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# Enzyme Nutrition

## Review by Robert W. Avery

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Oh, you'd love Dr. Howell! I did. For me, anyway, he put the whole business of raw foods and calorie-restriction on a sound theoretical scientific basis. He wrote a 700p book, "*Enzyme Nutrition*," I think it was called, replete with scientific references and footnotes, but i haven't been able to track it down yet. Few copies were printed and fewer survive. However, Viktoras Kulvinskas resurrected his work and had a 200p abridgment published under the title "Food Enzymes for Health and Longevity," and it retains footnotes. There is also another version by Avery publishers (no relation) called "*Enzyme Nutrition*," which seems to be a similar abridgment without the footnotes. I'll bet Kulvinskas has the original, but he seems to be guarding it for whatever reason. At least, he ignored my requests on how to obtain it.

Anyway, Dr. Howell's basic theoretical paradigm, which he buttresses with numerous scientific studies, is that the mysterious thing we call nerve energy (or chi, or prana, ...) is equivalent to what Howell calls enzyme manufacturing potential (let's call it EP). The body has upwards of 100,000 enzymes in production, but the energy that produces these things is of a finite inherited quantity. The process of aging is merely a gradual using up of the body's enzyme potential. Further, the body maintains a pool of readily available enzyme stores that it is able to use to transmute its enzymes from one type to another --- digestive to metabolic to whatever. The point for raw foods and CR is this: every time we eat, the body must use up some of its EP and enzyme stores in processing the food. The less food eaten, the less EP gets used up (or it gets used in more productive ways, like healing chronic ailments, and so forth). Raw foods contain self-digesting enzymes which are highly active at physiological temperatures and do a great deal of pre-digesting of the food in the first 30-45 minutes it sits in our stomach before these are broken down in turn by our digestive juices.

A way he suggests looking at it is like electricity. Electricity consists of flowing electrons, which can use any number of metallic and non-metallic substances as carriers. He likens enzyme energy to electricity. The 1000's of enzymes are really just protein carries of one special kind of energy that flows from one *enzyme* protein carrier to another. He suggests that in addition to the enzymes of raw food predigesting it

to some extent, the body may also be able to remove the energy packets from these plant enzymes before it digestively destroys the protein carriers and add them to its stores.

He identified the lymph system as the body's enzyme reservoir, in particular, the leukocytes. This explains why leukocytes are sent off to *battle* germ invaders --- they have most of the digestive power to absorb them. It also explains the well-known phenomenon of digestive leukocytosis that occurs in the small intestine when cooked food is eaten. The idea is that the body's normal supply of digestive secretions are maxed out by this food, so the reserves are rushed to the scene to help out.

You gotta read this one; you'd eat it right up! And, as i said, it would provide good ammunition to use in your pitched battle with the CR types.

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The abridged Howell is readily available. The footnoted version is called "*Food Enzymes for Health & Longevity*." Its ISBN is 0-941524-28-0. The 2nd Edition that I have was c1994. Any national chain store like Barnes & Noble could order it for you. Where do you live anyway?

However, his original book was published in 1946 (but written in 1939) under the title "*The Status of Food Enzymes in Digestion and Metabolism*." This may be the 700 page wonder that the Avery reprint refers to, and that's the one I'd love to get my hands on. If you find that one, let me know.

It sounds like Szent-Gyorgyi is more up-to-date and may have built on Howell's work (or maybe he discovered some of the same lines of thought independently).

Of course it takes more than ascorbic acid to nuke an invading organism. I mean, once you've zapped it, you've still got to haul off the carcass and digest it (admittedly, it self-digests to some degree).

Howell was still alive some time around 1980, but don't know what became of him after that. I think he was born around the turn of the century. Browsing his literature citations, I see no reference to Szent-Gyorgyi, but considering how old his is, one might not expect that anyway.

Sounds like Szent-Georgyi might be interesting reading too if he ever wrote anything in lay language. I've already read one *senile* biochemist (Pauling); may as well read another. Do you have any recommended books on bioenergetics? Has your study of it helped you in any discernible way?

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**HEALTH DISCOVERIES NEWSLETTER**

## Enzymes and Longevity

In an exclusive interview, food enzyme researcher Dr. Edward Howell tells why he believes:

*Enzymes may be the key factor in preventing chronic disease and extending the human lifespan.*

Dr. Edward Howell was born in Chicago in 1898. He is the holder of a limited medical license from the State of Illinois.

The holder of a limited practice license is required to pass the same medical examination as a medical doctor. Only surgery, obstetrics and materia medica are excluded.

After obtaining his license, Dr. Howell joined the professional staff of the Lindlahr Sanatorium, where he remained for six years. In 1930, he established a private facility for the treatment of chronic ailments by nutritional and physical methods.

Until he retired in 1970, Dr. Howell was busy in private practice three days each week. The balance of his time he devoted to various kinds of research.

Dr. Howell is the first researcher to recognize the importance of the enzymes in food to human nutrition. In 1946, he wrote the book, *The Status of Food Enzymes in Digestion and Metabolism*. Dr. Howell's forthcoming book is entitled, *Enzyme Diet*.

This book contains the reference and source materials for the enzyme theories which Dr. Howell has collectively called, *The Food Enzyme Concept*. The manuscript for *Enzyme Diet* reviews the scientific literature through 1973. It is approximately 160,000 words long and contains 47 tables and 695 references to the world's scientific literature.

In this interview, Dr. Howell tells: What enzymes are, what they do in our bodies, why he believes a state of enzyme deficiency stress exists in most people, and finally, what he believes you can do about it. "*Neither vitamins, minerals or hormones can do any work -- without enzymes.*"

HDN: What are enzymes?

HOWELL: Enzymes are substances which make life possible. They are needed for every chemical reaction in that occurs in our body. Without enzymes, no activity at all would take place. Neither vitamins, minerals, or hormones can do any work -- without enzymes.

Think of it this way: Enzymes are the *labor force* that builds your body just like construction workers are the labor force that builds your house. You may have all the necessary building materials and lumber, but to build a house you need workers, which represent the vital life element.

Similarly, you may have all the nutrients -- vitamins, proteins, minerals, etc., for your body, but you still need the enzymes -- the life element -- to keep the body alive and well.

HDN: Are enzymes then just like chemical catalysts which speed up various reactions?

HOWELL: No. Enzymes are much more than catalysts.

Catalysts are only inert substances. They possess none of the life energy we find in enzymes. For instance, enzymes give off a kind of radiation when they work. This is not true of catalysts.

In addition, although enzymes contain proteins -- and some contain vitamins -- the activity factor in enzymes has never been synthesized.

Moreover, there is no combination of proteins or any combination of amino acids or any other substance which will give enzyme activity. There are proteins present in enzymes. However, they serve only as carriers of the enzyme activity factors.

Therefore, we can say that enzymes consist of protein carriers charged with energy factors just as a battery consists of metallic plates charged with electrical energy.

HDN: Where do the enzymes in our bodies come from?

HOWELL: It seems that we inherit a certain enzyme potential at birth.

This limited supply of activity factors or life force must last us a lifetime. It's just as if you inherited a certain amount of money. If the movement is all one way -- all spending and no income -- you will run out of money.

Likewise, the faster you use up your supply of enzyme activity, the quicker you will run out.

Experiments at various universities have shown that, regardless of the species, the faster the metabolic rate, the shorter the lifespan.

Other things being equal, you live as long as your body has enzyme activity factors to make enzymes from. When it gets to the point that you can't make certain enzymes, then your life ends.

HDN: Do people do anything which causes them to waste their limited enzyme supply?

HOWELL: Yes. Just about every single person eats a diet of mainly cooked foods. Keep in mind that whenever a food is boiled at 212 degrees, the enzymes in it are 100% destroyed.

If enzymes were in the food we eat, they would do some or even a considerable part of the work of digestion by themselves. However, when you eat cooked, enzyme-free food, this forces the body itself to make the enzymes needed for digestion. This depletes the body's limited enzyme capacity.

HDN: How serious is this strain on our enzyme "bank" caused by diets of mostly cooked food?

HOWELL: I believe it's one of the paramount causes of premature aging and early death. I also believe it's the underlying cause of almost all degenerative disease.

To begin with, if the body is overburdened to supply many enzymes to the saliva, gastric juice, pancreatic juice and intestinal juice, then it must curtail the production of enzymes for other purposes. If this occurs, then how can the body also make enough enzymes to run the brain, heart, kidneys, lungs, muscles and other organs and tissues?

This *stealing* of enzymes from other parts of the body to service the digestive tract sets up a competition for enzymes among the various organ systems and tissues of the body.

The resulting metabolic dislocations may be the direct cause of cancer, coronary heart disease, diabetes, and many other chronic incurable diseases.

This state of enzyme deficiency stress exists in the majority of persons on the civilized, enzyme-free diet.

HDN: Did human disease begin when man started cooking his food?

HOWELL: This is what the evidence indicates.

For example, the Neanderthal Man of 50,000 years ago used fire extensively in his cooking. He lived in caves and ate mostly roasted meat from the continuous fires which warmed the caves. These statements are documented by scientific evidence in my published and unpublished works.

>From fossil evidences we know that the Neanderthal Man suffered from fully-developed crippling arthritis.

It's possible that the Neanderthal Man also had diabetes or cancer or kidney disease and so forth.

However, we'll never know since all soft tissues have disappeared without a trace.

Incidentally, another inhabitant of the caves was the cave bear. This creature protected the Neanderthal Man from the cave tiger, who also wanted the protection of the cave to avoid the frigid weather. The cave bear, according to paleontologists, was a partially domesticated animal and most likely lived on the same roasted meat that the cave man ate.

Like the cave man, the cave bear also suffered from chronic, deforming arthritis.

HDN: Isn't it possible that cold weather, not cooked food, was responsible for the arthritis of the Neanderthal Man?

HOWELL: No, I don't think weather had much to do with it. For example, consider the primitive Eskimo. He lived in an environment just as frigid as that of the Neanderthal Man. And yet, the Eskimo never suffered from arthritis and other chronic diseases.

However, the Eskimo ate large amounts of raw food. The meat he ate was only slightly heated and was raw in the center. Therefore, the Eskimo received a large quantity of food enzymes with every meal. In fact, the word Eskimo itself comes from an Indian expression which means, "*He who eats it raw.*" Incidentally, there is no tradition of medicine men among the Eskimo people. But among groups like the North American Indian, who ate cooked food extensively, the medicine man had a prominent position in the tribe.

HDN: What evidence is there that human beings suffer from food enzyme deficiency?

HOWELL: There's so much evidence that I can only briefly summarize a small fraction of it. Over the last 40 years, I have collected thousands of scientific documents to document my theories.

To begin with, human beings have the lowest levels of starch digesting enzymes in their blood of any creature. We also have the highest level of these enzymes in the urine, meaning that they are being used up faster.

There's other evidence showing that these low enzyme levels are not due to a peculiarity of our species. Instead, they are due to the large amounts of cooked starch we eat.

Also, we know that decreased enzyme levels are found in a number of chronic ailments, such as allergies, skin disease, and even serious diseases like diabetes and cancer.

In addition, incriminating evidence indicates that cooked, enzyme-free diets contribute to a pathological over-enlargement of the pituitary gland, which regulates the other glands. Furthermore, there is research

showing that almost 100% of the people over 50 dying from accidental causes were found to have defective pituitary glands.

Next, I believe that food enzyme deficiency is the cause of the exaggerated maturation of today's children and teenagers. It is also an important cause of overweight in many children and adults. Many animal experiments have shown that enzyme-deficient diets produce a much more rapid maturation than usual. Animals on cooked diets are also much heavier than their counterparts on raw diets .

Another piece of related evidence is that farmers use cooked potatoes to fatten pigs for market. They've found that pigs on cooked potatoes fatten faster and more economically than pigs on raw potatoes. This evidence shows the great difference between cooked calories and raw calories. Indeed, from my work in a sanitarium many years ago, I've found that it was impossible to get people fat on raw foods, regardless of the calorie intake.

Incidentally, another effect associated with food enzyme deficiency is that the size of the brain decreases. In addition, the thyroid overenlarges, even in the presence of adequate iodine. This has been shown in a number of species. Of course, you can't prove it on human beings. The evidence, however, is very suggestive.

HDN: What else is there?

HOWELL: Next, consider that the human pancreas is burdened with enzyme production far in excess of any creature living on a raw food diet. In fact, in proportion to body weight, the human pancreas is more than twice as heavy as that of a cow.

Human beings eat mainly cooked food, while cows eat raw grass.

Then, there is evidence that rats on a cooked diet have a pancreas about twice as heavy as rats on a raw diet.

Moreover, evidence shows that the human pancreas is one of the heaviest in the animal kingdom, when you adjust for total body weight.

This overenlargement of the human pancreas is just as dangerous -- probably even more so -- than an overenlargement of the heart, the thyroid and so on. The

overproduction of enzymes in humans is a pathological adaptation to a diet of enzyme-free foods.

The pancreas is not the only part of the body that oversecretes enzymes when the diet is cooked. In addition, there are the human salivary glands, which produce enzymes to a degree never found in wild animals on their natural foods.

In fact, some animals on a raw diet do not have any enzymes at all in their saliva. The cow and sheep produce torrents of saliva with no enzymes in it.

Dogs, for instance, also secrete no enzymes in their saliva when they're eating a raw diet. However, if you start giving them cooked starchy food, their salivary glands will start producing starch-digesting enzymes within 10 days.

In addition, there's more evidence that the enzymes in saliva represent a pathological and not a normal situation. To begin with, salivary enzymes cannot digest raw starch. This is something I demonstrated in the laboratory.

The enzymes in saliva will only attack a piece of starch once it's cooked. Therefore, we see that the body will channel some of its limited enzyme producing capacity into saliva only if it has to.

Incidentally, there is some provocative animal research which I have done in my own laboratory some years ago. If you'd like, I can explain it now for your readers.

HDN: Yes, please do.

HOWELL: I fed one group of rats a cooked diet and one group a raw diet and let them live out their lifespan to see which group would live longer.

The first group got a combination of raw meat and various raw vegetables and grains. The second group got the same foods boiled and therefore enzyme-free. I kept these rats until they died, which took about three years.

As the experiment came to a close, the results surprised me. It turned out that there was no great difference between the lifespans of the two groups. Later on, I discovered the reason.

It turned out that the rats on the cooked diet were still getting enzymes, but from an unexpected source. They had been eating their own feces, which contained the enzymes excreted from their own bodies. All feces, including those of human beings, contain the enzymes that the body has used. My rats had been recycling their own enzymes to use them over again. And that's why they lived as long as the rats on the raw diet.

Incidentally, the practice of eating feces is almost universal among today's laboratory animals. Although these animals receive scientific diets containing all known vitamins and minerals, the animals instinctively know they need enzymes. Because of this, they eat their own feces.

In fact, the animals on these scientific diets develop most of the chronic human degenerative diseases if they are allowed to live out their lifespans. This shows that vitamins and minerals alone are not sufficient for health.

HDN: How do you know that people would benefit from additional enzyme intake?

HOWELL: To me, the most impressive evidence that people need enzymes is what occurs as a result of therapeutic fasting. As you know, I spent some years in a sanitarium working with patients on various fasting programs.

When a person fasts, there is an immediate halt to the production of digestive enzymes. The enzymes in saliva, gastric juice and pancreatic juice dwindle and become scarce. During fasting, the body's enzymes are free to work on repairing and removing diseased tissues.

Civilized people eat such large quantities of cooked foods that their enzyme systems are kept busy digesting food. As a result, the body lacks the enzymes needed to maintain the tissues in good health. Most people who fast go through what is called a healing crisis. The patients may feel nausea, vomiting and dizziness. What's happening is that the enzymes are working to change the unhealthy structure of the body. The enzymes attack pathological tissues and break down undigested and unprocessed substances; and these then get thrown off through the bowels, through vomiting, or via the skin.

HDN: When people get enzymes from food, aren't they destroyed by stomach acid and therefore of little or no value?



HOWELL: This is not true. Although most nutritionists claim that enzymes in food are destroyed in the stomach, they overlook two important facts.

First of all, when you eat food, acid secretion is minimal for at least thirty minutes. As the food goes down the esophagus, it drops into the top portion of the stomach. This is called the cardiac section, since it's closer to the heart.

The rest of the stomach remains flat and closed while the cardiac section opens up to accommodate the food. During the time the food sits in the upper section, little acid or enzymes are secreted by the body. The enzymes in the food itself go about digesting the food. The more of this self-digestion that occurs, the less work the body has to do later.

When this 30 to 45 minute period is over, the bottom section of the stomach opens up and the body starts secreting acid and enzymes. Even at this point, the food enzymes are not inactivated until the acid level becomes prohibitive. You see, food enzymes can tolerate chemical environments many times more acid than neutral.

HDN: Do animals also have a special section of the stomach where food digests itself?

HOWELL: Absolutely. In fact, some creatures have what I call a food enzyme stomach.

There are the cheek pouches of monkeys and rodents, the crop of many species of birds, and the first stomachs of whales, dolphins and porpoises.

When birds, for instance, swallow seeds or grains, these grains lie in the crop for 8 to 12 hours. As they sit, they absorb moisture, swell up and begin to germinate. During germination, enzymes are formed which do the work of digesting the seeds and grains.

Whales, dolphins and porpoises have a first stomach which secretes no enzymes. Whales, for example, swallow large quantities of food without chewing it. The food simply decomposes and digests itself. In the flesh of the fish and other marine life the whale eats is an enzyme, called cathepsin, which breaks down the fish once it has died. In fact, this enzyme is present in almost all creatures.

After the whale's catch has liquefied itself, it passes through a small hole into the whale's second stomach.

It mystifies scientists how the whale's catch can get through that small hole into the second stomach.

They have no idea that self-digestion was at work.

HDN: Most -- if not all of us, eat lots of cooked foods every day. Can we make up for this enzyme loss by eating raw foods in addition?

HOWELL: No. Cooked foods cause such a large drain on our enzyme supply that you can't make it up by eating raw foods.

In addition, vegetables and fruits are not concentrated sources of enzymes. When produce ripens, enzymes are present to do the ripening. However, once the ripening is finished, some of the enzymes leave and go back into the stem and seeds.

For example, when companies want to get enzymes from papaya, a tropical fruit, they use the juice of unripe papaya. The ripe papaya itself has no great concentration of enzymes.

HDN: Are there any foods particularly high in enzymes?

HOWELL: Bananas, avocados and mangoes are good sources. In general, foods having a higher calorie content are richer in enzymes.

HDN: Do you recommend all raw foods as sources of enzymes?

HOWELL: No. There are some foods, seeds and nuts, that contain what are called enzyme inhibitors. These enzyme inhibitors are present for the protection of the seed. Nature doesn't want the seed to germinate prematurely and lose its life. It wants to make sure that the seed is present in soil with sufficient moisture to grow and continue the species.

Therefore, when you eat raw seeds or raw nuts, you are swallowing enzyme inhibitors which will neutralize some of the enzymes your body produces. In fact, eating foods with enzyme inhibitors causes a swelling of the pancreas.

All nuts and seeds contain these inhibitors. Raw peanuts, for example, contain an especially large amount. Raw wheat germ is also one of the worst offenders. In addition, all peas, beans and lentils contain some.

Potatoes, which are seeds, have enzyme inhibitors.

In eggs, which are also seeds, the inhibitor is contained mainly in the eggwhite.

As a general rule, enzyme inhibitors are confined to the seed portions of food. For instance, the eyes of potatoes. The inhibitors are not present in the fleshy portions of fruits or in the leaves and stems of vegetables.

There are two ways to destroy enzyme inhibitors. The first is cooking; however, this also destroys the enzymes. The second way, which is preferable, is sprouting. This destroys the enzyme inhibitors and also increases the enzyme content from a factor of 3 to 6.

Some foods, like soybeans, must be especially well heated to destroy the inhibitors. For example, many of the soy flours and powders on the market were not heated enough to destroy the inhibitors.

There is one other way to neutralize enzyme inhibitors, but we'll get to it in just a minute.

HDN: You said that it's not possible to overcome the enzyme drain of cooked foods just by eating other raw foods. What then can people do?

HOWELL: The only solution is to take capsules of concentrated plant enzymes.

In the absence of contraindications, you should take from 1 to 3 capsules per meal. Of course, if you are eating all raw foods, then no enzymes will be necessary at that meal.

The capsules should be opened and sprinkled on the food or chewed with the meal. This way, the enzymes can go to work immediately. Incidentally, taking extra enzymes is the third way to neutralize the enzyme inhibitors in unsprouted seeds and nuts.

Concentrates of plant enzymes or fungus enzymes are better for predigestion of food than tablets of pancreatic enzymes. This is because plant enzymes can work in the acidity of the stomach, whereas pancreatic enzymes only work best in the alkalinity of the small intestine.

If the enzyme tablet has an enteric coating, then it's not suitable, since it will only release after it has

passed the stomach. By this time, it's too late for food predigestion. The body itself has already used its own enzymes to digest the food.

HDN: Would people benefit from taking enzymes, even if they have no problem with digestion or if they eat mainly raw foods?

HOWELL: They probably would benefit. Our bodies use up enzymes in so many ways that it pays to maintain your enzyme bank, regardless of what you eat.

For example, enzymes are used up faster during certain illnesses, during extremely hot or cold weather, and during strenuous exercise.

Also, keep in mind that any enzymes that are taken are not wasted since they add to the enzyme pool of your body.

Furthermore, as we pass our prime, the amount of enzymes in our bodies and excreted in our sweat and urine continues to decline until we die. In fact, low enzyme levels are associated with old age and chronic disease.

So far, there's not much hard evidence on whether taking additional enzymes will extend the lifespan. However, we do know that laboratory rats that eat raw foods will live about 3 years. Rats that eat enzymeless chow diets will live only 2 years. Thus, we see that diets deficient in enzymes cause a 30% reduction in lifespan.

If this held true for human beings, it may mean that people could extend their lifespans by 20 or more years -- just by maintaining proper enzyme levels.

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Editor's Note: While not much in the way of evidence, Dr. Howell and his wife Evangeline can be offered as examples of the benefits of taking enzymes. She looks about twenty years younger than her age. And Dr. Howell, though well over 70, feels as alert and vital as 30 years ago. He still goes jogging frequently.


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