

## Digestive Materials

Digestive Requirements	Source	Action	pH
amylases	Pancreas	Digest starch	8
proteases	Pancreas	Breaks down proteins	8
nucleases	Pancreas	Digest nucleic acids	8
lipases	Pancreas	Digest lipids (fats)	8
stomach acid	Stomach	Break down proteins	2
bile salts	Liver (stored in Gall bladder)	Aids in digestion of lipids	7

## Deficiencies

### Deficiency of Protease

- Acidity is created through the digestion of protein. Therefore a protease deficiency results in an alkaline excess in the blood. This alkaline environment can cause anxiety and insomnia.
- In addition, since protein is required to carry protein-bound calcium in the blood, a protease deficiency lays the foundation for arthritis, osteoporosis and other calcium-deficient diseases.
- Because protein is converted to glucose upon demand, inadequate protein digestion leads to hypoglycemia, resulting in moodiness, mood swings and irritability.
- Protease also has an ability to digest unwanted debris in the blood including certain bacteria and viruses. Therefore, protease deficient people are immune compromised, making them susceptible to bacterial, viral and yeast infections and a general decrease in immunity

### Deficiency of Lipase

- Since lipase digests fat and fat-soluble vitamins, lipase deficient people may have a tendency towards high cholesterol, high triglycerides, difficulty losing weight and diabetes or a tendency towards glucosuria (sugar in the urine without symptoms of diabetes). The down-the-road outcome of these tendencies is heart disease, which kills one out of two Americans.
- Because lipase requires the coenzyme, chloride, lipase deficient people have a tendency towards hypochlorhydria (low chlorides in our electrolyte balance). This can be easily remedied with lipase, but often nutritionists recommend using betaine HCL, which may place an acidic stress on the blood, leading to an inability to provide the alkalinity required to activate the body's pancreatic enzymes. Lipase requires a high pH for its activation among food enzymes. That is why fats are the most difficult of all foods to digest.
- Fat intolerant people can be helped by taking a lipase supplement, but the fat intolerance problem still exists. (i.e., Taking a food combination containing lipase will gradually reduce the size of gall stones, thus reducing symptoms, but this does not cure fat intolerance just as surgery does not cure disease.) The lipase will help prevent an aggravated condition ONLY if the fat intolerant person minimizes fat consumption.
- Lipase deficient people have decreased cell permeability, meaning nutrients cannot get in and the waste cannot get out. For example, diabetics are lipase deficient and cannot get glucose into their cells, nor can wastes or unwanted substances get out. People with "hidden viruses" that are often diagnosed with "Chronic Fatigue Syndrome" also fall into this category. Lipase modulates cell permeability so that nutrients can enter and wastes exit. Waste-eating enzymes (such as protease) may also be taken to help cleanse the blood of the unwanted debris.

- A common symptom of lipase deficiency is muscle spasms. This is not the "muscle cramp" (tetany) resulting from low ionized blood calcium. It commonly occurs as trigger point pain in the muscles across the upper shoulders, but it can occur in other muscles, such as those in the neck or anywhere in the small or large intestines including the muscles of the rectal tissues. If chronic muscle spasms keep you going back to your chiropractor, osteopath or acupuncturist for repeated adjustments or therapy, try adding some lipase to your diet. It may help you hold your adjustments.
- People with "spastic colon" may be lipase deficient. They are often given toxic muscle relaxant drugs to control the symptoms, but a simple food enzyme called lipase may provide relief.

#### Deficiency of Amylase

- Amylase refers to a group of enzymes whose catalytic function is to hydrolyze (breakdown) sugar and starch.
- Amylase digests carbohydrates (polysaccharides) into smaller disaccharide units, eventually converting them into monosaccharides such as glucose. People who are fat intolerant (can't digest fats) often eat sugar and carbohydrates to make up for the lack of fat in their diet. If their diet is excessive in carbohydrates, they may develop an amylase deficiency.
- Amylase digests not only carbohydrates but also dead white blood cells (pus). For example, when you are low in amylase you are a candidate for abscesses (inflamed areas with pus but not bacteria). If you have a toothache and are being treated with antibiotics, but it doesn't go away, chances are you have an abscess.
- Amylase is involved in anti-inflammatory reactions such as those caused by the release of histamine and similar substances. The inflammatory response usually occurs in organs which are in contact with the outside world, i.e., the lungs and skin. These include skin problems such as psoriasis, eczema, hives, insect bites, allergic bee and bug stings, atopic dermatitis, and all types of herpes. Some lung problems including asthma and emphysema may require amylase plus other enzyme formulas depending on the particular condition.