

Pantothenic Acid, Part of A Healthy Foundation

Just about four-score and zero years ago, in a biochemistry laboratory in Texas, a scientist was working with rows and rows of yeast. He was very interested in yeast. Yeast was a cluster of microbes that reproduced through a-sexual mitosis, much like a great number of cells in the human body. Theoretically, if one could improve the health of a yeast culture one could improve the health of the bodily cells in a human body.

In the mid 1930's, this middle-aged scientist named Dr. Roger Williams discovered that his yeast cultures grew vibrant rapidly after being given a particular nutrient. By 1940, he had it completely isolated and synthesized. He called it *pantothenic acid*. Its name comes from the Greek word, *pantother*, which means "from everywhere". A fitting name since pantothenic acid, more commonly called vitamin B5, is found in nearly every plant, animal, or other substance we consume as food. Another way of looking at this is that humans are one of the only organisms that cannot produce their own pantothenic acid. The reason may require much more discussion than we are currently interested in at the moment.

This discovery was one of Dr. Roger Williams's claims to fame. He also went on to name folic acid (B9) and become a pioneer and leading expert in the field of vitamins and essential nutrients. He was active in this field for nearly the remainder of his life, which was quite some time considering that he finally passed away at age 94, which is not surprising for an expert in essential nutrients.

He was also very involved in the research of proper food enrichment. The practice, which is still prevalent today, is the processing on grain. The great majority of grains today are stripped of the substances which will accelerate decay and decrease shelf life; these are mainly nutritious elements, vitamins, and minerals. In an attempt to restore the nutritional values of these processed foods, they are "enriched" with nutrients per guidelines by the FDA and other regulatory governmental authorities.

During the mid to late 1960s, the nutrients that were required to be replaced were iron, riboflavin, thiamine, and niacin. Dr. Roger Williams conducted a study using white bread enriched through the standard process and fed it to rats. Two-thirds of the rats were dead within three months, and those that were still alive were afflicted with severe malnutrition.

Dr. Williams then conducted a second trial using white bread that had been further enriched with other essential nutrients like sulfur, copper, phosphorus, magnesium, calcium, lysine, vitamins A and E, as well as pantothenic acid. This superior enrichment was able to keep the rats alive in a healthy condition indefinitely. He obviously recommended improving the enrichment guidelines drastically.

Since that time, enrichment requirements are greatly improved, it is not a perfect system. The quantity and quality of the nutrients used in the enrichment process are greatly inferior to the natural arrangement of nutrients that existed within that food in the first place.

Pantothenic acid is a particularly important nutrient for the body for a number of reasons. Pantothenic acid is a primary constituent of coenzyme A, in fact it is the first substance upon which all the other substances are processed and formed upon. Coenzyme A is an extremely important substance because it is needed to both synthesize and oxidize fatty acids. It is needed in order to create and process ATP, the main source of bodily energy. It is needed in order to properly form and construct antibodies as a part of the immune system. It is also needed in order to make acetylcholine which is a vital part of the nervous system. Actually, such a general explanation of acetylcholine is not doing it proper justice.

Acetylcholine was the first neurotransmitter ever discovered. Though it is used throughout the entire nervous system, both the central and peripheral, it is the only neurotransmitter used in the motor division of the somatic nervous system. In plain English, that means that without acetylcholine, you couldn't move. And without coenzyme A, you can't make acetylcholine. AND without pantothenic acid, you just simply can't make coenzyme A. For those of you not scientifically inclined, a solid understanding of the above paragraph will surely win you a few bets amongst your friends, or at least make you look smart and impress a few people, maybe even your disapproving in-laws? Good luck.

Returning to the matter at hand, because of the enrichment process, however, pantothenic acid deficiency is rare and even if one does have a mild deficiency, it is difficult to detect since its symptoms are

often mental, subjective, or similar to other deficiencies and medical conditions.

Most commonly, a deficiency in pantothenic acid is accompanied by a deficiency in B-complex vitamins in general. But even if one were deficient in just pantothenic acid alone, the wide spread and systematic demand of coenzyme A creates a variety of noticeable symptoms namely:

- Burning sensations in the feet
- Loss of appetite
- Respiratory infections
- Indigestion
- Peripheral neuritis
- Adrenal insufficiency
- Abdominal pain

Also, a host of mental symptoms exist as well, as is common with many of the B vitamins. These symptoms include, fatigue, depression, insomnia, and gloominess. The good news is, similar to many vitamin deficiencies; intake of sufficient pantothenic acid quickly improves and reverses these deficiency symptoms.

Since a healthy balanced diet rich in animal proteins, vegetables and whole grains will usually satisfy one's basic needs for pantothenic acid, why all the fuss? Honest questions deserve honest answers and the honest answer is that pantothenic acid also has therapeutic value when taken either in larger doses, and/or for particular conditions, and times of physical stress, such as injury, antibiotic therapy, and severe illness.

Pantothenic acid, specifically pantethine which is the active form, has been shown to be effective in regulating cholesterol

(increasing HDL and lowering LDL) and decreasing triglycerides in both the blood and liver. There is even strong evidence that pantothenic acid can be very effective for people with fatty livers. Both cholesterol and triglycerides are associated with cardiovascular conditions such as heart attack and stroke.

Even more impressive is the benefits that diabetics can have from proper use of pantothenic acid. A recent study conducted in Alexandria, Egypt by three researchers at the Medical Insurance Hospital showed promising results for a topical ointment made from royal jelly and pantothenol (a form of pantothenic acid). Over ninety-percent of diabetics with foot ulcers that also had deep tissue infections were cured. These are extremely promising results for diabetics suffering from these ulcerations, this study was not double-blind, and had no control groups and further study is needed.

Another subsequent condition associated with diabetes is peripheral polyneuropathy, which is when the hands and feet develop either numbness, weakness, or pins and needles tingling, and sometimes burning pain. Often it can become gradually worse and disables people, making them unable to use their hands or walk.

In a German study conducted in 1997, patients with polyneuropathy were given alpha-lipoic acid (ALA) and many experienced benefit. This same group was then given a combination of ALA and pantothenic acid in combination nearly 85% of them experienced even greater benefit.

This is a great illustration of how nutrients in general, not just pantothenic acid, may be beneficial on their own, but often become even more powerful and effective when used in the proper balance and combination. This is exactly how your body operates, using the resources it is given in various combinations for multiple purposes to make the most and best use of what it has.

The best way to discover what the best balance and combinations of nutrients that are right for you is by consulting a nutritional expert who can help you develop a proper diet and supplement plan that may include pantothenic acid.



**4789 Vineland Ave.
Toluca Lake, CA 91602
(818) 761-1661**

www.nutrikon.com