

WHAT IS IMMUNOCAL™?

Excerpt From: *Chronic Fatigue, Fibromyalgia & Environmental Illness*, by Burton Goldberg, M.D. page 127 - Immunocal™: Immune Nutrient from Milk Protein

One of the most important substances required by the immune system for optimal functioning is an amino acid complex called glutathione. However, supplementation is made difficult by the complexity of the body's system for delivering glutathione to cells. Canadian researchers figured out a way to deliver glutathione effectively in the form of a natural milk protein supplement called Immunocal™ and early research suggests it has benefits for chronic fatigue syndrome, cancer, AIDS, hepatitis, and age-related conditions such as Alzheimer's, Parkinson's, and arteriosclerosis.

Glutathione is a tripeptide, a small protein consisting of three amino acids (glutamic acid, cysteine and glycine) bound together. The substance functions as a principal antioxidant, scavenging free radicals and toxins such as lipid peroxides that would otherwise damage, even destroy, cells. It accomplishes this valuable task by working with an enzyme called glutathione peroxidase. Further, glutathione regulates the activities of other antioxidants such as vitamins A, C, and E.

However, when the body is suffering from oxidative stress, supplies of glutathione become depleted. Oxidative stress is a condition in which the body is unable to detoxify itself completely and is overrun by free radicals because antioxidants are depleted. Oxidative stress affects the nervous, immune, and endocrine systems, and it may underlie many of the symptoms associated with chronic fatigue.

Glutathione exerts another protective and scavenging role in concert with the liver, the body's primary organ of detoxification and internal cleansing. In the liver, glutathione combines with toxins, carcinogens, and waste products as a way of more effectively securing their elimination from the body. In addition, glutathione helps red blood cell membranes and other cellular proteins maintain their structure and aids the production of leukotrienes, immune system cells crucial for working against inflammation.

But glutathione also has an important role in supporting the activity of white blood cells called lymphocytes (the key players in the body's immune response) as well as antibodies (specialized immune defense cells). In fact, for lymphocytes to do their job, glutathione must be present. The tricky fact about glutathione is that you can't simply take in more glutathione as a supplement; it must be made INSIDE the cells. In other words, glutathione doesn't enter cells directly; rather, it must be made within them by precursors.

Recognizing this biochemical fact, Canadian researchers developed Immunocal™ in 1993 to deliver to the cells the necessary PRECURSORS for glutathione. In the course of researching dietary protein sources capable of boosting the immune system, Gustavo Bounous, M.D., of McGill University in Montreal, Quebec, discovered the substance, which later became Immunocal™. Today, Dr. Bounous

serves as the medical director of Immunotec Research, the manufacturers of Immunocal™, located in Vaudreuil-Dorion, Quebec, Canada.

Immunocal™ is a natural food supplement consisting of concentrated milk protein powder containing unusually high amounts of glutathione precursors, according to Immunotec Research. "Immunocal™ promotes optimal functioning of the immune system by sustaining normal levels of glutathione and glutathione precursors in the lymphocytes. Glutathione, acting as the cellular antioxidant, allows for a full immune response," says Immunotec literature.

Immunocal™ contains concentrates of three substances in the whey portion of milk (serum albumin, alpha-lactalbumin, and lactoferrin). These contain a large quantity of cystine, an amino acid breakdown product which is a more usable form of cysteine (the amino acid precursor of glutathione). Studies have shown that cysteine levels tend to be the rate-limiting factor (the biochemical bottleneck) in maintaining the ideal level of glutathione.

The problem with cysteine (both a protein building block and an antioxidant) is that it is found in only trace amounts in a limited number of foods, including raw egg whites, milk, and meats. If the body is under immune stress, as happens with a viral infection, dietary sources may not be sufficient to produce enough glutathione.

If you isolate cysteine and take it in large quantities, however, it can be toxic. Rapidly metabolized (burned up, digested by the body), cysteine is unusable as a dietary supplement. Immunocal™ solves this problem because it contains cystine, which is to say, cysteine in a more practical form. This form is readily released during digestion and transported to target cells, where it can be broken down into cysteine.

Once in the cells, the cysteine can then be used as raw material for the synthesis of glutathione, the goal of all this biochemistry. For example, proper amounts of glutathione enable white blood cells (lymphocytes such as T cells, B cells, and natural killer cells) to reproduce in order to make antibodies or to attack foreign substances directly.

Five hundred liters of fresh, raw cow's milk are necessary to produce one kilogram of Immunocal™, according to Immunotec. It is produced using a gentle process and low temperatures to preserve the biological activity of the proteins. Recommended dosage is one pouch (10 g) of Immunocal™ daily. Here you add the powder to 4 to 6 ounces of milk, water, or juice and shake gently to mix. There are no reported side effects from using Immunocal™, says Immunotec.

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