

# The FELIX Letter

No. 100

A COMMENTARY ON NUTRITION

1998

## VEGETARIAN ALERT!

In Boulder, Colorado, last August I was at a lively 3-day seminar on natural medicine organized by friend Robert Crayhon, M.S. Lanky, goodlooking Robert is a researcher and nutritionist who dispenses wicked wit like refreshing drops of rain. The folks he had as presenters along with himself awed me by their combination of wisdom and clinical experience. (And they were so *young!* I notice that's happening more lately. Is it that they're getting younger.... or that I'm....? Oh heck.) A major theme, pursued by physiology professor Loren Cordain, Ph.D., of Colorado State U., and by geochemist C. Leigh Broadhurst, Ph.D., was *Paleolithic nutrition* -- what our ancestors -- first *Homo habilis*, later *Homo erectus*, and finally *Homo sapiens* -- hunted, gathered, and ate over a stretch of more than *two million years*.

The transition from Paleolithic lifestyle took place only ten thousand years ago and just in a few parts of the globe -- likely in Southeast Asia, and in the 'Fertile Crescent' of the Middle East bordered on the east by the Euphrates and Tigris rivers and on the west by the Nile. When we first settled down to raise and harvest crops, it had to happen in these warm regions: sheets of ice from the last Ice Age would still have covered the northern latitudes for a few thousand more years.

Some paleontologists say it's been all downhill since: our teeth became prone to decay, our bones got weaker, we actually shrank! Neanderthals were bigger, stronger, and maybe smarter -- their brains were larger than ours. Our immediate ancestors, the Cro-Magnons, too, were taller than today's humans and sported great teeth and bones.

Where did we go wrong?

Hunter-gatherers (i.e., foragers) ate a lot of protein, some of it fatty -- from game animals, fish, marine mammals, shellfish, birds, lizards, occasional eggs, and (yuck) insects and grubs.

They ate a bunch of plant stuff, too: greens, tubers, roots, bulbs, fruit, berries, nuts, seeds. Little or no grains (as in no wheat, rye, or barley).

As their numbers grew and wild game got scarce, our ancestors gradually abandoned a forager lifestyle for farming. Cereal grains could be harvested, stored, and fill a lot of bellies when game was vanishing. In time, people's primary sustaining food switched from flesh to cereal grains. The larger the populations grew, the fewer flesh foods and the more grains they ate.

Worse yet, cereal grains became the biggest part of *carbohydrate* intake, crowding out the rich variety of vegetables, tubers, nuts, fruits and berries we'd depended on during the huge hunk of time when grains weren't dietary mainstays. Grains have good stuff in them, but can't make up for the abundance of vitamins, minerals, antioxidant nutrients, etc. in the foods they displaced; they're also high in an 'anti-nutrient', phytic acid, which interferes with mineral absorption.



An illuminating example is what this transition, beginning just 200 years ago, meant to Aborigines, who had flourished as foragers for 50,000 years in Australia after they migrated from Southeast Asia. Newer research has reversed the notion that Aboriginal diet

was largely made up of plant foods. Instead, Australia's Stone-Agers not only hunted marsupials, reptiles, lizards, birds, etc., but because many inhabited the huge coastal areas of the continent (until driven inward to the deserts by the colonists), they also hunted salt-water turtles, dugongs, and deep sea fish "from bark or dugout canoes."<sup>1</sup> Like all coastal people they depended on many varieties of fish and shellfish as the easiest-to-get sources of protein. (Need I mention as sources of *omega-3 fats* as well? Where d'ye think they got the brains to be such skillful hunters -- and later to figure out how to survive in Australia's parched interior?)

They ate a lot of greens, yams, and fruits, too. Also, eggs, frogs, grubs, sweet honey ants, honey (they were crazy about honey), and seeds from which they baked a kind of bread. No wheat, no flour, no sugar. Aborigine moms nursed their kids for three years.

Healthy? Strong bones? No heart disease? Gorgeous teeth? You bet.<sup>2</sup> That was then. Now, they eat modern foods -- canned meat, white flour goods, sugar -- and have modern diseases, bad teeth, and rampant alcoholism.<sup>1</sup>

So what's so different in America? Not a lot. We have our nutrition policy-setters trumpeting the virtues of a meat-free, fat-free, high-grain diet that's going to solve all our health problems.

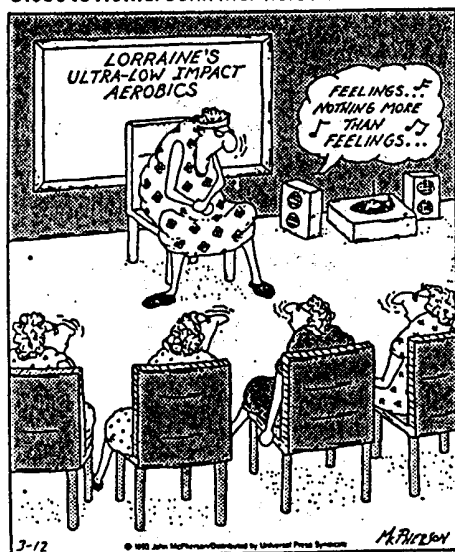
Right.

## And Now: Carnitine!

Crayhon has written a book that's so good I don't mind if he sells more copies than the Rudin-Felix *Omega 3 Oils*, honest! The title put me off at first: *The Carnitine Miracle* (1998, M. Evans & Co., New York). Sorry, Robert, it sounded like one of those quickies put out by firms that sell supplements, but when I started reading it, I couldn't put it down and finished it in one evening. Crayhon offers a wondrous panoramic view of human nutritional needs, beginning with our beginnings as Stone-Agers. Clearly, the secrets for keeping our evolving species strong, healthy, and smart lie in the foods we cherished for over two million years, and in the physical activity their procuring demanded.

Okay, we all know what we're supposed to be doing in the way of walking, swimming, weight-training, dancing, or whatever it takes to get us off our duffs. As for nutrition, it's by no means impossible to re-create a Paleolithic pattern, even if we omit insects and grubs. But first, Crayhon says, we'll have to overcome the dictum of present-day experts who are hooked on grains, no-red-meat, and low-fat everything. And I'm sorry, dear vegetarian friends, he says you're fighting human history and physiology. Crayhon was one for 11 years until he repented.

Close to Home/John McPherson



"OK, now the left nostril. Good!"

### Fleshfood Myths

What about the business of high-meat diets causing everything from weak bones to heart disease? It depends on which studies you look at, how they were conducted, and how interpreted.

For instance, if you eat a lot of protein, you'll probably excrete more calcium in urine than if your protein intake is low. (I'll explain why a little later.) And, of course, we need calcium for strong bones. But J.E. Kerstetter et al. in the October *American Journal of Clinical Nutrition*, comparing effects on calcium absorption in healthy young women of typical diets either high or moderately low in protein (but containing the same amounts of calcium), came up with this discovery: *the lower protein diet caused intestinal absorption of calcium to decrease*. Although the high-protein intake, as expected, caused more calcium to be lost in urine, it allowed intestinal absorption of calcium to be normal. Net result: *the young women absorbed significantly more calcium on the high-protein diet*.

While studies with animals show that protein in the diet improves calcium absorption in the gut, this is the first confirmation in humans. Moreover, above-normal levels of parathyroid hormone were found within 4 days *only* in the women eating the so-called moderately low-protein diet -- a sign that blood calcium was getting too low. To offset the peril of inadequate calcium in the blood, the parathyroid gland is designed to go into high gear. One of its hormone's main effects is the resorption of calcium *from bones* into the blood circulation. That's right: robbing the bones to supply the body.

The ladies got 46 grams of protein a day on the low- and 135 grams on the high-protein diet. Here's the rub: the current RDA for females ages 25 to 50 is *only 50 grams of protein*. In contrast, the same ladies in Paleolithic days would be scarfing about *160 grams of protein daily*.<sup>3</sup> Something's off-base with our RDA, wouldn't you suspect? Here are the researchers' conclusions:

"In summary, we found that a low dietary protein intake depresses intestinal calcium absorption. Young women consuming a well-balanced, moderately low-protein diet developed secondary hyperparathyroidism within 4 days, due in part to depressed intestinal calcium absorption. *The fact that the recommended dietary allowance for protein for adults is only slightly higher than the amounts tested in our experimental conditions raises new questions about the optimal amount of dietary protein required for normal calcium metabolism and bone health in young women*" [emphasis mine. CF].

BIZARRO Piraro



### The Key Is Calcium Balance

Though it's widely accepted that a high meat diet leads to calcium loss and hence weaker bones and osteoporosis, this flies in the face of paleontologists' evidence of consistently sturdy bones in fossils of early humans. Studies as well of the few remaining hunter-gatherer tribes who had access to plenty of game and aquatic foods show they had superb health, including strong teeth and dense bones.<sup>1, 2</sup>

### Acid-base Status & Calcium

Here's the explanation for urinary calcium excretion on high protein diets. Dr. Loren Cordain, interviewed by Crayhon in the November *Townsend Letter for Doctors & Patients*, believes the critical factor influencing bone metabolism is not so much calcium intake and excretion, but *calcium balance*, which depends on the *acid-base status* of the total diet. Many foods when digested and assimilated produce powerful acids, e.g., sulfuric and phosphoric, which would damage the kidneys, etc. The body's ingenious buffering system goes into action, grabbing *alkaline minerals such as calcium, magnesium, and potassium* to neutralize these acids and convert them into harmless salts that won't harm the kidneys when excreted in the urine. [See *FLs 52 and 53*.]

How does this relate to a high fleshfood diet? Meat and fish actually cause a net production by the body of these potentially harmful acids. *So do most commonly consumed cereal grains*. Without ample intake of calcium, magnesium, and potassium to neutralize metabolic acids, the body draws on its emergency stores -- *the calcium in its bones*.

### Saved By Veggies!

But, thankfully (and logically), nature provides us with *fruits and vegetables* to yield the specific alkaline minerals our bodies need to convert the acids into harmless salts. Dr. Cordain says these plant foods "have a net alkaline value and consequently reduce acid excretion and hence reduce calciuria [calcium excreted in urine], thereby halting bone resorption and actually allowing bone accretion to occur." This could also have helped to prevent kidney stone formation, he suggests.

It was their high intake of fruits and vegetables that allowed Stone-Agers to enjoy their enormous protein intake and still produce "a net dietary acid-base status which would have favored bone accretion..."

### Botswana's Hunter-Gatherers

Back to modern times. I can't think of a better argument for choosing a diet that's ample in meat, fish, vegetables, and fruits -- and modest in grains. Remember, most of the commonly eaten grains are net producers of acids.

As to the ominous ailments in addition to osteoporosis that are attributed by pundits to high animal food intake, a wonderful study took place in 1976 of the San people -- Bushmen hunter-gatherers in the Dobe region of Botswana, South Africa. Both game and plant foods still were plentiful -- 54 species of animals and 85 species of plants were hunted or gathered at one time or another. Clinical and biochemical exams showed good nutrient status in the 100 adults and 60 children examined, no obesity, hardly any dental caries, normal blood pressure that didn't rise with age, and no evidence of coronary heart disease. "Indeed, the authors reported that in several respects the San were considered to be more healthy than people in western countries. Provided they did not die from infections or from injuries, the hunter-gatherers at Dobe could live to a good old age."<sup>1</sup> So much for the myth of 40-year lifespans for hunter-gatherers.

### Nature's Tool for Burning Fat

What has all this to do with Robert devoting a whole book to carnitine? Here's why carnitine is unique, in his words: "It is a nutrient that does something no other nutrient can do: it acts like a forklift, picking up fats and dropping them off where the body burns them." That's right; fats can't get into the mitochondria -- the numerous energy 'factories' in each of the body's billions of cells -- unless carnitine latches on and takes them there. Whatever the fancy names are for the process and the enzymes that drive it, the stark truth is *we can't turn fats into energy without carnitine.*

Carnitine, actually L-carnitine, is a molecule our bodies can make in limited amounts if all the precursor nutrients and enzymes are present and working. However, we can save our bodies trouble by a simple expedient: eating fleshfoods. They're full of carnitine. The plant kingdom supplies very negligible amounts.

Moreover, the two precursor amino acids the body needs for making carnitine -- lysine and methionine -- are also low in plant foods. The 8th edition (1994) of the nutritionist's "bible," *Modern Nutrition in Health & Disease* edited by M. Shils, J. Olson & M. Shike, says: "Because higher

animals including man can synthesize carnitine, it has long been assumed that it is a nonessential nutrient. But much clinical nutrition research now indicates that carnitine should be viewed as a 'conditionally essential nutrient.'"

Medical research on carnitine is so new that this 1994 textbook has only a handful of 1980s references and not a single one in the '90s. But trust intrepid researcher Crayhon to chase down 54 *carnitine studies in the 1990s* (yep, I counted them in the book), along with those from the 1980s, to fuel the book and provide a rationale for using carnitine supplements in his practice.

Even the conservative nutrition 'bible' is suggesting that for those who (1) may not be making enough, and/or (2) are not getting enough from food, [Yo, vegetarians!] supplemental carnitine may be an idea whose time has come. It helps that it has no side effects even in very big doses except -- this is great -- occasional *euphoria!*



Crayhon writes: "The abundant energy that carnitine helps to deliver has made an enormous difference in the health of all my clients. It is the single most remarkable nutrient I have used in my nutrition practice over the past twelve years."

Carnitine, whether in meat or in a supplement, is a familiar molecule to the body, unlike drugs or stimulants. "If you give your cells the ability to make optimal levels of energy, they can use it to do whatever they want: build and renew cell membranes, create and maintain cell structures....In short, they can use it to make themselves work better and last longer." Crayhon has observed carnitine helping to empower everything from his patients' immune systems, to their muscles. He puts it this way:

"Garage sales are great. They help you turn what you don't need any more into ready cash. And often the money that comes from these garage sales goes into

refurbishing the house. Carnitine puts on a nutritional garage sale. It rids the body of excess fat and other fatty acid residues that are only getting in the way. And it creates the cellular equivalent of cash: energy. This energy often goes into repairing and refurbishing the cells of our body."

### Carnitine's Many Roles

Beginning in the 1980s, medical interest in carnitine began to perk up. Its unique ability to energize cells led to trials showing carnitine supplements improved athletic performance. Muscles worked better and made less lactic acid, which decreased fatigue. Now, a slew of medical studies shows it also works for the *heart* -- strengthening it, lowering fats in the blood, relieving angina, even helping to ease congestive heart failure.

Another motive for writing the book is carnitine's effectiveness in *weight control* which Crayhon sees over and over again in his practice.

"Turning fat into energy is the greatest conversion that can be made in the body. And only carnitine can make it happen....Unless fat makes it into the mitochondria, you can't burn it off no matter what you do and no matter how well you diet. Once fat is inside the mitochondria, fat is magically transformed into energy. It's like turning bricks into gold. This is why carnitine both encourages weight loss and increases energy levels."

He often recommends from 500 to 2000 milligrams per day of *carnitine tartrate*, the form he prefers, to his clients who want to trim down, "usually before breakfast and lunch for the best results." He cites a 1997 study of overweight teenagers (Zhi-Qian He et al., *Acta Nutrimenta Sinica*; 19(2): 146-151): "For those eating a healthy diet and getting moderate exercise for 12 weeks, average weight loss was one pound. For those who added one gram of carnitine [1000 milligrams] per day to the same regime, weight loss averaged eleven pounds!"

Crayhon says adequate *omega-3 fats* are vital not just for health but specifically to fight obesity. They're burned for energy faster than other fats; also, their presence in body cell membranes makes the cells more responsive to insulin, helping to avoid the *insulin resistance* that can make people fatter and prone to diabetes and high blood fats. (Robert is a passionate omega-3 fan, making us soulmates.)

**H**e offers another reason for eating more protein and fewer grain-based carbs: protein has 30 to 40 percent more ability than carbohydrates or glucose to stimulate the vagus nerve that tells you when to stop eating. When you eat protein and healthy fats, "your body will respond happily by saying, 'Hey, I know what this stuff is. I've had enough!'" High carbohydrate foods such as grains, bread, pasta, sugar, and candy, however, are new to the body so it takes much longer for it to know when to stop asking for food. You can be on your third plate of pasta, and your 100,000-year-old digestive tract will still be trying to figure out what it is, let alone tell you that it is satisfied..."

**M**ore good news: Crayhon says carnitine is a critical nutrient for the management of *diabetes*. Studies show carnitine levels are lower in type II diabetics. Besides its fat-burning role, carnitine promotes optimal carbohydrate metabolism, helps insulin to work better, and may prove to be essential for healing diabetics.

**B**abies don't make enough carnitine for at least the first two years, so it must officially be added to soy- and rice-based formulas. There's some in cow's milk formulas, but the baby's best bet for getting carnitine in its most bio-available form, of course, is mother's milk. Supplemental carnitine has helped malnourished infants and children to gain weight and grow normally.

### Acetyl-L-Carnitine

**T**he body makes another version, acetyl-L-carnitine, that gets into the brain more effectively than L-carnitine. Animal research and a few human studies testify to the effectiveness of acetyl-L-carnitine supplements in protecting brain cells from deterioration that normally happens with age, as well as during stress. Apparently it provides the brain with energy needed to maintain viability of neurons, receptors, and myelin sheaths around nerves.

Crayhon is so enthusiastic about acetyl-L-carnitine's effect on brain power, he thinks we should start taking 250-1,000 milligrams a day at college age! The only drawback: it's a lot more expensive at present than L-carnitine.

**I**t's funny, folks, I have a file on carnitine dating back to 1982, with clear expositions by 'alternative' writers and clinicians on the nutrient's potential to soup up our muscles, normalize blood fats, strengthen the heart, fight fatigue,

increase sperm motility, improve DNA repair, protect the brain, and so on. Thank you! -- Richard Kunin, MD, Parris Kidd, PhD, Stephen A. Levine, PhD Jeffrey Bland, PhD, Jack Challem, and Brian Leibovitz, PhD -- and others I may have missed. Crayhon's book was the final wake-up call I needed.

**M**ost useful are Crayhon's discussions of optimal diet regimes that he's found effective for clients in dealing with common health nuisances, together with systematic listing of appropriate supplements and recommended dosages, including both forms of carnitine. Frankly, dear readers, I'm hoping to whet your appetite so you'll buy the book and use it as a guide to ratchet your own health up a few notches. Its basic message is the optimistic kind I like: that those of us who don't make enough carnitine, or get enough from our food, or who simply have greater requirements, will in all likelihood benefit from supplementing. Your fearless editor has already added it to her crowded cupboard and will report next time on results! □



### AUTHOR, AUTHOR!!

**I** just finished a booklet for Avery Publishing Group (they published Dr. Donald Rudin's and my *Omega 3 Oils* in 1996) as part of their new FAQs (Frequently Asked Questions) health series for mass marketing. It's called *All About Omega-3 Oils* and it's a tidy, pocket-sized booklet into which I poured a lot of salient up-to-date information. Unfortunately, because of Avery's time constraints, they didn't send authors the galleys for proofreading -- a crummy thing to do to us. So, while I'm proud of the booklet and enjoy its easy question and answer format, I'm apologizing for several grievous errors *not of my own making*. On page 56, a nitwit editor wrote "...can **reign** in an immune system that is reeling out of control" (instead of **rein**); on page 71, a lamebrain wrote "Canola oil is high in omega-9 **essential** fatty acids," probably assuming any fat named "omega" had to be essential. Omega-9s are not. And finally, on page 85, they had me

writing "...a difference that **impacts** our health." I'm sorry, it's against my religion to use "impact" as a verb -- I don't care *what* the dictionary says.

**O**ther than the above, *All About Omega-3 Oils* is a handy way to introduce these good fats to nutritionally challenged, stubborn friends and relatives and well worth \$2.99. They may even thank you. If you can't find it locally, you can order from Avery (800-548-5757). Same for *Omega 3 Oils* by Rudin & Felix (\$11.95) plus whatever they charge for shipping. □

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1. *World Review of Nutrition and Dietetics*, No. 79, 1996, "Metabolic Consequences of Changing Dietary Patterns," including sections "Australian Aboriginal Diet" and "Food, Diets and Health in South African Populations." Artemis P. Simopoulos, M.D., editor.

2. Weston A. Price. *Nutrition and Physical Degeneration*. Greatest existing before-and-after photographs and descriptions of native people who abandoned traditional foods. First published in 1939, new edition available from Price-Pottenger Nutrition Fndtn, 1-800-366-3748.

3. S.B. Eaton, S.B. Eaton III, and M.J. Konner. "Paleolithic nutrition revisited: A twelve-year retrospective on its nature and implications." *European J. of Clinical Nutrition* (1997) 51, 207-216.



Illustrations are by the late Clay Geerdes and other artists as noted.

**THE FELIX LETTER**, P.O. Box 7094, Berkeley CA 94707, has been published independently (and irregularly) by Clara Felix since 1981, supported by subscription. Descriptive list of back issues plus sample, \$1. Subscriptions US & Canada: \$12 for six issues (approximately one year); \$22 for 12 issues (approximately 2 years). US funds only.

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