

# "HYPOGLYCEMIA" --- a fresh look

By Warren M. Levin, M.D.



Is there really one "disease" that can present itself as allergy or dizziness or headache or fatigue or muscle pain or "nerves" or poor concentration or forgetfulness or ulcers or colitis or palpitations or angina or almost ANYTHING? The answer is obviously a resounding "no" - - and anyone who says otherwise to today's scientifically trained and oriented physician is a fool or worse. But ask that same physician how a person under stress will first reveal his body's inability to cope with it and he will most likely say: "It could be anything" - or words to that effect.

The key concept in the above paragraph is stress. Dr. Hans Selye won a Nobel Prize for elucidating the body's response to any and all stresses in what he termed the General Adaptation Syndrome (G.A.S.) In response to any deviation (stress) from the status quo the body undergoes three stages of adaptation: (1) The alarm phase, (2) The adaptation phase, (3) The exhaustion phase. Depending on the severity and duration of stress the G.A.S. may be short or long, intense or mild. The G.A.S. may fail in any stage if the stress is overwhelming.

For example, upon initial exposure to sunlight the unadapted body's response would be somewhere between mild sunburn and fatal heat stroke (Stage 1). Given the opportunity to develop an adaptation, Stage 2 would present as suntan and amazing tolerance to the sun. Stage 3 is the eventual failure to maintain adaptation -- either acutely from excessive exposure (as when totally unprotected in the desert) or much later, perhaps long after the suntan has disappeared, by skin cancer.

In addition to the concept of the G.A.S., Dr. Selye demonstrated that the primary mechanism of the body's stress reaction resides in the adrenal gland. All in all, a monumental piece of work!

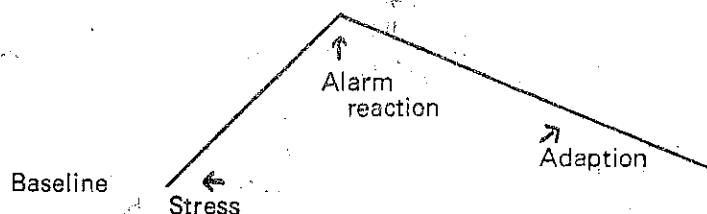
By the very nature of things, doctors tend to see patients in either Stage 1 or Stage 3. The relationship between the stress and the Stage 1 (alarm) reaction may be obvious. However, in many instances the Stage 3 patient would seem to have no relationship between his adaptive failure and his complaints. The allergy sensitive patient in particular presents this problem, for he has often lived for years in adaptation with this stress (es) and when such adaptation begins to fail nothing "new" can be found to account for the allergy.

The normally functioning body tends to maintain its internal environment in a steady state. ("homeostasis"). All physicians utilize this idea dozens of times a day -- every assessment of temperature, pulse, respiration and blood pressure is a check on homeostatic mechanisms. All of the hundreds of blood, urine, spinal fluid and other chemical analyses are compared with "normal limits" to evaluate any problem in maintenance of health. However, some major pitfalls exist here. The "normal" standards represent a statistical phenomenon. When statistics are interpreted by a computer (or computer-like minds!) such results are black or white but never gray. We cannot forget that patients are people and people are individuals -- what is normal for one, or a hundred, may not be normal for another. But the principle of homeostasis is true for all of us. Each body has its own settings but the need for controls is universal.

In general, the most accurate tests of body functions do not rely on single determinations but rather they challenge the body's homeostatic mechanisms: the ability to respond to an outside disturbance of body equilibrium -- a stress -- and neutralize it.

How long does it take the heart to return to its normal resting rate after twenty vigorous jumps? (Can the patient make twenty vigorous jumps?) If the patient is pushed off balance, does he regain his equilibrium in one step (like an athlete), or does he stumble across the room (like a drunk), or does he fall down (like an invalid). These are dynamic tests and give more information than testing the heart at rest, or observing the patient standing still.

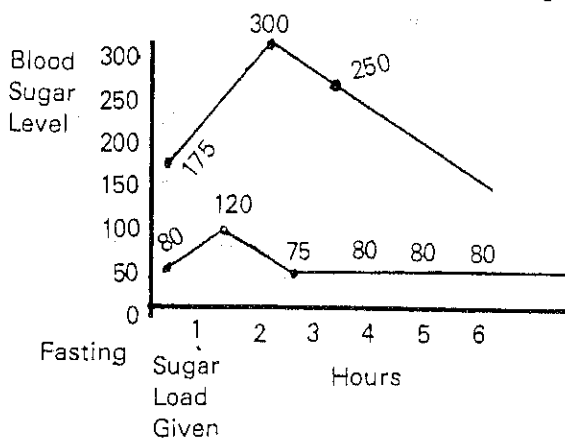
In general, if we make a graph of a dynamic test, it looks like this:



This is the typical reaction to a simple stress, not continued. For example, chart of heart rate before and after twenty jumps. How rapid and high the peak is and how prompt the return to baseline are the criteria of judgement for ability to adapt.

The Glucose Tolerance Test (G.T.T.) was originally designed to determine the presence of diabetes (a disease characterized by elevated blood sugar) and it remains today the most widely used method of diabetes diagnosis. In the standard G.T.T. the fasting blood sugar (F.B.S.) is measured and the patient is then given a measured quantity of glucose (body sugar) according to height and weight. A series of determinations of blood sugar over the next three hours is interpreted to confirm or exclude diabetes. To this date the greatest diabetes specialists in the world are unable to agree on precisely what constitutes the earliest "diabetic" response!

(Everyone can agree on the classical diabetic picture -- see graph below -- but where is the dividing line?)



Curve of classical Diabetes Mellitus  
Normal (Ideal) including "over correction"

Even more unfortunate, however, is the failure to continue the test for more than three hours.

Although no further information about diabetes is revealed, prolongation of the test gives much additional insight into the body's regulatory mechanism, and since, in the case of glucose regulation, the adrenal gland is of great importance, additional determinations up to six or more hours may give an evaluation of the entire body's potential resistance to stress. Significant hypoglycemia (low blood sugar) is an indication of failure of the body to maintain homeostasis. In the case of blood sugar, the most important implication is failure of fuel supplied to the Central Nervous System (C.N.S.)--the brain and spinal cord. Without fuel, these organs cannot function and without them there is no life! Therefore, the threat of too low a blood sugar level is a major emergency in body mechanics and the body always compensates. Yet, the promptness and

degree of control can give important clues to actual or potential homeostatic failure. On the other hand what is "significant" hypoglycemia? If the world's foremost diabetologists cannot agree on how high is up how can we expect agreement on the opposite end? Most low blood sugar occurs as an over-reaction of the body's correction mechanism (see graph). A certain amount of such over-correction must be considered tolerable, for we should not demand perfection. Unfortunately, most doctors have been taught that a particular level of blood sugar is the dividing point. Even if all schools and teachers were to agree on that level, it would be arbitrary and capricious; but when, as now, each authority quotes a different level it becomes painfully absurd! I feel that the only realistic method of judgement is by an overall view of the dynamic picture. We must allow for individual variation in baseline levels. If we accept the generally quoted spread of 45 points in the "normal range" of F.B.S. (from 65-110) as a manifestation of different requirements of different bodies, how can we possibly speak of 45, 50, 55, 62½, or any single point as the level of low blood sugar? Again, any group of doctors will agree that 25 is low blood sugar, but any doctor that insists on one specific level is thinking like a computer, in black and white for his gray patient.

What accounts for the tremendous variation in individual tolerance to stress? Certainly heredity is of great importance but we ignore it for it is beyond our present ability to modify. The second greatest factor is the environment, and the most important aspect of this is nutrition. There are only three types of food available: those that are essential and healthful, those that are toxic, and those that are not necessary but also not toxic. There is really little argument about most of the foods in the essential category. (Essential amino acids from protein, essential fatty acids, vitamins, minerals, water and an adequate supply of oxygen.) Technology has created a host of new "foods" that are man-made of the century and which are, therefore, foreign to the body's internal environment. This "chemical feast" has economics as its main reason for existence, not nutrition! Our bodies were designed to use foods of a wide variety as found in nature--to supply building materials for growth and repair as well as fuel for energy. In this century we have seen a marked decrease in the body's daily requirement for energy as a result of industrial technology and labor-saving devices. We must, thus, reduce our intake of calories (energy) while we maintain our intake of essential nutrient substances to insure continued tissue and organ integrity throughout the body. This requires that the nutritional content of the food we eat be of higher quality and more concentrated in relation to the calorie content; yet, analysis of our food supply often shows just the reverse! The ratio of protein to calories has decreased in farm produce such as wheat, and this inferior grade of wheat is processed

in such a way as to remove at least sixteen known nutrient substances to "prevent spoilage" AND IS THEN "enriched" with four synthetic "nutrients"; the resulting flour is then processed into bread with the "legal" addition of an unbelievable number of modern chemical additives to further "retard spoilage," "enhance flavor," "improve consistency" and, unfortunately, increase the body's load of foreign, non-nutritive materials which must be deactivated and excreted -- by processes that use up some of the precious few nutrients. Present-day farming methods have greatly increased the yield of bushel per acre of fruits and vegetables, but the quality has suffered in many instances and is further compounded by pesticides and preservatives which cannot be seen or removed. Our livestock are also fed on this devitalized and chemicalized produce and the quality of nutrition in milk, butter, beef, pork, etc., is also decreasing although greater quantities are being turned out. Bigger need not mean better!

The fall of bread from its position as "the Staff of Life" has been accompanied by two other major changes in dietary habits which are having serious repercussions in world health: the enormous increase in consumption of sugar (a classic example of calories without nutrition) and the ubiquitous processing of oil and "shortenings," along with the increased percentage of fats in the diet.

In less than 100 years the human body's ability to adapt has been stressed to exhaustion by the avalanche of sugar. In general, nature's carbohydrates (starches and sugars) are found complete with vitamins and minerals essential to metabolism, (energy turnover) and in a form which requires digestion before absorption. Our present-day refined sugars have no nutritional value other than calories, and are absorbed without complicated digestion processes, so rapidly that the homeostatic mechanisms are overwhelmed.

Fats and oils were a problem in "olden times." The lack of refrigeration facilities severely limited the permissible length of time between preparation and use, because natural fats become rancid -- a manifestation of chemical reactivity. This "problem" had a built-in solution: the use of freshly prepared food. With technology an alternative answer was developed: hydrogenation. This idea is simple -- by changing the chemically active locations on the fat molecules to an inactive form, rancidity is prevented, and the addition of antioxidants -- such as BHT and BHA -- covers the few remaining areas that slip by the processing. By such "advances" in food technology, we are simultaneously deprived of the essential fatty acids (which are the chemically more reactive ones) and are subjected to new toxic substances.

Cholesterol is a fatty substance with a myriad of essential functions in the body. Excess amounts of

cholesterol accumulate in the body with degenerative diseases, such as arteriosclerosis. This observation has led to the erroneous conclusion that cholesterol in the diet was the cause of the degeneration. (That's like blaming an automobile's black spark plugs on dirty gasoline, when it's more likely from a clogged filter, poor carburation, poor timing, etc.) The healthy body needs and uses cholesterol and combines it with essential fatty acids into esters. If healthy fatty acids are not present, unwholesome cholesterol esters result.

I have attempted to present a rational explanation for the alarming increase in the number of patients who "just don't feel right," without complaining of a specific SYMPTOM COMPLEX. (A "Disease".) These are the people who are categorized as "neurotic" because no disease can be found to explain their complaints. It includes a large number of "overactive" children with "school problems," most of the "tired housewives" and "antisocial" people who fall asleep at parties or in the middle of a lecture at school, as well as the chronic headaches, muscle pains and multiple other symptoms listed in Section 1.

I feel it would be unfair to close without making some specific recommendations for preventing (ideally) or alleviating this problem, but I will confine myself to some generalities (several categories overlap):

(1) Avoid any processed food, when possible. The worst offenders are the "pure white" -- sugar, flour, shortening and anything that contains them in any form. (See #6)

(2) Avoid any chemical additives when possible including "certified" artificial food colors, antioxidants, stabilizers, emulsifiers, preservatives, etc.

(3) Beware of any food that does not spoil! Use only fresh meat, vegetables, fruit, fish, when possible. Healthy food is food that does spoil and in a short time -- obtain it fresh and eat it before it spoils. Nuts and seeds are nature's packaging of the spark of life and are generally healthy unless repackaged.

(4) Avoid "convenience" foods when possible. They represent food technology at its finest, nutrition at its worst at a high cost (examples: TV dinners, frozen appetizers, cake mixes, ready-to-serve, "just add water," etc.)

(5) If you must use frozen foods be sure to use the fluid released in thawing.

(6) READ EVERY LABEL FOR INGREDIENTS -- remember they are listed by percentage -- greatest quantity first. Pay particular attention to the first four ingredients listed. (Warning words include: hardened, hydrogenated, saturated vegetable oil or shortening, corn syrup, sugar, emulsifiers, stabilizers, brominated oils, coloring, etc.)

- (7) Avoid stimulant drugs when possible -- caffeine, alcohol, nicotine.
- (8) The only healthy drinks are pure water, fresh-squeezed juices, herbal teas and milk, preferably raw (many people cannot drink milk). Soft drinks are addicting and unhealthy.
- (9) Breakfast is all important -- change your eating habits! A good breakfast includes at least 4 oz. of high-quality protein -- meat, fish, poultry or cheese alone or 2 oz. plus two eggs.
- (10) Nibble frequently during the day -- nuts, seeds, fruit and cheese or other protein small quantities!
- (11) Use a wide variety of vegetables raw or lightly steamed.
- (12) Take a broad non-synthetic vitamin-mineral supplement. I believe that even with all these rules a little insurance is a good idea -- the body will discard

- any excess.
- (13) Take two teaspoons of cold pressed oil (uncooked) each day. Rotate among Safflower, Peanut, Olive, etc. Avoid cottonseed and coconut oils. Use on salad or "straight." Keep refrigerated!
- (14) Two specific vitamins are indicated in larger doses than ordinarily considered. Vitamin E is important because of the recommended oil ("poly-unsaturates" need Vitamin E!) and Vitamin C is going to be recognized ultimately as safe and essential in large doses. Specifically - 500 mg. of Vitamin C three times a day and 100 units of Vitamin E daily.
- (15) Exercise actively and regularly. There are many more details to healthy living, but the suggestions above could make a difference within a matter of weeks. Try it--you'll like it!



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We have now had this program for over 10 years, but this policy still represents an early endeavor. We have found it to be of value to many of our patients. If it ever becomes a part of your life, we will be glad to provide you with a list of our members. We will be glad to provide you with a list of our members. We will be glad to provide you with a list of our members.

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