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Enzymes: 20 Answers

1. What are enzymes?

Enzymes are protein molecules which carry a vital energy factor needed for every chemical action and reaction that occurs in our body. There are several thousand different enzymes found in the human body. These enzymes can combine with co-enzymes to form nearly 100,000 various chemicals that enable us to see, hear, feel, move, digest food and think. Every organ, every tissue, and all the 100 trillion cells in our body depend upon the reaction of enzymes and their energy factor. Nutrition cannot be explained without describing the part that enzymes play. Enzymes are the single biggest contributing factor to health and longevity.

2. What do you mean by nutrition?

Simply stated nutrition is: the body's ability to consume the 45 known nutrients in their proper amounts; digest these nutrients; absorb these nutrients; carry these nutrients into the cells; metabolize these nutrients; and eliminate the waste. Eating foods containing these elements (along with their enzymes) in their proper amounts will normally ensure good nutrition. Enzymes are responsible for digestion, absorption, transporting, metabolizing, and eliminating the waste of these nutrients. Again, every organ, every tissue, and all the 100 trillion cells in our body depends upon the reaction of enzymes and their energy factor.

3. What do you mean by "energy factor"?

The "energy factor" is the energy that triggers or starts the chemical reactions between enzymes. This "energy factor" is separate and distinct from the chemical make-up of the enzymes itself. A good example of this energy factor can be seen by placing a raw bean into a pot of boiling water. The cooked bean will fail to sprout. Its life force ("energy factor") has been taken away from it. Science tells us that only living organisms can make enzymes possessing this "energy factor". Chemicals that serve as catalysts work by chemical action only, while enzymes function by both biological and chemical action.

Catalysts do not contain the "energy factor" which is measured as a kind of radiant energy which enzymes emit. The "energy factor" of enzymes has never been synthesized. Simply stated the energy factor is the "electricity" that makes the light bulb (the enzyme) work.

4. What are supplemental enzymes?

Supplemental enzymes are enzymes that have been extracted in some manner, from either plant or animals, and are given in addition to a normal diet. Pepsin (an enzyme that digests proteins) was the first enzyme used by doctors to help with protein digestion. Pepsin was extracted from the stomach of pigs and requires a very low pH to be used by the body. It is best used in skin products for exfoliation of the skin and for meat tenderizers. Another enzyme supplement was made from the pancreas of slaughterhouse animals, which could not only digest proteins, but carbohydrate and fats as well. However, the pancreatic enzymes work best in an alkaline medium, which is present in the duodenum. Pancreatic enzymes will not work in the acidic stomach and cannot perform predigestion. There is little need to take these supplemental enzymes for digestion purposes. In order for supplemental enzymes to work they must be able to help with predigestion in the upper stomach (fundus). The Japanese have developed a method for extracting protease, amylase, cellulase and lipase enzymes from fungi which work throughout the entire digestive system. Although there are hundreds of varieties of aspergilli, the strains (*Aspergillus Oryzae* and *Aspergillus Niger*) used in the fermentation of plant enzymes have been tested to be free of mycotoxins. Extracts of these enzymes are dried into powders and put into capsules. These enzymes should be taken with a meal if predigestion is to be most effective. The reason for this is if you wait until finishing the meal, you delay the action of the enzymes on the food.

5. Can you overdose on enzymes?

Research from over a hundred years revealed that there has not been one report of side effects from enzyme consumption. Plant enzymes are food.

6. How do enzymes work in the stomach?

Food entering the stomach is called a bolus. The stomach has two distinct divisions—Fundus (upper part) and Pylorus (lower part). The bolus remains in the upper part for approximately one hour. This is where predigestion takes place. The fundus is where digestive food enzymes begin to break down the food into carbohydrates, fats and protein. Raw foods supply their own digestive enzymes, thus saving the stomach from supplying all the enzymes. Cooked foods, which has no enzymes, must wait in the fundus until the stomach supplies the enzymes. Predigestion by food enzymes occurs in every creature on earth. The only exception is the human being on an enzyme-free diet. The upper section has no peristalsis (movement of food), acid, or pepsin and therefore, if enzymes are not provided in the diet, only minimal digestion can occur. The lower stomach (pylorus) performs the second step in digestion, but of protein only. In the lower part of the stomach, pepsin (a powerful digestive enzyme) and hydrochloric acid continue the digestive process. The predigested food now enters the small intestine and is called chyme. Here, the pancreas and small intestine cells secrete their enzymes to further break down the chyme into glucose (carbohydrates), fatty acids (fats) and amino acids (proteins) for absorption into the villi (absorption cells in the small intestine). The human stomach is really two stomachs with separate functions. Our stomachs have been provided with the means of permitting outside enzymes to help with the burdens of digesting food. Thus, we don't have to make all of our own digestive enzymes to digest our food. This will allow us to make more metabolic enzymes as needed and make us more healthy.

7. How do enzymes work in the body?

When we eat raw foods the enzymes in the food are activated by heat and moisture in the mouth. Once active, these enzymes digest a significant portion of our food and make it small enough to pass through the villi (small projections found in the small intestines) and into the blood. Metabolic enzymes found in the blood then take the digested 45 known nutrients and build them into muscles, nerves, bones, blood, lungs, and various glands. Every cell in the body which is referred to as enzyme specificity. A protein digestive enzyme will not digest a fat and a fat enzyme will not digest starch. enzymes act

upon chemicals and change them into another chemical, but remain unchanged themselves. Simply stated our chemicals are changed from their original identity by the enzyme to another chemical with a different identity. Without enzymes nothing in our body would work.

8. Can you summarize how enzymes may help improve my health?

The following are ways in which enzymes may help improve health:

Purifies the blood. It is a known fact that fungal forms, parasites and bacteria are made up of protein. Viruses also have a protein coating as a shell that protect them. The enzyme protease breaks down proteins, and since the invaders of our blood system are proteins, it makes sense that ingesting protease could break down the protein invaders.

Strengthens the immune system. Enzymes have been found to deliver nutrients to our cells, carry away toxic debris, digest food, purify the blood, deliver hormones by feeding and fortifying the endocrine system and balance the cholesterol and triglycerides levels while doing no harm to the body.

Break down fats. Research has shown that the enzyme lipase breaks down and digests fat. This takes stress off the gallbladder, liver and pancreas. This will enhance weight loss.

Enzymes lower cholesterol and triglycerides levels. The body uses glucose called from the liver to feed and fortify the hypothalamus. Glucose is made from the protein stored in the liver. Most all plant foods contain protein enzymes. Red blood cells carry oxygen to the brain and along with glucose to feed the brain cells. When there is a dysfunction with this mechanism we become fatigued and are unable to think clearly. The hypothalamus directs the endocrine system and is responsible for water balance, body temperature, appetite and emotions.

Enzymes cleanse the colon. Foods that are not digested properly are stored in the colon and digestive problems can begin. Some researchers estimate that nearly 70% of all illness starts in the colon.

Undigested protein putrefies, carbohydrates ferment, and fats turn rancid in the colon. Enzymes will break down foods properly and keep the colon free of these toxins. In fact, it is recommended by many researchers that it is healthy to have at least two bowel movements per day.

Enzymes help sleep. Enzymes enhance the endocrine glands. The under nourished endocrine system may create a malfunction in the hormonal system which can upset the nervous system and sleep patterns. When we are unable to digest food or deliver the nutrients to keep the endocrine and nervous system in balance, we can not rebuild our lifestyle or energy level.

Enzymes help us shed excess weight and fat. Many overweight people have a metabolic imbalance or will soon create one. Remember that the endocrine system regulates metabolism. Once we are able to fortify the endocrine system, have our bowels working regularly and can digest our food rather than turning it into fat, we have a successful combination. Enzymes, especially lipase, will break down fats properly, which will help burn fat, thus promoting weight loss.

Improves aging skin. An adequate supply of enzymes is absolutely essential for keeping the skin young-looking and healthy. Enzymes fight the aging process by increasing blood supply to the skin, bringing with it life-giving nutrients and carrying away waste products that can make your skin look dull and wrinkled. Our circulation slows down as we get older. To counteract this we need to consume more enzymes.

Enzymes maintain proper pH balance in the urine. Research has shown that a balance of the enzymes (lipase, protease, and amylase) eaten by individuals produce a proper urine pH of 6.3 to 6.6 in 24 hour urinalysis.

9. Why does our ability to produce enzymes decrease when we get older?

Bartos and Groh enlisted 10 young and 10 old men and used a drug to stimulate the pancreatic juice flow. The juice was then pumped out

and tested. It was found that considerably less of the enzyme amylase was present in the pancreatic juices of older men. It was determined that the enzyme deficiency of the older group was due to exhaustion of the cells of the pancreas. Other research indicates that not only are there fewer enzymes in the pancreas but also in the trillion cells in our body as we age. One explanation for this might be that our pancreas, which weighs only three (3) ounces, can not begin to supply the vast amount of enzyme activity required for the pancreatic secretion, not to mention the tremendous need for protein to equip the enzyme complex. The pancreas must borrow these entities stored in the cells to make the enzyme complex. This could be a definition of "old age" because old age and debilitated metabolic enzyme activity, then we might delay the aging process and possibly increase the life span to its genetic potential.

10. If I take plant enzymes what effects will I notice?

It depends. Please understand that plant enzymes are not "magic pills". Rather, they supplement the work of your body's organs and glands to completely digest the food you eat. Some people will notice a dramatic improvement in the functioning of their digestive tract and relief of long-term chronic conditions. Some people's recognition of improvement will be more subtle and gradual. It all depends on the underlying condition of deficiency and how quickly the imbalance can be corrected.

11. I thought my body produced all the enzymes I need?

Not really. Because we eat so much cooked, processed and refined food, we must supplement our body's natural production of enzymes required for digestion. If we do not then the food we eat will not be completely digested and the by-products of incompletely digested food will be deposited in areas of our body where it can create toxicity, lead to declining health, contribute to the development of chronic conditions and impair immune system functioning.

12. How long do I have to take enzymes?

Most everyone has an enzyme deficiency to one degree or another. As long as we eat enzyme deficient food' which is simply defined as

any food that has been processed or cooked, our bodies need an enzyme supplement to aid digestion, deliver the nutrients and eliminate the waste. The logical conclusion is that we will need to take enzymes supplements for as long as we live.

13. Is there a significant difference between raw calories and cooked calories?

Research supports that there is a difference. Normal non-diabetic and diabetic subjects were fed raw starch and then had their blood tested for sugar. It is well documented that eating cooked starch causes the blood sugar of diabetics to increase significantly. The diabetics who participated in this research found that their sugar level rose only 6 milligrams the first half-hour. Then it decreased 9 milligrams after 1 hour, and 14 milligrams 2 hours after ingestion of the raw starch. In the non-diabetic persons there was a slight increase followed by a slight decrease in blood sugar in 1 hour. This research indicates that there is a difference between raw and cooked calories.

14. Does adding raw food to the diet or juicing guarantee enough enzymes to meet our needs?

No, raw food provides only enough enzymes to digest that particular food. There are no extra enzymes in raw food to digest cooked or processed food. Due to the risk of bacterial contamination many foods should not be eaten raw, including meats, poultry, eggs and beans. Also, the fiber content normally found in raw food is very difficult to digest due to the body's inability to produce cellulase.

15. Do obese people have a shortage of enzymes?

There is some evidence that obese individuals do have a shortage of lipase. Researchers at Tufts University School of Medicine conducted some tests on the abdominal fat of 11 extra heavy individuals (average of 340 pounds) and found a lipase enzyme deficiency in their fat cells. This could be explained by the fact that obesity and abnormal cholesterol deposits both have their beginnings in our failure to permit fat predigestion of cooked or processed foods in the upper stomach due to the fact that the natural lipase content of fatty foods has been destroyed by cooking.

16. Should children take enzymes?

Yes. Children usually eat the same enzyme deficient foods as their parents. It should be pointed out the importance of breast feeding in comparison to bottle feeding and acquiring enzymes. Children that are breast-fed acquire dozens of enzymes from their mother's milk. Bottle-fed babies receive pasteurized milk that has been heated, which destroys the milk enzymes. This causes the baby's own enzyme factory to begin using its enzyme potential from day one. Research indicates that this could be harmful for the child. Their study involved 20,061 babies that were divided into three groups (breast-fed, partially breast-fed, and bottle-fed). They studied the morbidity (sickness) rate for the first nine months of the infant's life. They found that 37.4% of the breast-fed babies had sickness in comparison to 53.8% of the partially breast-fed and 63.6% of the bottle-fed. It is obvious that babies who were entirely breast-fed had far less sickness than babies who were only partially breast-fed or who were bottle-fed. Research is trying to tell us that we, which includes pregnant women and children, must eat raw foods that contain enzymes and/or take supplemental enzymes.

17. Can pregnant women take digestive enzymes?

Yes, if they are taking plant enzymes. Animal enzymes should not be taken by pregnant women. Plant enzymes make a great deal of sense since the baby is the recipient of the nutrients that are transported.

18. Can enzymes help the body recover from disorder back to order?

Yes. There is a connection between the strength of our immune system and our enzyme level. The more enzymes we have, the stronger our immune system will be and the healthier and stronger we will be. For example, leukocytes (white blood cells) have eight (8) different amylase enzymes which assists the white blood cell to engulf foreign substances and reduce them to a form that the body can eliminate, Research has shown that leukocytes increase after one has eaten a cooked meal. This indicates a definite compensatory

measure on the part of the body to transport more enzymes to the digestive tract for digestion. There is no increase in leukocytes after one has consumed a raw food meal. Research has shown that enzymes are related to all diseases via the immune system, whether the disease is acute or chronic. If the pancreatic output of enzymes is hindered, the whole body is affected. Therefore, we must eat raw foods or take supplemental enzymes to enable our body's immune system to fight against infections.

19. I take vitamins and minerals. Isn't that enough for good health?

No, not if your body cannot utilize the vitamins and minerals that are taken. Vitamins and minerals are really co-enzymes themselves. As such they require that other enzymes act on them in order to release their beneficial powers. If the body is unable to supply those necessary enzymes in the proper quantities at the proper time, the vitamins and minerals simply become inert materials and pass unused through your body.

20. I am taking medicine that my doctor prescribed. Should I continue taking this medicine while I am taking plant digestive enzymes?

Yes, continue taking all medicine prescribed by your doctor and follow all of his instructions. Plant digestive enzymes, since they are completely from natural organic products and are classified as food by the FDA, will not adversely affect your medication program.

*These statements have not been evaluated by the Food and Drug Administration. These products are not intended to diagnose, treat, cure or prevent any disease.

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