

# Enzymes

## What are Enzymes?

Enzymes are proteins which act as catalysts for a myriad of reactions constantly taking place in our bodies. Catalysts speed up the rate of a reaction, without being consumed themselves in that reaction. Enzymes and their substrates (the substances acted upon by enzymes) are often described using the "lock and key" analogy. Enzymes are highly specialized, and will "fit" like special keys into the "locks" of their specific substrates, but no other. This means that the body needs to have a great number of different enzymes in order to catalyze and carry out the many functions necessary for sustaining life. Enzymes play a role in practically all body functions, including the production of energy, repair of tissues, organs, and cells, and digestion of our food. Enzymes are necessary even when there are sufficient amounts of vitamins, minerals and other nutrients already present.

Enzymes are categorized as either digestive or metabolic. Digestive enzymes are secreted in the gastrointestinal tract, where they break down food particles, enabling nutrients to be absorbed into the bloodstream. The three categories of digestive enzymes are: amylase, protease, and lipase. Amylase is responsible for the breakdown of carbohydrates, and is present in the saliva as well as pancreatic and intestinal secretions. An interesting fact is that dog and cat saliva contains no amylase, while human saliva does contain amylase. Pancreatic juices also contain protease, for breaking down proteins, and lipase, for the breakdown of fats.

## Where do we get all these enzymes?

The body manufactures its own enzymes, but also obtains enzymes from foods. Enzymes, like all proteins, are very heat sensitive. This means in order to obtain enzymatic benefit from food consumed, that food must be eaten raw. Cooking the food denatures (destroys) its enzymatic activity and alters its chemical composition. Eating raw foods and/or taking enzymatic supplements reduces stress on the body by conserving the body's supply of its own enzymes.

The best food sources of digestive enzymes are: sprouts (easy and inexpensive to grow on your own), unripe papaya, unripe pineapple, avocados, bananas, and mangos. You may make your own enzyme supplement by air-drying and then grinding into a powder the seeds of a papaya. Raw meats contain lipase, to break down fats. Fats consumed in the diet are not as well digested when exposed only to the body's own production of lipase, as they are when they are also worked on by lipase found in food items. The lipase found in food items (like raw meat) works better in an acidic environment, such as the stomach, while the lipase produced by the pancreas is better suited to fat digestion in the alkaline intestines.

In summary, it is apparent that both sources of enzymes are important (those produced by the body and those obtained from foods). Furthermore, it is advisable to feed raw foods in order to provide the optimum level of living enzymes, essential to life-sustaining processes in the body.