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HOMOGENIZED MILK AND ATHEROSCLEROSIS—Cause and Effect
ARE YOU DRINKING HOMOGENIZED MILK?
By Nicholas Sampsidis, M.S.

– **Kurt A. Oster, M.D. Explains How Homogenized Milk Triggers Heart and Circulatory Disease and What Steps You Should Take To Reverse and Prevent The Disease Process.**

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1 THE CHOLESTEROL FALLACY
The Importance of Cholesterol

The human body is amazingly infallible. The human system, with a minimum of care, rarely makes a mistake in its operation. The biochemicals which the body manufacturers, whether they are digestive enzymes or specific hormones, are manufactured for good reasons and for specific purposes.

Cholesterol is manufactured by the body. Cholesterol is actually so vital to the integrity of the body, that all tissues fabricate it and all cells contain it.[1,2] Cholesterol has an important structural role in the brain where it is found in high concentrations. Cholesterol also has a role in the conduction of nerve impulses. Male and female hormones are synthesized from cholesterol. Vitamin D, vital for proper calcium absorption from the gut, also has its origin in the cholesterol molecule. Bile, manufactured by the liver and essential for proper fat digestion, is produced out of cholesterol.

In short, because cholesterol is so important physiologically, it is a rather foolhardy assumption that, in the course of millions of years of evolution, the human system has been performing the suicidal experiment of becoming dependent on a biochemical which can trigger its self-destruction. The human system takes very good care of itself and it does not manufacture cholesterol in order to clog up its own arteries and start heart disease.

Doesn't Cholesterol Which You Eat Affect Blood Cholesterol Levels?

Dr. Paul D. White, a person who was known for dedicating much of his life to medicine was a leading specialist in the study of heart disease. He concluded, "The amount of cholesterol in the blood — we call it serum cholesterol — is not necessarily related to cholesterol found in food."[3]

In various parts of the world people consume food containing large amounts of cholesterol and fat, and yet, have blood cholesterol readings below that of the average American! Evidence has shown that these low serum cholesterol readings are not the result of genetic, exercise, or stress factors. The Eskimos and the Masai of Tanzania, Africa are both examples of high fat and cholesterol consuming

populations.[4] In both groups, however, heart disease is as rare as leprosy is in this country. In 1967, the French heart disease death rate was five times lower than that of the United States even though the French per capita consumption of cholesterol was greater.[5] Fat and cholesterol consumption in the United States has not changed significantly during the last one hundred and thirty years, yet, the heart disease rate skyrocketed fifty years ago.

The body has an interesting cholesterol feedback mechanism. When cholesterol disappears from the diet, the liver immediately begins synthesizing it at an accelerated rate and blood cholesterol values rise. Conversely, when the diet is high in cholesterol, its production in organs and tissues drops.[6]

Cholesterol obstructions in the coronary artery, which supplies the heart with oxygen, can be produced experimentally with diets containing no cholesterol![7] This is possible because 80 percent of the cholesterol in the body is produced by the liver, while only 20 percent comes from the diet.[8]

Studies Indicate Cholesterol IS NOT Responsible for Starting Heart Disease

Dr. Michael DeBakey, a heart surgeon, performed a study using a large number of patients at Baylor University. He found that out of 1,700 patients who had atherosclerosis, which was so severe that they required hospitalization, only 1 patient out of 5 had high serum cholesterol values![9] This finding supports the contention that some other factor triggers atherosclerosis.

In another study, half of a group of patients with high cholesterol were given medication which successfully lowered their serum cholesterol levels. However, the incidence of serious heart disease in both groups remained exactly the same — 18 people in each group developed heart disease.[10] As in the DeBakey study, this finding suggests some other factor besides cholesterol is responsible for initiating the heart disease process. Many more similar studies exist. The results suggest two things. First, dietary cholesterol is not related to blood cholesterol levels. Second, cholesterol does not start the heart disease process.

Heart disease doesn't start until something first induces cholesterol to come out of its liquid state and to solidify on artery walls. Cholesterol has been implicated as the guilty party because of its presence at the scene of the crime. Cholesterol is very much like the schoolboy in a group caught throwing the last snowball after a window has been broken. Although the whole group was involved in the crime, only the one boy seen throwing the last snowball is blamed. An occlusion in an artery is not only composed of cholesterol, but of over fifteen other major chemical ingredients including triglycerides, phospholipids, various minerals such as calcium, and proteins such as collagen and fibrin. Cholesterol shares only a remote responsibility for heart disease. The ringleader and the real bandit is a substance called xanthine oxidase (XO).

2 THE THEORY AND THE PROOF
Xanthine Oxidase's Role in Starting Heart Disease

Cow's milk is normally a nutritious food. However, when it is tampered with by way of homogenization, it becomes a type of slow poison for the circulatory system. Homogenization was introduced in this country in 1932. It is a mechanical process in which milk is stirred in a large blender and passed under enormous pressures through fine filters. The fat portion of the milk is broken up into very small globules which keep the fat from separating and rising to the top. Today, almost all milk in this country is homogenized. Milk is homogenized primarily to extend its shelf life. There are economic advantages in selling a product with a longer shelf life.

Milk fat contains a substance called xanthine oxidase (XO). When milk is not homogenized, both the fat and the XO are digested in the stomach and small intestine into smaller molecules, which are either used or excreted from the body. Dr. Oster and Dr. Ross have found that the homogenization process is reponsible for allowing some of the XO to pass intact, in small protective packets, through the wall of the intestine and into the circulation. XO is an enzyme normally involved in the breakdown of protein into uric acid in the liver of many organisms. However, XO creates havoc in the bloodstream by attacking specific targets in artery walls as well as the heart tissue itself. Lesions in artery walls result from this attack.

The body responds to the attack by attempting to heal any damaged areas. Calcified plaques and scar tissue represent stages in the healing process. In the final stage, deposits of cholesterol and

fatty material are laid down over the scar as a protective measure. Eventually, these deposits obstruct the flow of blood and cause the arteries to become less elastic. This hardening of the arteries contributes to high blood pressure. High blood pressure is not a disease in itself. Instead, it is just one of the symptoms which surface during the later phases of progressive arterial disease, intiated by XO. When a coronary artery is clogged, the heart is deprived of oxygen, resulting in chest pain. The medical term for this symptom is angina pectoris. Large obstructions in the coronary artery can starve heart cells of oxygen and cause heart tissue damage. This phenomenon is known as a heart attack (myocardial infarction).

The drug allopurinol is a strong inhibitor of XO. Unfortunately, allopurinol produces harmful side effects. The only safe and effective inhibitor of XO is a vitamin called folic acid. Besides blocking the action of XO, folic acid helps rebuild cell membranes in arteries damaged by XO. Dr. Oster provides up to 80mg of folic acid per day for his heart disease patients.[11]

A Closer Look At The Disease Process

Since XO is an enzyme and since enzymes are proteins, XO should be broken down by the acidity of the stomach's gastric juices and by digestive enzymes. There are two interesting reasons why XO escapes destruction and passes intact through the intestinal wall into the bloodstream.

First, although concentrated stomach acid is capable of inactivating XO, the large volumes of milk, which children and teenagers commonly consume, can dilute the acid to the point where a significant amount of XO is left active. According to one study, 64 percent of the XO will remain active after equal volumes of milk and acid are mixed in the stomach.[12] Some alkaline foods also have a neutralizing effect on stomach acid. With advancing age, the volumes of gastric secretions often drop. This also allows more XO to remain biologically active.

Second, the homogenization process causes active XO to become trapped within membrane bound structures call liposomes. Liposomes are very small capsule-like structures which surround XO and protect it from the action of digestive enzymes and acids. Liposomes are vehicles which transport active XO through the intestinal

wall into the lymph channels. Eventually XO reaches specific target sites in the circulatory system.[13]

Plasmalogen Disease

Surrounding each one of the cells which make up heart and artery wall tissue, is a phospholipid membrane. It is responsible for a variety of important functions including the transport of nutrients and oxygen to the interior of cells. Thirty percent of this membrane in human heart muscle cells is composed of a substance called plasmalogen. Plasmalogen's presence is essential for the integrity of the outer cell membrane in a similar way that mortar is an ingredient vital to the cohesiveness of a brick wall.

After autopsies were performed on patients who had died from heart and circulatory disease it was found that plasmalogen was completely missing in artery wall lesions and plaques.[14] The mystery was solved when researchers found XO in the plaques.[15] They knew that XO destroys plasmalogen tissue and that the two cannot coexist in one location. The liver, for example, is devoid of plasmalogen since it normally contains XO. Because the XO disease process starts with the destruction of plasmalogen, researchers have coined the term *plasmalogen disease* to describe the XO arterial disease process (atherosclerosis).

The reaction between XO and plasmalogen produces a very reactive byproduct called superoxide (O_2-) which is toxic to the cell membranes in the inner artery wall. When XO accumulates at a site, a small area of the artery's interior lining is literally eaten away. Eventually, this lesion becomes hardened by the deposition of minerals. It is at this point that fatty streaks and cholesterol cover the plaque. Blood circulation is then impaired and the heart is forced to work harder. Poor circulation not only increases the risk of a heart attack, but it also undermines the health of the whole body and predisposes a person to a variety of diseases.

Certain Factors Can Affect XO Activity

Fortunately, the chain reaction leading to atherosclerosis can be stopped and reversed if the damage is not too extensive. The vitamin folic acid, and the elimination of active XO from the diet, are vital to the prevention of heart and circulatory disease. According to Dr. Oster, XO is also inhibited by female sex hormones. The rarity of atherosclerosis in women, prior to menopause, is the result of XO inhibition by female sex hormones.

Other factors, however, can stimulate and enhance XO activity. They include male sex hormones, histamines, cholesterol, and the vitamins D_2 and D_3. It should be recalled that cholesterol in the diet does not normally raise blood cholesterol. The cholesterol which enhances XO activity is the cholesterol deposited over arterial lesions. The human system is not "aware" that XO is stimulated by cholesterol. It deposits cholesterol as part of the normal healing mechanism. Because of their sex hormones, males are more likely to suffer heart disease at an early age. Vitamins D_2 and D_3 are not factors if biologically active XO is eliminated from the diet. The vitamin D, which is added to milk actually does more harm than good since it increases XO's activity!

3 FURTHER EVIDENCE AGAINST HOMOGENIZED MILK

If Dr. Oster's hypothesis is correct, then the heart disease rate should be highest in those nations in which the largest volumes of homogenized milk with biologically available XO are consumed. Statistics from around the world reflect that this is indeed the case – the heart disease death rate in a country is proportional to the consumption of homogenized milk.

Although the United States ranked ninth in milk consumption out of the countries included in Table I, almost all milk in the United States is homogenized. For this reason, in 1967, the United States had the second highest atherosclerosis fatality rate in the world.[16] Only Finland had more deaths, and, as might be expected, their per capita homogenized milk intake was higher than that of the United States. Statistics in Table I reveal the interesting correlation between the fluid milk intake in each nation and the atherosclerosis death rate. It is interesting to note that in those countries in which the practice of preboiling milk is common, the heart disease death rate is low. This is because the boiling temperature of milk inactivates most XO.

Table I is interesting, but it does not represent the strongest argument in support of Dr. Oster's theory. This is because the data is subject to some experimental error. For one, the definition and interpretation of a heart disease death varies from doctor to doctor

around the world. The table also does not take into consideration certain variables in lifestyle, such as alcohol consumption, which might affect the heart disease death rate by raising levels of high density lipoprotein in the blood (discussed on page 12).

TABLE I
ATHEROSCLEROSIS DEATH RATE AND MILK CONSUMPTION IN SELECTED COUNTRIES IN 1967[i]

Country	Death Rate Per 100,000	Milk Intake (pounds per person)	Approx-mate Amount Homo-genized	Pre-Boiled
Finland	244.7	593	33%	No
United States	211.8	273	95%	No
Australia	204.6	304	15%	No
Canada	187.4	288	13%	No
United Kingdom	140.9	350	7.5%	No
Netherlands	106.9	337	5%	—
West Germany	102.3	213	15%	—
Austria	88.6	327	3%	—
Italy	78.9	137	12.5%	Yes
Switzerland	75.9	370	3%	Yes
Sweden	74.7	374	2%	Yes
France	41.7	230	2%	Yes
Japan	39.1	48	5%	—

i — Adapted from data in reference 16.

XO's "Fingerprints" Have Been Found In The Blood

More proof in support of Dr. Oster's work has come from researchers at the University of Delaware. Their study conclusively showed that XO from cow's milk does get into the bloodstream. This finding is important because critics of the theory once questioned whether XO can enter the circulation intact and biologically active.

The Delaware group's study was based on the principle that once XO from cow's milk enters the bloodstream, the human system recognizes it as being foreign. In response to foreign material, the body manufacturers a specific substance called an antibody. Antibodies are very specific. The antibody produced in response to cow's milk XO is different than any other antibody in the blood. Therefore the presence of an antibody to XO from cow's milk represents conclusive proof that XO from cow's milk is, or has been, present in the

blood. An antibody can be compared to the fingerprint on a murder weapon. In the same way that a fingerprint can identify the criminal, a specific antibody can identify the foreign agent in the circulation.

Not only were antibodies to XO found, but patients with severe atherosclerosis had high quantities of the antibody.[17] Also, those individuals who consumed greater amounts of homogenized dairy products had higher quantities of the antibody to XO. Seventy-three out of the 94 people tested (of all ages) had antibodies to XO.[18] This type of testing is very accurate and reliable. In the near future it could become a valuable tool for identifying individuals with a predisposition for serious heart disease.

The Clinical Benefits Of Folic Acid Also Support The Theory

Dr. Oster knew that if his theory was correct, folic acid therapy would have to help reverse atherosclerosis in his patients. He selected elderly diabetics for a study. In such patients atherosclerosis is often so extensive that the circulation to the extremities is inadequate. Toes and fingers suffer the most. Toes become discolored (a condition known as ischemic discoloration) and they often display unpleasant surface ulcers. These patients were chosen for the study because any improvement in their condition could be easily detected.

For three weeks patients were given 80mg of folic acid daily (it should be kept in mind that doses of up to 450mg of folic acid per day have been tested on adults with no observable toxicity).[19] Although all other known treatments had proven unsuccessful, folic acid helped considerably. At the end of the three weeks the ischemic discoloration and the surface ulcers showed significant improvement.[11]

The blood flow through the capillaries nourishing the eye is, in a large part, responsible for the quality of vision, especially in older patients. Seventeen elderly patients, who had poor eyesight because of atherosclerosis in the capillaries of the eye were given 5mg to 7.5mg of folic acid daily. The therapy improved vision in 15 of the patients. The skin temperatures in these patients went up which suggested folic acid improved the circulation to the skin and to other distal areas of the body.[20]

ham Heart Study report supported the theory that people with high levels of HDL are less likely to suffer from a heart attack. Another, more recent study, involving almost 10,000 people indicated exercise and moderate alcohol consumption may help produce higher levels of HDL in the blood.[22] Alcoholics have an unusually low incidence of heart disease. However the quantity of alcohol which alcoholics consume is detrimental to the liver and to many bodily functions. Excess consumption of alcohol quickly depletes vitamin and mineral reserves in the body. Other dietary factors, such as a fish diet, may also increase levels of the beneficial HDL. Meanwhile, smoking and obesity have been associated with higher LDL levels. For this reason, these two factors promote the deposition of cholesterol over scar tissue in arteries and hasten the disease process.

The findings concerning HDL and LDL should be kept in proper perspective. High levels of LDL do not start the heart disease process. The abundance of LDL in the bloodstream merely creates conditions which are more favorable for cholesterol to be deposited over artery tissue scarred by XO.

Vitamins and Minerals

The human system is the net product of all of the enzymatic reactions that go on within it. Life as we know it could not exist without the help thousands of enzymes provide in speeding up reactions which otherwise would require months or years to take place. Imagine waiting a month to digest a meal! Unlike the enzyme XO, from cow's milk, our enzymes play a constructive role in all bodily functions.

An enzyme requires a vitamin and a mineral to operate in a similar way that an engine requires gasoline and oil for its operation. Depriving an enzyme of a particular vitamin or mineral will inactivate the enzyme. As a result, an organ, or a tissue, which depends on the enzyme, will then perform, at best, like an airplane with three out of four engines out of commission.

Certain vitamins and minerals are more directly involved with heart disease prevention than others. The following vitamins and minerals are essential for a healthy and efficient circulatory system.

B Complex Vitamins

Most of the B complex vitamins are directly involved in the prevention of heart disease. Although each one is discussed separately, they work best when taken together as a complex. One B vitamin which stands out in its importance is folic acid.

Folic acid is the most distinguished vitamin in the prevention and treatment of atherosclerosis because of its ability to inhibit XO in arterial lesions. It prevents the chain of events leading to the hardening of the arteries. Folic acid is also involved in the replacement of plasmalogen destroyed by XO. Another B vitamin, B_{12}, helps promote the absorption of folic acid in the body.[23]

Riboflavin, or B_2, (in combination with trace amounts of the mineral copper) is essential for normal arterial development. More specifically, B_2 is required by an enzyme (monoamine oxidase) which helps synthesize the connective tissue elastin. Elastin makes up the outer layer of arteries. It provides the elasticity characteristic of healthy arteries. A deficiency of B_2 or copper can result in improperly formed elastin which is brittle and ruptures easily. When young chicks were fed a diet deficient only in the mineral copper, the chicks' aortas (aorta is the largest artery) burst spontaneously.[24] The enzyme manufacturing elastin was crippled by the copper deficiency. A similar problem could have been expected if the chicks would have been deprived of B_2. Deficiencies of B_2 are common and therefore supplements of it are often recommended.[25]

Niacin and para-aminobenzoic acid (PABA) are two other members of the B family which work closely together and provide pronounced benefits for the circulation. Niacin has been used to increase the skin circulation in the legs of the elderly. PABA is beneficial because it stimulates the "friendly" intestinal bacteria to produce folic acid.

Pangamic acid, also known as pangamate, is not a vitamin even though for a period of time it was called B_{15}. In the Soviet Union pangamate has received widespread acclaim. According to their reports it is valuable for athletes and for patients with atherosclerosis.[26] Researchers in the United States, however, have not substantiated these claims.

Lecithin, Choline, and Inositol

Lecithin is the circulatory system's natural degreaser. It is not a B vitamin but rather a strong emulsifying agent which helps dissolve fats and cholesterol in the bloodstream.[26] It is for this reason that lecithin is the main therapeutic ingredient in the famous Dr. Rinse formula for relieving symptoms of atherosclerosis, such as angina. Although lecithin supplements may help alleviate some chest pain, lecithin does not block XO and therefore any relief it may provide is only temporary. Normally the liver can produce lecithin, but without an adequate supply of the two B vitamins, choline and inositol, it cannot manufacture the required amounts of lecithin.[27]

Eggs are the richest source of choline. In addition, they contain lecithin and the amino acid methionine, which is necessary for the production of choline in the body. A number of nutritionists and doctors, including Dr. Roger Williams, Adele Davis, Dr. Donsbach, plus Dr. Oster and several of his colleagues, have stated that eggs should not be restricted in the diets of patients with atherosclerosis who have no lipid metabolism problem. The egg is nature's perfect food containing all of the vitamins present in a multivitamin pill.

Two other factors which are vital for the production of lecithin are vitamin B_6 and the mineral magnesium.[28] Autopsies have shown that patients who died from heart attacks had reduced concentrations of magnesium in heart muscle tissue.[29] Since the average American diet is deficient in magnesium, it is often recommended as a supplement by nutritionists.[30]

Vitamin E

Like the B complex vitamins, vitamin E plays a key role in the health of the circulatory system. It clears up the scar tissue lining artery walls and thereby minimizes points of attachment for cholesterol. It also helps reduce the body's demand for oxygen. This is beneficial for heart disease patients whose circulatory systems are not performing up to par. It helps dilate blood vessels and thin the blood (in a similar way that garlic is thought to thin the blood) providing better circulation to distal areas such as the capillaries under the skin. Many athletes have taken advantage of vitamin E to improve their performances. Several books have been written entirely

on the topic of vitamin E. One such valuable reference, by Carlson Wade, is titled, *Vitamin E — The Rejuvenation Vitamin.*

Vitamin C

Vitamin C is similar to vitamin E in providing a broad range of beneficial effects for the circulatory system. Capillary walls which burst easily reflect a vitamin C deficiency. A tendency to bruise easily, nosebleeds, and bleeding gums are warning signals which indicate vitamin C reserves are inadequate. You can monitor the health of your capillaries by observing for bleeding gums when you brush your teeth. Although Dr. Linus Pauling is in support of a daily vitamin C intake between 2,300mg and 9,000mg, an intake of 2,000mg will quickly rejuvenate the capillaries in the gums. Ideally, vitamin C should be obtained from natural (raw) foods, including fruits, berries, and vegetables. If the daily intake of vitamin C exceeds 2,000mg, chelated magnesium and pyroxidine (B_6) supplements can minimize the risk of vitamin C induced, calcium oxalate kidney stone formation. Vitamin C cannot be manufactured within the human body and certain factors, such as smoking and stress, quickly deplete vitamin C reserves.

Calcium

The human system is highly dependent on the mineral calcium. It has widespread importance within the body. In the circulatory system, one of its functions is to help regulate the heartbeat.

Although many vegetables, meats, and fish are good sources of calcium, milk and milk products are generally considered by the public as the most dependable calcium sources. Consequently, American children and teenagers consume large volumes of homogenized milk unaware of the hidden danger from XO. XO starts its damage at an early age. A heart attack is the product of years of arterial damage from XO, and not the result of some sudden, overnight process.

What should be done in order to avoid both heart disease and calcium deficiencies? When homogenized milk and homogenized milk products are eliminated from the diet, the body's demand for calcium can be met with other foods. Calcium containing substitutes for homogenized milk include raw milk (milk which has not been pasteurized or homogenized) and foods made out of raw milk.

Imported Swiss cheese is a food product which is produced out of raw milk and contains a high concentration of calcium. One pound of this cheese contains the calcium equivalent of 3.5 quarts of milk. If such foods are unavailable, calcium gluconate, calcium lactate, or chelated calcium supplements are good substitutes. Calcium from these supplements is actually absorbed more readily by the body than calcium from milk. Although another supplement called bone meal contains the most desired proportions of calcium, phosphorus, and vitamin D for absorption, it may not be ideal for atherosclerosis patients since the added vitamin D can stimulate the XO residing in arterial lesions.

Stress, Caffeine, Smoking, Dietary Salt, and Obesity

If XO can be compared to a time bomb, then the group of risk factors, including stress, caffeine, smoking, salt and obesity would represent the clock mechanism. Adrenalin, which is released by the adrenal glands during periods of stress, constricts blood vessels and speeds up the heart rate. Caffeine from coffee, tea, and cola, plus nicotine from cigarettes also constrict blood vessels and speed up the pulse rate. Sodium from sodium chloride (table salt) has been associated with increased blood pressure in susceptible persons. The heart must work overtime in people who are overweight just to stay even with bodily demands for oxygen and nutrients. The effect of just several of these risk factors on clogged arteries could be fatal. A conscious effort should be made to minimize such risk factors. All of these risk factors simply speed up the disease started by XO.

At What Age Does Heart And Circulatory Disease Start?

Considerable arterial damage occurs before the age of fifteen when the greatest volumes of homogenized milk are consumed. This is not as true in females as it is in males because females are protected against XO by estrogen. Scarred artery walls have been found in infants after autopsy.[32] Similar studies have revealed that by the time American children reach the age of ten, one half have lesions (the result of XO) in their coronary arteries.[33] The well publicized autopsy studies involving American soldiers killed in combat, who averaged 22 years of age, showed that over 75 percent had evidence of atherosclerosis.[34] Korean soldiers had little or no signs of heart disease! Antibodies to XO, the "fingerprints" XO leaves behind in the blood, have been isolated from every age group. The amount of antibody to

XO in the blood can be used as a diagnostic tool by physicians to help establish the extent of atherosclerosis in a patient and to help determine whether folic acid therapy is necessary.[17]

Pregnant women are often advised to consume large quantities of milk. However, they should avoid homogenized milk, not so much because of any potential harm to themselves (female hormones inhibit XO), but because of the risk of exposing a male fetus to XO, since the circulation of the mother mixes with the circulation of the fetus. Bone meal or other calcium supplements can be taken by pregnant women. Mothers should never feed infants and children with homogenized cow's milk. Interestingly, Mother's milk contains virtually no XO and is the natural food for a baby.

Does XO Cause All Heart And Circulatory Disease?

According to a conservative estimate by Dr. Oster, over one half of all heart and circulatory disease deaths in the United States result directly from XO in homogenized milk. This translates into over 500,000 annual circulatory disease fatalities caused by XO! Risk factors only hasten the disease process. Genetic heart ailments account for only a small percentage of all heart disease related deaths. People with heart murmurs may be more susceptible to angina chest pain due to posssible heart valve lesions and because they have a less efficient circulation to start with. Up to this time XO has been the only demonstrated causative agent of cardiovascular disease.

The Advantages Of Raw Milk — Unpasteurized and Unhomogenized

People often confuse the terms homogenization and pasteurization. Milk is homogenized to increase its shelf life and its economic value for dairy farmers and for retailers. Homogenization does nothing to make milk a better product from a nutritional standpoint. Homogenized milk is even classified as denatured according to the textbook of dairy chemistry. This milk is certainly not a "natural"! Although pasteurization, a heating process, provides a benefit by destroying harmful bacteria, which may be present in milk, the process also greatly diminishes the nutritive value of the milk. Most nutritionists disapprove of pasteurization.

When milk is obtained from disease-free cows and high sanitary standards are observed on farms, pasteurization is not required. Several farms, including Gates Homestead Farms in Chittenango, New York, Mathis Dairy in Georgia, Laurelwood Acres in Northern California (a goat milk dairy), and Alta-Dene Dairy, which is also in California, are certified to sell raw milk, unpasteurized and unhomogenized. Cows at these farms are inspected regularly for disease and their milk is checked for bacterial content. Unfortunately, such controls result in higher retail prices. However, when the health of the circulatory system is at stake, the small price differential becomes even more insignificant.

XO has been isolated from the milkfat of sheep, goats, rabbits, and cows. It is practically absent in the milkfat of humans, sows, or mares.[31]. Cow's milk and cow's milk products, including kefir, cottage cheese, yogurt, ice cream, cheese, buttermilk, sour cream, whipped cream, and chocolate all contain varying amounts of XO. However, only those dairy products which are made out of homogenized milk may contain biologically active XO which can pass intact through the intestinal wall into the circulation. Homogenized skim milk (which contains 1% fat instead of 3-4% fat) is no better with regards to XO than homogenized whole milk. Companies manufacturing milk products may be consulted if any doubt exists over the type of milk used in a dairy product. Keep in mind, most company representatives have never heard of XO!

Because of processing, butter, a dairy product, contains no biologically active XO. According to Dr. Oster, butter has no potential for triggering circulatory disease. However, it is advisable for heart and circulatory disease patients to avoid butter because vitamin D enhances XO activity and butter is high in vitamin D. A healthy person, with a normal fat metabolism, can eat butter and other saturated fats, (fats from animal sources) but in moderation only, because of certain health related reasons unassociated with heart disease. For one, organic chemicals such as pesticides, pass up the food chain within saturated fats. Second, all fats possess high caloric values. According to many nutritionists, such as Carlton Fredericks, butter is still a better food than margarine.

5 SUMMARY AND CONCLUSIONS
Solutions

Dr. Oster's findings indicate the heart and circulatory disease process is triggered by homogenized milk consumption in the following manner:

1. The milk homogenization process causes an enzyme called xanthine oxidase (XO) to become trapped within liposomes (very small, fat-like, membranous globules).
2. After milk is consumed, stomach acid and gastric enzymes digest and inactivate only some XO. Liposomes protect much of the XO from digestion. However, when nonhomogenized milk is consumed all XO is broken down during digestion.
3. Membrane bound packets of XO are transported through the intestinal wall into the circulatory system. White blood cells transport XO through the circulation.
4. XO attacks plasmalogen – a vital structural component of the cell membranes of cells in heart and artery wall tissue. Superoxide (O_2-) is produced during the reaction.
5. Superoxide initiates a chemical chain reaction which can produce lesions in artery walls or damage to the heart muscle itself.
6. Arterial lesions eventually harden into calcified plaques due to the disposition of minerals.
7. Cholesterol and fatty streaks cover calcified plaque and obstruct blood flow.
8. Circulation to remote areas of the body, such as the prostrate gland, the eyes, the brain, and the skin is first affected.
9. Artery walls may loose their elasticity due to a large number of calcified plaques.
10. High blood pressure is one symptom of the loss in arterial elasticity. Angina (chest pain) results from a diminished blood flow through branches of the coronary artery. The combination of adrenalin, (released during stress) caffiene, and nicotine may constrict a diseased coronary artery depriving the heart of oxygen triggering a heart attack.

Dr. Oster has mapped out the biochemical pathways of the circulatory disease process. However, a knowledge of chemistry is required before one can comprehend the chemical chain of events. For this reason, in this summary, only a compilation of circumstantial evidence in support of the theory is included. Anyone interested in the biochemical mechanisms involved in the disease process may

contact Dr. Oster at Park City Hospital in Bridgeport, Connecticut. The circumstantial evidence can be summarized as follows:

1. The heart disease death rate skyrocketed after the homogenization of milk became commonplace in the United States.
2. Xanthine oxidase destroys plasmalogen. In the arteries of heart disease victims, extensive plasmalogen tissue destruction is evidenced.
3. Active xanthine oxidase has been isolated from the plaques and lesions lining artery walls.
4. It has been demonstrated that biologically active xanthine oxidase can pass through the intestinal wall into the circulation within protective packets called liposomes.
5. Cow's milk xanthine oxidase has been identified in the human circulation through the presence of human antibodies to cow's milk xanthine oxidase.
6. Folic acid therapy has helped heart disease patients since it blocks the action of xanthine oxidase and helps to rebuild plasmalogen.
7. Female sex hormones inhibit xanthine oxidase. Therefore, arteriosclerosis is rare in women prior to menopause.
8. Male sex hormones chemically enhance xanthine oxidase activity. Arteriosclerosis and heart attacks are more common in men.
9. The heart disease death rate is to a large part proportional to the volume of homogenized milk consumed in each country. Circulatory disease is rare in countries in which whole (raw) milk is consumed.
10. Heat inactivates xanthine oxidase. Countries in which milk is commonly preboiled have relatively little heart disease.

How To Combat XO And Heart Disease

Dr. Oster's findings are frightening considering how much homogenized milk is consumed in this country. Although the chances are that the average young person under thirty, has one or more arterial lesions from XO, the presence of lesions does not mean a person will die from circulatory disease. In light of what we now know about XO, the following preventive health recommendations can reverse progressive arterial disease.

- Avoid homogenized milk and homogenized milk products.
- Take daily supplements of one to three mgs of folic acid, a 50 mg or 100 mg B complex formula, and brewer's yeast. Dr. Oster's folic acid therapy (80mg/day) can only be pursued under the supervision of a practicing physician.

- Take 400 IU of vitamin E daily (preferably at bedtime to minimize interference of iron absorption in the gut).
- Obtain at least 1gm/day (1,000mg) of vitamin C in the diet; preferably from raw fruits, berries, and vegetables.
- Exercise regularly, quit smoking.
- Calcium and phosphorous can be obtained from vegetables, meats, fish, and certified raw dairy foods. Calcium supplements containing the correct 2.5:1 ratio of calcium to phosphorous are also desirable. Take 100mg to 200mg of chelated magnesium daily.
- Patients with atherosclerosis must minimize intake of vitamin D since excesses stimulate XO residing in arterial lesions. Exposure to sunlight and many foods in today's diet which contain vitamin D provide more than enough vitamin D. The liver stores sizable reserves of vitamin D.

Dr. Oster is presently continuing his cardiovascular disease research without the benefit of research grants or outside funds. Medicine in this country is a highly conservative institution and often years pass before medical findings gain acceptance. The concept that heart disease is triggered by an enzyme in homogenized milk is a radical deviation from the official viewpoint of the American Heart Association. You might wish to write your local American Heart Association representative or send a copy of this booklet to your congressman. The sooner the public hears of Dr. Oster's work the sooner heart disease will cease to be our number one killer.

Note: Please remember to consult your doctor before attempting any form of self-therapy.

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