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[](http://appliedhealth.com/wp-content/uploads/2014/06/enzymes-nutsandbolts-600w.png)While attempting my best Dr. Carl Sagan impersonation, I will say that our bodies contain “billions and billions” of enzymes. Enzymes are more important to our bodies than eating, thinking, or even breathing. That may sound like an exaggeration, but the truth is that without enzymes, the body could not sustain life.

All plant and animal cells produce enzymes, made from protein molecules (long chains of amino acids held together by peptide bonds). Enzymes are catalysts, which are required for chemical reactions to take place. Without them, no living cell could function or survive; life could not occur.

Enzymes are what help seeds to sprout, fruit to ripen, and leaves to change color. In animal and human life, they are responsible for building, detoxifying and healing the body, along with regulating biochemical functions such as growth, nerve function, fighting disease, hormone regulation, and the function of organs, glands and tissues. These metabolic actions occur because of enzymes.

Human life needs digestive enzymes to gain the benefits of nutrients from food. Metabolic enzymes are needed to use nutrients for building bones, blood, teeth, nerves, organs, tissues, etc.

All viable, healthy enzymes have a life force or energy, sometimes referred to as “energy factor”. This life energy, which is actually separate from the chemical make-up of the enzyme itself, is what triggers the chemical reactions between enzymes. This energy force is what enables your body to digest and assimilate food.

Science has shown that only living organisms can make enzymes containing this life force. Scientists have not duplicated the energy factor, measured as a type of radiant energy. Chemicals, used to serve as catalysts, work by chemical reaction alone. Whereas, enzymes use both chemical and biological reactions.

Each type of enzyme has a specific purpose, designed to fit a given substrate. Think of how only a specifically sized and threaded bolt will fit a given nut.

Often, the analogy used to explain the “energy factor” concept is a light bulb. The energy factor – electricity – is necessary for the light bulb to be of any useful purpose. Without it, there is no light. An enzyme is also useless without its energy. It remains only a powerless protein molecule.

Because it is important to understand the significance of the energy factor, it is also important to know that it can be destroyed, such as when heated above a certain point. Although, we have often referred to a damaged enzyme as “dieing”, it is actually more that it is transformed from a workable structure to one beyond the point of function.

Each type of enzyme has a specific purpose, designed to fit a given substrate. Think of how only a specifically sized and threaded bolt will fit a given nut. Like a matching bolt and nut, only matching enzymes will perform a specific task. When an external influence acts upon an enzyme in a manner to damage it, such as excessive heat, it is like beating the threads of a bolt with a hammer until it no longer functions with the nut, regardless of whether or not they were previously a perfect fit.

Although there is some disagreement as to the exact temperature when enzymes will transform beyond usefulness, it is generally accepted to be between 110 and 120 degrees Fahrenheit. This is the “dead zone”. Since this is a relatively low temperature in relation to cooking, the consequence is that foods cooked in excess of this temperature for any length of time no longer have useful enzymes.

This can be proven, as an example, by trying to sprout soybeans after they have been placed in boiling water. Compared to soybeans that have not been heated, these soybeans retain no enzymatic activity, and therefore, cannot sprout.

Once food has been heated past the dead zone, it is enzymatically “dead”. The life force or energy factor is destroyed. If our food is enzymatically dead, the body is unable to effectively breakdown the food into useful nutrients.

Fortunately, our body is a rather clever organism. If it detects that we have consumed food without an adequate supply of digestive enzymes with which to process it, our body will convert some of our “metabolic” enzymes into digestive enzymes for the task.

However, there is an unfortunate side to this clever method of resolving the immediate issue. The problem is that we have a limited supply of metabolic enzymes from which to recruit.

We are actually born with an abundant supply of metabolic enzymes. Newborn babies have 100 times more enzymes than that of the average older adult. These metabolic enzymes enable our bodies to grow and function.

As we age, we have a smaller supply, and consequently our metabolisms slow down, and we notice more aches and pains. Our bodies do not absorb as many nutrients. The more rapidly these metabolic enzymes are used, the more rapidly we age.

Some researchers believe, with an appropriate supply of enzymes in our food and supplements, each one of us has the capability of living (on average) to 120 years old.

The body uses some metabolic enzymes for digestion; however, only 25% of the digestive enzymes needed come from the body. The other 75% must come from raw, unprocessed food – such as raw vegetables, fruits, unprocessed nuts, and even raw meat.

Yes, that probably sounds a tad disgusting. Please know that I am not advocating you go out and chew on the hind-quarter of Bessy the Cow. Just understand that raw meat is enzymatically active, and were it not for the concern over quite deadly bacteria, it would be healthier than when cooked.

Food grown in an optimum environment will contain more than enough enzymes to digest itself. Nevertheless, sadly, with modern farming methods, mass production techniques, and storage methods, most food is sorely lacking adequate levels of enzymes.

In most modern cultures today, people fail to eat enough live foods. We live in a society where it is quicker and much easier to run to a fast-food restaurant regularly for lunch and/or dinner. Breakfast is often a bowl of boxed cold cereal laden with sugar, along with a cup of coffee – if there is breakfast at all.

Do not think we can open a can of corn, eat (without heating it), and think we are getting enzymes from a raw vegetable. Anything in a can has been heated to a high temperature, by virtue of the canning process itself – even if it was not heated on your stove – thus damaging beneficial enzymes.

Without enzymes, the body can neither assimilate the nutrients essential for life, nor regulate metabolic activity. Our eating habits eventually place a gigantic workload on the pancreas and other organs of the body, as they try to produce enough digestive enzymes (more than the usual 25%) to handle what we have just eaten. This means there are fewer resources available for the body to rebuild and replace damaged cells, and the immune system weakens.

It wasn’t too long ago that many within the scientific community believed digestive enzymes in the body are constant and last forever, that they could be used and reused. It was the popular opinion that enzyme levels became low because of illness.

Researchers now know that the opposite is true; illness occurs because of low enzyme levels. Many scientists believe the lack of enzymes is the major cause of many degenerative diseases.

So what can we do about this? Take enzyme supplements with every meal. For young people, digestive enzymes will help maintain healthy digestive and immune systems, as they aid in making total use of the nutrients that are consumed.

For the more mature person, the results can be dramatic. Digestive enzymes will encourage the body to heal. Poor health symptoms may decrease as energy levels increase. In addition, many will notice a gradual reduction of body fat.

I usually notice several people perk up with interest when I mention that last point. It is true. With good digestive enzymes introduced into your diet, it is very common to notice a loss of fat.

In future articles, we will provide more information on the benefits of digestive enzymes and the correlation between appropriate digestive enzymes and good health. This is a vitally important topic, and one that justifies continuing articles to share this valuable information.

I also will occasionally share some results of studies that support the current understandings of enzymes, and I will introduce a few eating habits of other cultures where they seem to instinctively know the value of “live” food. It is these cultural stories that make me appreciate the enzyme supplements that are available today.

**RESOURCES:**

“Food Enzymes”, Tonita d’Raye, The Ten Minute Read Company, Keizer, Oregon, September 1997.

“Enzymes and Enzyme Therapy”, Anthony Chichoke, D.C., Keats Publishing Inc., New Canaan, Connecticut, 1994.

“Live Food Juices”, H.E. Kirschner, H.E. Kirschner Publications, Monrovia, California, 1990.

“Food Enzymes. The Missing Link to Radiant Health”, Humbart Santillo, N.D., Holm Press, Prescott, Arizona, 1993.

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As an early adrenaline junky, Bill Evans learned the harsh lessons of pay-back, as his body eventually rebelled with daily reminders that the thrills of "fast times" are fleeting, and the baggage of payment is heavy. In 1997, he began **Applied Health** as a means to design the products his own body craved. All these years later, he is back to enjoying most of the activities he once had to forfeit, albeit, this time he is a bit wiser.

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 [The Value of Digestive Enzymes](http://appliedhealth.com/value-digestive-enzymes/)