Enzymes
the Catalysts of our Life Force
by Roger French

We rarely hear much about these little critters, but without them we can't live. They are the agents that initiate all the chemical changes in our cells that constitute life. However, they are fragile and easily destroyed by heat. Besides our digestive enzymes, there are enzymes in our cells and in our foods which have a large bearing on our health and wellbeing. By understanding these other enzymes, we can have greater control over how our bodies and minds can function and how long we may remain on this planet.

In the late 1800s a European researcher named Virchow discovered that the immune system produces more of its white blood cells after a cooked meal than after a meal of raw foods, and called this condition 'digestive leukocytosis'. This condition was first explained in detail by a Swiss doctor, Dr Paul Kautchakoff, when he presented to the First International Microbiology Conference in Paris in 1930 a paper entitled 'The Influence of Food Cooking on the Blood Formula of Man'.

Dr Kautchakoff found that there is a dramatic increase in the level of activity of white blood cells (leukocytes) in the blood after undigested cooked food passes from the intestine into the bloodstream. The immune system regards these undigested food particles in the same way as it regards bacteria, and mounts an attack against them. This puts a strain on the immune system and depletes overall health.

The first major study to compare cooked food and raw food was conducted by Dr Francis Pottenger of California in 1932. Involving 900 cats over ten years, he fed one group of cats cooked meat and pasteurised milk and another group only raw meat and unpasteurised (raw) milk.

The differences were dramatic. In the group of cats fed only raw food, there were no degenerative diseases, the cats were docile and lived to a good age, dying primarily of old age. In contrast, the cats fed cooked food showed degenerative diseases in the first generation – allergies, asthma, arthritis, kidney disease, liver problems, thyroid disturbance, dental disease, osteoporosis, heart disease and cancers. The second generation suffered these diseases more severely and, in the third generation, the kittens were either stillborn or born with disease and most died within six months. The study ended during the fourth generation because the surviving cats were infertile and could not reproduce. In other words, cooked food caused this entire group to die out.

The underlying reason for the inability of cooked foods to sustain life is the fact that they create digestive problems. Before discussing this, let's consider digestive difficulties in general.

Impaired digestion is brought about by many possible factors, including the following:

• Overeating, which puts a great strain on the digestive system;
• Eating on the run;
• Eating while stressed or excessively tired;
• Drinking during or soon after meals, especially very hot or very cold drinks;
• Constantly eating cooked, processed or irradiated foods;
• Growing older – digestive systems tend to weaken in the later years.

The signs of poor digestion include:

• Burping, bloating and excessive wind;
• Feeling tired after eating;
• Food intolerances;
• Abdominal cramps and pains;
• Indigestion and feeling that food is still in the stomach two to four hours after a meal;
• Alternating constipation and diarrhoea.

Why are digestive problems widespread in modern society? A typical meal in Australia today contains poor combinations of foods, that is, foods that have different digestive requirements and so interfere with the digestion of each other. Over the last 50 to 100 years, more and more chemicals have been added to our foods – herbicides, insecticides, anti-ripening agents and a wide range of food additives. Further, when food is cooked, all the enzymes occurring naturally in that food are destroyed.

This brings us back to the subject of digestive leukocytosis.

DIGESTIVE LEUKOCYTOSIS
Many researchers, including Max Wolfe, Edward Howell and Loomis were studying enzymes from the 1930s onwards. It was soon realized that enzymes that occur naturally in raw foods quickly predigest the food when it is eaten. However, with cooked food, the food enzymes are completely destroyed by cooking, the enzymes to digest that food must be supplied entirely by the digestive organs. This produces a constant drain of the body's enzymes and the food may not be fully digested. The result is, as mentioned above, a response by the immune system to the incompletely digested food particles.

With canned and cooked foods, the increase in the amount and activity level of white blood cells has been found to be moderate, whereas with heavily processed foods, such as packaged meats, the increase is somewhat similar to food poisoning – but without the bacterial contamination.

There is no increase in white blood cell numbers or level of activity when people eat only raw food. The researchers concluded that cooked foods are missing essential natural enzymes, whereas all raw foods contain food enzymes that completely digest the food when it is eaten. Dr Kauachkoff concluded that it is not the quantity of food, but the quality that plays an important role in eliciting a response by the
immune system. He also found that the reaction in the bloodstream is almost instantaneous, occurring at the moment the food enters the stomach. He found that every raw foodstuff has a critical temperature above which that food will produce a reaction by the immune system. For example, ordinary drinking water heated for half an hour at 87° C has no effect, but when heated to 88° C, there is a response in the bloodstream.

The critical temperature is not the same for all foods, it varies within a range of 10 degrees. Here are some examples for common foods:

- **Drinking water**: 88° C
- **Milk**: 89° C
- **Cereals**: 89° C
- **Tomatoes**: 89° C
- **Cabbage**: 90° C
- **Butter**: 92° C
- **Apples**: 93° C
- **Oranges**: 93° C
- **Potatoes**: 93° C
- **Carrots**: 93° C
- **Strawberries**: 93° C
- **Figs**: 93° C

Note that all critical temperatures are below the boiling point of water which is 100° C.

Combinations of raw foods and cooked foods eaten together produce some interesting effects. If some of a single food is raw and the rest is cooked, there is no reaction. The raw part apparently neutralises any reaction to the cooked portion.

When two different foods are consumed together, with one of them raw and the other cooked, there is no reaction provided the critical temperature of the raw food is higher than that of the cooked one.

On the other hand, if the raw food is outnumbered by several cooked foods, there will be a reaction.

As if to complicate matters, Dr Kauchakoff found that highly manufactured foods, such as sugar, wine, chocolate, etc, that normally produce a major response by the immune system, can be eaten in a way that avoids any response. One of these foods needs to be consumed with at least two raw foods of a different critical temperature.

In every case, for raw food to protect us against cooked food, the raw food must constitute half the meal or more. There is a simple way to at least reduce the effect of cooked food. Whether or not the protection is complete, the Natural Health Society has long recommended that in any meal containing cooked food, aim to consume at least a few mouthfuls of raw food first. Because the bloodstream responds immediately to the first food to enter the stomach, this may well fool the immune system into assuming that the remainder of the food will not be a problem.

**WHAT ARE ENZYMES?**

Enzymes are biological catalysts, that is, they trigger off chemical changes in living tissue. In fact, they trigger off every chemical change in the living body, there being perhaps millions of reactions every second. They are the agents of life force; without enzymes there is no life.

There are thousands of different enzymes in the human body, and more are being discovered constantly. They are responsible for initiating digestion, growth, healing of tissues, breakdown of tissues, degradation of wastes, etc. All life's processes consist of an extremely complex series of biochemical reactions which are referred to as metabolism. Enzymes are the catalysts that make metabolism possible. They are made essentially of protein.

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ENZYMES, OUR LIFE POTENTIAL

In 1940 Dr Howell raised the question as to whether chronic degenerative disease is a matter of severe enzyme deficiency. He spent the remaining 40-odd years of his life researching this, and concluded that the answer is a decided 'yes'. He detailed the findings of his life's work in his two books, Food Enzymes for Health and Longevity and Enzyme Nutrition.

Dr Howell observed that all mammals have a 'pre-digestive stomach' or 'food enzyme stomach'. In cattle, it is the rumen and in humans it is the uppermost portion of the stomach. It is here that the enzymes found in raw food predigest that food.

Dr Howell found that heating food to 48°C completely destroys all its enzymes. So when cooked food is eaten, digestion depends entirely on enzymes supplied by the digestive system. A great burden is placed on the pancreas because this organ supplies a lot of digestive enzymes. After many years, the pancreas enlarges and, if the burden continues for long enough, the result may be pancreatitis or some other serious condition.

Dr Howell reasoned that cooked food must force the body to squander its metabolic enzymes on digestion. He also reasoned that the body is able to produce only a certain number of enzymes in total, that is, there is a limit to our enzyme potential, so that when the body's level of metabolic enzymes runs low, degenerative disease develops and premature ageing occurs.

Dr Howell proposed that our longevity is proportional to our availability of enzymes. The more enzymes our bodies are able to produce, the longer we will live, and, conversely, the more rapidly that our enzymes are used up, the shorter will be our lifespan.

"... our longest lifespan would be achieved by eating entirely raw foods, whereas our shortest lifespan would be the result of eating entirely cooked food. Most of us, of course, are somewhere in between."

In relation to fasting, Dr Howell discovered something very interesting. When no food is consumed (which must be for only a relatively short period), there is an increase in the available enzymes in the body, and there are more of them available for repair and healing. This discovery is consistent with the remarkable recoveries from illness achieved by therapeutic fasting. No doubt the more commonly used juice cleansing diets (which use raw juices) have a similar effect.

There are two leading things that we can do to maximize our enzyme potential. The first is to consume as much of our food raw as possible.

We need to be aware that even pasteurisation kills all enzymes. There are three methods of pasteurisation. Low-temperature pasteurisation heats the food for 30 minutes at 63°C. The high-temperature, short-time method heats the food to 72°C for 15 seconds. Ultra-high-temperature (UHT) uses 138°C for just two seconds.

Because canning involves either cooking or pasteurising the food in the can, all enzymes in canned food have been destroyed.

Freezing is probably the least damaging method of preserving food, but if the food is blanched prior to freezing, this will inactivate the natural enzymes - which is intentional for preservation purposes. Nothing is quite as good as fresh, raw food.

The second way of maximizing our enzyme potential is by taking supplements of digestive enzymes. This will now be discussed in some detail.
SUPPLEMENTAL ENZYMES
The practical approach to this whole issue of enzymes would seem to be to consume as much food in the raw state as is appropriate – preferably at least 70% of total food intake – and to support the digestion of cooked foods with enzyme supplements.

In the early years, scientists thought that we couldn’t absorb supplemental enzymes, but it is now believed otherwise. Food often remains in the upper region of the stomach for as long as an hour, and much of the activity of supplemental enzymes occurs during this time before food is mixed with stomach acid. Although stomach acid can be very acidic (pH as low as 2), when mixed with food the mixture becomes much less acidic. In this environment, enzymes from microbial sources are not harmed and may even function optimally.

Researchers believe that, besides aiding digestion, supplements may have a sparing effect on the body’s own digestive enzymes. It works this way. Enzymes are secreted into the small intestine for the digestion of protein, carbohydrates and fats. A portion of these enzymes that is not required is then absorbed back into the bloodstream and returned to the pancreas. In the pancreas they are stored until the next meal, when they can be again secreted for the digestion of protein, carbohydrates and fats. This recirculation of enzymes means that oral supplementation may allow the body’s own digestive enzymes to be conserved and thereby contribute to the body’s pool of enzymes that are available for the vital functions of life.

Most enzyme supplements are derived from the pancreases of pigs. Not only is this unappealing to people who choose natural diets, but these animal enzymes are more easily destroyed by stomach acid and don’t necessarily work well in our small intestines either.

The better source of enzymes is fungi, from which can be derived proteases, amylases, lipases, cellulase and lactase. These microbial/fungal enzymes have the advantage of being broad spectrum and are highly stable in the range of acidities occurring in the stomach and intestines. Importantly, thanks to a very meticulous extraction process, these enzymes contain no microbial residue.

Advantages of Enzyme Supplementation
The book, Enzymes, Enzyme Therapy, by Dr Anthony Cichoki, summarises the benefits of taking enzyme supplements as follows:
- Rapid effect
- Excellent tolerance
- No acute or chronic side effects
- No risk of haemorrhage
- Coagulation controls not necessary
- No suppression of the immune system
- No incompatibility with medications
- Can be used by diabetic patients
- Useful for all ages
- Useful in diseases of arteries and veins
- Decreased scar formation in wound healing

About the Use of Enzyme Supplements
The first and foremost question is – will the pancreas become lazy if we take enzyme supplements? According to a practitioner with a great deal of experience in the use of enzyme supplements, the answer is no. The digestive organs, especially the salivary glands and pancreas, adjust their output constantly in accordance with the amount of food enzymes being supplied by our diets. The supplements may simply be saving them from working overtime when we consume cooked food. Provided they are taken in sensible doses, supplemental enzymes will not replace the total production from the pancreas.
What if you have a very sensitive system? Start taking the supplements gradually. Take very small quantities for a week or so to allow the body to get used to the supplemental enzymes.

Can supplemental enzymes from microbial sources produce adverse reactions? It is possible that there may be a degree of ‘getting worse before getting better’. As the cells become healthier, they may begin to detoxify, resulting in runny nose, nausea, headache, diarrhoea, aches, pains or other discomforts. Rather than quitting taking the enzymes when symptoms occur, continuing to take them may result in the person soon experiencing improved health and knowing that they are doing good. However, should the symptoms be severe or persist beyond a few days, a practitioner should be consulted.

How quickly can results be expected? If there is indigestion, heartburn, bloating or cramping, there may be immediate relief. With constipation, it may take a week or two, while other people may take a few weeks to a month to feel increased energy.

Can enzymes help a weight problem? Yes, says the practitioner. Most people who are overweight are low on the enzyme, lipase. This will be compensated for by the supplemental enzymes which will assist in breaking down the fats in the diet. After a meal, the person will feel satisfied sooner because all the food is being digested. Food cravings are considered to be a sign of incomplete digestion.

Can fungal enzyme supplements be taken with prescription drugs or other medications? Yes, says the practitioner, these enzymes are classified as food by the United States Food and Drug Administration. However, if your practitioner advises otherwise, then follow your practitioner’s advice.

Some Precautions

People with gastric or duodenal ulcers need to take particular care with supplemental enzymes. If the enzymes contain proteases, they should only be taken with food and under professional supervision.

It is common to take betaine hydrochloric acid with an enzyme supplement, but if there is any starch in the meal, the acid will impede its digestion in the stomach. For those who need the hydrochloric acid, which is more particularly elderly people, it is best taken 40 to 60 minutes after finishing the meal. Also, if taking blood-thinning drugs, there is evidence that hydrochloric acid doesn’t combine well.

For Older People ...

As the digestive system ages with the years, there is often a decline in stomach acid and digestive capacity. This is where enzyme supplements can be of great value, because they can be adjusted to complement the declining bodily enzymes.

Many older people have particular difficulty in digesting raw salads, raw vegetables and fruits. In this case, the enzyme, cellulase, which is not produced by the human body, can be very helpful as a supplement.

SUPPLEMENTAL ENZYMES AND DIGESTIVE AILMENTS

Lactose intolerance (intolerance to the milk sugar, lactose) is the most widely recognised enzyme deficiency. It is caused by the small intestine no longer producing the enzyme, lactase, which digests milk sugar. The sugar remains undigested, typically resulting in diarrhoea, flatulence, bloating, cramping and abdominal pain. Supplemental enzymes may make a great difference to lactose intolerance.

Inability to digest fat is a problem with many people. It can result in deficiency of essential fatty acids and deficiency of the fat-soluble vitamins. Supplements containing lipase from fungi can be very effective.

Leaky gut and food allergies are widespread. Incompletely digested food passes through the gut wall into the bloodstream, leading to an immune response and the symptoms of allergy. Supplemental enzymes may improve the digestion of protein sufficiently to reduce the immune response and thus ease the allergy problem.

Regarding irritable bowel syndrome, “I have seen so many people who have been diagnosed by their doctors with irritable bowel syndrome,” says practitioner Robert McIlroy. “I put them on enzymes, totally eliminate all dairy and wheat products, and their bowel settles right down. The younger the person is, the easier it is to fix.”

If a person has leaky gut and wakes up during the night and can’t get back to sleep, this practitioner’s advice is to take a dose of supplemental enzymes with half a glass of water and go back to bed. In 90% of cases, he finds that the person is asleep within about 20 minutes. It is the food they had for dinner that has upset their whole system.

Cruelty Free Living Festival Coming to Sydney

Animal Liberation (NSW) will be presenting Sydney’s first ever Cruelty Free Living Festival on Sunday, 5 November 2006. This will be a totally cruelty free event designed to educate the public about everyday life choices they can make to avoid causing cruelty to animals. It will also showcase the amazing range of cruelty free food and household products now available in Australia.

There will be about 40 stalls from cruelty free product suppliers, vegetarian and vegan food producers, vegetarian restaurants, animal rights groups and vegetarian/vegan societies. To create a festival atmosphere there will be all day entertainment on the main stage, children’s activities, cooking demonstrations, wine tasting, workshops, speakers and lots of delicious vegie food to feast on.

The Cruelty Free Living Festival will be held at Petersham Town Hall, Crystal Street, Petersham, which is a beautiful art deco hall close to trains, buses and has lots of street parking.

This will be an excellent opportunity for vegie-friendly businesses to promote themselves and their products to a receptive audience. Festival sponsorship is now available with many benefits including logos featured on all advertising materials and access to workshops and showbags. If anyone is interested in sponsorship of the festival or in having a stall on the day, please email Jessica Bailey at jessica@crueltyfreeshop.com.au or telephone 02 9564 5861.

We invite all people who are vegans, vegetarians and everyone else interested in saving animals from cruelty to attend the festival for a great day of eating, shopping, education and entertainment. See the next issue of the NVNH for full festival details.