

Enzymes: Part 1 of 3

Jon Barron

In today's newsletter, I'm going to talk about enzymes in general (this allows me to steal a lot of material from my book, *Lessons from the Miracle Doctors*). In the next two parts of this series, I'll specifically cover digestive enzymes (including a discussion of the role hydrochloric acid and bile play in the digestive process), and I'll cover proteolytic enzymes (including the "hot" enzymes "de jour", serrapeptase, nattokinase, and Seaprose-S). Although at first glance similar (and often used interchangeably), digestive enzymes and proteolytic enzymes are, in fact, very different in formulation, purpose, use, and effect. But before we get down to that level of detail, let's talk about enzymes in general.

Enzymes are proteins that facilitate chemical reactions in living organisms. In fact, they are required for every single chemical action that takes place in your body. All of your tissues, muscles, bones, organs, and cells are run by enzymes.

Your digestive system, immune system, blood stream, liver, kidneys, spleen, and pancreas, as well as your ability to see, think, feel, and breathe, (in fact, the very functioning of each and every cell in your body) all depend on enzymes. All of the minerals and vitamins you eat and all of the hormones your body produces need enzymes in order to work properly. In fact, every single metabolic function in your body is governed by enzymes. Your stamina, your energy level, your ability to utilize vitamins and minerals, your immune system—all governed by enzymes.

But where do enzymes come from? As it happens, they are produced internally (in every cell in your body, but most notably in the pancreas and the other endocrine glands), and they are present in all of the raw foods that we eat. At birth, we are endowed with a certain potential for manufacturing enzymes in our bodies, an enzyme "reserve," if you will. Nature intended that we continually replenish that reserve through proper nutrition and eating habits. Unfortunately, that just doesn't happen. Let's take a look at why.

Most people believe that when you eat a meal it drops into a pool of stomach acid, where it's broken down, then goes into the small intestine to have nutrients taken out, and then into the colon to be passed out of the body—if you're lucky. Not quite.

What nature intended is that you eat enzyme rich foods and chew your food properly. If you did that, the food would enter the stomach laced with digestive enzymes. These enzymes would then "predigest" your food for about an hour—actually breaking down as much as 75% of your meal.

After this period of "pre-digestion," hydrochloric acid is introduced. The acid inactivates all of the food-based enzymes, but begins its own function of breaking down what is left of the meal. Eventually, this nutrient-rich food concentrate moves on into the small intestine. Once this concentrate enters the small intestine, the acid is neutralized and the pancreas reintroduces digestive enzymes to the process. As digestion is completed, nutrients are passed through the intestinal wall and into the blood stream.

That's what nature intended. Unfortunately, most of us don't live our lives as nature intended!

Processing and cooking destroy enzymes in food. (Man is the only animal that cooks his food.) In fact, any sustained heat of approximately 1180-1290 F destroys virtually all enzymes. This means that, for most of us, the food entering our stomachs is severely enzyme deficient. Actually, there are enzymes present from our saliva. The amount, however, is minuscule since we only chew our food about 25% as much as is required. The result is that most of our meals enter our stomachs woefully devoid of enzymes. (It's worth noting that the body tries desperately to compensate. Amylase levels in the saliva of people eating the typical western cooked/processed diet are as much as 40 times higher than that found in people eating a more natural diet. (The enzyme

amylase is used by the body for digesting carbohydrates.)

Since there are no enzymes in the food, it sits in the stomach for an hour, like a heavy lump, with very little pre-digestion taking place. At that point, stomach acid is introduced at high levels to compensate for the lack of pre-digestion (a major factor in the onset of acid reflux disease). But high levels of stomach acid cannot compensate for the lack of pre-digestion. So even after the stomach acid has done its work, the typical cooked/processed meal enters the small intestine largely undigested.

At this point, the pancreas and the other organs of the endocrine system are put under tremendous stress since they have to draw reserves from the entire body in order to produce massive amounts of the proper enzymes. The less digestion that takes place before food reaches the small intestine, the greater the stress placed on the endocrine systems. Recent studies have shown that virtually 100% of people on the typical “western” diet have an enlarged pancreas by the time they are 40. Is it any wonder that the incidence of diabetes is exploding in the developed world?

There is also major research showing that enzyme deficient diets contribute to a pathological enlargement of the pituitary gland (That's the gland that regulates all the other glands in the body.) And there is research showing that almost 100% of people over 50 who die from "accidental" causes have defective pituitary glands.

The bottom line is that regular supplementation with digestive enzymes takes stress off the pancreas (and the entire body) by providing the enzymes required for digestion. In other words, digestive enzyme supplements may just be one of the best insurance policies you can give your body so you can enjoy a long and healthy life.

In the next part of this series, we will look at digestive enzymes in more detail – and give you guidelines on how to choose the optimum formulation. (Don't be suckered by enzymes that crank up protease numbers to “look” more powerful than competitive brands – unless you're a lion, or on the “steak lover's diet. Such enzymes will only marginally effective for most people. The simple fact is that you have to choose a formula designed for real world diets. Benefits from using supplemental digestive enzymes can include:

A significant reduction in indigestion and heartburn problems resulting from too much acid in the stomach.

Relief from gas and bloating.

Improved digestion of dairy products.

Diminished food allergies due to more complete protein digestion.

An increase in energy levels.

Relief from hiatal hernias.

Relief from ulcers

And then in the last part, we'll cover the most exciting topic in enzyme supplementation, the use of high levels of proteolytic enzymes between meals. The health benefits derived from this kind of supplementation can be truly extraordinary. Benefits from using proteolytic enzymes can include:

Reduced inflammation for, among other things

Increased heart health

Cancer prevention and recovery

Alzheimer's prevention

Cleanse the blood of debris

Dissolve fibrin in the blood, reducing the risk of clots

Raise the immune system

Kill bacteria and viruses

Improved circulation
Eliminate autoimmune diseases
Speed up recovery from sprains, strains, fractures, bruises, contusions, and surgery
Help with MS
Help with arthritis
Help with sinusitis and asthma
Dissolve scar tissue
Aid in detoxing
etc.

The possibilities offered by proper supplementation with proteolytic enzymes are obviously very exciting. But even more exciting, a brand new breakthrough product is being released in a few weeks that makes the potential even more exciting, and I'll be covering that breakthrough product in Part 3 of the series.

Enzymes: Part 2 of 3

Jon Barron

There are several hundred digestive enzyme formulas on the market. Unfortunately, the vast majority of them aren't even worth the cost of the bottles they are packaged in. Today, I want to give you the tools to separate the wheat from the chaff when it comes to those formulas. Those tools center around your ability to identify:

Watered down formulas
Actual enzyme activity
Why the "My protease is bigger than your protease" game is useless
The importance of pH ranges in designing a formula
What about enteric coating
Animal sourced enzymes VS vegetarian sourced enzymes
Whether or not your formula is designed for the real world
How to use an enzyme formula
The importance of HCL -- and where it belongs
Dual action formulas VS dedicated formulas
Watered down formulas

All too often, nutritional formulas are designed by people who get their "expertise" from books, not real world experience. This makes for formulas that may look good on paper, but make no sense in the real world. Examples include formulas that contain 30 ingredients stuffed into a 500 mg capsule. On paper, it gives companies bragging rights to all of these great ingredients in their formula, which some people think is a good thing. But the reality is that if all the ingredients are equal in the formula, that means 16.7 thousandths of a gram of each ingredient is present. In fact, the reality is usually worse, with the first few ingredients getting more and the rest getting as little as 4, or even 2, thousandths of a gram. Incidentally, a full gram is only 1/28 of an ounce. When you get down to 2, 4, or even 16.7 thousandths of a gram, you're talking pixie dust levels for a given ingredient.

So what does this have to do with digestive enzymes? Well, it's hard enough to stuff all of the enzyme activity you need into a 500 mg capsule, even packing it full to the brim with the highest quality enzymes. And yet, so many enzyme formulas, stuff their enzyme capsules with more herbs than enzymes because it looks good on the label. For example, I went on the net and randomly pulled up a major selling enzyme formula. It has just a little over 100 mg of enzymes in each capsule. It has 300 mg of herbs (nothing wrong with them except for the fact they have nothing to do with the purpose of the formula) and 100 mg of fillers. That means that with this formula, it will take you 5 capsules to get the enzyme activity you would get from just one properly designed capsule.

Actual enzyme activity

And that brings up another issue -- enzyme activity. Be suspicious of any enzyme formula that lists the mgs of enzymes present as opposed to the activity level of each enzyme in the formula. Activity level is what you're after. Two batches of the same enzyme of equal weight can have wildly different activity levels. The bottom line is that when it comes to enzymes, weight measurements are just not useful and can be downright misleading, as there is no direct relationship between weight and units of activity. In fact, an enzyme can still have a weight even if it has been destroyed and has zero activity. When comparing enzymes, if you want an apples to apples comparison, you need to compare activity levels.

The internationally recognized and accepted standard for measurement is by Food Chemical Codex (FCC) Units. This is usually expressed in different activity units for each type of enzyme, as in:

Protease - HUTs (Hemoglobin units, tyrosine basis)

Amylase - SKB (named after the creators of the test Sandstedt, Kneen, and Blish) or DU (used in the brewing industry)

Lipase - LU

etc.

My protease is bigger than your protease

The hot game in enzyme formulas right now is comparison tables so you can see that brand A has more protease than brand B or C. This is not necessarily useless, but it is marginal. It ignores a number of factors

First of all, unless you are on a "meat lover's diet", you need far less protease than most of these formulas contain.

On the other hand, you need more amylase and more lactase if you want a formula designed for the way most people eat.

And high HUT numbers for protease, provide an incomplete picture. Unless the formula also contains a significant amount of acid stable protease, you will find that your supplement just doesn't work as well as expected.

So what numbers should you look for?

Protease: A minimum of 33,000 HUT should be adequate for most meals. (Remember, you can always take a second or third capsule for meals that require it.)

Acid stable protease: 1,000 SAPU would be great. Most formulas have none at all.

Lipase: 5,000 LU is adequate

Amylase: Look for 12,000 SKB

Lactase: 1,500 LACU is the minimum with 2,000 or even 2,500 being better

Look for a variety of other enzymes such as Malt diastase, Invertase, Glucoamylase, Cellulase, and Hemicellulase

And look for Alpha galactosidase to help control gas

Whether or not your formula is designed for the real world

This ties into what we've just talked about. Extremely high protease numbers do not reflect the average "western" diet -- a diet high in carbohydrates, fats, and dairy products. Even people who try and avoid these items often find them sneaking in unbeknownst to them. For example, if you eat out at restaurants, you find dairy used in soups, sauces, and pastas. Formulas need to be designed for the way you eat, not for "ideal" diets or to help manufacturers win bragging contests in advertising comparison tables.

pH ranges in which a formula works

We've already talked a little about the importance of pH ranges for proteases, but this is so important, let's cover it in a little more detail.

Most people believe that when you eat a meal it drops into a pool of stomach acid, where it's broken down, then goes into the small intestine to have nutrients taken out, and then into the

colon to be passed out of the body. Not quite.

What nature intended is that you eat enzyme rich foods and chew your food properly. If you did that, the food would enter the stomach laced with digestive enzymes. These enzymes would then "predigest" your food for about an hour -- actually breaking down as much as 75% of your meal.

After this period of "predigestion," hydrochloric acid and pepsin are introduced. The acid inactivates all of the food-based enzymes (except the acid stable enzymes), but begins its own function of breaking down what is left of the meal. Eventually, this nutrient-rich food concentrate moves on into the small intestine. Once this concentrate enters the small intestine, the acid is neutralized and the pancreas reintroduces digestive enzymes to the process. As digestion is completed, nutrients are passed through the intestinal wall and into the blood stream.

That's what nature intended. Unfortunately, most of us don't live our lives as nature intended! Processing and cooking destroy enzymes in food. This means that, for most of us, the food entering our stomachs is severely enzyme deficient.

At first, the food sits there for an hour, like a heavy lump, with very little predigestion taking place. Even after the stomach acid has done its work, the meal enters the small intestine largely undigested. But gradually, we train our body's to respond more and more quickly with ever increasing amounts of stomach acid in an attempt to compensate for the lack of predigestion. The consequences are:

Acid reflux which is caused by the high levels of acid introduced too early in the process and splashing up into the esophagus. Oftentimes, the mere act of using digestive enzymes can eliminate acid reflux. Note while the use of prescription and over the counter acid reflux drugs may help alleviate the symptoms of acid reflux, they significantly aggravate the following three problems.

Incomplete digestion. High levels of stomach acid cannot adequately overcome the lack of predigestion. That means that food is only partially digested, which means that many proteins that are not sufficiently broken down enter the blood stream causing allergic and autoimmune problems. Another problem is chronic indigestion. Acid reflux drugs which reduce the amount of stomach acid make this problem even worse.

Eventually, you blow out the ability of your stomach to produce sufficient stomach acid, which means incomplete digestion. A common condition in the elderly. Again, if you use drugs that artificially suppress your stomach's acid making abilities, you eventually kill its ability to produce stomach acid.

Malnutrition. Incomplete digestion means that you don't get the nutrient value from your meal. A common condition in the elderly. Again, aggravated by the use of acid reflux medications.

Enteric Coating

Since it is known that digestive enzymes don't mix with stomach acid, some formulators enteric coat their digestive enzymes. But this is counterproductive -- the result of book learned theory, not real world experience. If the enzymes are enteric coated, they won't begin working until they reach the intestinal tract. This is a good thing for proteolytic enzymes, but not digestive enzymes. The primary role of digestive enzymes is to work in predigestion. If the enzymes are enteric coated, that is an impossibility.

Animal VS Vegetable

Experience shows that vegetarian based enzymes are a better bet than animal based enzymes

Their activity levels are more consistent

They are less likely to be contaminated with pesticides and xenoestrogens

They are less likely to contain prions -- a concern relative to mad cow disease

How to use an enzyme formula

So how many enzymes should you take? Well, that depends on the strength of your formula and

the size of your meal. If one capsule works for most of your meals, you may find you need to take 2 when you overindulge, or 4 on Thanksgiving.

And when do you take your enzymes? I've seen instructions that recommend taking enzymes after you eat your meal, but that makes no sense. The moment dead food enters the stomach, your body recognizes that it has no enzymes and starts pumping in stomach acid. If you have your enzymes after eating your meal, they will be rendered inactive by the stomach acid being pumped in and provide much less benefit -- at least until they are reactivated by the alkaline environment of the intestinal tract, but by then much of their value will be gone. On the other hand, if you take them too soon, they will clear the stomach and be absorbed into your bloodstream before they have a chance to help digest your food. The simple answer is to take them just before you start eating. This sends a signal to your body that enzymes are present and begins to train your body to hold back on the stomach acid for the 40-60 minutes that nature intended

And if you forget to take your enzymes before you start eating, they can still be of use after you eat -- depending on the size of the meal and how heavy it is, and if your formula contains acid stable protease. In fact, you may find that you can still get great benefit taking enzymes 3-4 hours after eating a large heavy meat, starch, and fat meal -- you know, the kind that sits in the stomach like a giant piece of lead for for three days!

HCL

Some enzyme formulas like to include HCL (stomach acid) in the form of Betaine Hydrochloride to aid in digestion. But for the reasons that we've just talked about, this does not make sense. Taking Betaine HCL with your enzyme supplement (or as part of it) creates an acid environment too soon in the digestive process. The bottom line is that for those who need supplemental HCL (a significant percentage of the elderly), it should be taken as a separate supplement 40-60 minutes after you finish eating.

Dual action formulas

It is possible to use digestive enzymes as systemic proteolytic enzymes (enzymes designed to clean out the bloodstream and body, and which are taken without food so they go into the bloodstream). In fact, for years I designed enzyme formulas in this way. It's convenient, and it does work. The problem is that you have to compromise your formula to do this. A capsule can only hold so much. If you beef up the protease to accommodate the proteolytic functions, you have to back off from the other digestive enzymes. But if you make the formula a full spectrum digestive enzyme formula, you have to cut back on the proteases, or at least the ability of the proteases to work in a wide range of pHs. In the end, you get much more effective formulas if you split them in two and design your digestive enzymes as pure digestive enzymes and your proteolytics as a pure proteolytic formula.

In our next issue, I'm going to talk about proteolytic enzyme formulas. A good proteolytic formula can make a profound difference in the state of your health. I'll also talk briefly about the release of what I consider one of the most important formulas that I've been involved with in the last five years -- the strongest proteolytic formula available in the world today.

Enzymes: Part 3 of 3

Jon Barron

In order to understand proteolytic enzymes, it's important to once again (at the risk of repeating myself) touch on what enzymes are.

Enzymes are proteins that facilitate chemical reactions in living organisms. In fact, they are required for every single chemical action that takes place in your body. All of your tissues,

muscles, bones, organs, and cells are run by enzymes.

Your digestive system, immune system, bloodstream, liver, kidneys, spleen, and pancreas, as well as your ability to see, think, feel, and breathe, (in fact, the very functioning of each and every cell in your body) all depend on enzymes. All of the minerals and vitamins you eat and all of the hormones your body produces need enzymes in order to work properly. In fact, every single metabolic function in your body is governed by enzymes. Your stamina, your energy level, your ability to utilize vitamins and minerals, your immune system -- all governed by enzymes.

The vast majority of metabolic enzymes in the body -- the enzymes that regulate everything from liver function to the immune system -- are proteases, or proteolytic enzymes -- enzymes that regulate protein function in the body.

When we continually eat foods that are enzyme dead (cooked or processed), we force the body to divert its production of enzymes away from proteolytic enzymes designed to govern metabolic functions into proteolytic enzymes designed to break down dead proteins in our diets. The health consequences of this diversion are enormous. Conversely, the health benefits of supplementing with proteolytic enzymes are profound. And by supplementing, I mean

Supplementing with "digestive" proteolytic enzymes at meals to ease the burden on the body so that it no longer has to divert its resources

And supplementing with "special" proteolytic enzymes between meals so that the enzymes can enter the bloodstream and augment the proteolytic functions of our metabolic enzymes.

It is possible to use good quality digestive enzymes for both functions and receive a significant amount of benefit. (I have formulated enzymes that way for years.) But it is far more beneficial to use formulas that are optimized for each particular function. With that in mind, I now want to spend the rest of this newsletter talking about the profound benefits of supplementing with a dedicated proteolytic formula. These benefits include:

Reduced inflammation: Inflammation is a natural response of the body to injury. However, excessive inflammation retards the healing process. Proteolytic enzymes reduce inflammation by neutralizing the bio-chemicals of inflammation (bradykinins and pro-inflammatory eicosanoids) to levels where the synthesis, repair and regeneration of injured tissues can take place. Reducing inflammation can have immediate impact on improved heart health, cancer prevention and recovery, and Alzheimer's prevention. It also helps speed up recovery from sprains, strains, fractures, bruises, contusions, surgery -- and arthritis.

Cleansing the blood of debris: Proteolytic enzymes are the primary tools the body uses to "digest" organic debris in the circulatory and lymph systems. Supplementing merely improves the effectiveness of the process.

Dissolving fibrin in the blood, reducing the risk of clots: Certain specialized proteases such as nattokinase are extremely effective at improving the "quality" of blood cells, optimizing the ability of blood to flow through the circulatory system, and reducing the risk of clots. This is extremely important in reducing the risk of stroke. It also makes using proteolytic enzymes during long plane flights to minimize the potential of blood clots in the legs a no-brainer.

Maximized immune system: The primary vehicle the immune system uses for destroying invaders is enzymes. Macrophages, for example, literally digest invaders with proteolytic enzymes.

Supplementation significantly improves the ability of your immune system to do its job.

Killing of bacteria, viruses, molds, and fungi: Bacteria, viruses, molds, and fungi are protein/amino acid based. Proteolytic enzymes taken between meals literally go into the bloodstream and digest these invaders.

Elimination of autoimmune diseases: In Lessons from the Miracle Doctors, I cover in detail the process whereby large undigested proteins make their way into the bloodstream and form CICs (Circulating Immune Complexes), which trigger allergies and autoimmune diseases.

Supplemental proteolytic enzymes clean CICs out of the body, thereby reducing allergies and autoimmune conditions. In addition, this helps with sinusitis and asthma.

Dissolving of scar tissue: Scar tissue is made of protein. Proteolytic enzymes can effectively "digest" scar tissue -- particularly in the circulatory system

And finally, a properly designed supplemental proteolytic enzyme formula can help. reduce the symptoms of MS, clean out the lungs, and aid in detoxing.

Which brings us to the final question: what constitutes a properly designed supplemental proteolytic enzyme formula?

First, it needs a lot of protease. You want at least 200,000 HUT. This is far more than you will ever find in a digestive formula. 300,000 HUT is even better. (Note: fungal (vegetarian based) protease is merely rendered inactive by stomach acid, not destroyed. As soon as it passes into the alkaline environment of the intestinal tract it reactivates -- and if not needed for digesting food, makes its way into the bloodstream. In other words, for use in a proteolytic enzyme formula, it does not need to be protected from stomach acid.)

In addition, even though fungal protease does indeed reactivate in the intestinal tract, the formula will be much more effective if it includes a variety of proteases that work optimally in a variety of pH ranges. Some of these proteases would include: papain, bromelain, and fungal pancreatin.

A very special proteolytic enzyme called nattokinase has been discovered that has displayed a remarkable ability to optimally balance the clotting ability of blood. Its ability to control clotting rivals that of pharmaceutical drugs such as warfarin, but without any of the side effects or downsides -- making it of value to everyone, not just heart disease patients. Obviously, if you are already using blood thinners, you will need to work with your doctor if you decide to incorporate proteolytic enzymes in your health program. (Unfortunately, most doctors will opt to play it safe (for them, not you) and choose to keep you on the pharmaceuticals.)

One of the "hot" proteolytic enzymes in alternative health right now is serrapeptase. It has remarkable anti-inflammatory and anti-edemic (counters swelling and fluid retention) activity in a number of tissues. And in addition to reducing inflammation, serrapeptase has a profound ability to reduce pain, due to its ability to block the release of pain-inducing amines from inflamed tissues. And finally, it helps clear mucous from the lungs by reducing neutrophil numbers and altering the viscoelasticity of sputum in patients with chronic airway diseases.

These are all major benefits, however, serrapeptase has several problems

Its quality tends to be inconsistent

It can cause intestinal distress

It is very sensitive to stomach acid, which means it has to be enteric coated. Unfortunately, the technology for enteric coating capsules or powders is not reliable (which is why you normally find enteric coating used only on hard tablets or on hard beads inside capsules (as in cold capsules).

So is there an alternative to serrapeptase? Yes, it's called Seaprose-S.

It's manufactured in Japan and is of consistent high quality

It causes virtually no intestinal distress

It is not affected by stomach acid so it does not require enteric coating

And studies have shown that it is more effective than serrapeptase -- 85% vs 65%. [Click here to see a summary of one such study.](#)

So let's bring this to a conclusion

Regular use of proteolytic enzymes can be an invaluable addition to your daily health program.

For maintenance, take three 500 mg capsules a day at least 1 hour before or after eating.

For detoxing, start with 2 capsules three times a day and build to 4 capsules or more until you notice benefits, or as recommended by your health professional. You will want to run a detox program for a minimum of 30 days to as long as 12-24 months -- depending on the state of your health and how much damage you are trying to repair.

Note: if it is impossible for you take your proteolytic formula without food, then take it with food. You will still receive a substantial portion of the benefit -- 65-75%, which is better than not taking it at all.

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