SOLAR RADIATION AND EVOLUTION

Over billions of years this spectrum of solar radiation reached the moon’s surface to not photosynthesize one new compound. In contrast, on the earth, because of the presence of carbon dioxide, water, and nitrogen, it resulted in the photosynthesis of chlorophyll, glucose, oxygen, nitrogen compounds, vitamin D, melanin and other compounds. The vegetable and modern living cell evolved out of these.

As daylight and ultra violet radiation reached the earth following the primordial dawn, the primitive living cell absorbed glucose and oxygen as sources of energy. As the cell concentration of these compounds and the first vitamin D substance capable of ionizing calcium, increased and diminished each summer and winter season over billions of years, ionic calcium was destined to be intimately involved in the preservation and release of their energy within the cell. A deficiency of this ion, such as may occur in a winter season, when the synthesis of glucose had near ceased, would facilitate the release of energy from residual body and cellular stores of glucose necessary for cell survival. Extended deprivation of vitamin D could thus lead to the depletion of energy stores and "cell energy starvation". To offset such disaster, as complex mammalian organism evolved, they were also destined to develop adaptive functions in organs and tissues that would maintain an optimum concentration of such an important factor.

The breakdown of these functions, created by lifestyle defects causing chronic deficiency of calcium and vitamin D, the latter through lack of solar radiation, is the major cause of "the diseases of civilization".
ADAPTATION TO CHRONIC CALCULUM DEFICIENCY

ABSTRACT

Two of the actinic properties of sunshine, namely the formation of vitamin D, ionizing calcium compounds, and the bonding of solar energy in long carbon chained molecules, predicated that ionic calcium would attain a most superior position in cell physiology. This position likely represents an intimate relationship of calcium with the control of energy release mechanisms of the cell. The importance of this mineral has resulted in the development of physiological compensatory function of tissues and organs, designed to compensate for variations in concentration of this ion produced by dietary deficiency, etc. These adaptive functions are in addition to the more obvious function of support, covering, respiration, digestion, etc. The asymptomatic adaptive devices may be disrupted to create disease either by the relentless pressure of the deficiency state or by the additional direct effect, on the tissues of the adapting unit, of malformed adaptive steroids or of the ionic calcium deficiency state. The presence of a syndrome arising for reason of the effect of A & D vitamin and calcium deficiency on other tissues, may be taken as a warning that adaptive function may have been called into action and therefore may be in danger of being broken down to create disease.

In the deficient, but non-diseased individual, this syndrome therefore represents the disease prone state to the "maladaptive diseases".
ENVIRONMENT, EVOLUTION, CHRONIC DEFICIENCY, ADAPTATION, AND THE "MAL-ADAPTIVE" DISEASES, INCLUDING HYPERTENSION AND CANCER.

ABSTRACT

The evolution of the modern mammalian cell likely involved the parasitic invasion of a large anaerobic functioning cell, that originated during the primordial night, by a smaller aerobic cell that was created after the primordial dawn. These smaller cells, which were destined to become the larger cell's mitochondria because they had "learned" to gain energy by the oxidation of glucose, had also absorbed another important product of plant life, a pro vitamin D steroid. Through its ionization of calcium this steroid was destined to produce an ionic calcium control of the oxidative system. The consequence of these factors of evolution is that as these cells lived in a symbiotic relationship the mitochondria became the major sites of the concentration of cellular calcium.

The energy need of the modern cell's many metabolic engines may be temporarily taxed by excessive physical exertion that exceeds the capability of the lungs and circulation to supply oxygen for the oxidative process, or may be permanently restrained by calcium or vitamin D deficiency which blocks the ionic calcium mechanism responsible for the transport of energy that is so liberated. In these circumstances the primitive anaerobic glucose fermentation mechanism of supplying energy will be activated. While temporary energy deficiency may be satisfied by this means, permanent "energy starvation" will lead to cell changes giving rise to physical changes, complaints, and the direct and indirect diseases including cancer.

An example of such direct disease is atherosclerosis.

Diseases such as asthma, arthritis, osteoporosis, diabetes, and hypertension, may represent the breakdown of an autonomically excited ancillary and adaptive function of an organ or tissue designed to effect biochemical compensation for the ionic calcium deficiency and cell energy starvation that are enforced by lifestyle defects. In contrast, cancer may represent cell adaption, through mutation, to the same deficiency and energy starvation.

Complaints, which are the first to arise as the direct effect of such deficiency, represent "body language" warning of cell energy starvation that may lead to these and other direct and indirect disease.
ON ADAPTATION TO CHRONIC CALCIUM DEFICIENCY

"Life is not merely of thinking, breathing, moving, seeing, etcetera, but equally important it is an integration of the adaptive potential of each of the tissues and organs of the body to create adaption to psychological and physical stress. This includes the stress of chemical deficiency and of chemical excess.

C. Reich (1917 - )
Everybody knows that if you don't get enough vitamin C, you'll get scurvy. It's common knowledge that a lack of vitamin D causes rickets. But a western Canadian doctor who's been arguing for more than twenty-five years that asthma and arthritis can be caused by a deficiency of vitamins A and D and minerals, finds — much to his surprise — that even when they are extrapolations on accepted fact, new ideas don't sit well with the medical establishment.

Dr. Carl Reich lives in Calgary and practices as a specialist in preventive and orthomolecular medicine there, in Edmonton, and in Vancouver. He is frequently in trouble with members of his own profession and at sixty-three, he's getting a little tired of it all.

"It's cost me too much, I wish I were a different type of individual so I could never look at a new thing again. This has cost me far too much. But I'm an investigator. I know what I'm seeing. And I can't be dissuaded from it."

Orthomolecular therapy — using substances natural to the body instead of synthetic drugs in the prevention and treatment of disease — wasn't invented by Carl Reich. The hypothesis that certain diseases are caused by a dietary lack of specific vitamins was formulated by British scientists in the early 1900's. The treatment of schizophrenia with massive doses of niacin was begun in 1952 by Dr. Abram Hoffer and Dr. Humphrey Osmond in Saskatchewan. And large doses of vitamin E to treat heart disease, burns, skin ulcers, diabetes mellitus and kidney diseases has been advocated by the brothers Evan and Wilfrid Shute, both doctors, of London, Ontario.

In 1954 Reich added himself to the list of physicians who suspected dietary deficiencies to be the cause of certain illnesses. Up to then he'd been a perfectly ordinary doctor, practicing what he now calls stereotype medicine. Then he found he had three patients suffering similar complaints — asthma among them — and diagnosed a dysfunction in the autonomic nervous system due to chronic vitamin and mineral dietary deficiency. "It took me three years to discover that," he says. And when he administered treatment based on this conclusion, and it worked, his life was changed.

He emphasizes that his conclusions, and his adoption of mega-vitamin therapy, are based on observation, study and clinical research. He has written massive amounts of material about his work, some of which has been seen in publications like The Journal of the International Academy of Preventive Medicine, The Journal of Orthomolecular Psychiatry and The Journal of the International Academy. Metabolism Incorporated.

His therapy is based on a concept of what he calls "maladaptive response." For example, Reich says that the bronchial tubes of asthmatics constrict in an attempt to compensate for a calcium deficiency. This is a healthy, or "adaptive" response, he says, but it also interferes with breathing and this is a "maladaptive" response. "In essence," says Reich, "the concept of the maladaptive response shows that many diseases are the end product of a good, protective function of an organ that wasn't taken care of through proper nutrition. The protective function, unable to do its job, turns into disease."

But publication of his findings isn't enough for the medical profession. Its officials call his case histories "anecdotal evidence," and say that double-blind research studies should be done — that is, tests using two groups of patients, one of which takes the vitamins being tested and the other taking a placebo, with neither group knowing who's taking what.

"They say I've had half my lifetime to produce the double-blind studies on this work," says Reich. "I say I'm not a scientist, I'm a clinician. I lost my specialist license (in internal medicine) for seven years, fourteen years ago I lost my hospital privileges — they confine me to the limits of my office and then they want me to be scientific. I'm damned if I ain't, I'm damned if I am."

He has applied his theory of maladaptive response to osteo- and rheumatoid arthritis and to colitis, as well as to asthma. He says that the skeletal reserves of calcium in arthritic patients are depleted, often because of a vitamin D deficiency. He has written that arthritis "largely represents a robbing of Peter (the skeleton) to pay the mineral debt to Paul (the tissues), until the skeleton becomes diseased." This is another example of the adaptive function becoming a disease, he says. Reich is certain that a dietary deficiency resulting in a maladaptive response is what's behind many more diseases, as well.

"I don't say that every disease can be treated nutritionally," he cautions, "I think that every disease may eventually be studied as arising from a nutritional deficiency state or some combination of deficiencies or excess. So it could be prevented, by retrospect study."

Many of his colleagues may not like what he's doing, but most of his patients are pretty happy. The following quotes are taken from a story which appeared in the Canadian Magazine in May of last year:

Evelyn Morrice of Lacombe, Alberta, was stricken by arthritis in 1973. Aspirin was prescribed by her doctors. "It did cut back the pain, but I didn't feel well. I had headaches, stomach aches, leg cramps and sinusitis. I felt tired all the time." She went to see Reich in 1975 and he prescribed vitamins A, D and E and minerals. She noticed an improvement in her condition two weeks later, and by the end of a year, "I felt so good, so healthy, I'd almost forgotten I'd ever been sick."

In 1977 Lynn and Carol Reid of Carstairs, Alberta took their asthmatic children — Teresa, twelve and Cameron, nine — to Reich, after specialists hadn't been able to help them. Reich prescribed vitamins A and D and minerals. The children's conditions improved. "The more amazing improvement was with Teresa," Carol Reid told The Canadian. "She couldn't even run, and she's a
Carol Reis's uncle, Haulce Anderson of Okotoks, took his chronic asthma to Reich when he saw what megavitamins had done for the Reich children. Three weeks after beginning the therapy he felt a little better, and three months later he was no longer bothered by asthma. "I know it sounds too simple to be true," he said, "but it worked for me."

More than 13,000 people with asthma and about 2500 with arthritis have gone to Reich since 1954, he says. He describes the results as "moderate to excellent for about sixty per cent of them — but I have my failures, too."

The traditional method of treating disease is "to throw a drug at it," says Reich. Physicians are "promised great cures by the multi-billion-dollar pharmaceutical industry." He says there are "deep currents in the profession," and one of them is the use of drugs versus the "natural methods."

"Medicine, he insists, is still more of an art than a science. But he says that doctors' reliance on science is just as much the fault of patients as of physicians."

"The public feel that they have not been adequately treated or investigated until they've had every force of science concentrated on their little bodies. The physician who examines the patient and then uses his head, and says 'I'm using my computer, my brain, to analyze your complaints' — some patients don't accept this at all. There are physicians who use batteries of tests, and they have influenced the patient to be laboratory test-minded and drug-minded."

"He's scornful of people who 'smoke three packs of cigarettes a day for thirty years and eat what they want and then expect the doctor to bail them out at age forty eight when they get sick.'"

"The body is a marvelously adaptive organism, if it's properly taken care of, he says. "You don't live for twenty years, or sixty one years — you adapt for twenty years or sixty one years. Every part of your body. Your lungs, your skin, your intestines, your liver, your nervous system — they're all adapting, in concert. But if you don't take care of these systems correctly with nutrients, they'll break down."

"Physical exertion is as important as vitamins, he says. "I tell my patients, you're knocking all these vitamins back, but you're not using your body. The body's not meant to sit, to walk across the block. You have the gift of the millen- nia in your body — physical exertion. And for the last 100 years we're not using this gift for physical exertion. We're just letting it sit. And so the heart gets small, the arteries get small, they harden up."

"He's not talking about exercise."

"Exercise is your walk around the block. Exercise is your walk to work. That Participation — do they urge you to walk half a block a day? A Block? Well this is absolutely ridiculous."

"He's talking about exertion, 'to keep the peripheral circulation going. Exer- tion is where you play tennis or squash or walk up a hill or hike vigorously or swim, and you get your heart rate up to 120, 140.'"

"This is hardly earth-shaking stuff, in these days of fitness chic and food with- out preservatives. But Reich isn't impressed with many of the ways most people go about staying healthy. They have sedentary habits, and insist on a two-per-cent milk-and-margarine diet which deprives their bodies of sufficient amounts of vitamins A and D and calcium."

"A Nutrition Canada study shows that sixty eight per cent of teenage girls in Canada are dietary deficient in calcium — sixty eight per cent!" he says indignantly. "Which means that six or seven out of ten young girls who enter a physi- cian's office, if the physician would care to question them, would be identified as being deficient in calcium. But most doctors don't ask that question. If I see these girls I promise them that if they don't smarten up their diet, by the time they're twenty six years of age and they have their two children they'll be sitting ducks for arthritis. I tell them this."

"Reich has begun to see a few encouraging signs. About one quarter of his patients are now referrals from other physicians. "It wasn't like that several years ago. It's only recently that I've gotten any referrals at all."

"And although orthomolecular medicine is not on the curricula of Canada's medical schools, he gets inquiring letters from medical students, new doctors, and nurses. "I guess it's a movement," he says, "but it's certainly a movement that's still in its infancy."

"By 1974 the movement had become well enough known to convince Alberta's Minister in charge of the province's health plan, then Helen Hunley, to set up a megavitamin therapy review committee. The health insurance plan had become reluctant to pay doctors like Carl Reich, who used megavitamin therapy, and the patients of these doctors had complained.

"The committee's report came out in 1976, and as a result megavitamin prac- tioners are now reimbursed by the provincial health care system — because little risk is associated with the treatment Megavitamin therapy started off as a Canadian innovation, and Reich would like to see the necessary research and exploration in the field continue here. "But it would take 500 physicians five years to get some answers, and across Canada may be twenty are at it. The States are away ahead of us. It's become an American thing."

"Meanwhile, Reich continues to find himself clashing with the medical estab- lishment. Not long ago he wrote to the Letters Page of the Vancouver Sun stating that "over fifty per cent of the population continues to eat a diet seriously de- ficient in vitamins and minerals .... It has been my clinical experience that if deficient individuals improve their diet and take mega doses of vitamins, they fre- quently resolve their complaints and the predisposition to infections."

"The B.C. College of Physicians and Surgeons did not like this at all. It reacted by expressing "concern at the advertis- ing and solicitation aspects of such a letter," and told Reich to "cease and desist in any further such public statements." Reich promptly informed the College that his letter to the Editor had elicited only three calls to his office: one from another doctor who shared his point of view, one from a woman asking where she could buy a book about nutrit-
Vitamin D: a factor in bronchial asthma?

Canadian physician Dr Carl Reich, MD, FRCP (C) suggests that vitamin D, along with vitamin A and calcium, has a hand in the development of previously unrelated conditions. In particular, chronic bronchial asthma may not be due to an allergic reaction, but to deficiencies of these nutrients. The problem is aggravated, he says, when people avoid milk products in the belief that they are mucus-producing. When deficiencies are corrected, milk is better able to be tolerated and future problems are avoided.

The chronic deficiency responsible for both this background syndrome and the overt disease state, is of vitamin A, vitamin D and calcium, enforced by a deficient intake of natural milk products or their substitution by others.

Attempted compensation

I first treated chronic bronchial asthma largely as a deficiency disease in 1954. By 1958, I considered that it largely represented a breakdown of an autonomically excited adaptive device, attempting compensation for calcium ion deficiency of diet and skin-generated vitamin D. Moreover, I felt that the background syndrome, of which these findings of muscle form the most important physical criteria, represented the direct effect which the same deficiency state would have on other tissues and organs of the body. Ultimately, the syndrome was studied in healthy individuals; in these it was considered as the disease prone state in reference to this pulmonary disease and to other smooth muscle spastic states, namely of the intestinaltract, such as form of ileitis and colitis.

These intestinal diseases were also considered as the result of adaptive autonomic stimulation, attempting compensation for calcium ion deficiency because of the association of the above-mentioned dietary deficiency state and this syndrome, and because of the response of these diseases to the same specific therapy.

The intimate chemical association between the bonding of solar energy by chlorophyll and the ionization of calcium compounds by vitamin D, enforced by the association of visible light and ultraviolet radiation in the sun’s spectrum, predicated that calcium would attain a very superior position in the hierarchy of minerals involved in the physiology of the developing cell and ultimately in the fully developed organism. No other mineral can claim this or other relationship to the all-important solar energy binding or energy release process of the cell.

Carbon dioxide link

Because of this importance of this mineral cell calcium, the body has evolved compensatory mechanisms of various tissues and organs designed to maintain the optimum concentration of this element. Just as hyperventilation causes alkalosis and a decrease in the concentration of ionized calcium of tissues which, in muscle, gives rise to an increased contractility of the macromolecule of muscle, so retention of carbon dioxide by mucous membrane exudation and spasm of bronchial smooth muscle (which mimics the allergic reaction) will cause a retention of carbon dioxide. This will increase the ionization of calcium compounds within the cell and within calcium deposits. The adaptive mechanism in chronic bronchial asthma, therefore, is retention of carbon dioxide. In forms of colitis and ileitis it is an increased production and more rapid evacuation of pancreatic and other alkaline intestinal contents.

As well as the autonomically nervous stimulated adaptive devices of mucous membrane and bronchial muscle, much of the signs of chronic bronchial asthma arise because of a local tissue reaction which I define as the “deficiency reaction”. This contrasts with the reaction arising for reason of allergy which I define as the “true allergic reaction”. Like the “true allergic reaction”, the “deficiency reaction” results in cell damage and the release of histamine. The main elements of the antihistaminic defence of tissue against the propagation of this reaction through tissue, appear to be vitamin A and ionized calcium.

The diet most likely to produce

- CARL J. REICH first used megadoses of A and D vitamins in the treatment of chronic asthma in 1954.

  His medical training was Queen’s University, Canada, where he graduated MD in 1943. After the War, he continued postgraduate studies at hospitals affiliated with the University of London (UK), at Shaukness Military Hospital in Vancouver and at the University of California Medical Centre in San Francisco. He was certified as a specialist in Internal Medicine in Canada in 1950 and currently practises as a specialist in Calgary, Alberta.

In 1982 and ’83 his work was recognised by the pioneering British charity Action Against Allergy, which has commended him for contributions to clinical ecology and allergy.
Reduction of this defence to the point that a combination of the autonomically excited adaptive mechanisms and the tissue reactions would result in the chronic form of this pulmonary disease, is what I define as the “one glass of 2 per cent milk and margarine diet”. While approximately 20 per cent of the general population may partake of such a diet, or even one more deficient in natural A and D vitamins and calcium, without developing a disease, it does appear that the A and D and calcium requirement of 80 per cent of the population is such that it can only be satisfied by drinking and eating more of the more natural milk products.

The argument that milk is mucous-producing is frequently correct. Tissue reaction to the protein or other constituents of milk, however, is largely true only of the individual who, for reason of chronic deficiency of vitamins A and D and minerals, has lost the anti-histaminic tissue defences. Therefore if the deficiency of these individuals is corrected by therapy, utilising these nutrient factors in other sources, the patient will ultimately demonstrate a far greater tolerance to the ingredients contained in milk.

The initial dosages of A and D vitamins used are approximately ten times the RDAs and are approximately equally divided between the vitamins in fish oil (namely halibut liver oil) and an aqueous soluble preparation. This preparation, sold by Arlington Funk, a Canadian subsidiary of US Vitamin Corporation, is known as “AquaSol A and D”.

Reducing the dosages

Both these supplements contain natural vitamin A. The vitamin D of halibut liver oil is natural D3, fortified either by synthetic vitamin D2 or semi-synthetic vitamin D3. The vitamin D of the aqueous solution is the semi-synthetic form. Semi-synthetic vitamin D3, in my definition, is that produced by ultra-violet radiation of 7-Dehydrocholesterol, extracted from the spinal cords of animals. In contrast, vitamin D2 or calciferol, is defined as the “pure synthetic form”, formed by the ultra-violet radiation of Ergosterol, extracted from yeast.

The dosages are reduced to two thirds, one half, one third within two or three months, or sooner, depending on response to therapy.

Therapy also includes a source of calcium such as bone meal in dosages of 0.25 to 0.5 grams daily for babies and young children and of 1.0 to 1.5 grams daily for older children and adults. This dosage is given in three equally divided amounts.

Zinc, in the form of zinc gluconate (5 mg daily for a child and 250 mg daily for adults) may also be given.

To date I have treated approximately 12,000 chronic asthmatics, approximately equally divided between the under-15 years of age group and the over-15s.

Patients may be monitored before treatment for parathyroid excess and during therapy for vitamin overdosage by biochemical determination of calcium phosphorus and alkaline phosphatase and by routine urinalysis. To date none of the classical signs of toxicity of either vitamin has been noted in this large series of cases. Very rarely the patient may develop headaches and leg cramps, frequency and dysuria within several days of therapy. These symptoms occur with such intensity that they invariably force the patient to discontinue therapy and to enquire about their occurrence. These symptoms, not defined in medical literature as arising for reason of this therapy, likely suggest severe intolerance to either of the vitamins. In these instances the therapy is discontinued and resumed at a much decreased dosage.

Results far exceed those attained by drugs. In the under-5s group of chronic asthmatics, I have estimated that this therapy provides “moderate” to “excellent” resolution of the disease in 93 per cent of cases! In the remaining seven per cent the results are only slight or nil. The response of chronic bronchial asthma in older age groups is considerably less. The response in the adaptive diseases of other tissues, that is of intestinal tract and skeleton, is likewise considerably better than that afforded by drug therapy.

Effects in other diseases

Attention to diet and the background syndrome of deficiency in non-diseased as well as diseased patients constitutes a study of the prevention not only of chronic bronchial asthma, but also of other members of what I define as the “genus of spastic vessel and conduit diseases”.

Other diseases arising for reasons of spasm of smooth muscle are related to chronic bronchial asthma in two ways. Firstly, as examples of the direct and non-adapting deficiency diseases. Secondly, as indirect and adaptive diseases excited by the autonomic nervous system when the responsible dietary deficiency state and the physical and functional criteria of the background syndrome are defined in them (vii). Moreover, this relationship is fortified by the response, not only of the overt disease, which in my opinion complicates the underlying syndrome, but also of the functional and physical stigma of the background syndrome.

In conclusion, the etiology of chronic bronchial asthma may involve what I define as the “true allergic reaction”, the “deficiency reaction”, and the autonomically stimulated adaptive mechanism of the body. Unquestionably, while the more acute bronchial asthma may be entirely dependent on a “true allergic reaction”, in its chronic form the tissue reactions responsible for the disease may to a large extent be due to the “deficiency reaction”.

In view of the frequent occurrence of negative skin allergy tests in face of chronic expressions of this disease, one is forced to consider that chronic forms of bronchial asthma may not involve the “true allergic reaction” at all, but only be due to the “deficiency reaction”, and the adaptive process.


