specifically tailored to the requirements of that animal. For example, cows' milk is very much richer in

protein than human milk. Three to four times as much. It has five to seven times the mineral content. However, it is markedly deficient in essential fatty acids when compared to human mothers' milk. Mothers' milk has six to ten times as much of the essential fatty acids, especially linoleic acid. (Incidentally, skimmed cow's milk has no linoleic acid). It simply is not designed for humans.

Food is not just food, and milk is not just milk. It is not only the proper amount of food but the proper qualitative composition that is critical for the very best in health and growth. Biochemists and physiologists -and rarely medical doctors - are gradually learning that foods contain the crucial elements that allow a particular species to develop its unique specializations.

Clearly, our specialization is for advanced neurological development and delicate neuromuscular control. We do not have much need of massive skeletal growth or huge muscle groups as does a calf. Think of the difference between the demands made on the human hand and the demands on a cow's hoof. Human new-borns specifically need critical material for their brains, spinal cord and nerves.

Can mother's milk increase intelligence? It seems that it can. In a remarkable study published in *Lancet* during 1992 (Vol. 339, p. 261-4), a group of British workers randomly placed premature infants into two groups. One group received a proper formula, the other group received human breast milk. Both fluids were given by stomach tube. These children were followed up for over 10 years. In intelligence testing, the human milk children averaged 10 IQ points higher! Well, why not? Why wouldn't the correct building blocks for the rapidly maturing and growing brain have a positive effect?

In the *American Journal of Clinical Nutrition* (1982) Ralph Holman described an infant who developed profound neurological disease while being nourished by intravenous fluids only. The fluids used contained only linoleic acid - just one of the essential fatty acids. When the other, alpha linoleic acid, was added to the intravenous fluids the neurological disorders cleared.

In the same journal five years later Bjerve, Mostad and Thoresen, working in Norway found exactly the same problem

in adult patients on long term gastric tube feeding.

In 1930 Dr. G.O. Burr in Minnesota working with rats found that linoleic acid deficiencies created a deficiency syndrome. Why is this mentioned? In the early 1960s pediatricians found skin lesions in children fed formulas without the same linoleic acid. Remembering the research, the addition of the acid to the formula cured the problem. Essential fatty acids are just that and cows' milk is markedly deficient in these when compared to human milk.

WELL, AT LEAST COW'S MILK IS PURE

Or is it? Fifty years ago an average cow produced 2,000 pounds of milk per year. Today the top producers give 50,000 pounds! How was this accomplished? Drugs, antibiotics, hormones, forced feeding plans and specialized breeding; that's how.

The latest high-tech onslaught on the poor cow is bovine growth hormone or BGH. This genetically engineered drug is supposed to stimulate milk production but, according to Monsanto, the hormone's manufacturer, does not affect the milk or meat. There are three other manufacturers: Upjohn, Eli Lilly, and American Cyanamid Company. Obviously, there have been no long-term studies on the hormone's effect on the humans drinking the milk. Other countries have banned BGH because of safety concerns. One of the problems with adding molecules to a milk cows' body is that the molecules usually come out in the milk. I don't know how you feel, but I don't want to experiment with the ingestion of a growth hormone. A related problem is that it causes a marked increase (50 to 70 per cent) in mastitis. This, then, requires antibiotic therapy, and the residues of the antibiotics appear in the milk. It seems that the public is uneasy about this product and in one survey 43 per cent felt that growth hormone treated milk represented a health risk. A vice president for public policy at Monsanto was opposed to labelling for that reason, and because the labelling would create an 'artificial distinction'. The country is awash with milk as it is, we produce more milk than we can consume. Let's not create storage costs and further taxpayer burdens, because the law requires the USDA to buy any surplus of butter, cheese, or non-fat dry milk at a support price set by Congress! In fiscal 1991, the USDA spent \$757

million on surplus butter, and one billion dollars a year on average for price supports during the 1980s (Consumer Reports, May 1992: 330-32).

Any lactating mammal excretes toxins through her milk. This includes antibiotics, pesticides, chemicals and hormones. Also, all cows' milk contains blood! The inspectors are simply asked to keep it under certain limits. You may be horrified to learn that the USDA allows milk to contain from one to one and a half million white blood cells per millilitre. (That's only 1/30 of an ounce). If you don't already know this, I'm sorry to tell you that another way to describe white cells where they don't belong would be to call them pus cells. To get to the point, is milk pure or is it a chemical, biological, and bacterial cocktail? Finally, will the Food and Drug Administration (FDA) protect you? The United States General Accounting Office (GAO) tells us that the FDA and the individual States are failing to protect the public from drug residues in milk. Authorities test for only 4 of the 82 drugs in dairy cows.

As you can imagine, the Milk Industry Foundation's spokesman claims it's perfectly safe. Jerome Kozak says, "I still think that milk is the safest product we have."

Other, perhaps less biased observers, have found the following: 38% of milk samples in 10 cities were contaminated with sulfa drugs or other antibiotics. (This from the Centre for Science in the Public Interest and The Wall Street Journal, Dec. 29, 1989).. A similar study in Washington, DC found a 20 percent contamination rate (Nutrition Action Healthletter, April 1990).

What's going on here? When the FDA tested milk, they found few problems. However, they used very lax standards. When they used the same criteria, the FDA data showed 51 percent of the milk samples showed drug traces.

Let's focus in on this because it's critical to our understanding of the apparent discrepancies. The FDA uses a disk-assay method that can detect only 2 of the 30 or so drugs found in milk. Also, the test detects only at the relatively high level. A more powerful test called the 'Charm II test' can detect drugs down to 5 parts per billion.

One nasty subject must be discussed. It seems that cows are forever getting infections around the udder that require ointments and antibiotics. An article from France tells us that when a cow receives penicillin, that penicillin appears in the milk for from 4 to 7 milkings. Another study from the University of Nevada, Reno tells of cells in 'mastic milk', milk from cows with infected udders. An elaborate analysis of the cell fragments, employing cell cultures, flow cytometric analysis, and a great deal of high tech stuff. Do you know what the conclusion was? If the cow has mastitis, there is pus in the milk. Sorry, it's in the study, all concealed with language such as "macrophages containing many vacuoles and phagocytosed particles," etc.

IT GETS WORSE

Well, at least human mothers' milk is pure! Sorry. A huge study showed that human breast milk in over 14,000 women had contamination by pesticides! Further, it seems that the sources of the pesticides are meat and--you guessed it--dairy products. Well, why not? These pesticides are concentrated in fat and that's what's in these products. (Of interest, a subgroup of lactating vegetarian mothers had only half the levels of contamination).

A recent report showed an increased concentration of pesticides in the breast tissue of women with breast cancer when compared to the tissue of women with fibrocystic disease. Other articles in the standard medical literature describe problems. Just scan these titles:

- 1.Cow's Milk as a Cause of Infantile Colic Breast-Fed Infants. *Lancet* 2 (1978): 437
- 2.Dietary Protein-Induced Colitis in Breast- Fed Infants, *J. Pediatr.* 101 (1982): 906
- 3.The Question of the Elimination of Foreign Protein in Women's Milk, *J. Immunology* 19 (1930): 15

There are many others. There are dozens of studies describing the prompt appearance of cows' milk allergy in children being exclusively breast-fed! The cows' milk allergens simply appear in the mother's milk and are transmitted to the infant.

A committee on nutrition of the American Academy of

Pediatrics reported on the use of whole cows' milk in infancy (Pediatrics 1983: 72-253). They were unable to provide any cogent reason why bovine milk should be used before the first birthday yet continued to recommend its use! Doctor Frank Oski from the Upstate Medical Centre Department of Pediatrics, commenting on the recommendation, cited the problems of acute gastrointestinal blood loss in infants, the lack of iron, recurrent abdominal pain, milk-borne infections and contaminants, and said:

Why give it at all - then or ever? In the face of uncertainty about many of the potential dangers of whole bovine milk, it would seem prudent to recommend that whole milk not be started until the answers are available. Isn't it time for these uncontrolled experiments on human nutrition to come to an end?

In the same issue of Pediatrics he further commented:

It is my thesis that whole milk should not be fed to the infant in the first year of life because of its association with iron deficiency anemia (milk is so deficient in iron that an infant would have to drink an impossible 31 quarts a day to get the RDA of 15 mg), acute gastrointestinal bleeding, and various manifestations of food allergy.

I suggest that unmodified whole bovine milk should not be consumed after infancy because of the problems of lactose intolerance, its contribution to the genesis of atherosclerosis, and its possible link to other diseases.

In late 1992 Dr. Benjamin Spock, possibly the best known pediatrician in history, shocked the country when he articulated the same thoughts and specified avoidance for the first two years of life. Here is his quotation:

I want to pass on the word to parents that cows' milk from the carton has definite faults for some babies. Human milk is the right one for babies. A study comparing the incidence of allergy and colic in the breast-fed infants of omnivorous and vegan mothers would be important. I haven't found such a study; it would be both important and inexpensive. And it will probably never be done. There is simply no academic or economic profit involved.

OTHER PROBLEMS

Let's just mention the problems of bacterial contamination. Salmonella, E. coli, and staphylococcal infections can be traced to milk. In the old days tuberculosis was a major problem and some folks want to go back to those times by insisting on raw milk on the basis that it's "natural." This is insanity! A study from UCLA showed that over a third of all cases of salmonella infection in California, 1980-1983 were traced to raw milk. That'll be a way to revive good old brucellosis again and I would fear leukemia, too. (More about that later). In England, and Wales where raw milk is still consumed there have been outbreaks of milk-borne diseases. The Journal of the American Medical Association (251: 483, 1984) reported a multi-state series of infections caused by Yersinia enterocolitica in pasteurised whole milk. This is despite safety precautions.

All parents dread juvenile diabetes for their children. A Canadian study reported in the American Journal of Clinical Nutrition, Mar. 1990, describes a "...significant positive correlation between consumption of unfermented milk protein and incidence of insulin dependent diabetes mellitus in data from various countries. Conversely a possible negative relationship is observed between breast-feeding at age 3 months and diabetes risk."

Another study from Finland found that diabetic children had higher levels of serum antibodies to cows' milk (Diabetes Research 7(3): 137-140 March 1988). Here is a quotation from this study:

We infer that either the pattern of cows' milk consumption is altered in children who will have insulin dependent diabetes mellitus or, their immunological reactivity to proteins in cows' milk is enhanced, or the permeability of their intestines to cows' milk protein is higher than normal.

The April 18, 1992 British Medical Journal has a fascinating study contrasting the difference in incidence of juvenile insulin dependent diabetes in Pakistani children who have migrated to England. The incidence is roughly 10 times greater in the English group compared to children remaining in Pakistan! What caused this highly significant increase?

The authors said that "the diet was unchanged in Great Britain." Do you believe that? Do you think that the availability of milk, sugar and fat is the same in Pakistan as it is in England? That a grocery store in England has the same products as food sources in Pakistan? I don't believe that for a minute. Remember, we're not talking here about adult onset, type II diabetes which all workers agree is strongly linked to diet as well as to a genetic predisposition. This study is a major blow to the "it's all in your genes" crowd. Type I diabetes was always considered to be genetic or possibly viral, but now this? So resistant are we to consider diet as causation that the authors of the last article concluded that the cooler climate in England altered viruses and caused the very real increase in diabetes! The first two authors had the same reluctance to admit the obvious. The milk just may have had something to do with the disease.

The latest in this remarkable list of reports, a New England Journal of Medicine article (July 30, 1992), also reported in the Los Angeles Times. This study comes from the Hospital for Sick Children in Toronto and from Finnish researchers. In Finland there is "...the world's highest rate of dairy product consumption and the world's highest rate of insulin dependent diabetes. The disease strikes about 40 children out of every 1,000 there contrasted with six to eight per 1,000 in the United States.... Antibodies produced against the milk protein during the first year of life, the researchers speculate, also attack and destroy the pancreas in a so-called auto-immune reaction, producing diabetes in people whose genetic makeup leaves them vulnerable." "...142 Finnish children with newly diagnosed diabetes. They found that every one had at least eight times as many antibodies against the milk protein as did healthy children, clear evidence that the children had a raging auto immune disorder." The team has now expanded the study to 400 children and is starting a trial where 3,000 children will receive no dairy products during the first nine months of life. "The study may take 10 years, but we'll get a definitive answer one way or the other," according to one of the researchers. I would caution them to be certain that the breast feeding mothers use on cows' milk in their diets or the results will be confounded by the transmission of the cows' milk protein in the mother's breast milk.... Now what was the reaction from the diabetes association? This is very

interesting! Dr. F. Xavier Pi-Sunyer, the president of the association says: "It does not mean that children should stop drinking milk or that parents of diabetics should withdraw dairy products. These are rich sources of good protein." (Emphasis added) My God, it's the "good protein" that causes the problem! Do you suspect that the dairy industry may have helped the American Diabetes Association in the past?

LEUKEMIA? LYMPHOMA? THIS MAY BE THE WORST--BRACE YOURSELF!

I hate to tell you this, but the bovine leukemia virus is found in more than three of five dairy cows in the United States! This involves about 80% of dairy herds. Unfortunately, when the milk is pooled, a very large percentage of all milk produced is contaminated (90 to 95 per cent). Of course the virus is killed in pasteurisation--if the pasteurisation was done correctly. What if the milk is raw? In a study of randomly collected raw milk samples the bovine leukemia virus was recovered from two-thirds. I sincerely hope that the raw milk dairy herds are carefully monitored when compared to the regular herds. (Science 1981; 213:1014).

This is a world-wide problem. One lengthy study from Germany deplored the problem and admitted the impossibility of keeping the virus from infected cows' milk from the rest of the milk. Several European countries, including Germany and Switzerland, have attempted to "cull" the infected cows from their herds. Certainly the United States must be the leader in the fight against leukemic dairy cows, right? Wrong! We are the worst in the world with the former exception of Venezuela according to Virgil Hulse MD, a milk specialist who also has a B.S. in Dairy Manufacturing as well as a Master's degree in Public Health.

As mentioned, the leukemia virus is rendered inactive by pasteurisation. Of course. However, there can be Chernobyl like accidents. One of these occurred in the Chicago area in April, 1985. At a modern, large, milk processing plant an accidental "cross connection" between raw and pasteurized milk occurred. A violent salmonella outbreak followed, killing 4 and making an estimated 150,000 ill. Now the question I would pose to the dairy industry people is this: "How can you assure the people who drank this milk that they

were not exposed to the ingestion of raw, unskilled, bulky active bovine leukemia viruses?" Further, it would be fascinating to know if a "cluster" of leukemia cases blossoms in that area in 1 to 3 decades. There are reports of "leukemia clusters" elsewhere, one of them mentioned in the June 10, 1990 San Francisco Chronicle involving Northern California.

What happens to other species of mammals when they are exposed to the bovine leukemia virus? It's a fair question and the answer is not reassuring. Virtually all animals exposed to the virus develop leukemia. This includes sheep, goats, and even primates such as rhesus monkeys and chimpanzees. The route of transmission includes ingestion (both intravenous and intramuscular) and cells present in milk. There are obviously no instances of transfer attempts to human beings, but we know that the virus can infect human cells in vitro. There is evidence of human antibody formation to the bovine leukemia virus; this is disturbing. How did the bovine leukemia virus particles gain access to humans and become antigens? Was it as small, denatured particles?

If the bovine leukemia viruses causes human leukemia, we could expect the dairy states with known leukemic herds to have a higher incidence of human leukemia. Is this so? Unfortunately, it seems to be the case! Iowa, Nebraska, South Dakota, Minnesota and Wisconsin have statistically higher incidence of leukemia than the national average. In Russia and in Sweden, areas with uncontrolled bovine leukemia virus have been linked with increases in human leukemia. I am also told that veterinarians have higher rates of leukemia than the general public. Dairy farmers have significantly elevated leukemia rates. Recent research shows lymphocytes from milk fed to neonatal mammals gains access to bodily tissues by passing directly through the intestinal wall.

An optimistic note from the University of Illinois, Urbana from the Department of Animal Sciences shows the importance of one's perspective. Since they are concerned with the economics of milk and not primarily the health aspects, they noted that the production of milk was greater in the cows with the bovine leukemia virus. However when the leukemia produced a persistent and significant lymphocytosis

(increased white blood cell count), the production fell off. They suggested "a need to re-evaluate the economic impact of bovine leukemia virus infection on the dairy industry". Does this mean that leukemia is good for profits only if we can keep it under control? You can get the details on this business concern from Proc. Nat. Acad. Sciences, U.S. Feb. 1989. I added emphasis and am insulted that a university department feels that this is an economic and not a human health issue. Do not expect help from the Department of Agriculture or the universities. The money stakes and the political pressures are too great. You're on your own.

What does this all mean? We know that virus is capable of producing leukemia in other animals. Is it proven that it can contribute to human leukemia (or lymphoma, a related cancer)? Several articles tackle this one:

1. Epidemiologic Relationships of the Bovine Population and Human Leukemia in Iowa. Am Journal of Epidemiology 112 (1980):80
2. Milk of Dairy Cows Frequently Contains a Leukemogenic Virus. Science 213 (1981): 1014
3. Beware of the Cow. (Editorial) Lancet 2 (1974):30
4. Is Bovine Milk A Health Hazard?. Pediatrics; Suppl. Feeding the Normal Infant. 75:182-186; 1985

In Norway, 1422 individuals were followed for 11 and a half years. Those drinking 2 or more glasses of milk per day had 3.5 times the incidence of cancer of the lymphatic organs. British Med. Journal 61:456-9, March 1990.

One of the more thoughtful articles on this subject is from Allan S. Cunningham of Cooperstown, New York. Writing in the Lancet, November 27, 1976 (page 1184), his article is entitled, "Lymphomas and Animal-Protein Consumption". Many people think of milk as "liquid meat" and Dr. Cunningham agrees with this. He tracked the beef and dairy consumption in terms of grams per day for a one year period, 1955-1956., in 15 countries. New Zealand, United States and Canada were highest in that order. The lowest was Japan followed by Yugoslavia and France. The difference between the highest and lowest was quite pronounced: 43.8 grams/day for New Zealanders versus 1.5 for Japan. Nearly a 30-fold difference! (Parenthetically, the last 36 years have seen a startling increase in the amount of beef and milk used in Japan and their disease patterns are reflecting this,

confirming the lack of 'genetic protection' seen in migration studies. Formerly the increase in frequency of lymphomas in Japanese people was only in those who moved to the USA)!

An interesting bit of trivia is to note the memorial built at the Gyokusenji Temple in Shimoda, Japan. This marked the spot where the first cow was killed in Japan for human consumption! The chains around this memorial were a gift from the US Navy. Where do you suppose the Japanese got the idea to eat beef? The year? 1930.

Cunningham found a highly significant positive correlation between deaths from lymphomas and beef and dairy ingestion in the 15 countries analysed. A few quotations from his article follow:

The average intake of protein in many countries is far in excess of the recommended requirements. Excessive consumption of animal protein may be one co-factor in the causation of lymphomas by acting in the following manner. Ingestion of certain proteins results in the adsorption of antigenic fragments through the gastrointestinal mucous membrane.

This results in chronic stimulation of lymphoid tissue to which these fragments gain access "Chronic immunological stimulation causes lymphomas in laboratory animals and is believed to cause lymphoid cancers in men." The gastrointestinal mucous membrane is only a partial barrier to the absorption of food antigens, and circulating antibodies to food protein is commonplace especially potent lymphoid stimulants. Ingestion of cows' milk can produce generalized lymphadenopathy, hepatosplenomegaly, and profound adenoid hypertrophy. It has been conservatively estimated that more than 100 distinct antigens are released by the normal digestion of cows' milk which evoke production of all antibody classes [This may explain why pasteurized, killed viruses are still antigenic and can still cause disease.

Here's more. A large prospective study from Norway was reported in the British Journal of Cancer 61 (3):456-9, March 1990. (Almost 16,000 individuals were followed for 11 and a half years). For most cancers there was no association

between the tumour and milk ingestion. However, in lymphoma, there was a strong positive association. If one drank two glasses or more daily (or the equivalent in dairy products), the odds were 3.4 times greater than in persons drinking less than one glass of developing a lymphoma.

There are two other cow-related diseases that you should be aware of. At this time they are not known to be spread by the use of dairy products and are not known to involve man. The first is bovine spongiform encephalopathy (BSE), and the second is the bovine immunodeficiency virus (BIV). The first of these diseases, we hope, is confined to England and causes cavities in the animal's brain. Sheep have long been known to suffer from a disease called scrapie. It seems to have been started by the feeding of contaminated sheep parts, especially brains, to the British cows. Now, use your good sense. Do cows seem like carnivores? Should they eat meat? This profit-motivated practice backfired and bovine spongiform encephalopathy, or Mad Cow Disease, swept Britain. The disease literally causes dementia in the unfortunate animal and is 100 per cent incurable. To date, over 100,000 cows have been incinerated in England in keeping with British law. Four hundred to 500 cows are reported as infected each month. The British public is concerned and has dropped its beef consumption by 25 per cent, while some 2,000 schools have stopped serving beef to children. Several farmers have developed a fatal disease syndrome that resembles both BSE and CJD (Creutzfeldt-Jakob-Disease). But the British Veterinary Association says that transmission of BSE to humans is "remote."

The USDA agrees that the British epidemic was due to the feeding of cattle with bonemeal or animal protein produced at rendering plants from the carcasses of scrapie-infected sheep. They have prohibited the importation of live cattle and zoo ruminants from Great Britain and claim that the disease does not exist in the United States. However, there may be a problem. "Downer cows" are animals who arrive at auction yards or slaughter houses dead, trampled, lacerated, dehydrated, or too ill from viral or bacterial diseases to walk. Thus they are "down." If they cannot respond to electrical shocks by walking, they are dragged by chains to dumpsters and transported to rendering plants where, if they are not already dead, they are killed. Even a "humane" death is usually denied them. They are then turned into protein

food for animals as well as other preparations. Minks that have been fed this protein have developed a fatal encephalopathy that has some resemblance to BSE. Entire colonies of minks have been lost in this manner, particularly in Wisconsin. It is feared that the infective agent is a prion or slow virus possibly obtained from the ill "downer cows."

The British Medical Journal in an editorial whimsically entitled "How Now Mad Cow?" (BMJ vol. 304, 11 Apr. 1992:929-30) describes cases of BSE in species not previously known to be affected, such as cats. They admit that produce contaminated with bovine spongiform encephalopathy entered the human food chain in England between 1986 and 1989. They say. "The result of this experiment is awaited." As the incubation period can be up to three decades, wait we must.

The immunodeficiency virus is seen in cattle in the United States and is more worrisome. Its structure is closely related to that of the human AIDS virus. At this time we do not know if exposure to the raw BIV proteins can cause the sera of humans to become positive for HIV. The extent of the virus among American herds is said to be "widespread". (The USDA refuses to inspect the meat and milk to see if antibodies to this retrovirus is present). It also has no plans to quarantine the infected animals. As in the case of humans with AIDS, there is no cure for BIV in cows. Each day we consume beef and dairy products from cows infected with these viruses and no scientific assurance exists that the products are safe. Eating raw beef (as in steak Tartare) strikes me as being very risky, especially after the Seattle E. coli deaths of 1993.

A report in the Canadian Journal of Veterinary Research, October 1992, Vol. 56 pp.353-359 and another from the Russian literature, tell of a horrifying development. They report the first detection in human serum of the antibody to a bovine immunodeficiency virus protein. In addition to this disturbing report, is another from Russia telling us of the presence of virus proteins related to the bovine leukemia virus in 5 of 89 women with breast disease (Acta Virologica Feb. 1990 34(1): 19-26). The implications of these developments are unknown at present. However, it is safe to assume that these animal viruses are unlikely to "stay" in the animal kingdom.

OTHER CANCERS--DOES IT GET WORSE?

Unfortunately it does. Ovarian cancer--a particularly nasty tumour--was associated with milk consumption by workers at Roswell Park Memorial Institute in Buffalo, New York. Drinking more than one glass of whole milk or equivalent daily gave a woman a 3.1 times risk over non-milk users. They felt that the reduced fat milk products helped reduce the risk. This association has been made repeatedly by numerous investigators.

Another important study, this from the Harvard Medical School, analyzed data from 27 countries mainly from the 1970s. Again a significant positive correlation is revealed between ovarian cancer and per capita milk consumption. These investigators feel that the lactose component of milk is the responsible fraction, and the digestion of this is facilitated by the persistence of the ability to digest the lactose (lactose persistence) - a little different emphasis, but the same conclusion. This study was reported in the American Journal of Epidemiology 130 (5): 904-10 Nov. 1989. These articles come from two of the country's leading institutions, not the Rodale Press or Prevention Magazine.

Even lung cancer has been associated with milk ingestion? The beverage habits of 569 lung cancer patients and 569 controls again at Roswell Park were studied in the International Journal of Cancer, April 15, 1989. Persons drinking whole milk 3 or more times daily had a 2-fold increase in lung cancer risk when compared to those never drinking whole milk.

For many years we have been watching the lung cancer rates for Japanese men who smoke far more than American or European men but who develop fewer lung cancers. Workers in this research area feel that the total fat intake is the difference.

There are not many reports studying an association between milk ingestion and prostate cancer. One such report though was of great interest. This is from the Roswell Park Memorial Institute and is found in Cancer 64 (3): 605-12, 1989. They analyzed the diets of 371 prostate cancer patients and comparable control subjects:

Men who reported drinking three or more glasses of whole milk daily had a relative risk of 2.49 compared with men who reported never drinking whole milk the weight of the evidence appears to favour the hypothesis that animal fat is related to increased risk of prostate cancer. Prostate cancer is now the most common cancer diagnosed in US men and is the second leading cause of cancer mortality.

WELL, WHAT ARE THE BENEFITS?

Is there any health reason at all for an adult human to drink cows' milk?

It's hard for me to come up with even one good reason other than simple preference. But if you try hard, in my opinion, these would be the best two: milk is a source of calcium and it's a source of amino acids (proteins).

Let's look at the calcium first. Why are we concerned at all about calcium? Obviously, we intend it to build strong bones and protect us against osteoporosis. And no doubt about it, milk is loaded with calcium. But is it a good calcium source for humans? I think not. These are the reasons. Excessive amounts of dairy products actually interfere with calcium absorption. Secondly, the excess of protein that the milk provides is a major cause of the osteoporosis problem. Dr. Heggsted in England has been writing for years about the geographical distribution of osteoporosis. It seems that the countries with the highest intake of dairy products are invariably the countries with the most osteoporosis. He feels that milk is a cause of osteoporosis. Reasons to be given below.

Numerous studies have shown that the level of calcium ingestion and especially calcium supplementation has no effect whatever on the development of osteoporosis. The most important such article appeared recently in the British Journal of Medicine where the long arm of our dairy industry can't reach. Another study in the United States actually showed a worsening in calcium balance in post-menopausal women given three 8-ounce glasses of cows' milk per day. (Am. Journal of Clin. Nutrition, 1985). The effects of hormone, gender, weight bearing on the axial bones, and in particular protein intake, are critically important. Another

observation that may be helpful to our analysis is to note the absence of any recorded dietary deficiencies of calcium among people living on a natural diet without milk.

For the key to the osteoporosis riddle, don't look at calcium, look at protein. Consider these two contrasting groups. Eskimos have an exceptionally high protein intake estimated at 25 percent of total calories. They also have a high calcium intake at 2,500 mg/day. Their osteoporosis is among the worst in the world. The other instructive group are the Bantus of South Africa. They have a 12 percent protein diet, mostly plant protein, and only 200 to 350 mg/day of calcium, about half our women's intake. The women have virtually no osteoporosis despite bearing six or more children and nursing them for prolonged periods! When African women immigrate to the United States, do they develop osteoporosis? The answer is yes, but not quite as much as Caucasian or Asian women. Thus, there is a genetic difference that is modified by diet.

To answer the obvious question, "Well, where do you get your calcium?" The answer is: "From exactly the same place the cow gets the calcium, from green things that grow in the ground," mainly from leafy vegetables. After all, elephants and rhinos develop their huge bones (after being weaned) by eating green leafy plants, so do horses. Carnivorous animals also do quite nicely without leafy plants. It seems that all of earth's mammals do well if they live in harmony with their genetic programming and natural food. Only humans living an affluent life style have rampant osteoporosis.

If animal references do not convince you, think of the several billion humans on this earth who have never seen cows' milk. Wouldn't you think osteoporosis would be prevalent in this huge group? The dairy people would suggest this but the truth is exactly the opposite. They have far less than that seen in the countries where dairy products are commonly consumed. It is the subject of another paper, but the truly significant determinants of osteoporosis are grossly excessive protein intakes and lack of weight bearing on long bones, both taking place over decades. Hormones play a secondary, but not trivial role in women. Milk is a deterrent to good bone health.

THE PROTEIN MYTH

Remember when you were a kid and the adults all told you to "make sure you get plenty of good protein". Protein was the nutritional "good guy" when I was young. And of course milk is fitted right in.

As regards protein, milk is indeed a rich source of protein - "liquid meat," remember? However that isn't necessarily what we need. In actual fact it is a source of difficulty. Nearly all Americans eat too much protein.

For this information we rely on the most authoritative source that I am aware of. This is the latest edition (10th, 1989: 4th printing, Jan. 1992) of the Recommended Dietary Allowances produced by the National Research Council. Of interest, the current editor of this important work is Dr. Richard Havel of the University of California in San Francisco.

First to be noted is that the recommended protein has been steadily revised downward in successive editions. The current recommendation is 0.75 g/kilo/day for adults 19 through 51 years. This, of course, is only 45 grams per day for the mythical 60 kilogram adult. You should also know that the WHO estimated the need for protein in adults to be .6g/kilo per day. (All RDA's are calculated with large safety allowances in case you're the type that wants to add some more to "be sure.") You can "get by" on 28 to 30 grams a day if necessary!

Now 45 grams a day is a tiny amount of protein. That's an ounce and a half! Consider too, that the protein does not have to be animal protein. Vegetable protein is identical for all practical purposes and has no cholesterol and vastly less saturated fat. (Do not be misled by the antiquated belief that plant proteins must be carefully balanced to avoid deficiencies. This is not a realistic concern.) Therefore virtually all Americans, Canadians, British and European people are in a protein overloaded state. This has serious consequences when maintained over decades. The problems are the already mentioned osteoporosis, atherosclerosis and kidney damage. There is good evidence that certain malignancies, chiefly colon and rectal, are related to excessive meat intake. Barry Brenner, an eminent renal physiologist was the first to fully point out the

dangers of excess protein for the kidney tubule. The dangers of the fat and cholesterol are known to all. Finally, you should know that the protein content of human milk is amount the lowest (0.9%) in mammals.

IS THAT ALL OF THE TROUBLE?

Sorry, there's more. Remember lactose? This is the principal carbohydrate of milk. It seems that nature provides new-borns with the enzymatic equipment to metabolize lactose, but this ability often extinguishes by age 4 or 5 years.

What is the problem with lactose or milk sugar? It seems that it is a disaccharide which is too large to be absorbed into the blood stream without first being broken down into monosaccharides, namely galactose and glucose. This requires the presence of an enzyme, lactase plus additional enzymes to break down the galactose into glucose.

Let's think about this for a moment. Nature gives us the ability to metabolize lactose for a few years and then shuts off the mechanism. Is Mother Nature trying to tell us something? Clearly all infants must drink milk. The fact that so many adults cannot seems to be related to the tendency for nature to abandon mechanisms that are not needed. At least half of the adult humans on this earth are lactose intolerant. It was not until the relatively recent introduction of dairy herding and the ability to "borrow" milk from another group of mammals that the survival advantage of preserving lactase (the enzyme that allows us to digest lactose) became evident. But why would it be advantageous to drink cows' milk? After all, most of the human beings in the history of the world did. And further, why was it just the white or light skinned humans who retained this knack while the pigmented people tended to lose it?

Some students of evolution feel that white skin is a fairly recent innovation, perhaps not more than 20,000 or 30,000 years old. It clearly has to do with the Northward migration of early man to cold and relatively sunless areas when skins and clothing became available. Fair skin allows the production of Vitamin D from sunlight more readily than does dark skin. However, when only the face was exposed to sunlight that area of fair skin was insufficient to provide

the vitamin D from sunlight. If dietary and sunlight sources were poorly available, the ability to use the abundant calcium in cows' milk would give a survival advantage to humans who could digest that milk. This seems to be the only logical explanation for fair skinned humans having a high degree of lactose tolerance when compared to dark skinned people.

How does this break down? Certain racial groups, namely blacks are up to 90% lactose intolerant as adults. Caucasians are 20 to 40% lactose intolerant. Orientals are midway between the above two groups. Diarrhea, gas and abdominal cramps are the results of substantial milk intake in such persons. Most American Indians cannot tolerate milk. The milk industry admits that lactose intolerance plays intestinal havoc with as many as 50 million Americans. A lactose-intolerance industry has sprung up and had sales of \$117 million in 1992 (Time May 17, 1993.)

What if you are lactose-intolerant and lust after dairy products? Is all lost? Not at all. It seems that lactose is largely digested by bacteria and you will be able to enjoy your cheese despite lactose intolerance. Yogurt is similar in this respect. Finally, and I could never have dreamed this up, geneticists want to splice genes to alter the composition of milk (Am J Clin Nutr 1993 Suppl 302s).

One could quibble and say that milk is totally devoid of fiber content and that its habitual use will predispose to constipation and bowel disorders.

The association with anemia and occult intestinal bleeding in infants is known to all physicians. This is chiefly from its lack of iron and its irritating qualities for the intestinal mucosa. The pediatric literature abounds with articles describing irritated intestinal lining, bleeding, increased permeability as well as colic, diarrhea and vomiting in cows'milk-sensitive babies. The anemia gets a double push by loss of blood and iron as well as deficiency of iron in the cows' milk. Milk is also the leading cause of childhood allergy.

LOW FAT

One additional topic: the matter of "low fat" milk. A common

and sincere question is: "Well, low fat milk is OK, isn't it?"

The answer to this question is that low fat milk isn't low fat. The term "low fat" is a marketing term used to gull the public. Low fat milk contains from 24 to 33% fat as calories! The 2% figure is also misleading. This refers to weight. They don't tell you that, by weight, the milk is 87% water!

"Well, then, kill-joy surely you must approve of non-fat milk!" I hear this quite a bit. (Another constant concern is: "What do you put on your cereal?") True, there is little or no fat, but now you have a relative overburden of protein and lactose. It there is something that we do not need more of it is another simple sugar-lactose, composed of galactose and glucose. Millions of Americans are lactose intolerant to boot, as noted. As for protein, as stated earlier, we live in a society that routinely ingests far more protein than we need. It is a burden for our bodies, especially the kidneys, and a prominent cause of osteoporosis. Concerning the dry cereal issue, I would suggest soy milk, rice milk or almond milk as a healthy substitute. If you're still concerned about calcium, "Westsoy" is formulated to have the same calcium concentration as milk.

SUMMARY

To my thinking, there is only one valid reason to drink milk or use milk products. That is just because we simply want to. Because we like it and because it has become a part of our culture. Because we have become accustomed to its taste and texture. Because we like the way it slides down our throat. Because our parents did the very best they could for us and provided milk in our earliest training and conditioning. They taught us to like it. And then probably the very best reason is ice cream! I've heard it described "to die for".

I had one patient who did exactly that. He had no obvious vices. He didn't smoke or drink, he didn't eat meat, his diet and lifestyle was nearly a perfectly health promoting one; but he had a passion. You guessed it, he loved rich ice cream. A pint of the richest would be a lean day's ration for him. On many occasions he would eat an entire quart -

and yes there were some cookies and other pastries. Good ice cream deserves this after all. He seemed to be in good health despite some expected "middle age spread" when he had a devastating stroke which left him paralyzed, miserable and helpless, and he had additional strokes and died several years later never having left a hospital or rehabilitation unit. Was he old? I don't think so. He was in his 50s.

So don't drink milk for health. I am convinced on the weight of the scientific evidence that it does not "do a body good." Inclusion of milk will only reduce your diet's nutritional value and safety.

Most of the people on this planet live very healthfully without cows' milk. You can too.

It will be difficult to change; we've been conditioned since childhood to think of milk as "nature's most perfect food." I'll guarantee you that it will be safe, improve your health and it won't cost anything. What can you lose?

(Article courtesy of Dr. Kradjian and <http://www.afpafitness.com/articles/MILKDOC.HTM>)
Email This Page to Someone you care about!