

The FELIX Letter

A COMMENTARY ON NUTRITION

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LOSING WEIGHT

Nancy Drew or Miss Marple I'm not, but chasing down the unlikely connection with weight reduction of an obscure essential trace mineral like chromium has led me to a series of clues clearly in need of an encompassing theory. It also led me down a long research trail, the unwieldy results of which had to be combined as the present March/April issue. The February 1982 *FELIX LETTER* speculated on a new study that perhaps for the first time links chromium supplementation with increased levels of HDL-C (the cholesterol carriers in the blood associated with protection against cardiovascular disease) and a *modest but significant weight reduction* for the middle-aged men in the study, whose only dietary change was to take 100 micrograms of trivalent chromium twice a day for twelve weeks¹. I decided then that a useful topic to research might be a weight control program incorporating chromium-rich foods.

Stepchildren of Medicine

In reviewing what I have been able to of the abundant scientific literature on obesity, I have yet to run across a serious consideration of chromium's intriguing dual role in obesity and diabetes, but I'm still looking. In two compilations of recent major studies on obesity^{2, 3}, I found no mention of chromium; the trace minerals are given short shrift altogether. If there is an awareness on the part of many physicians and psychiatrists that without minerals most of the enzymatic reactions of the body cannot take place, it's well-hidden. Strange to say, I found minimal concern with nutrition generally — trace mineral or otherwise; and the nutritional aspect is often couched in esoteric language: amino acids, electrolyte balance, lipid content, etc. Time and again, I've encountered in medical writings this same reluctance to deal plainly with *foods*, so that diets are often loftily described

by their biochemical categories — giving rise to the widely-held assumption in medical circles that a carbohydrate is a carbohydrate, and that 100 grams of jelly beans and 100 grams of brown rice are separate but equal.

Again, we are witnessing the phenomenon I've been grumbling about since the first *FELIX LETTER*: the lag between the development of significant nutritional research . . . and its application in medicine. The essential trace elements are stepchildren of the medical community: there are no four-color full-page ads heralding them in the journals nor are high-priced detail men pushing samples in doctors' offices. Like vitamins, they are non-patentable and can be manufactured by small firms. Nevertheless, they are the subject of intense interest and investigation by nutrition scientists because of their pivotal role in human metabolism.



Chromium is a case in point. Research since the 1960's clearly demonstrates a role in blood sugar regulation. The conservative Food and Nutrition Board of the National Academy of Sciences, in both its 1974 and 1980 (8th and 9th) editions of *Recommended Dietary Allowances*, begins its section on chromium with this statement:

Trivalent chromium is required for maintaining normal glucose metabolism in experimental animals; it probably acts as a cofactor for insulin . . . Several investigations have described chromium-responsive disturbances of glucose metabolism in man, suggesting that marginal deficiency states may exist within the United States . . . and abroad . . . Chromium levels in human tissues were found to decline with age . . .

The 9th edition (1980) has added:

. . . with age . . . and in diabetes. This last edition not only expands the section on chromium but makes a "tentative recommendation" for an intake of 50-200 micrograms a day (for adults and adolescents, less for children). For the first time, it provides a supplementary table of "Estimated Safe and Adequate Daily Dietary Intakes" for several vitamins and minerals long (and illogically) excluded from the main table of nutrient recommendations — among them pantothenic acid, selenium, and chromium.

Fatty Treasure Chest?

In the face of acknowledgement by orthodox nutrition scientists of chromium's unique role in the proper utilization of blood glucose, it's disquieting to note that papers dealing in depth with the related phenomena of obesity, blood glucose disturbances, and diabetes still manifest no interest in the possibility that chromium deficiency may represent a critical common factor. I believe this reflects a widely held attitude — medically and otherwise — about fat people: *that their*

bloated tissues are an interminable storehouse of vitamins and minerals which are readily tapped in the process of weight reduction, even when weight loss is accomplished through severe and lengthy fasting; thus the obese body feeding on its fat cells is assumed to encounter no difficulty in securing the nutrients required for metabolic processes.

The truth is at the other end of the biochemical spectrum. True stores of the water-soluble vitamins and trace minerals do not exist in our bodies, obese or otherwise. The process of mobilizing fat from its storage depots (adipose cells) and oxidizing it to CO₂, water, and energy calls for a number of complex and tightly controlled biochemical reactions — “so tightly controlled in some individuals,” as one author ruefully puts it, “that one wonders if it occurs at all”⁴.

Vitamins to Burn Fat

First, a hormonally-controlled enzyme must trigger the release into the circulating blood of fatty acids from fat stored in adipose cells. After entering muscle or other tissue cells, fatty acids are first broken down to small molecules (of acetyl coenzyme A) by a stepwise process requiring at least the following essential vitamins and minerals (“essential” in that the body can’t make them and must get them from food): pantothenic acid, riboflavin (B₂), niacin, magnesium, phosphorus, and copper.

The acetyl coenzyme A molecules enter the mitochondria or “power factories” of the cell where they are oxidized to energy, CO₂, and water in a series of intricate reactions requiring these additional nutrients: niacin, magnesium, thiamin (B₁), pantothenic acid, riboflavin (B₂), and iron, for completion of the energy-releasing process.

Underlying all these processes is the fundamental one permitting all cells, including fatty ones, to accept glucose from the blood for energy, etc., and for this, both insulin — which we make — and chromium — which we get from food — are needed.

Like the thousands of other “happenings” at the cellular level, the successful burning of body fat thus requires specific food factors, none of them “stored” in the same way that fat is hoarded in adipose cells (except for the storing of vitamins A and D in the

liver). When these nutrients are no longer available from the diet and the levels in circulating blood are depleted, the body begins tapping the only “stores” it has: *its own cells*, each a little factory with nutrients for burning fuel and synthesizing new materials. During periods of starvation, our efficient self-destruct system has the ability to break apart the more expendable cells and release their nutrients into the circulation so that brain, heart, and other vital organs may continue to be nourished.

You Mean, Not Fat Cells?!!

The *rotten* news is that it is chiefly *muscle cells* which give up the ghost so that the rest of our cells may live. Starved fat cells are NOT the first to go. They only SHRINK . . . and sit there, playing their nasty little waiting game . . .



The inexorable first principle of successful weight reduction, then, is to *supply generously all known vitamins and minerals, including those that permit the burning of fat to take place with the maximum effect*. Since a weight loss program for severe obesity may go on for many months or even years, the effort to supply vitamins, minerals, and trace elements (from food and supplements) should be a continuous and scrupulous one, keeping the breakdown of muscle cells to a minimum.

Aside from its disinterest in this principle, I found many of the medical insights into the complex aspects of obesity both absorbing and useful. Is obesity inherited? Science says there appears definitely to be a heritable component in certain kinds, but even here, inheritance is not necessarily destiny. Genetically obese mice, for example, have been kept thin

by increasing their exercise and decreasing their food intake.

Fat Cells Get Fatter

Body fat, as we know all too well, is cached in adipose cells which nature has designed precisely for fuel storage against times when food is scarce. The numbers of fat cells laid down during early childhood were once thought to be permanent, but there is increasing evidence that they may be added to during periods of overfeeding throughout growth and adulthood. All authorities agree that, once formed, their numbers cannot decrease. One typical class of overweight persons is heavy because their adipose cells have become enlarged with excess fat content but the *cell numbers are normal*. Frequently, they were slender as children. Effective dieting can cause their adipose cells to shrink to normal size as the surplus lipid content is oxidized for energy, and the person’s weight and dimensions also normalize.

A tougher problem faces the obese person with *abnormally high numbers of fat cells*; dieting will shrink the size of the fat cells, but their surplus numbers still remain. The battle to keep these extra fat cells from refilling requires lifetime vigilance. Overfeeding in infancy and childhood can lead to this overproduction (hyperplasia) of adipose cells, and a goodly portion of these fat babies can become fat adults all too easily.

Breast Vs Bottle

Both English and American pediatric studies^{5,6} find far fewer fat babies among those who have been breast fed for at least the first six months and longer. Unfortunately, in this century, bottle feeding has become much more common in both countries and, for some reason, seems to foster the introduction and overfeeding of solid foods at a very young age. This can initiate a habitual intake of excessive calories and the laying down of a lifetime supply of extra adipose cells.

Breastfeeding without supplemental bottle feeding is recommended in these studies as a preventive measure, and mothers are urged to postpone feeding babies solid foods until the fifth or sixth month. At the first sign of excessive weight gain, solid foods — not breast milk — should be reduced. In general, “stuffing” and coaxing babies to eat should be avoided; fatness for little ones is no longer considered the desirable goal it once was.

Sorry, No Magic Wands

These admonitions may help for the next generation . . . but what about all the existing fatties . . . what are their (our) chances of sloughing off the blubber?

If we were thin as children, we must understand that there are at least ten thousand reasons for the weight we've gained since — all of them lying on the shelves of supermarkets and bakeries. Reversing the process clearly entails the sacrifice of innumerable moments of gustatory passion. The literature I've reviewed has a lot of practical means to achieve weight loss. So far, I've found no miracles. As yet, nothing offering magical results has proven to be safe. There are hormonal potions that increase lipolysis (release of fatty acids from fat cells into the blood plasma), but no guarantee that the fatty acids will then be safely burned as fuel by our tissues. The commonly prescribed appetite-suppressing drugs (anorectic agents) produce central nervous system stimulation and can cause very uncomfortable symptoms: insomnia, dry mouth, rapid heartbeat, agitation, headache, dizziness, impotence, and so on. Their anorectic effect soon dwindles so that often increased doses are required. The *Physicians' Desk Reference* notes that they "can produce tolerance and severe psychological dependence, as well as other adverse organic and mental changes." One, in a slightly different pharmacological class, fenfluramine (Pondimin), has been shown to reduce ascorbic acid (vitamin C) concentrations markedly in human tissues⁷.

Further, although initial weight loss may be greater with anorectic agents, after their use ends there tends to be more rapid regaining of weight than when weight loss has occurred through conscious invoking of new and wiser habits.

My reaction to the periodic hearlding of yet another fat-melting wonder worker in the popular press (NOTHING, not even sex, sells tabloids faster!) is, if it works and is totally safe, we'll all know about it soon enough. Meanwhile, for those of us resigned to the long, hard way, there are some useful principles.

The timing of meals may be significant. Eating in the earlier part of the day coincides with the times in which protein synthesis in our bodies is switched on. Breakfast, by making amino acids available when our cells can best use them to make protein, may turn out to be the most efficiently utilized meal of the day. Under the circumstances, it makes sense to include high-quality protein for the breakfast meal.

Many heavy people are breakfast skippers and tend to concentrate their eating late in the day, often during dinner and afterwards. There seems to be some indication that the same number of calories divided into smaller meals eaten throughout the day will lead to less fat deposition than when the calories are eaten in one meal, especially if the one meal is eaten at the end of the day. Eating is known to increase our metabolic rate (about 6 per cent), while fasting can depress it, so "saving up" for one big late meal may defeat its purpose.



Sleep and Grow Thin!

There's another good reason to eat the day's last meal early rather than late. During the night's long fast when glucose is no longer available from our digestive tract, the body switches over its hormone-control system to the "post-absorptive" phase. All resources are now used to send glucose to the brain and nerves, so instead of glucose, *fat becomes the main energy source for all the other tissues*. This may explain why a specific number of calories eaten at night can lead to weight gain but not when consumed earlier in the day. Understanding that the longer the night's fast, the greater the fat loss, may also provide a clearcut incentive to most of us to end the habit of nibbling after dinner.



There are two situations in which fat becomes the major metabolic fuel instead of glucose: first, as we've noted, in the post-absorptive fasting state (whether during sleep, voluntary fasting, or starvation). The second is during *exercise*. Not too long ago, the emphasis was entirely on restricting calories, and exercise was largely dismissed as ineffectual. An admonition typically went: to lose a half-pound of fat, you would have to walk upstairs and downstairs continually for 2½ hours; whereas merely reducing caloric intake by 350 calories for 5 days would accomplish the same result.

Now, exercise is coming up roses by all biochemical, clinical, and psychological parameters:

- Vigorous physical activity can have a normalizing effect on the appetite center in the brain.
- Exercise reduces anxiety, tension, and depression.
- It raises our blood sugar, which reduces appetite.
- Exercise can improve every function of the cardiovascular system: reduce high blood pressure; raise the numbers of protective cholesterol transporters (HDL-C) in the blood; lower fatty levels in the blood plasma; improve glucose tolerance; normalize insulin levels.
- Exercise can restore normal insulin response in obese persons.
- Exercise raises our metabolic rate not just while it's going on *but for as long as 48 hours afterwards*.

Revving Up Our Motor

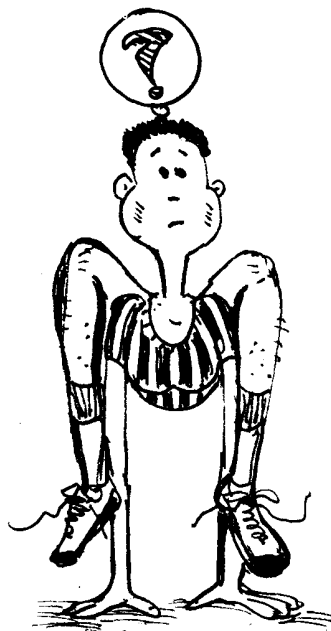
This increase in the rate at which we use up calories has a special significance in dieting. Many studies show that reducing calories does not automatically produce the expected weight loss (i.e., the loss of one pound of fat from a deficit of about 3500 calories). It appears the body has clever ways of conserving for what it now interprets (correctly) to be a period of scarcity. The rate of absorption of nutrients from foods markedly increases, and the basal metabolic rate drops. The same number of calories now covers a lot more territory.

Regular vigorous exercise offsets this metabolic decline and speeds up the burning of body fat as fuel. The effect on the morale of the dieter can be heartening.



Our Marvelous Lymphatics

Some years ago, a wise naturopathic doctor explained to me the true significance of exercise. The delivery of oxygen to each cell by the blood stream is so vital that only the ceaseless pumping of blood by our heart permits us to survive. But nearly as important as the blood circulation, he told me, is the *lymphatic system*, a great network of thin vessels resembling the veins, carrying pale yellow lymph fluid. These begin as lymph capillaries in most organs, where cellular products diffuse into them and are carried through increasingly larger vessels until the largest of the lymphatics drains into the blood circulation. The lymphatic system removes waste products from cells, returns protein to the blood that has filtered out of capillaries, and carries hormones, fats, and other vital substances to the blood circulation. It constitutes the major defense against invasion by bacteria, viruses, and foreign matter, and plays a basic role in the development of immunity.



The Lymph Pump

As life-giving as these functions are, they are, however, not critical enough to require the beating of a heart-pump sixty or seventy times a minute for a lifetime. Instead, nature has chosen *physical motion* to be the activator of the lymph system. With no heart to push it, the *flow of lymph depends on the pumping action of the muscles* through which the lymphatic vessels course, and on the muscular action of breathing. The massagelike effect of strong muscular activity and deep breathing stimulates and increases lymphatic circulation.

My naturopathic friend explained how essential this is to the "cleansing" of the body on the cellular level, and how vital as defense against disease. "Observe a young baby," he said. "Every waking moment, it is wriggling, kicking, squirming, and arching; but even in sleep, its entire abdomen moves deeply many times a minute with each breath. Nature has provided for this constant muscular movement for very good reason."

In a state of nature, I should note, we would continue vigorous physical activity till the end of our lives. In thousands of photos of primitive peoples in Africa, New Guinea, and the Amazon jungles, I have yet to see a group of fatties. If, because of the artifacts of civilization, we develop habits of shallow breathing and long spells of physical torpor, the efficiency of our remarkable lymphatic system is bound to suffer.

The concept of exercise as a *cleansing force* has been personally helpful to me, providing additional motivation for beginning most days with ten minutes or so of a free-wheeling combination of yoga, calisthenics, and the shimmy — absurd to watch but a great way to stir up sluggish lymphatics.

Processed Fat

Why do we have so many fatties in the U.S., and why is obesity blooming as well in Europe and the United Kingdom, judging by the concern in their medical literature? Clearly, the rise of the automobile in our time and the mechanization of farm and industrial labor have changed the energy needs of many. Additionally, the post-World War II years have witnessed an enormous, sophisticated rise in the manufacture, advertising, and distribution of processed foods.



Are you old enough, as I am, to remember when there were no supermarkets — only grocery stores with tubs of butter, sacks of steelcut oats, and bottles of milk in which the cream still rose to the top? Forty per cent of our calories used to come from fresh fruit, vegetables, cereal grains, potatoes and beans. Today these natural complex carbohydrate foods provide only 20 per cent. Their calories have been largely replaced by *sugar*, now the predominant carbohydrate energy source in the U.S. diet. Processed foods and beverages with their high refined-sugar content have taken over the American diet to such an extent that they account for more than 70 per cent of the sugar we consume. Soft drinks comprise the largest single in-

dustry use of refined sugar, the per person consumption having more than doubled since 1960 (and quadrupled since 1940)⁸. Fat consumption also rose, partly because of greater meat consumption but also because of the rise of packaged fried and fatty foods: potato and corn chips, shortening-rich crackers, bakery goods, etc. The greater availability and acceptance of processed foods and drinks, reinforced by extensive advertising, have affected all of us. I now find that humans are not the only vulnerable species. The most delightful piece of research I've run across on the origins of obesity is the chapter "Dietary Obesity" by Anthony Sclafani, Ph.D.⁹.

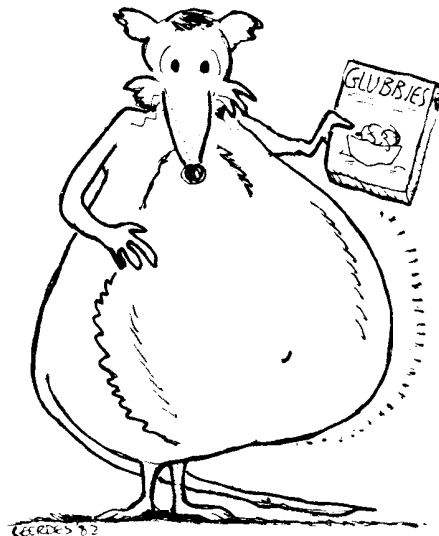
"Given a nutritious but bland and monotonous chow diet," he notes, "sedentary rats limit their body weight to what may be considered mildly obese levels. Rats on chow diets defend their body weight when subjected to a variety of homeostatic challenges and have gained a reputation as being precise regulators of body weight."

Et Tu, Brute!

But take these same animals and offer them what Dr. Sclafani calls the "supermarket diet," and what do you suppose happens? In addition to their boring but worthy chow, adult rats were presented with a supermarket assortment including "chocolate chip cookies, salami, cheese, marshmallows, milk chocolate, peanut butter, and sweetened condensed milk." Despite having maintained normal weights throughout adulthood, in only two months the creatures gained 269 per cent more weight than their chow-fed pals! Even rats which resist all other traditional fattening measures became Los Chubbos.

The supermarket diet caused obesity in both young and old rats; in males and females; in "bored" rats and in "environmentally enriched" rats; in rats of previously normal weight and in those who were genetically obese. It probably would have caused obesity equally in anal-compulsive and in oral-dependent rats. The only modest brake on fattiness occurred with exercise; wheel-running rats on the diet still got fat but gained 27 per cent less than sedentary nosherers. When put back on their nutritious but humdrum chow diets, all rats promptly reduced their intake and lost weight.

Have I pushed any buttons for my readers? Can the parallel between this and our national food habits be any clearer? We are dealing more with artifacts than with food. Neither man nor mouse is immune to their blandishments.



Let me review the weight-losing principles:

- The fat body is NOT an endless source of nutrients. To burn fat instead of destroying muscle, all vitamins, minerals, and trace elements should be supplied in the diet or as supplements.
- Appetite-suppressing drugs can cause problems; also, afterwards, weight tends to be gained back more quickly than when a true change of dietary habits has taken place.
- Food is best eaten earlier in the day to coincide with the body's cycle of protein synthesis. For this reason, breakfast should include protein foods.
- At least three small or modest meals instead of saving up for 'the big one' at night are useful for speeding up metabolism and causing less fat deposition.
- Advantage should be taken of the body's switchover to burning its fat as the main energy source during the night's fast. My own suggestion: eat dinner early, then **DON'T TAKE ANYTHING WITH CALORIES TILL THE NEXT MORNING.** (Make the exceptions rare.)

- Light your fire with **EXERCISE** to burn up fatty fuel (and massage your lymphatics!)
- If you're a rat, eat regular chow and stay out of the supermarkets.

The 'Free Diet'

We come now to the heart of the matter. It's not easy to get fat on foods as they exist in nature. Obesity is never a problem in wild animals, nor was it in early man. The substances that are making us fat are clever products of man's virtuosity, not nature's. I found little recognition of this in the conventional medical literature, so it was especially pleasant, in the midst of treatises on liquid fasting regimens and intestinal bypass operations, to find this rational statement by an English family physician¹⁰. A less pompous approach I have yet to find. In Dr. Craddock's words:

It is axiomatic that for the successful long term control of obesity a change of eating habits is essential. How is it best to bring this about? Most of the patients who go to their personal physicians in Great Britain for advice about weight reduction are only moderately obese. For these . . . patients a calorie controlled diet is not necessarily the best method of achieving long term weight control unless they have obsessional personalities.

For the last 16 years, I have routinely used a modification of Marriott's 'free' diet. This diet allows patients to eat as much of the natural foods such as meat, fish, eggs, fruit, and vegetables as is needed to satisfy their hunger. They are rationed as to bread, butter, milk, potatoes, and alcohol and are forbidden to eat sugar, refined cereals or anything made from them.

Almost every patient loses weight initially on this diet.

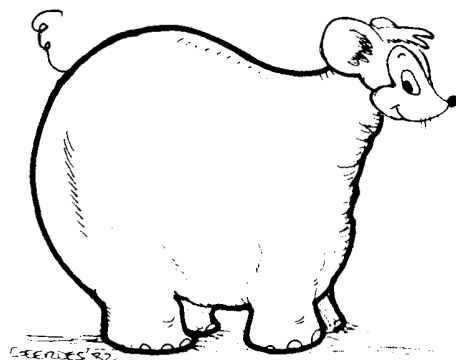
And, unlike most programs described in the literature, the long term results have been good. In a group of 130 patients followed up for 10 to 15 years, half maintained a modest weight loss and 20 per cent a weight loss of over 20 pounds.

And Now, Chromium

My original purpose was to explore a weight-loss diet rich in chromium. This was prompted (a) by the knowledge that chromium was needed as a cofactor with insulin to permit body cells to take up glucose from the blood; and (b) by the recent study I reported in the February *LETTER* of weight loss produced in twelve men solely by a chromium supplement. The chromium trail has proven to be an intriguing one. A natural diet like the good Dr. Craddock's will be richer in this trace element than a "super-market" diet, but the amount of chromium a food contains is not the whole story. Chromium's effectiveness in normalizing blood sugar levels may depend on whether it is incorporated into a molecule called the "glucose tolerance factor" (GTF), in which, it is thought, chromium, the B-vitamin niacin, and amino acids link up to perform the function of amplifying insulin's action. Some foods contain GTF ready-made. Others have chromium but the job of converting it to GTF is up to the persons eating the food who may have varying abilities to do so. (It has been suggested that diabetics who need insulin may be unable to synthesize GTF from chromium. When given the richest known source of preformed GTF, namely brewers yeast, a number of diabetics have actually been able to lower their insulin requirements.)

Ye Gads, Yeast Again!

GTF-chromium in brewers yeast has been shown to improve ability to handle blood sugar not only in elderly persons with pre-diabetic symptoms, but in healthy young men as well. The implication from the latter is that even in normal young persons, dietary intake of chromium or GTF may be marginal; otherwise, brewers yeast would not have caused such clearcut improvement. The fact that pregnant women frequently show abnormally high blood sugar could well be related to the depletion of already inadequate chromium stores by the growing fetus. Tests of chromium in the hair of newborn babies show very high values compared to their mothers¹¹.



Cr and Weight Loss

Now what has all this to with weight loss? A great deal, because although there are conflicting theories on the how and why of obesity, there is agreement on one of its effects — *chronically high circulating levels of insulin in the blood*. Some researchers suggest that adipose tissue is more responsive to these high levels than muscle tissue, with the result that more glucose is taken up proportionately by adipose cells to be promptly sequestered as fat¹.

Chromium appears to improve the ability of *all* cells to respond to insulin, so that the uptake of glucose by muscle and other tissues is accelerated. One might suspect that when insulin is more effective, less of it might have to be produced; and this is exactly what happens. Often during supplementation with brewers yeast, *insulin decreases to normal levels*.

Breaking the Cycle

In obesity, chronically high insulin levels create a vicious cycle in that not only is more glucose seized by adipose cells and turned into fat, but insulin, by creating an "absorptive phase" metabolic pattern, causes the synthesis of fat to be further stimulated in the liver, which sends it to the already overstuffed adipose tissues. (An additional unwanted effect is that in obesity there is often a high level of circulating fats in the blood from this constant flux.)

By lowering insulin levels to normal, GTF-chromium may help to break this cycle.

The reasons for low chromium were explored in the February *LETTER*. Briefly, the all-American diet is a two-edged sword; its low-fiber, high sugar-white flour-soft drink content causes frequent large insulin surges, which increase requirements for chromium. These foods, however, are a poor source, so marginal chromium nutrition may be the norm in the U.S.

This may be even more true of fat individuals. Certainly, by the time they've reached a point where their insulin levels are chronically high, there's a good chance their chromium intake is far too low to offset this heightened need. Indeed, the chronically high insulin levels may represent the system's attempt to overcome insulin's ineffectiveness in the face of inadequate chromium.

The Best Cr Source

I planned to include chromium-rich foods in my weight-loss program, but in Dr. Edward Toepfer's exhaustive study on this¹², I learned that the amounts of chromium in foods are not necessarily indications of their biological activity (or preformed GTF content). Liver, cheese, black pepper, wheat germ, whole wheat bread, sea foods, mushrooms are among the best sources of GTF-chromium. However, they don't even come close to brewers yeast, the all-time champ. With the thought that in many of us, obesity and too-high or too-low blood sugar are interrelated and may reflect a common difficulty in obtaining or synthesizing enough active GTF-chromium, I suggest that two brewers yeast tablets might be taken with each meal. If this amount doesn't cause gassiness, it can be increased gradually to five with each meal. (I say tablets because few folks are motivated to prepare a powdered brewers yeast drink three times a day.) A chromium tablet of 50 to 100 micrograms taken twice a day might also be helpful.

In addition to GTF-chromium from brewers yeast, a program for weight loss might include only foods that do *not* trigger heavy insulin production; in other words, the foods we choose should release their sugars slowly from the digestive tract into the bloodstream. Nuts and the protein foods, of course, have little or no sugars. The carbohydrate foods that

release sugars modestly are the natural complex carbohydrates: root vegetables, whole grains, beans, fruits. For this reason, as in Dr. Craddock's diet, all sugar, refined cereals and flours, "or anything made from them" are best excluded. Since this leaves out 75% of the supermarket products (and everything in bakeries and ice cream parlors!), before embarking on such a dietary course, a commitment might have to be made to the *experience of limited pleasure from food for a period of time* — the trade-off being our flatter bellies and the sense of gaining control of our bodies.

Foods That Work

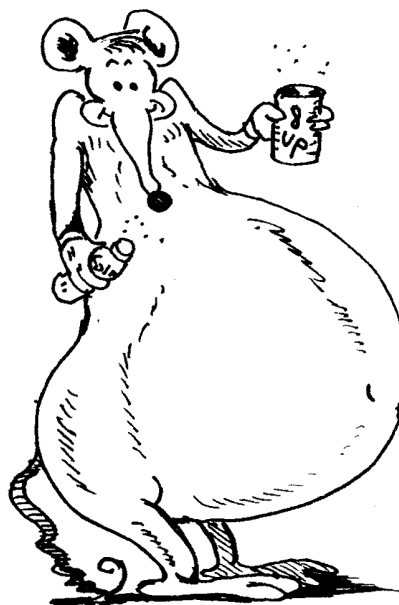
Eating regular meals of foods that permit comfortable, steady blood sugar levels will help to avoid the hollow feeling which prompts sugar and bakery binges. All vegetables, cooked or raw, sea food, fish, chicken, meat, eggs, cheese, yogurt, tofu, beans, barley, brown rice, millet, buckwheat, Ry-Krisps, oatmeal, popcorn, and potatoes are foods which permit smooth insulin and blood sugar levels. The brewers yeast supplement will reinforce this. Soups and broths (low on the salt, please!) are a good way to start lunch or dinner; they tend to increase satiety by slowing up the eating process. Raw vegetable snacks together with a few unsalted nuts, a tablespoon of pumpkin or sunflower seeds, a hardboiled egg, or a small square of cheese can serve as midmorning or midafternoon snacks if needed. For desserts, we can adopt the French practice of fresh fruit, perhaps with a little cheese.

To lose weight on these foods, we have to eat them in somewhat less than opulent amounts, but in giving up our supermarket items, we've left caloric space for comfortable portions. A weight loss of one pound of fat a week calls for a reduction of 500 calories per day — leaving a reasonable 2200 calories for the average man and 1500 for the average woman.

Caution: Calories Ahead!

Two areas where abstemiousness is the watchword: First, oils. Polyunsaturated oils are just as caloric

as hard fats; all, including butter, average 100 calories a tablespoon. Our daily need for the essential fatty acids can be met by a tablespoon of oil (it can even be codliver oil!) plus a few spoons of walnuts or sunflower seeds. Deep-fat frying adds a huge caloric load to otherwise fine foods like potatoes, fish, and sea foods. Better to bake, broil, or saute using one of the lecithin-based non-stick sprays in the pan and a spoon of oil or butter. Fat in food in excess of caloric need is converted with less energy cost than any other foodstuff into body fat.



Second, sweet drinks, natural or otherwise, are an area of easy downfall because in using them innocently to quench our thirst, we are adding a big burst of calories, even using good fruit juices. Next to Dr. Sclafani's supermarket diet, which outdid all others in producing obesity, the two quickest ways to turn normal rats into fatties is (1) to give them a special very high-fat chow; or (2) permit them in addition to regular chow as much as they wish at all times of a sugar-sweetened drink!

On a personal level, in addition to stepping up my daily calisthenics, I find I derive dieting benefits from reversing the pattern of snacking after dinner which invariably lays on the lard. A sharp, self-administered admonition helps, like "Okay, kiddo,

you've had your quota of taste thrills for the day." I set up determined images of my fatty cells giving up their droplets, and keep a stiff upper lip until the urge to nosh passes. An exception if I'm too wired at bedtime might be a half-cup of warm milk and a teaspoon of honey.

More Helpful Hints

Another dieting aid that I've been exploring personally is the vitamin pyridoxine, or B₆. Several physicians have noted its firming effect on waterlogged tissues, and it does appear to have a beneficial diuretic action. Another effect that I haven't seen in the research literature is that doses of 100 mg or more markedly decrease my appetite. This appears to be more a pharmacological than a vitamin action, and I'm not all that keen about using vitamins in this way, but the literature indicates, so far, that these high doses are not harmful. I'll be alert for further developments in the literature.

Recently, I've been gathering information on commercial preparations using the dried green algae, Spirulina. It's available in tablets or as a powder that can be added to broths or juices, imparting a deep hunter's green color and not too overpowering a flavor. Cutting through the hype in the promotional literature, I am impressed with its protein content. It has good quantities of the essential amino acids and is 90 per cent digestible. Long used in many cultures, it began to be investigated about 15 years ago as a concentrated source of protein for a World Hunger Research project. In Japan and Mexico, it's used medically as a nutritional adjunct to therapeutic programs. In the U.S., Spirulina powder and tablets are middle-class luxury product, like many food supplements.

So far, in my own use, I like its effects. It IS a natural product with an old history of usefulness to man. Its nutrients are described as being exceptionally available to our bodies, and this may in part account for the fact that it *does* keep me feeling perky and well-fed for a number of hours. Since it is low in sodium and calories, it's worth exploring in a weight-loss program if the budget permits.

The Group Approach

The dietary patterns I have been describing are modest and gradual in their effect but, in the long run, are more successful than harsher programs which create a roller-coaster effect of high weight losses and equally high regainings.

To those who have had a longterm concern with weight and for whom it is not just an inconvenience but a painful emotional burden, I would like to report that the medical literature is quite encouraging on the effectiveness of the group approach. Two that I know to work although using different methods are Weight Watchers and Overeaters Anonymous (O.A.). The loneliness of the long-distance dieter is no joke; apparently there can be great benefit from group support and wisdom.



One young friend of mine, whose battles with obesity have gone on since childhood, stumbled only by chance into O.A., and two years later has emerged with a slender body and an evident sense of well-being. Over the two years, he told me, he has used many experimental dietary approaches, but currently has settled for the pattern described below. On the 1800 calories he allows himself, he loses one pound a week. Earlier in the dieting experience, weight dropped off more rapidly as commonly happens, much of it water. Now, the slow but steady loss is of fat. His workmanlike attitude toward dieting involves the

methodical use of a good kitchen scale to weigh food portions.

My breakfast will usually be several pieces of fruit (an orange and half a cantaloupe; or grapefruit and a few plums, etc., depending on the season) plus an ounce of nuts (unsalted). A few times a month, I'll have eggs with the fruit. Occasionally, I'll add 7 ounces of fish.

My friend, a student, takes his midday meal to school.

My lunch can be a half-avocado, ¾ lb. of non-starchy raw vegetables, and a few pieces of fruit. Sometimes I also have tofu. At times I'll take a cold baked potato with the avocado.

Dinner typically will be two potatoes weighing a total of 1 to 1¼ pounds, which he will bake; 1 pound of raw salad vegetables seasoned with herbs and lemon; and 1 to 1¼ pounds of vegetables to be cooked. Foods are weighed, prepared, and eaten lovingly, without haste. He uses about a tablespoon of salad oil or tahini (ground sesame seed paste with oil) on the potatoes.

Often instead of potatoes he has cooked buckwheat groats, brown rice, or tempeh burgers (a soy product). He drinks herbal and regular teas without sweetening.

Although he has achieved and maintained a large weight loss during these years with O.A., his goal of 138 pounds (he is 5 ft. 8 inches tall) will take a few more months. He then plans to stay on a 2000-calorie maintenance diet.

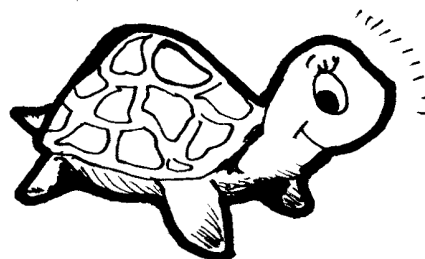
Winning the Fight

To those who have known him during all the years when his weight bounced back and forth from 200 pounds, his achievement with the help of O.A. is indeed affecting.

Basically, I'm trying to eliminate the foods for which I have the strongest, most uncontrollable cravings, on the assumption that I am addicted to these. [The allergy-addiction concept in obesity, alcoholism, and other health problems will be the topic of future LETTERS. CF] Into this category fall breads, bakery goods,

chocolate, sugar-sweetened foods, french-fried foods, salty foods, things like chicken-pot pies, doughnuts, and so on. At 36, I look back on a lifetime of alternate episodes of crash dieting and monumental binge-eating. They took away my confidence and left me depressed. In O.A., we understand that addiction to these foods is analogous to alcohol addiction and, as with alcohol, the answer is abstinence — one day at a time.

Good luck, my friend ... I salute you. ■



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