NO. 36

the FELIX Letter

A COMMENTARY ON NUTRITION

1987

COPING WITH CHOLESTEROL

Cholesterol is the catchword of our times and a lot of folks have acquired the dubious privilege, accorded mainly to affluent societies, of high levels in blood serum. If it's any comfort to those in the club, many people wasting with illness or starvation have the far more urgent problem of ominously **low** readings. If you're comfortable with your health generally but not with your cholesterol level, the measures described below may be of use . . . especially if you've doggedly followed the "low-saturated fat, low-cholesterol, high-polyunsatured oil" dietary homilies with less than thrilling results, but your doctor is not in a hurry to put you on high-powered cholesterol-lowering drugs.

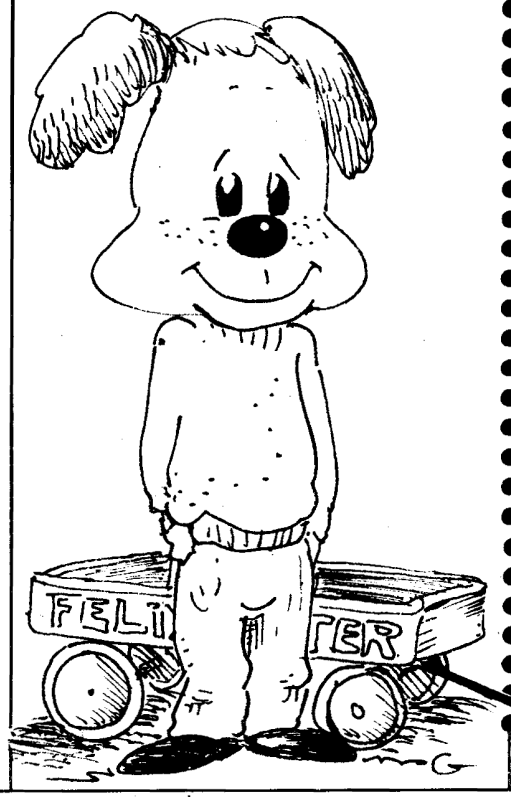
First we should recognize that cholesterol is used by the body for a whole laundry list of vital functions — which is why our system goes to considerable trouble to make it. We usually get some from food, and make the rest in the liver, i.e., endogenous cholesterol. Cholesterol has gotten such a bad press that a young friend called me after his first cholesterol test, deeply concerned. His reading was a pristine 160 mg/dl, but because he's no-eggs, no-dairy vegetarian and doesn't get any in his diet, he thought his cholesterol should be zero! I explained that at zero levels he'd probably be permanently out to lunch. A lack in the diet only means the liver has to make a little more.

Cholesterol fills many bills. For one, it plays a stabilizing role in tissues. The brain has huge requirements — it's got the largest concentration in the body. About fifty different hormones in our system, including cortisone and the male and female sex hormones, come from cholesterol. Ultraviolet light in sunlight converts cholesterol on our skin to vitamin D3 to regulate our disposition of calcium and other minerals. The liver transforms a good part of dietary or endogenous cholesterol into ***bile acids.*** Bile acids emulsify the fats and oils we eat so we can absorb them better.

No kidding, we'd be in deep trouble without this waxy little molecule.

The Good Ship HDL

Cholesterol is ferried through the bloodstream in special carriers called lipoproteins. Low-density lipoproteins (LDL) sail cholesterol to wherever it's needed, but sometimes onto the walls of arteries where it's definitely a liability. High-density lipoproteins (HDL) serve as sanitation skiffs, picking up excess cholesterol and returning it to the liver for safe reprocessing. The more HDL-cholesterol we have, the better our chances are of avoiding gummy pile-ups in arteries (atherosclerosis). Generally, a range of 120 to 220 milligrams of total cholesterol per deciliter (one-tenth of a liter) of blood will pass muster. The next time you have a checkup ask the doctor what your HDL-cholesterol levels are, also your ratio of total cholesterol to HDL-cholesterol. Current medical consensus is that a ratio of around 3 or less may protect us from heavy plaque buildup in arteries. E.g., if total cholesterol (made up mostly of LDL and HDL) is 200, and HDL-cholesterol is 60, then 200 divided by 60 = 3.3. As total cholesterol gets higher and/or HDL lower, the ratio goes up and presumably protection goes down.



Ways to Go

The following measures offer alternative approaches to a recalcitrant cholesterol level and provide some clues to its origin. A few qualify for the A.M.A.'s blessing, others may give it apoplexy, and one or two are downright fanciful even by my standards! I credit my readers with having the good sense to pick and choose discreetly.

● SUPPLEMENTING FIBER INTAKE. Regular premeal "cocktails" of oat bran or wheat bran and powdered psyllium (Metamucil or similar products) stirred with a spoon of yogurt taken 15 minutes before meals and followed by a glass of water will help to bind bile acids in the intestine and increase the amount that's excreted from the body. Presumably, the body then draws on its cholesterol stores in order to synthesize more bile acids, and serum cholesterol goes down. (I'm taking it for granted that my readers normally eat plenty of fiber-rich foods besides.)

THE OMEGA-3 PHENOMENON: ***The Nutrition Breakthrough of the '80s*** by Donald O. Rudin, M.D. and Clara Felix will be in bookstores by the first of September. Our editor at Rawson Associates of Macmillan tells me it's a main selection of Prevention Book Club and an alternate selection of Book of the Month Club. Richard A. Kunin, M.D., former president of the Orthomolecular Society, writes:

Dr. Rudin's book is a nutrition-health breakthrough. He is first to see that the Omega-3 EFA are a missing link in our nutrition knowledge. He is first to theorize that this is a common element in the diseases of modern times, especially cancer, heart, and mental illness . . . and the first to carry out a clinical research to verify his theory. Now he is first to bring readers a program of recipes, menus, and sensible nutrient supplements that will surely improve your health and may save your life.

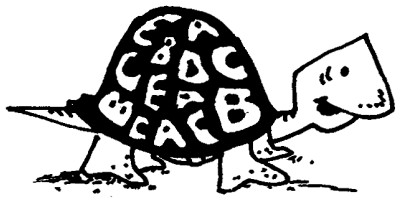
● INCREASING VITAMIN C INTAKE. Cholesterol happens to be a tough molecule to break down and eliminate from the system. The chief way is through stepped-up excretion of bile acids from the gut via fiber. ***Vitamin C is needed to convert cholesterol to bile acids.*** Dr. Linus Pauling in his valuable best-seller, ***Live Longer and Feel Better,*** describes a study where patients with cholesterol over 300 mg/dl decreased it 18% after three weeks of taking 3 grams a day of vitamin C.

• Vitamin C also can raise "good" HDL-cholesterol and lower LDL levels.

● INCREASING INTAKE OF THE ANTI-OXIDANT NUTRIENTS: ***Vitamins A, C, E, beta-carotene, and the minerals zinc, manganese, and selenium.*** They safeguard the toughness and elasticity of blood vessels and make them resistant to injury, especially at branching points where the flow is turbulent and pressure high. Plaque builds up when cholesterol gloms on to an injury site.

In the vitamin C deficiency disease scurvy, blood vessels literally disintegrate. Dr. Pauling tells us that experiments forty years ago in England to determine vitamin C requirements had to be stopped in a hurry when two of the ten healthy young volunteers, who didn't show any apparent signs of scurvy, keeled over with cardiac emergencies!

• Like vitamin C, vitamin E increases HDL-cholesterol.

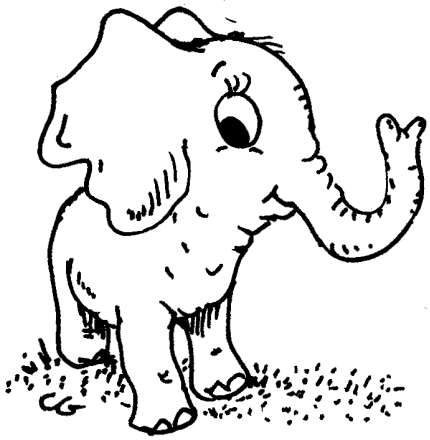


● GETTING A GOOD BALANCE OF OMEGA-3 AND OMEGA-6 FATTY ACIDS. To do its job, every cholesterol molecule needs to be linked ("esterified") to an unsaturated fatty acid (f.a.), thus forming a "cholesterol ester." When there's a shortage of the unsaturated kind, it grabs a *saturated* f.a., thereby becoming a candidate for embedment in artery walls.

Cholesterol esterified to omega-3 or omega-6 f.a., on the other hand, can board the HDL ferry and get flushed out of arteries. Make sure the foods and oils you use are good sources of linoleic acid (omega-6) and alpha-linolenic acid (omega-3). They are just as "essential" as vitamins. ***Linseed oil, non-hydrogenated soybean oil, and walnut oil qualify. Fatty fish and fish oils supply EPA and DHA, the ultra-polyunsaturated omega-3's.*** See F.L. 16, 21, 26, 29, 30 and 33/34 for amounts and kinds of foods and oils that work.

•Make "Easy Butter" instead of buying margarine: Soften two cubes of butter in a bowl; sir in about 2/3 cup linseed oil. You don't have to whip them smooth — they work fine just mushed well together with a fork. Cover and refrigerate. Friends who can't stand the taste of linseed oil love my Easy Butter! You can adjust the spreadability by the amount of oil you add. Soybean, walnut, or a mixture of any of the three oils works fine, too.

•The ongoing state of western diet for the last 80 years has created an artificial preponderance of the omega-6 (linoleic and arachidonic) f.a. and a devastating, undetected deficiency of the omega-3. The two families of essential f.a. are precursors to a bodywide hormonal regulatory system — the prostaglandins and their derivatives which control almost every function in the body. A rebalancing in which the neglected omega-3's are replaced in the diet, and hence in our tissues, will affect everything in a good way, not just cholesterol levels!



● USING GAMMA-LINOLENIC ACID. Oils rich in linoleic acid can lower cholesterol but scientists aren't exactly sure why. British medical researcher Dr. David F. Horrobin has an attractive theory: Linoleic is mainly a means to some ends, one of them being prostaglandin E1 (PGE1). PGE1 is made from linoleic by a series of steps catalyzed by enzymes in our system. The actions of prostaglandins — late-bloomers as far as medical research is concerned — are just beginning to be fathomed. PGE1 is known for its exceptionally benevolent effects such as its life-saving ability to prevent dangerous spasms and clots in arteries. What is not yet well known is that ***PGE1 inhibits the synthesis of cholesterol.***

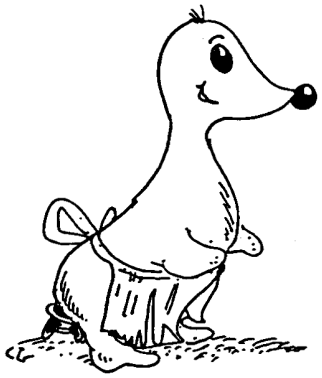
According to Horrobin's theory, when cholesterol levels get too high, a feedback signal causes more PGE1 to be released. ***When there's enough PGE1, cholesterol production goes down.*** He hypothesizes that the two regulate one another! (***Medical Hypothesis*** 6:785, 1980.) In a state of health, this feedback loop works like a charm. PGE1 levels stay high, cholesterol low, and our arteries are at peace! Two scenarios can disrupt this idyll. First is a lack of linoleic acid. Obviously, without it no PGE1 can be made, no matter how many signals are triggered by the increase in cholesterol.

The second scenario is much more common in this day and age, where we're awash in a sea of vegetable oils: ***Linoleic can't be adequately converted to PGE1.*** All too familiar factors such as viral infections; diabetes and high blood sugar; cortisone and other steroids; too much alcohol; deficiencies of zinc, B6 and B3 (niacin); even aging, can weaken the enzymes that do the converting.

Enter GLA! GLA (gamma-linolenic acid) is an intermediate molecule on linoleic's pathway to becoming PGE1, so that only fleeting amounts are found in most foods. Dr. Horrobin and other scientists learned that evening primrose oil — one of the few natural substances besides breast milk with stable GLA — can step up PGE1 production in individuals who don't make enough. Apparently, GLA bypasses the faltering enzymes and gets converted readily to PGE1.

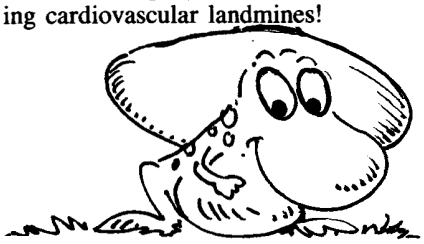
I think its potential for lowering cholesterol should be clear, assuming that Horrobin's theory has validity. Six capsules of evening primrose oil a day containing 40 mg of GLA actually have gotten good results in studies. Another source of stable GLA is one of the oldest plant species on earth, the blue-green algae, Spirulina. One teaspoon of Spirulina powder contains about 40 mg. Both substances have shown health benefits and are continuing to receive substantial research attention.

•***Incidentally and importantly, omega-3-rich linseed oil and fish oil also help boost PGE1 production.*** They do it in a roundabout way through enzyme competition that channels GLA more firmly onto the PGE1 pathway.



● USING LECITHIN SUPPLEMENTS. The esterification of cholesterol takes place when a natural substance in the body, lecithin, transfers one of its fatty acids (f.a.) to cholesterol. We make our own lecithin, but if we don't get enough polyunsaturated omega-3 and omega-6 f.a. in our diet, lecithin will donate saturated f.a. to cholesterol instead of the good, unsaturated ones.

Plants can make lecithin, too. When we eat soybean lecithin, some of it is absorbed intact and can donate unsaturated f.a. to cholesterol. Human systems may produce less lecithin with age, so supplements may be useful. Soybean lecithin has had a good reputation in alternative medicine for many years, although duly scorned in conventional practice until it was discovered not long ago that lecithin helps some senile patients improve their memory. My own confidence in lecithin comes, first, from many reports of its good effects over the years; and second, from the comforting observation that most of the folks I know who've taken it for a long time, including myself, appear to be skirting cardiovascular landmines!



● COMBATING HYPOTHYROIDISM. Doctors have been aware for quite a while that below-normal thyroid function (hypothyroidism) may cause high cholesterol, and an over-active gland very low cholesterol. Some alternative-minded physicians suspect hypothyroidism is more common than generally acknowledged because it doesn't always show up in standard blood tests. Even mild hypothyroidism, however, can push cholesterol levels too high. A Berkeley physician, Stephen E. Langer, M.D., who practices nutritional medicine, says an individual's temperature in the morning may be a surer indication. If he suspects hypothyroidism, each morning for a week he has his patient place a thermometer under an armpit for ten minutes ***before getting out of bed.*** Temperatures below 97.8° F often are correlated with low thyroid activity. Dr. Ronald Schmid, a naturopathic physician in Connecticut, modifies this a bit, using temperatures below 97.2° rather than below 97.8° as an indicator. Dr. Langer, based on his own and other clinicians' experiences, believes natural thyroid prescriptions in appropriate cases can improve a patient's overall health, raise their a.m. temperature, and lower their blood cholesterol.

If you're curious about your own thyroid function, try it. If you fall consistently in the low range, talk to your doctor and lend him a copy of Dr. Langer's book, ***Solved: The Riddle of Illness.***

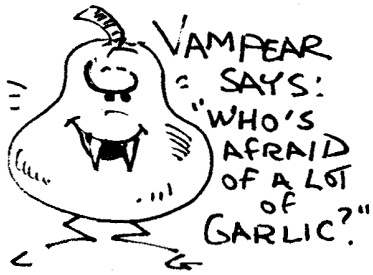
● CUTTING DOWN ON SUGAR IN ALL ITS FORMS. Sugar, corn sweetener, fructose, etc. keep getting a clean bill of health in the press, which is understandable in light of the staggering commercial interests that fatten on the national sweet tooth. However much it may be denied or underplayed by industry publicists, the cholesterol-connection is that ***we synthesize cholesterol from acetate, which can be derived from the breakdown of these sugars.*** It is true that acetate is far more generously supplied by the fats and oils we eat. But let us remember that all varieties of sugar consumed in amounts above caloric needs are cleverly converted by our body to . . . FAT! And fat can then be broken down into acetate, which . . . well, the picture should be clear. (Don't feel alone, fellow sweets-lovers. We're all in the vale of tears called 'Self-denial' together!)

● USING ARGININE SUPPLEMENTS. I've seen reports suggesting that this amino acid, consumed apart from meals, may help to lower cholesterol. Caution to individuals who harbor herpes: A high arginine and low lysine intake may exacerbate herpes. The opposite dietary approach — an intake low in arginine and high in lysine (another amino acid) has been found to keep outbreaks to a minimum.

● USING CARNITINE SUPPLEMENTS. We make our own carnitine from the amino acid, lysine, with the help of vitamin C, as well as getting carnitine in a meat diet. Carnitine is used by the body to transport fatty acids into the mitochondria — the "energy factories" in our cells — so that the fat can be metabolized to provide us with energy. For whatever reasons, some individuals may not be making enough nor getting it in the diet. Supplements of carnitine in tests have shown a very sizable drop in serum lipids, including a 24% drop in cholesterol. Worth looking into, I believe.

● USING GARLIC, ***Or Getting Rid of Vampires While You Lower Your Cholesterol.*** Medical reports continue to confirm the folk tales about garlic's therapeutic range, including its estimable antibiotic powers. Clinical studies show garlic oil effective in lowering cholesterol in people, while in rabbits it can actually sweep out accumulations of cholesterol from arteries, i.e., reverse atherosclerosis. Japan exports a special garlic distillate that's odorless but is supposed to retain all of garlic's remedial qualities. I suggest checking out the growing literature on odor-free supplements at your local healthfood emporium. At the same time, use lots of whole garlic with fine, free careless rapture whenever you can get away with it!

● USING SUPPLEMENTS OF PLANT STEROLS (PHYTOSTEROLS). Lately, healthfood publications have been touting them. My medical texts tell me beta-sitosterol, a plant sterol, was known for its cholesterol lowering properties 30 years ago. Long-term studies showed no toxicity, but somehow it gained only limited status as a treatment. Animals and people make cholesterol, plants make phytosterols. They're enough alike so that phytosterols compete with dietary cholesterol and interfere with its absorption into the bloodstream. A 1982 trial shows beta-sitosterol reduced dietary cholesterol absorption by 25 to 65%. By a not well-understood mechanism, plant sterols appear to interfere also with absorption of endogenous cholesterol, resulting, again, in lower blood cholesterol. Apparently, phytosterols themselves pass on through the gut and are not absorbed to any significant extent. Maybe the low cholesterol typical of vegetarians is in part related to their ample intake of phytosterol-rich foods such as whole grains, nuts, seeds, soybeans and fruit.



● USING NIACIN SUPPLEMENTS. Niacin (nicotinic acid or vitamin B3) is one of the few vitamins regularly used in conventional medical treatment of high cholesterol. Dr. Langer recommends it as well, usually in the slow-release form to avoid problems of flushing and itching with required high doses.

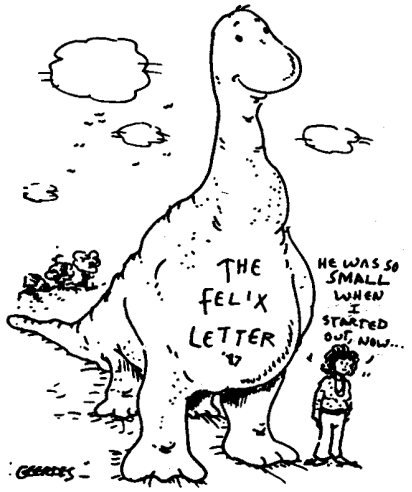
● EXERCISING EVEN MORE. Regular vigorous workouts can raise HDL-cholesterol (the good kind) and lower our stress levels. (Stress may raise cortisone levels, which interferes with output of benign E1 prostaglandins, or PGE1.)

● SHUNNING SOAP. This last one's a doozy! My favorite medical reading is a journal published in the U.K., ***Medical Hypotheses,*** edited by Dr. Horrobin. In it, health professionals get a chance to stretch their wings a bit and expound on pet theories without the formal restraints of experimental protocol. Robert Cane, a doctor of veterinarian medicine from Louisiana, thinks we may be soaping ourselves into heart attacks, or at least into high blood cholesterol (***Med. Hypoth.*** 11:251, 1983). Soap, after all, is a fairly recent embellishment. "Great-grandfather might have bathed with soap once a month, grandfather once a week," he writes, but today we soap off in showers and tubs once or more daily from birth to death. Each time we lather, we remove a natural protective coating called sebum. "The sebaceous glands in their role of protecting the skin, try to resupply the skin with a new covering of cholesterol, cholesterol esters, fatty acids and triglycerides," he notes. (Cholesterol has a stabilizing and waterproofing function in the skin in addition to making vitamin D3 in sunlight.)

The skin is our largest organ, close to 19 square feet in area. Cholesterol and fats to re-coat the skin have to be assembled and shipped from the liver via the bloodstream, thereby raising plasma levels of LDL-cholesterol and fats. Dr. Cane suggests that daily or twice daily soapy ablutions may keep these levels abnormally high, encouraging the accumulation of plaque in arteries!

You well may ask, are we then condemned to ***fester***, as in the aromatic days of old, in order to safeguard our cardiovascular plumbing? Not at all! The answer, he says, is to wash as freely as before ***without using soaps or detergents.*** Perhaps as a veterinarian Dr. Cane understands more keenly than most how important sebum secretions are to the beauty and health of an animal's skin and coat, and that similar complex, protective mechanisms may operate in man as well. In any event, after he and others made the switch to soapless bathing, (1) they no longer were troubled with boils; (2) allergic skin conditions improved; (3) susceptibility to poison ivy diminished; and (4) body odors decreased! He suggests the natural antibiotic action of fatty acids normally present on the [unsoaped] skin creates a hostile environment for staphylococcal and other microbes. Water removes dirt and perspiration without dissolving the protective fatty sebum.

Hmmm, all those potential benefits and maybe lower cholesterol, too. I'd say it's worth a few months' trial. To the no-no list I would add frequent detergent shampooing. Cleopatra bathed and washed her hair in asses' milk and she was a real beauty. Healthy, too, they say, till the asp bit her. ■



In ***Traditional Foods Are Your Best Medicine*** (1987), naturopathic physician Ronald F. Schmid draws on the findings of anthropologists, medical researchers, and his own years of clinical experience to tell us about foods that can restore health. He assembles the major anthropological research over the past fifty years on diets of primitive societies, from Australian Aborigines to Hunza mountain people, describing the foods and dietary practices that allowed pre-industrial people not just to survive but to maintain splendid physiques, gorgeous cavity-free teeth, and robust health. He then brings us up to date with a brilliant analysis of these foods in terms of contemporary nutritional biochemistry. For instance, raw foods were widely used: organ meats, shellfish, salmon eggs, fruits, young greens, sea vegetables, and so on. Standard medical teaching holds that raw foods have no unique properties, because the so-called "live" enzymes in them, which are made of protein, are broken down completely into inert amino acids by the time they get in our bloodstream. However, new scientific work indicates "that a significant portion of dietary protein is absorbed intact ... These proteins went to tissues throughout the animal's body ... The researchers believe a similar process occurs in humans, indicating different raw foods each have unique and potentially significant biological effects."

The most vigorous societies were those which had free access to food from the sea. Dr. Schmid explains this makes a great deal of sense in the light of new awareness of the exceptional importance to health of the omega-3 fatty acids from marine plant and animal life. Since modern meat because of hormones, pesticides, antibiotics, and the wrong kind of fat (little or no omega-3) is a poor substitute for the wild game or healthy domestic animals our ancestors ate, he suggests we largely substitute fish and shellfish. Accordingly, he has a detailed appendix on the characteristics and habitat of seafood, the tastiest and safest species, and ways to avoid the contaminated kind.

The book is a rare blend of philosophical insights, good science, and practical guides for using foods to achieve health. (Available in bookstores and directly from publisher: Ocean View Publications, 2420 Main St., Stratford, CT 06497. $23.95 postpaid.) ■

Illustrations are by Clay Geerdes and other artists as noted.

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