# The Healing Power Of ENZYMES



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Chapter 1

### The Miracle of Enzymes

#### JUST WHAT ARE ENZYMES, ANYWAY?

Although enzyme biochemistry has been the subject of intensive study since the 1930s, the role of enzymes in supplementation and therapy has not been widespread or understood by many people. Isn't it ironic that almost everyone knows the value of vitamins and minerals (co-enzymes) but cannot tell you anything about enzymes?

- Enzymes are necessary in every chemical reaction that occurs in the body
- All organs, tissues, and 100 trillion cells in the body depend upon enzymes
- Co-enzymes (vitamins and minerals) require enzymes in order to be absorbed and used by the cell
- Enzyme utilization of co-enzymes creates 100,000 chemical reactions every second for metabolism, allowing us to see, hear, feel, move, and think

Enzymes are proteins commonly referred to as metabolic enzymes when they are made in the body. They must be present before any chemical reaction can take place in our system. Even vitamins, minerals, and hormones cannot do their jobs without these enzymes. We used to say that enzymes were too small to be seen through the most powerful microscope. This has changed throughout the years with the stronger microscopes that allow us to see pictures of specific enzymes. These tiny proteins are a catalyst (a spark or an action). They are the dynamic power that gives us our ability to function at the highest level of good health.



#### HOW DO OUR BODIES MAKE ENZYMES?

These delicate life-giving substances called enzymes are present in all living cells, whether vegetable or animal. Technically, enzymes are energized protein molecules. Our bodies can obtain them in only two ways: by making them inside the body (endogenous metabolic enzymes) or by acquiring them through the protein food we ingest from outside the body (exogenous enzymes) by using properly digested proteins to replenish or make more metabolic enzymes.

There are problems that occur with each source:

- As you get older, your body becomes much less efficient, thus producing significantly fewer enzymes than it did when young.
- Secondly, the greatest part of the food you eat today is genetically modified, and your body does not recognize those unidentified proteins. As a result, you do not get enough proteins to replenish your supply of enzymes in order to remain healthy and energized.
- Furthermore, because enzymes are protein molecules, the body needs a constant supply of amino acids from our diets to continue replacing lost metabolic enzymes. If anyone at any age has a stomach / digestive problem or does not consume enough protein in their diet, the body's ability to replenish its metabolic enzymes and rebuild is hindered.

Our bodies cannot exist without metabolic enzymes.

#### IF OUR BODIES MAKE THEIR OWN ENZYMES, THEN WHY DO WE NEED TO TAKE SUPPLEMENTAL DIGESTIVE ENZYMES?

A wide array of disorders can affect your digestive tract, the long tube of organs that begins at your mouth and ends at your anus. Over ninety million people

suffer every day from some form of digestive issues (heartburn, acid reflux, gastro esophageal reflex disorder (GERD), irritable bowel syndrome (IBS), indigestion, constipation, diarrhea, abdominal pain, etc).

- Your body produces digestive enzymes. However, it cannot produce enough digestive enzymes to keep up with the typical western diet, which is full of enzyme-depleted, cooked, and processed foods. This is one of the reasons why so many people suffer from digestion-related health problems.
- Add to this the fact that genetically modified foods cannot be broken down properly and are therefore seen by the immune system as an allergy. *Eighty percent of your immune system is located in your digestive tract.*
- If you were not breastfed as an infant and/or if you were given solid food too early in life, you would be a likely candidate.
- As we age, our ability to produce digestive enzymes decreases by thirteen percent every 10-year period.
- If you suffer from gluten sensitivities.
- If you have been diagnosed with a disease.

There are some diseases that are marked by an abnormal response by the body's immune system. Normally, the immune cells protect the body from infection. In some people, however, the immune system mistakes food, bacteria, and other materials in the intestine for foreign substances, and it attacks the cells of the intestines. In the process, the body sends white blood cells into the lining of the intestines where they produce chronic inflammation.

We especially need enzymes when we eat food that has been produced with genetically modified organisms. Such foods are referred to as "Frankenfood" or the foods that our bodies no longer recognize. GMO refers to a process that scientists use to make food sources using animals, insects, virus, bacteria, and human DNA. I will cover this in another chapter along with synthetic foods like sugars and fat. Pink synthetic meat . . . ugh!

In his book *Enzyme Nutrition*, written 30 years ago, Dr. Edward Howell tells of research done at the University of Toronto. The research showed that each child is born with a definite amount of enzyme potential that can be saved or wasted. It can be used up fast or sparingly according to one's life tempo. Also, this enzyme potential can last longer when reinforced with enzyme supplements.

#### OUR OWN DNA TELLS US WHEN TO MAKE DIGESTIVE ENZYMES

While yet an embryo (less than 5 days old), we receive an estimated 20,000 to 25,000 genes carrying three billion bits of genetic information. This information constitutes an instruction book for your body's proteins. The information is stored in our genes and the DNA carries it. What this tells us is that we are first given instruction on how to handle our proteins. Enzymes themselves are proteins.

While yet a fetus in Mother's womb between the ninth and twelfth week, we are given our ability to develop digestive enzymes (enzyme potential) that lasts for a lifetime. These 3 weeks are very important, and if the mother is healthy and digesting properly, we have a more improved possibility. Some mothers do not even know they are pregnant, and are in just the first trimester of their pregnancy. I am not going to go through all the possibilities that can go wrong but please know that my second child came in to this world with enzyme deficiencies. It took me years to understand this. From this time, I began developing enzyme therapy and teaching supplemental digestive enzymes to practitioners.

What does my time as a fetus or baby have to do with my digestion now?

- We first make digestive enzymes (enzyme potential) while in our mother's womb during our ninth to twelfth week.
- This enzyme potential is to last throughout our life.
- The only digestive enzyme turned on at birth is meant for our own Mother's breast milk.
- This remains so for at least **18 months**, and then babies may begin to slowly digest some carbohydrates added in their diet.
- It is not until they are around **36 months old** and have begun to cut twelve to fourteen teeth that they will be able to utilize natural sugars in foods.
- They will need the teeth for chewing as well as grinding, and the environment of their gut will then be able to handle natural sugars.
- This is all dependent on the genes' instructions, directing their DNA as to when to turn on their digestive enzymes.

#### TIME OUT FOR A MINUTE! WHY HAVEN'T I HEARD THIS ABOUT ENZYMES?

If you are like many who have heard me speak enthusiastically about the endless roles played by enzymes, you are beginning to wonder why you have not seen or heard much press coverage about them. You will also wonder why we were not instructed during pregnancy on the importance of enzymes and foods for our babies. Of late, the biggest coverage is on raw foods supplying enzymes, and I believed this was true for years. I wrote about it in my previous book. However, as I did further research, I found that labs measuring them in fecal matter and urine could measure the food-produced enzymes. Universities such as Wright State University wrote that the food enzymes were present but had not been utilized. They went further to use patients with colon bags to see if there was different information, but the food-produced enzymes were still dormant.

But how many true enzyme specialists do you know? Most of these specialists have a degree in enzymology. Furthermore, would the prospect of reading a newspaper article or watching a TV documentary on scientific enzymes fill you with excitement? Probably not, yet the healing power of enzymes has been documented for decades. There are many enzyme products on the market today, each with its own purpose. When correctly used, these enzymes can do wonders for our minds and bodies. We have briefly touched on the importance of enzymes for good digestion, and Chapter Two will cover Biochemical Individualism (the scientific word for body typing) and specific needs for enzymes in more detail.

You are probably reading this book for one of two reasons. You care enough about your own health, or someone who cares about you gave it to you. No matter which way you came to read about enzymes, you should definitely start to understand how they work and why they are so important as you read this book.

#### **ENERGIZE YOUR LIFE WITH NATURE'S LIFESAVERS**

These wonderful little lifesavers serve your body in two important and distinctly different ways. First, they break down the nutrients contained in food into chemical substances that are fine enough to pass through the lining of the digestive tract cells. From there, they enter the blood stream. The entire process is fascinating, and I plan to cover it in more detail in another chapter. Your body considers digestion as its most important duty. When a newly eaten meal enters the stomach, digestive enzymes are released from all systems of the body to initiate the digestion process. However, this same enzyme energy is also needed elsewhere to repair, regulate, and reactivate the other systems of the body. These systems have no choice but to partially shut down during digestion. The other alternative is to supplement your diet with digestive enzyme supplements. This option will be covered extensively in another chapter.

The other major role of enzymes is to keep the metabolism working at full throttle. This includes burning fats; making and feeding cells; and releasing energy wherever needed. Every bodily function, from building new skin, muscle, bone, glands, and nerves to those that rid the system of toxins, depends completely on enzymatic activity. Skin glowing with health; an efficiently operating colon, liver, heart, and brain; and fully functioning lungs, kidneys, and hormones all rely on enzymes. It can truly be said that enzymes are Nature's Lifesavers!

#### WHAT ARE SOME COMMON SOURCES OF ENZYMES?

**Metabolic enzymes** are those produced by the body. They are necessary for life itself. Age and high stress reduces our ability to produce necessary enzymes. Eighty percent of your body's own digestive process expends energy. If you are run down, under stress, living in a very hot or very cold climate, pregnant, or a frequent air traveler, are you aware that your body may require enormous quantities of enzymes? Because our entire system functions through enzymatic action, we must supplement our enzymes. Aging deprives us of our ability to produce necessary enzymes. The medical profession tells us that all diseases are caused by a lack or imbalance of enzymes. Our very lives are dependent upon them!

**Food enzymes** are preserved intact in raw foods. Uncooked fruit and vegetables contain their own enzymes. A ripening banana is a good example of how raw food enzymes work. The banana transforms itself from a hard, starchy plant into a very soft, brown, and sweet one through a process requiring energy from its enzymes. Their plant enzymes work to first take in nutrients and then allow them to ripen with the same enzyme process. There is confusion in the raw food world over the enzymes that raw foods contain. These food enzymes are specifically for the food itself to obtain its own nutrients from the soil, tree, or host they grow on.

If you eat raw fruits or vegetables, their specific enzymes can be used to mix with our metabolic or supplemental enzymes to better gain the nutrients in food. Food enzymes when in a raw state can sometimes make it to the small intestine before becoming dormant. They do not stand in place of our own metabolic enzymes, but they work in food by opening the door to the nutrients. However, if the food is heated by cooking, the heating process kills the food enzymes and many of their nutrients. They are then not available during human digestion because they are destroyed in heating and/or further made dormant in the environment of the human stomach. We may juice these raw foods, but the friction of the juicer also limits their enzymes. Food enzymes were created to work for their own needs. Such enzymes are not available for our enzymatic needs, nor do they provide human enzymes. The process of raw food enzymes during digestion is referred to as synergism. Some raw foods such as nuts, beans, and grains contain enzyme inhibitors. These foods need to be roasted or prepared to kill off the inhibitors, which can cause an inhibiting of digestion in the human stomach. **Supplemental plant-based digestive enzymes** are the third source for these miraculous substances. Enzymes cannot be made like synthetic vitamins and minerals. They must be grown and extracted without chemicals in a laboratory process. They are typically grown on plant foods in a laboratory where they are fed to become whatever digestive enzyme is required. The host is a plant source, and its use is just a platform to host the mycelial or biochemical enzymes — they do not contain their host. When mature, the fungus is removed and the remainder is a pure fluid that is dried to a fine powder substance. They are known as plant enzymes but they are really mycelial or microbial enzymes produced bio-identical to the human body. Supplemental plant-based enzymes are usually sold in capsule form. They are swallowed with food to assist in the digestion of a particular meal. They work throughout the entire digestive system, from esophagus to rectum.

**Animal enzymes**, sometimes known as glandular enzymes, are the other enzymes available for human consumption. For instance, **pancreatin** comes from the pancreas of a slaughterhouse hog or ox. Pancreatin requires an alkaline pH setting to work. It begins working in the latter stages of the digestive process in the small intestine. The reason for this is that they are proteins and therefore would be broken down in the stomach. Because of this, they require an enteric coating for time release and are usually found in tablet or capsule form. Their best work is in the alkaline setting of the blood but not necessarily for digestive purposes. Animal-produced enzymes are not recommended for children or pregnant women due to their coating.

**Plant enzymes** include **bromelain**, a proteolytic milk-clotting enzyme derived from the pineapple stem, and **papain**, an enzyme derived from the papaya tree. They were first used as meat tenderizers and ingredients in beer until they became more refined to be used in supplements. **Pepsin** is an enzyme involved in the breakdown of proteins in the stomach and in the recent past was usually prepared from the stomach of pigs and required an acid pH setting. Kiwi has some value in breaking down fiber and some dairy products. There are some who experience bowel irritation from the use of papain and kiwi that is similar to the bloating from eating at salad bars.

Plant-based supplemental digestive enzymes have the ability to aid digestion throughout the entire digestive process. Therefore, these enzymes are more useful to the body's digestion than any other type of enzyme supplement. Now let's look at *industrial grade enzymes*, such as those used in cleaning agents. These enzymes act as grease eaters. In this category are other single-purpose enzymes designed to do one specific thing, such as breaking down a particular type of grease. There are also *commercial grade enzymes*. These are sold in large

quantities and are used for baking, tanning leather, or fermenting the malt used to brew beer.

The focus of this book is *nutritional pharmaceutical grade plant-based enzymes*. These have a broader spectrum of use and come in a more purified and stable form. I have studied these types of enzymes more extensively. Personally, I use only these enzymes. Here are my reasons for doing so. I wish I could say that all packaged, nutritional enzymes are completely free of contaminants. Sad to say, that is not the case. Many of you have not had access to a high-quality source. In order to sell at lower prices, some companies do not use the purest products. The enzymes I use are those grown for a specific function — efficient digestion by a human. I am not interested in those commercial grade enzymes found in the bakeries and breweries. I recommend that anyone genuinely concerned with improving his or her health should avoid them as well. I have met users of enzymes who have had adverse reactions to them. This is generally because the product fillers are impure. Some kind of filler has been used to allow the manufacturers to sell at lower prices. Only those enzymes with no fillers should be ingested to ensure your maximum health and wellbeing. If it is necessary for you to take those with fillers, make sure the fillers come from a product that contains nutrients. It is a well known fact that not everything is "natural" even if labeled that way.

Synthetic vitamins can be legally labeled "natural" if they contain a small amount of natural food ingredients. People often think they are taking high dosages of absolutely pure vitamins or enzymes from an "all natural" source. The truth is that if these high-strength capsules were derived entirely from a perfectly pure, natural food source, one of them would be the size of a table, not a tablet. That would be difficult to swallow! This is why I want the public to be aware of what they are getting from their investment. This comes up when those formulating the tablets are mixing enzymes that work in a higher pH than the human body.

Plant-based enzyme supplements can be purchased from health food stores, through multi-level marketing groups, via mail order, and from health care professionals. They will vary in strength, ingredients, and the amount of fillers they contain. There are even claims that certain vitamins or foods are enzymes. Do not confuse plant-based enzymes with those made from animal products. Of all enzymes used for increasing our level of good health, it is important to be aware of a substandard enzyme supplement that may not work sufficiently in the human body. Remember, each of them works differently and may be intended for something other than digestion.

#### CAREFUL... WATCH IT! OH, NEVERMIND... TEN MILLION OF YOUR CELLS JUST DIED!

To illustrate the importance of enzymes, did you know that in less time than it takes you to read this sentence, and well before you finish the paragraph, ten million of your cells have died? Are you aware that there are at least 100 trillion cells at work in your body right now? Scientists have identified that there are at least 9,000 different protease enzymes alone in the human body. It takes 13,000 enzymes to make just one cell! There are 20,000 enzymes in each human cell that perform 100,000 different chemical actions every second!

Enzymes are pure proteins. They are catalysts in the combination of different molecules. Without them, a single cell consisting of more than 100,000 different chemicals could not exist. Your DNA molecules receive their ability to do all the tasks on the cellular level because of the presence of enzymes. As I stated earlier, the required nutrients our bodies use to make metabolic enzymes come from the food we eat — that is, if we digest our food thoroughly and use the nutrients efficiently.

Forty-five nutrients (in their proper amounts) derived from the food we eat nourish each and every cell.

These nutrients are:

- Nineteen minerals, in prescribed amounts
- Thirteen vitamins
- Nine amino acids
- One protein (nitrogen)
- One fat
- Water
- Glucose
- Plus 20,000 enzymes

#### WAY TO GO... YOU JUST MADE BILLIONS! (OF RED BLOOD CELLS THAT IS...)

When I suggest that there is an exact amount of vitamins and minerals needed to maximize good health, I mean that mega-dosing can create more problems than consuming few nutrients in some instances. What regulates all this is the delivery of enzymes. For example, there are billions of red blood cells made from bone marrow each second. In order to build these red blood cells, a form of iron called heme iron is necessary. We need to eat protein foods in order to obtain heme iron. However, if the protein food is not properly digested, our bodies will not extract the nutrients required. Inefficiencies in our digestive system typically allow only about fifteen percent of the heme iron present in animal proteins and only about three percent of the heme iron present in plant foods to be absorbed by our bodies. Improving the efficiency of the digestive system is vital to obtaining nutrients such as heme iron. Digestive enzymes are what allow the body to properly digest and assimilate the nutrients we consume. If your intake of calcium is too low, you will experience hair loss and brittle fingernails and toenails. You will also show all the symptoms of those who have bone problems. Too much calcium can form bone spurs and cause blood disorders. What happens when you do not have enough enzymatic action in your body? Once again, it takes most of our energy just to digest our food. Digestive enzymes are the delivery mechanism in the body. Not only do they assist in the breakdown of our food, they also deliver the nutrients to every part of the body.

Absorption cells called *villi* are present in the small intestine to aid in digestion. If all the villi in your body were laid out end to end, they would measure about half the length of a football field. Villi replace their cells every 2 days. With aging, we lose our ability to replace these cells, so they can no longer absorb nutrients for delivery to other cells. Where an imbalance occurs, such as Celiac disease, the villi fold over and are not able to absorb the nutrients. The next step is that undigested food, such as protein, begins to clog the system. Undigested protein begins to putrefy and will eventually cause health problems. The importance of proper digestion is mind-boggling. Every function must be perfectly synchronized with every other function. When we lack a particular enzyme, vitamin, or mineral, the resulting imbalance causes diseases. We are now considering this process as being due to the unhealthy eating habits that dominate our society. If you have digestive problems, you will have trouble rebuilding cells, which leads to an array of health disorders. My own experience in working with medical doctors and researchers has proved this to be true. You may think it is too simplistic to conclude that illness is caused by inadequate digestion, but I am convinced this is true.

#### LOOK AT YOURSELF IN THE MIRROR . . . YOU ARE LOOKING AT YOUR CELL PARTS!

You are made up of cells. If you look at yourself in a mirror, you are actually looking at your cell parts. An adult body (dependent on your size and age) is made up of 100 trillion cells. For example, when you look at your little finger, you will recognize that it holds one to two billion cells within it alone. Cells are not large. They may be shaped slightly different from each other (organ cells vs red blood cells) but what they have in common is they are all cells and require the same enzymes and oxygen to work.

#### **ENZYMES**

At any given moment, enzymes are doing all of the work being done inside any cell. If you understand enzymes, you understand cells. **A human cell has about 20,000 different types of enzymes** floating around in the cytoplasm (gel-like substance holding the cell together) like a bag.

Enzymes have extremely interesting properties that make them little chemicalreaction machines. The purpose of an enzyme in a cell is to allow the cell to carry out chemical reactions very quickly. As an example, the enzymes utilize nutrients and produce **100,000 different chemical actions every second**. These reactions allow the cell to build things or take things apart as needed. This is how a cell grows and reproduces. At the most basic level, a cell is really a little bag full of chemical reactions that are made possible by enzymes!

Enzymes in your body are made from **amino acids and they are proteins**. Amino acids string together in bunches of 100 to 1,000 in a very specific and unique order so as to form an enzyme. The chain of amino acids then folds into a unique shape. That shape allows the enzyme to carry out specific chemical reactions. An enzyme acts as a very efficient catalyst for a specific chemical reaction. The enzyme tremendously speeds up that reaction.

You may have heard of people who are **lactose intolerant**, or you may suffer from this problem yourself. The problem arises because the sugar in milk (lactose) does not get broken down into its glucose components. Therefore, it cannot be digested. The intestinal cells do not have the lactase available for lactose intolerant people. Lactase is the enzyme required to break down lactose. This problem shows how the lack of just one enzyme in the human body can lead to problems. However, a lactose intolerant person can swallow a capsule with lactase prior to drinking milk and the problem is solved.

Inside a cell, there are around 20,000 types of enzymes, lactase being just one of them. All of the enzymes float freely in the cytoplasm (a gel-like substance in the cell membrane) waiting for the chemical (nutrient) they recognize to float by so they can utilize it. There are hundreds or millions of copies of each different type of enzyme, depending on how important a reaction is to a cell and how often the reaction is required. These enzymes do everything from breaking glucose down for energy to building cell walls, constructing new enzymes, and allowing

the cell to reproduce. Enzymes do all of the work inside cells, and it takes 13,000 enzymes just to build one human cell.

#### MAKING ENZYMES THE MIRACLE OF LIFE

As long as a cell's membrane is intact and it is making all of the enzymes it needs to function properly, the cell is **"alive."** The enzymes it needs to function properly allow the cell to create energy from glucose, construct the pieces that make up its cell wall, reproduce, and, of course, produce new enzymes. I do want to mention that if it does not have what it needs, the cell will die (implode). This is called hemolysis.

How does the cell produce them when it needs them? If a cell is just a collection of enzymes causing chemical reactions that make the cell do what it does, then how can a set of chemical reactions create the necessary enzymes? How can the cell reproduce? Where does the miracle of life come from?

**The answer to these questions lies in the DNA**, which guides the cell in its production of new enzymes. At the beginning of our lives while yet just an embryo, within the very beginning of our life, we are given an instruction book specific for each one of us. This instruction book contains an estimated 20,000 to 25,000 genes carrying three billion bits of genetic information instructing our DNA just how it is to make our proteins (enzymes) for life.

DNA is a carrier of genetic information. Think about it as just a working model made up of four different parts. Now imagine a set of blocks that has only four different shapes, or an alphabet that has only four different letters. DNA is a long string of blocks or letters that spells out your given information.

A human's DNA is about three billion blocks long. Just so you can get an idea of what that means, it is the equivalent to nearly seventy trips from the earth to the sun and back. If you were to unravel your DNA, it would stretch from here to the moon! It is tightly wrapped into twenty-three structures called chromosomes. This ensures that the DNA is packed tightly in order to fit inside a cell. The amazing thing to me is that the DNA is nothing more than a self-replicating pattern or recipe that tells the cell how to make its proteins! That is all that DNA does. It carries the template (the instructions) on how to form an enzyme.

#### **RECOMMENDATIONS: ENZYMES AT WORK**

There are all sorts of enzymes at work inside the human cells, and many of them are incredibly interesting! Cells use enzymes internally to grow, reproduce, create

energy, rid the cell of waste, and they often excrete enzymes outside their cell walls as well.

**Energy enzymes** - ATP (adenosine triphosphate) is the fuel that is able to power enzymes by performing chemical reactions. A set of ten different enzymes allow a cell to perform glycolysis. Another eight enzymes control the Krebs cycle (citric acid cycle). These two processes together allow a cell to turn **glucose and oxygen into ATP energy!** In an oxygen-consuming human cell, one glucose molecule forms thirty-six ATP molecules.

**DNA manipulation enzymes** - These include specialized enzymes that move along DNA strands and repair them. Other enzymes can untwist DNA strands to reproduce them. DNA polymerase is one of these, and it is our most accurate or valuable enzyme for a good reason. It is the keeper of our most precious resource — our genetic information. DNA polymerase takes our DNA, gently unwinds it, and builds a complementary mate to each strand. Still other enzymes are DNA-binding proteins that can find small patterns on DNA and attach to them, blocking access to that section of DNA.

**Enzyme production enzymes** - All of these enzymes have to come from somewhere, and there are actually enzymes that produce the cell's enzymes! RNA (Ribonucleic acid) in three different forms (named messenger RNA, transfer RNA, and ribosomal RNA) is a big part of this process.

**Supplemental oral enzymes** – Otherwise known as supplemental digestive enzymes, we ingest these enzymes with meals to assist in the proper digestion of foods. For proper digestion to take place, four major and three minor digestive enzymes are required. The carbohydrate-splitting enzymes are called by many different names depending on the food they break down. For example, the first enzyme that was ever recognized by Biochemistry Science many years ago was **amylase**. This enzyme aids in the digestion of starches such as potatoes, pasta, and bread. Cellulase breaks down cellulose (the fiber found in vegetables and other plant materials). Since the body does not produce cellulase, the synthetic commercial fibers we ingest for the purpose of scouring the colon of unassimilated matter often fosters more intestinal problems. Undigested fiber leaves wax-like residue in the small intestine, which ends up causing absorption maladies in the small intestine. This is why we ingest cellulase even though the body does not produce it. The most widely known of all the enzymes is **lactase**. It breaks down the milk sugar lactose. If the body is not producing lactase (a lactase deficiency) then the lactose in milk is not broken down, resulting in digestive problems. Additionally, some dairy products can cause allergies because of casein (the protein) in milk. Other lesser-known enzymes that break down carbohydrates are **invertase**, **sucrose**, and **maltase**, which break down simple sugars. There are nine other different carbohydrate-splitting enzymes that break down the rest of the carbohydrate foods such as fruits and other vegetables. Poorly digested carbohydrates / starches can ferment in the large intestine, creating gas and other symptoms of discomfort. **Protease** enzymes digest proteins such as red meats, fowl, fish, and nuts. If improperly digested, protein putrefies in the large intestine, where it will cause indigestion, toxicity, and smelly gas. **Lipase** enzymes break down lipids (fats / triglycerides) and are required for balancing fatty acids. Fats that are not thoroughly digested turn rancid in the system and create pungent odors and poor cholesterol balance. Is it any wonder that we are an entire society suffering from constipation, gas, indigestion, and halitosis?

Besides the rancid gases that can be caused by poor digestion, our vitamins cannot be properly absorbed in the cells without enzymes. Carbohydrate-splitting enzymes assist in absorption of water-soluble nutrients such as B vitamins and vitamin C. Protein-splitting enzymes assist with amino acids, our building blocks of the body. Meanwhile, fat-splitting enzymes are responsible for the delivery of fat-soluble vitamins such as vitamin D, E, and K.

A cell really is nothing but a set of chemical reactions, and enzymes make those reactions happen properly!

#### IS THERE A WAY TO KNOW WHAT ENZYMES ARE DEFICIENT IN MY BODY?

The obvious symptoms of poor digestion are burps and belches, excessive gas, heartburn, nausea, constipation, feeling tired after eating, or an allergic reaction to a particular food. Another way to discover a deficiency is through observing which foods you crave or eat the most. These can include caffeine, chocolate, refined sugars, and cooked or processed foods. The only tests for enzymes lost are when an organ is stressed and is losing its enzymes such as our pancreas, heart, or liver. I am not aware of any other test for enzymes deficiencies, but questionnaires can be used to find more information on this. I mentioned earlier that there are labs that can observe the enzymes lost in the fecal matter or urine. But these have been designed for food enzymes. When an enzyme is working, it is used up and then converted into amino acids. Think about this with me — if it takes 13,000 enzymes to create just one cell, and every cell in your body (all 100 trillion) requires 20,000 enzymes each, then it would be impossible to measure "lack" of enzymes.

I refer you to Chapter Two for further information on enzyme deficiencies. This might be the right time to determine your biochemical type (similar to body type). There are four basic types, each associated with a specific enzyme deficiency.

#### **TESTIMONIALS**

**"Your company** has very well saved my life. I had to go through ten brands of enzymes before your digestive product helped me. In a few days, I am sleeping better, my diabetes is normalizing and even the natural curl on my hair I had lost is returning. You are right on target, realizing that many persons needing digestive enzymes could also be suffering from a very sensitive stomach and with gastric conditions, thus need gentle, pure and special enzyme formula. I will tell everyone that needs enzymes about yours. I will be forever grateful to your company!" - Tina M.

**"No, I haven't dropped off the planet!** But, all of a sudden I got real busy—which may reveal a lot, as I am feeling better than I have in years. I added a couple of diet changes you recommended, digestive enzymes and Probiotics. In other words, small changes made a big difference!" - Jeff S. - Garland, TX

"Actually Dr. DicQie Fuller-Looney is the writer and she formulated a lot of our products!!!! I know her personally. She is awesome! And I've learned so much from her. Love it :) that's awesome! Glad you read her book!" - Angely R. - Bronx, NY

**"Wow!! I admire you and your work,** it's really great to finally know the woman behind this great project!! I Really thank you because you changed my life!" - Jessica R. - Villahermosa, Tabasco

## NEWLY REVISED WITH 6 ADDITIONAL CHAPTERS!



Dr. DicQie Fuller-Looney has enjoyed and been blessed by her 30-plus years as a clinician, educator, researcher, and author. She has earned two Ph.Ds, one in Health Science and the other in Dietetic Nutrition, and also holds a degree as Naturopathic doctor – Heilpraktiker from Germany Kneipp Heilpraktiker Akademie. Her passion in the last 35 years has been in the realm of Enzyme Therapy along with Biochemical Individualism and their use in bringing balance to the body whether involving our health, thoughts, or harmful beliefs.

"How exciting! A Must Read For Everyone!!! What a great educational tool for those practitioners stuck on the simplicity of our wonderful enzymes" - Rose Jacobson, CT



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