Enzymes in the Raw

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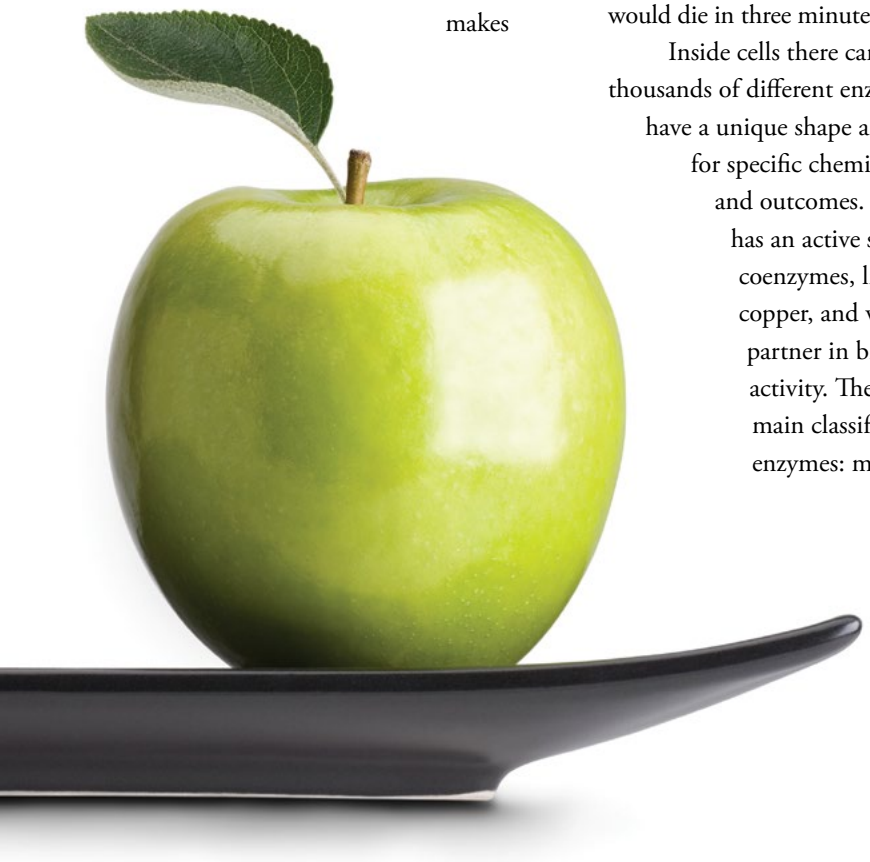
ALIVE!

I DESPISE sloths. The continuous ritardando of their existence is not to my liking. They sleep for 20 hours a day. When they are awake they barely move. They are so slow and sluggish that algae will actually grow on their fur! Can you imagine if sloths could talk? A short sentence would probably take five minutes! Wwwwwhhhhhhhaaaaaaaaaaat diiiiiiiiiiiiiiiiid youuuuuuuu ssssssssssssssaaaaaayyyy? I am way too impatient for that!

The human body has a certain speed at which life processes must occur for health and survival to be maintained. Cellular functions operate according to a biological clock. If these interactions and reactions occur too slowly, life cannot be sustained. This is what makes enzymes very important. They keep things happening, fast.



You have heard the generalization that man can live for about three to five weeks without food and three to five days without water. However, we would live only three minutes without enzymes. Enzymes are proteins with amazing abilities. They function as catalysts, compounds that increase the rate of chemical reactions. They were designed to attach, activate, and adjust their conformation to specific molecules, like other proteins, to form a desired product. After releasing their product, enzymes return to their original form to do it all over again, at mind staggering speeds. Without enzymes, reactions such as those involved in nerve conduction, heart contraction, energy production, and digestion of food would occur at a sloth's pace, and we would die in three minutes.

Inside cells there can be thousands of different enzymes that have a unique shape and location for specific chemical reactions and outcomes. Each enzyme has an active site where coenzymes, like zinc, copper, and vitamins partner in biochemical activity. There are three main classifications of enzymes: metabolic, digestive, and food. Metabolic enzymes run and maintain the body. They are found in every single cell. Digestive enzymes break down the food we eat into absorbable, usable components. Food enzymes are found in raw foods. In plants they serve to harvest the energy of the sun, protect the plant, and promote its survival and reproduction.

In the 1800s, Sylvester Graham advocated increasing raw plant food consumption. He called the simple diet he recommended, "the food of the first family." Advocates today give a variety of reasons for consuming a raw food diet, or a diet with a significant proportion of raw. Their strongest argument is based on the belief that plant enzymes benefit humans. The enzyme theory states that:

"1. Food enzymes possess a 'vital life force.'

2. People have a finite ability to produce enzymes over their lifetime.

3. Insufficient digestive enzymes lead to poor health, chronic disease, and premature death.

4. Cooking destroys enzymes in food.

5. Food enzymes are important for human digestion."[1]

Dieticians and authors, Brenda Davis, RD and Vesanto Melina, MS, RD, researched the tenets of this theory. Their conclusion is that "Raw food offers many advantages, and food enzymes are among them. There is good evidence that food enzymes play

a positive role in health and digestion, although the role appears somewhat different, and less critical, than what proponents of the food-enzyme theory have suggested."[2] Let's look at some of the evidence.

All enzymes have a pH and temperature range in which they are active. Outside of that range they are either inactive or denatured. This is why cooking pretty much destroys most enzymes. Raw food enzymes passing through the extremely acidic environment of the stomach also contributes to their destruction or inactivation.

"THERE IS GOOD EVIDENCE THAT FOOD ENZYMES PLAY A POSITIVE ROLE IN HEALTH AND DIGESTION"

When food is chewed, or ground up in some way (chopped, blended) food enzymes are released and activated. These enzymes remain active in the blender (raw food blended into a smoothie), mouth, and even in the upper part of the stomach. When food enters the stomach, it hangs out in the upper segment for approximately 40 minutes. It is thought that perhaps here, salivary as well as food enzymes work and are beneficial. After this stop however, the food enters the lower section of the stomach where it is mixed and churned with hydrochloric acid, pH levels change dramatically. Here, the enzyme pepsin is produced and secreted. Pepsin is the only enzyme known to survive, be activated, and thrive in the acidic pH of the stomach. As a result, the chance of food enzymes entering the small intestine (and being absorbed into the body) is not highly likely. Enzyme researcher Stephen Rothman states, "I am unaware of any evidence that suggests that enzymes in raw vegetables or fruits at quantities normally eaten, can substitute for our digestive enzymes or provide substantial assistance in the digestive process. Nor am I aware of any evidence that they pass safely through the acid environment of the stomach or are not rapidly degraded when they reach the intestines. . . ."[3]

The enzyme theory premise, that there is a limited amount of digestive enzymes in the body and that we cannot make digestive enzymes to reboot supplies, lacks scientific evidence. Researchers have found that instead, the body conserves digestive enzymes by reabsorbing, recycling, and reusing them. In addition, the contribution of raw food enzymes to the total digestive process is quite small. For example, amylase activity in a glass of carrot juice is 20-30 U/L whereas amylase in saliva is 200,000 U/L. If we had to rely on food enzymes alone, without digestive enzymes, "we would starve to death in short order."[4]

From a scientific perspective, the enzyme theory appears rather weak. However, this does not mean that an individual cannot be greatly benefited from eating more raw food. Raw plant foods provide an amazing array of vitamins, minerals, phytochemicals and antioxidants. In fact, there are a couple of enzymes that stand out when dealing with cancer. Myrosinase is an enzyme found in cruciferous vegetables such as broccoli, cabbage, kale, and even radishes. Myrosinase converts specific phytochemicals into active forms that are absorbed into the blood stream and are known to inhibit cancer growth and kill cancer cells in the body.

Allinase in allium vegetables like onion and garlic converts the phytochemical alliin to an active form possessing antimicrobial, antithrombotic, lipid lowering, antiarthritic, and anticancer activities. This conversion occurs when the plant has been juiced, blended, mashed, chopped, or chewed. Cooking these foods destroys much or all of these two enzymes. The anticancer potential of consuming these raw foods is exciting.

What do you imagine as the diet of the original family? Some people view it as a Paleolithic diet based on the hunting and gathering of cavemen. I see a family whose parents had once partaken of Edenic food picked fresh from trees, vines, and bushes, who made sure to include these in their daily fare, giving their children a reminder of that better land.

[1] Brenda Davis RD, Vensanto Melina MS, RD, *Becoming Raw*, Book Publishing Company, 2010, p. 210.
[2] Ibid, p. 224.
[3] Ibid, p. 218.
[4] Ibid, p. 214.

Risë has been writing on various health subjects for over 20 years. She has inspired many through her research and down-to-earth writing and speaking style. She believes that healthy living is intimately tied to happiness and wholeness.