the FELIX Letter
A COMMENTARY ON NUTRITION
No. 85 1995

ON THE SICKLE-CELL FRONT: A PRELIMINARY REPORT

From his home in Tulsa, Oklahoma, Oji Agbai, Ph.D., the biochemist from West Africa who has done original work on thiocyanate as an anti-sickling agent, telephoned to share what we all are hoping may turn out to be very good news. He and his wife, a medical technologist, alerted me several years ago (*FLs 72, 75, 82)* to actual successful cases using his nutritional thiocyanate formula, Dioscovite. The case studies grew out of his *in vitro* work in which thiocyanate, a natural substance in human plasma, clearly prevented sickling of red blood cells. (*Sickle Cell Anemia: A Solution At Last. Anti-Sickling Nutrition Handbook,* by Dr. Oji Agbai, 1990, Biomedical Research Institute, 2010 S. Nogales Ave., Tulsa OK 74107.)

Finally, a much hoped-for double-blind, placebo controlled study on Dioscovite began in April, conducted in the city of Enugu in Nigeria, at the University Teaching Hospital, a branch of the University of Nigeria. Enrolled in the trial are about one hundred men and women who are homozygous for sickle cell genes (i.e., inherited from both parents) and who suffer from frequent painful sickling "crises" when their tissues can't get enough oxygen. Testing was from April through September during a rainy season, the Agbais told me, a time when sickling of red blood cells is known to increase, precipitating more frequent and severe crises.

Well, even though the "unblinding" had not yet taken place, when I spoke to Dr. Agbai near the end of September he told me the researchers were "quite excited" by what they observed as the study went on. This seemed to him to mean only one thing: they were seeing far fewer crises than expected!

Dr. Agbai's optimism stems from what he discovered in the laboratory and from many real life experiences. He told me about one involving a 13-year-old farm girl who was "so much in pain from repeated sickling crises, she was too incapacitated to do her farm work." This was during his visit to West Africa in 1993. "I treated her daily with nutritional thiocyanate formula for two weeks. By the end of that time, she was free of pain and able to do her chores. Even the rain that fell on her in the fields did not cause her to go into crisis," he told me.

Even as I write, the doctors at the University Teaching Hospital may be opening the records to learn which of the subjects received the thiocyanate formula and which the placebo. Dr. Agbai will send me a copy of their report when he gets it and I promise to share it with *FL* readers--for better or for worse! ❑

YOU ARE MY SUNSHINE!

One evening a few years ago on a visit to Montana, my niece's family and I settled down in the living room to hear 11-year-old Seth read his latest story. My great-nephew has a bent towards the whimsical--I'd been reading his comical stories since he was 9--and this was no exception. His hero was a young man who had the magical ability to perform *photosynthesis.* Just as plants do, he could manufacture energy from sunlight!

The days are getting shorter; in Berkeley our extended summer is about over. Carl J. Reich, M.D., of Calgary, Canada, says we aren't paying enough attention to our need for sunlight on skin. Its ultraviolet rays set off a series of events that allows us to absorb and utilize *calcium.* It seems Seth wasn't too far off in his fantasy, because without calcium our cells' energy-making workshops--the mighty mitochondria--(Dr. Reich calls them "the furnaces of the cell") can't produce *energy.*

Of course, it takes an intricate Rube Goldberg kind of scheme to allow those of us not of the plant kingdom to emulate photosynthesis! Plants literally trap and harness the sun's energy. Photons of light zap electrons in chlorophyll or other light-absorbing plant pigments, triggering instant chain reactions to produce power-packed ATP molecules, the "energy currency" of living cells.

We trap sunlight, too, but what a convoluted steeplechase we go through before our initial irradiation turns into energy!

First, cholesterol in the skin which serves to keep it watertight is converted to 7-dehydrocholesterol. (This light-sensitive molecule also appears on our skin's surface in the protective coating, *sebum,* secreted by sebaceous glands.) When ultraviolet light irradiates it, the charged up molecule becomes ***vitamin D_3 (cholecalciferol).***

We're still a long way off from cellular energy, though. Vitamin D_3 has to travel in the blood first to the liver, then to the kidneys, where it's transformed into its *active* form (with the help of parathyroid hormone). More hormone than vitamin now, it's called (gulp) 1,25-Dihydrocholecalciferol (1,25-DHCC).

No Vitamin D Means No Ionized Calcium!

Now we're getting to the nitty gritty. *First of all, without vitamin/hormone 1,25-DHCC we can't absorb dietary calcium from the gut, nor can our bones and teeth be mineralized.* (Remember rickets? Babies who lived in northern city tenements and hardly saw the sun often developed softening of bones, leading to pigeon chest and bowlegs. Codliver oil, high in Vitamin D_3, became a standard supplement to prevent it.)

Secondly, to produce ATP our cellular energy mills (mitochondria) require continual supplies of ***ionized calcium.*** The ionized form is required for most of calcium's functions, including its effects on the heart, the nervous system, and on bone and tooth formation and upkeep. Even if dietary calcium is ample, *it won't be available for mitochondria in ionized form* unless the 'sunshine vitamin' does its magic. Reich describes it this way:

"This vitamin is a steroid molecule which has been packed with sufficient of the 295 nanometer ultraviolet radiant energy that it can "zap" a calcium atom, stripping two electrons from it, so granting it biological activity."

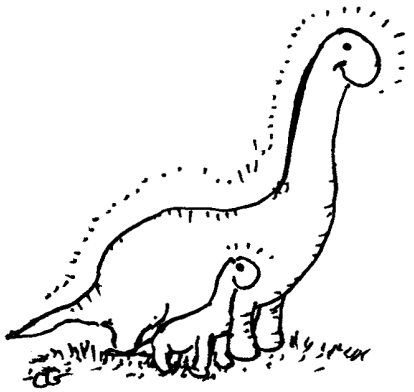
No Ionized Calcium--No Energy!

Now the ATP molecules which the ionized calcium helped to produce can transfer energy through the cytoplasm of each body cell "to the 1,000 or more biochemical processes that are scattered throughout the cytoplasm. The integration of those processes produces cell function," Dr. Reich wrote me in 1994. (What a marvel our bodies are!) "Therefore, if the cell is vitamin D deficient, the formation of oxygen in cells is not blocked, as you have written. Instead, the flow of ***energy*** is blocked so that the cell cannot use the oxygen that prevails...."

So there you have it: for all of us, not just for Seth's hero: ***sunshine (plus calcium) = energy!***

Dr. Reich points out that pre- and early humans were bathed in sunlight many months each year. We have a regulatory feedback system, enabling us to store excess vitamin D in inactive form in the liver and other tissues, to make sure ionized calcium levels in the blood don't soar too high.

What we *don't* have is a nifty plan to make up for chronically *inadequate* vitamin D! Oh, sure, we can leach calcium from our bones to keep blood calcium at required levels but, Dr. Reich asks, how long can this robbing of Peter to pay Paul go on??? Moreover, we won't get enough *ionized* calcium this way.



Systemic Acidity

In his clinical practice Dr. Reich observed how continuous deficiencies of vitamin D and/or dietary calcium led inevitably to what he refers to as ***"cell energy starvation."*** This is an unthinkable state for the body, so it proceeds to *acidify cellular fluids in order to convert calcium into the ionized state.* "The increased acidity of all cellular fluids so created....would facilitate the hyper-ionization of the residual molecular calcium of the body's trillions of cells," he writes in the June *Townsend Letter for Doctors,* pp 98-102.

Dear people, systemic acidity puts a heck of a strain on the body. Between the Scylla of cell energy starvation and the Charybdis of a chronic acidic condition, there's not a lot of choice! Dr. Reich believes these two abnormal states, maintained over time, contribute to such nuisances as chronic anxiety, fatigue, headaches, allergies, muscle cramps, digestive disturbances, and in the long run possibly to osteoporosis, diabetes, heart trouble, even to cancer.

I'm condensing outrageously from Dr. Reich's work in order to make these points:

(a) Many of us are not getting enough vitamin D, via sunlight on exposed skin or in our diet.

(b) Calcium deficiences also are common.

(c) Consequently, many folks don't have enough ionized calcium to run their cell energy 'assembly-lines.' This in itself creates health problems.

(d) Systemic acidity, a desperate way for the body to ionize what calcium it can, leads to further maladaptive health disorders.

Cheap Home Test!

Dr. Reich suggests a simple way to detect chronic systemic acidity, reflected in saliva, as follows:

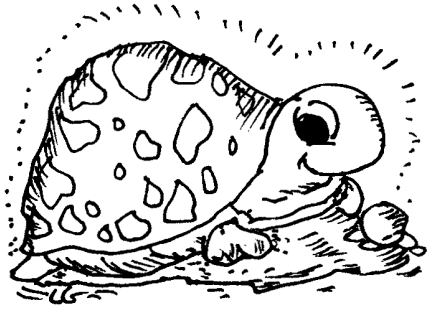
To determine acidity or normalcy of saliva, use litmus paper that has a pH scale of 4.5 (very acidic) to pH 7.5 (slightly alkaline).[1] No sooner than 1 or 2 hours after eating or drinking, clean mouth and lips with your tongue and swallow old saliva. Tear off a 3/4-inch strip of the litmus paper and dip it in fresh spit on your lips. (Don't suck on the paper or lick it!) Within 10 seconds compare the color that's developed on the strip with the chart of colors denoting pH values that comes with the litmus paper. Normal saliva will be neutral (ph 7.0) to slightly alkaline (pH 7.5). Dr. Reich says a pH between 4.5 and 6.5 is in the acidic range--*a signal to make changes in one's lifestyle if this value comes up consistently over time!*

A Doctor's Plan of Action

We get our sunshine vitamin from both sunlight and food. Textbooks agree with Dr. Reich that sun-on-skin generated vitamin D works more efficiently to satisfy our need for the vitamin. Apparently nature intended it that way because there's less of it in foods in their natural state than any other vitamin. The few common ones supplying sizeable doses of vitamin D_3 are fatty fish (e.g., salmon, sardines, mackerel), shrimp, and of course the oils in cod and halibut livers. Eggs, butter, animal livers contain only modest amounts.

Nowadays milk, infant formulas, and many commercial foods are fortified with ergocalciferol (vitamin D_2) derived from irradiated plant ergosterol; or synthetic cholecalciferol (vitamin D_3). Are these filling the sunshine gap for us?

From Calgary, Dr. Reich told me on the telephone that in over 30 years of clinical research, conducted in practice, he has seen improvement in thousands of arthritic patients and asthmatic children and adults. "When I gave them vitamin D they got better," he said. "My clinical responses have forced me to this conclusion: my patients were deficient."



[1] Specify pH 4.5 - 7.5 litmus paper at the pharmacy. Since I didn't have much luck at local pharmacies, I called Dr. Reich's source, Micro Essential Laboratory, and spoke to Walter Florin who knows Dr. Reich's work. They carry the paper in 180-inch rolls for $7.50 per roll, or $35 (plus $5 s/h) for a box of ten. 4224 Avenue H, Brooklyn, NY 11210. Tel: 718/338-3618.

Generally, his treatment includes supplemental calcium, magnesium and zinc; halibut liver oil capsules (vitamins A and D_3); and Aquasol drops (vitamins A and D_2). Initial daily doses of vitamin D may range from 1,400 IU for children to as high as 8,800 IU for some adults. (The same supplements provide vitamin A in large doses as well.) Maintenance doses drop substantially as patients improve.[2]

He also recommends an *alkaline-producing diet* for his patients:

- Plenty of salads, steamed vegetables, fruits, fresh vegetable juices, and, if not allergic, milk products--all rich in alkaline-forming calcium, magnesium, potassium, and sodium.
- Very little sugar.
- Fewer proteins and starches that are high in the acid-forming elements sulfur and phosphorus. Favors fish and fowl over red meat.
- No phosphated sodas! They're "calcium-robbers."

Chronic Acidity & Maladaptive Disease

He told me: "Minor complaints--what I call a 'grab bag' of annoyances such as headaches, constipation, muscle cramps, fatigue--frequently were resolved as well when a patient's arthritis or asthma improved. This 'grab bag' of ailments is as important to me as any major disease." Without nutritional intervention, it may foretell more serious maladaptive diseases ahead, particularly if a

[2] Authorities agree it's impossible to state vitamin D requirements exactly. For instance, there's no way to determine what an "average" person's production is of sun-on-skin vitamin D, since angle of sun, season, latitude, time of day, skin color and amount of precursor vitamin D on the skin are just some of the confounding factors. The 1980 Recommended Dietary Allowances (RDA) by the National Research Council were based on a handful of studies of amounts needed to prevent rickets in babies, and related softening of bones (osteomalacia) in adults. With little new data forthcoming, the same RDA for vitamin D were adopted in the latest (1989) RDA: 400 IU up thru age 24; 200 IU afterwards; 400 IU during pregnancy and lactation.

This now is being challenged as too low by quite a few medical studies.

Toxic levels may create abnormally high blood calcium which, if deposited in soft tissues, can cause kidney and heart damage. In isolated instances with very young children, beginning signs of "hypervitaminosis D" were seen with 1,800 IU doses. Research on vitamin D toxicity--a rare occurrence--is sparse and toxic levels for other ages are not established. Nevertheless, all nutrition texts emphasize "dangers of toxicity" starting anywhere from 20,000 IU to 50,000 IU daily, taken for prolonged periods.

Initial vitamin D supplements for Dr. Reich's adult patients ranged from 4,800 to 8,800 IU daily; adolescents started with 2,400 to 5,200 IU daily. Periodic blood and urine tests showed no abnormally high calcium levels. Doses were lowered as improvement continued.

person's saliva tests reveal chronic acidity. This is how he explains his theory in a recent letter:

"If persisting deficiency of calcium and vitamin D exhaust the adaptive processes of organs, such as the lungs, intestines, pancreas, arterial system, and skeleton, and also *energy-starve* their tissues, one or more of those functions may break down, to create one or more "maladaptive" disease..." Examples:
Lungs - *chronic asthma*
Intestines - *Crohn's ileitis*
Pancreas - *diabetes*
Arterial system - *hypertension*
Musculoskeletal - *osteoporosis and arthritis*

He said the saliva test makes it easy for mothers to survey their family's health. "If schools would do this inexpensive test on their students semi-annually, it's quite likely many hyperactive or disturbed youngsters would test acidic." He believes vitamin D and calcium supplements, as a start, could nip beginning health problems in the bud, as witnessed over and over again in his practice.

Dr. Reich's clinical successes have been greeted with stifled yawns by mainstream medicine. Alas, his protocol doesn't lend itself neatly to "scientific" double-blind placebo-controlled trials, combining, as it does, too many nutrient factors and subjective responses of patients.

"But clinical medicine by its nature *is* subjective!" he told me. "How do you measure improvement in pain if not by subjective criteria?" What makes perfect sense to those of us not wedded to the concept that truth in science is found only in double-blind trials is that, in Reich's patients, ostensibly unrelated minor and major ailments turn out to be linked by the same nutritional deficiencies. The proof is in the pudding: *ailments that resist conventional treatment improved with corrective nutrient therapy.* Patients maintained the improvement as long as they stayed on the corrective program.

The vampire Dracula shunned sunlight, so the legend goes, because it would turn him into dust. If the skin cancer scare has us acting like Dracula, let's rethink it a bit! Reich encourages ample, regular exposure to sunlight. (He offers this caveat: individuals who are in a chronic acidic state may lack skin protection and should exercise caution.) Darker-skinned and tanned folks need more sunlight exposure than fair-skinned ones in order to make vitamin D. We need to recognize that everything in modern life conspires against our emulating our gatherer-hunter ancestors, who weren't beset by smog, tall buildings, indoor jobs, clothing, and didn't slather their bods with sunscreen lotion!

When we do decide to soak up some rays, think about the vitamin D precursors not just *in* the skin, but in the invisible sebum coating on *top* of it. Soaps and detergents dissolve away sebum and pre-vitamin D, along with unwanted grime and sweat, while plain warm water in shower or bath will keep us just as clean and fresh, and not strip our useful mantle!

Older Folks Need More Vitamin D

Science may be catching up with Reich's concepts. *The American Journal of Clinical Nutrition* ran a number of reports on serious widespread vitamin D deficiency in older people in the U.S., Canada, and northern Europe--as a result of which, they say, many suffer from osteomalacia and hip fractures. Their October 1994 major review article by Michael Holick, M.D., of Boston University Medical Center, stated: "Although aging does not decrease the efficiency of the intestine to absorb dietary vitamin D, elderly individuals do not obtain sufficient vitamin D in their diet to meet their body's requirement..." He recommends *tripling* the RDA for adults to 600 IU per day.

"It is not often appreciated that it is casual everyday exposure to sunlight that provides us with our vitamin D requirement....[A]ging has a dramatic impact on the skin." He described how thinning epidermis in older individuals, *with its sharply reduced concentration of vitamin D precursor,* is far less efficient in making vitamin D upon exposure to sunlight. When healthy young and elderly volunteers were exposed to the same amount of simulated sunlight, vitamin D levels circulating in the blood rose almost 4 times higher in the young!

Should we take supplements? This is what Dr. Reich wrote me a year ago:

"See that you get around 2,000 to 3,000 IU of D. In the late 1980s the US Research Council indicated that toxicity due to vitamin D only begins when one takes more than 50,000 IU. When polar explorers got 8.0 *million* units of D and an awful lot of A by eating polar bear liver, they lost their hair and suffered exfoliative dermatitis but didn't die!!"

Vitamin A toxicity, though uncommon, is real enough. Vitamin D toxicity, in contrast, seems to be more bogeyman than reality. I'm starting our household on 500-1,000 IU daily of vitamin D_3 from fish liver oil capsules that don't have any vitamin A (we get plenty from food and supplements). Nonfish vitamin D also is available and cheap. Winter is just around the corner, dear readers!

❑

AGING WITHOUT KVETCHING!

"During the thirty-six years since she graduated from college, Sonja Soehnel has worked as a cocktail waitress, hotel desk clerk, secretary, elementary school teacher, legal aid attorney, adjunct professor of law, union organizer, and research attorney." That's how she's described in the book she initiated and edited, ***Women's Solutions to Problems of Aging,*** 1995. I know Sonja Soehnel as a graceful, articulate woman with whom I've swapped 'recipes' for everything from tasty nongluten foods to a philosophy of life! The book is a compilation of 112 responses to 160 questionnaires sent to women in many different regions of the U.S. asking for their anonymous comments on what had helped them to cope with common problems of aging (not serious or life-threatening ones).

Pickles/Brian Crane

Replies to each "problem" are grouped by age which ranges from 88 to 43 years. I was thrilled to discover how linked we all are by the same pesky discomforts! I never had sisters, so the book was like having a lot of sisters who are sharing intimate stuff with me, telling me how they've learned to 'roll with the punches.' For instance, to the question "What has helped you with memory loss?" a 70-year-old's answer is: "I don't put myself down. I realize that my 'computer' is much fuller than it used to be. I just say, 'It'll come.' It will, eventually. I go ahead and introduce people. Either they help or I say, 'Your name just left me' and proceed as usual.

A 53-year-old's answer to the same question is: "List, lists, and lists of lists!"

The women do splendid battle with a roll call of nuisances such as insomnia, urinary incontinence, mental sluggishness, and balance problems. (87-year-old: "I practice standing on one leg while dressing to help maintain balance."). Pages abound with sometimes funny, mostly useful ideas. There's a good index, too.

To "What has been helpful to your general physical health?" a 78-year-old's answer was: "Heredity. Good food--no coffee or tea. Enough sleep...I thank the members of my body for recovering or assisting me in any way. I concentrate on this until I feel a relaxation of the part of my body that is tense or hurting. I also repeat the Lord's Prayer and the 23rd Psalm, and although I don't embroider them into any theological points, they somehow relax me." ❑

Checks can be made out to Sonja Soehnel, P.O. Box 11508, Oakland, CA 94611. Out-of-staters: $10 plus $1.75 mailing. Californians: $12.58 includes mailing & tax.

FOLATE: NEW BENEFITS!

My two sons chipped in to get me a subscription to *The Lancet* for my birthday. (My daughter took me to the San Francisco Opera--they're great kids.) *The Lancet* is the major British medical journal and, unlike most in the U.S., isn't so stuffed with sincere color ads for ghastly nostrums that you can't find the articles. To my surprise and pleasure, an August 12 article by local folks* offers solid validation for recommending multivitamin supplements containing folic acid (folate) to women *at least one month before conception.*, to prevent **"orofacial clefts"**, i.e., cleft palate, cleft lip, or both of these defects in their newborn babies.

Natural folate sources include liver, brewer's yeast, leafy vegetables, sweet potatoes, winter squash, beets, mung bean sprouts, all beans and peas, wheat germ, sunflower seeds, avocados, oranges, and blackberries. Some dry cereals are fortified with folate. How many young women eat these foods habitually? Not many, judging by dismal results of surveys in the U.S. and U.K.!

In *FLs#51, 55 & 63,* I recounted folic acid's inestimable role in preventing abnormalities of the spinal cord and brain (**"neural tube defects"**) in the newborn. They are among the most common disabling birth defects in our country and the U.K. Great medical studies *proved* folic acid to be singularly effective in preventing these defects if mothers got plenty of this vitamin during the first six weeks of pregnancy, when the neural tube is forming. To make sure all bases would be covered they recommended folate supplements *beginning about six weeks before conception.*

Would you believe, in the face of this superb research the Food & Nutrition Board of the National Research Council slashed the latest (1989) RDA for folic acid *in half during pregnancy--from 800 micrograms to 400.* In this 10th Edition of the RDA--the "bible" of doctors, nutritionists, and the food industry--the Board did not even mention that folic acid supplements taken early in pregnancy prevented neural tube defects in subsequent children of mothers whose firstborns had the defect. (The defect used to be considered "genetic.") Worse yet, in the face of nutrition surveys showing teenage and young women to be almost universally deficient in folic acid, here is the Board's recommendation for pregnancy: "This level *[400 micrograms a day]* can be met by a well-selected diet without food fortification or oral supplementation." Hah!

*Gary M. Shaw, Dr. P.H., et al., March of Dimes Birth Defects Fndtn., Birth Defects Monitoring Program, Emeryville, CA; and Edward J. Lammer, M.D., Dept. of Medical Genetics, Children's Hospital, Oakland, CA. *THE LANCET,* Vol 346, pp 393-6.

Now, my Bay area "neighbors" have produced a brilliant study involving 731 women who had infants with orofacial clefts, and 734 whose babies were normal. "We found a reduced risk of orofacial clefts if the mother had used multivitamins containing folic acid during the period from one month before through two months after conception....Women who used multivitamins containing folic acid periconceptionally had a 25-50% reduction in risk for offspring with orofacial clefts compared to women who did not use such vitamins."

They conclude: "Orofacial clefts are common congenital anomalies. In addition to the anguish associated with these anomalies, babies born with these conditions have difficulty feeding as infants, have more frequent speech problems and ear infections, and need a series of corrective surgical operations....Our results, and findings from other studies, indicate a substantial risk reduction for orofacial clefts among pregnant women who used multivitamins containing folic acid periconceptionally. If this association proves causal, many of these anomalies will be preventable."

I say Amen to that! -- and a double-whammy to the so-called experts of the Food and Nutrition Board for the harm they caused by slashing the RDA for folic acid *and* magnesium--both low in U.S. diets, and both needed to make healthy babies! ❑

Sally Issenman, a longtime subscriber from Edmonton, Alberta, chided me for using environmentally unsound, tree-decimating paper in the newsletter. Blushing with shame, I phoned my printer to ask her about the possibilities of using ***recycled paper. Good news, Sally and everyone! This is, and has been all along, recycled paper. Hurrah!!*** and thank you, Sally. ❑

Illustrations by Clay Geerdes and other artists as noted.

***The Felix Letter,* P.O. Box 7094, Berkeley, CA 94707, has been published independently by Clara Felix since 1981 and supported solely by subscriptions. Descriptive list of back issues & sample, $1. Year's subscription (6 issues) $12; two-year (12 issues) $22.**