

YOU ARE WHAT YOU DIGEST

By John Burgstiner, B.S.

We are standing on the threshold of a new era in health care. In the near future, new immune-boosting techniques will help us fortify our natural resistance to life-shortening diseases caused by bacteria, viruses, fungi, and cancer cells. Each of us will have a better chance of living longer, with increased vigor and greatly improved health.

Aging, life extensions and cell regeneration appear to be related to an intact and strong immune system. As the immune system ages, some of us will die or spend our later years in bad health—simply because our defenses are down. What if we could bolster a flagging immune system so it would perform with youthful vigor? That hope is looking more like an eventuality as eye-opening evidence accumulates from laboratories around the world.

Food supplements, herbs, exercise, stress reduction, and new immune-stimulating formulations may fortify immune function. With this support, we may be able to resist many diseases in middle and old age as we did in youth.

Thymus gland: Controller of Immunity

Over the last three centuries, immune-stimulating vaccines, which produce a mild dose of the disease, stimulate the immune system to produce the appropriate disease-fighting antibodies. These vaccines have quelled smallpox, polio, and measles. Scientists are working on vaccines for cancer and the common cold.

We know the thymus gland produces T-lymphocytes, the white blood cells responsible for cell-mediated immunity. Cell-mediated immunity refers to immune mechanisms not controlled or mediated by antibodies. Cell-mediated immunity defends the body against infection by mold-like bacteria, yeast (including *Candida albicans*), fungi, parasites, and viruses (including herpes simplex and Epstein Barr). Cell-mediated immunity also protects against cancer and allergies.

The thymus gland also releases several hormones such as thymosin, thymopietin and serum thymic factor, which regulates many immune functions.

The thymus gland, large in infants and children, atrophies as we grow older. By age 20, it often starts shrinking. If a gland dries up, we need to replace it. In other words, if we maintain normal physiology, we prevent disease and pathology.

Protecting Thymus Function

Protecting the thymus is important. This gland is extremely susceptible to free radicals and oxidation damage caused by stress, radiation, infection, and chronic illness. Antioxidants such as vitamin C, vitamin E, selenium, zinc and beta-carotene can prevent thymus shrinkage and enhance cell-mediated immune functions.

Quality extracts of calf thymus tissue and various botanicals effectively stimulate thymus gland activity. Calf thymus tissue has been shown to significantly improve immune function. Herbs such as *Echinacea angustifolia*, licorice and European mistletoe have profound immune-enhancing effects.

We replace the thyroid gland with thyroid hormone, the adrenal gland with cortisone, the pancreas gland with insulin, and the ovaries with estrogen and progesterone. However, physicians have not routinely replaced the thymus gland. Yet thymus supplementation has been linked to dramatic results in such varied conditions as asthma, hay fever, allergies, chronic fatigue syndrome (Epstein Barr), herpes, condyloma acuminatum, and hepatitis B and C. And this is just the tip of the iceberg.

Biological Response Modifiers

Biological Response Modifiers (BRM), produced by the human body, are also involved in immune function, BRM's are hormones, proteins, and other substances that stimulate or regulate the incredibly intricate workings of the immune system. Fifty BRM's are known at present. The most studied group are the thymosins, hormones extracted from the thymus gland. This "master gland" of the immune system converts regular cells into specialized cells for fighting disease.

Allan Goldstein, Ph.D. chairman of Biochemistry and Molecular Biology at George Washington University in Washington, D.C. began isolating thymosins in the 1960's. Goldstein's Washington-based company, Alpha 1 Biomedicals Inc., is investigating the potential for successful treatment of hepatitis B.

Milton G. Mutchnick, M.D., a gastroenterologist/ hepatologist at Wayne State University Medical School in Detroit, Michigan, has now converted 24 of 32 hepatitis B carriers to normal. Funded by an NIH grant, Mutchnick used controlled studies with thymosin injection. In the United States, the FDA has not yet approved thymus for treatment of disease. In Europe, thymosins are routinely used in the treatment of certain cancers, influenza, and infectious diseases such as herpes. Goldstein believes that taking thymosins can enhance immunity throughout old age.

Interferon, Interleukin, and Colony-Stimulating Factors

Another BRM is interferon, a family of hormones that regulates the activity of T-cells, Alpha-interferon blocks the reproduction of some viruses. The FDA has approved interferon for the treatment of hepatitis C, hairy-cell leukemia and Kaposi's sarcoma (two kinds of cancer), and genital warts. Interferon gamma is approved for treatment of a hereditary immune disorder, chronic granulomatous disease.

Interleukin is another BRM. These hormones tell the appropriate immune system cells to multiply once an invader has been captured and identified. Interleukin-2 promotes the multiplication of T and B cells. It safely and effectively boosts the potency of a hepatitis B vaccine. Researchers at the National Cancer Institute have used a combination of Interleukin-2 and Interleukin-2-stimulated NK (natural killer) cells to treat patients with three types of cancer: malignant melanoma, kidney cancer, and colon cancer.

Equally promising as immune boosters are a class of BRM's known as colony-stimulating factors (CSDF), first discovered in the 1960's. Manufactured by specific immune cells, their job is to stimulate the development of immature bone marrow cells into functional immune system components. These factors are used to stimulate the bone marrow after transplantation or cancer chemotherapy. They also increase the effectiveness of anti-AIDS drugs.

David Goode, M.D., chief of the Division of Hematology and Oncology at the UCLA School of Medicine, says "CSF's may ultimately prove to be as big a step to medicine as the introduction of antibiotics."

In the fall of 1990, three separate groups of researchers isolated a protein that activates primitive bone marrow cells, known as stem cells. The activated stem cells divide and differentiate into progenitors, not only of the red cells that carry oxygen to the body's tissues, but of every variety of cell in the immune system. This has incredible potential to treat a variety of bone marrow failures from cancer chemotherapy, radiation treatment, aplastic anemia and toxicity from the anti-AIDS drug AZT.

Combinations of BRM's with vaccines or standard therapies (chemotherapy drugs or radiation) in a "cocktail form" could be more effective than any of the substances used alone. Astonishing results are occurring at centers across the country with this approach.

Effects of Diet and Exercise

Although the connection between diet and immunity is still controversial, many studies indicate the link is real. A research team at the American Health Foundation in New York City found that reducing fat consumption to 25 percent (from 40 percent) of total calories increased the activity of NK cells by 49 percent. These are the cells that attack viruses and incipient cancers.

A number of animal and human studies show vitamin C can also help increase the immune system's ability to fight infection. Vitamin E supplementation in people 60 and older increases immune system responsiveness, according to nutritionist Jeffrey Blumberg, Ph.D., of the USDA's Human Research Center on Aging at Tufts University in Boston. Immunologist Adrienne Benedick, Ph.D. of the pharmaceutical giant, Hoffman-La Roche, tested vitamin E on rats. "Vitamin E is the most important immune stimulant I have seen." Benedick said.

The immune system is also nourished by regular exercise. David Neiman, Ph.D. and a research team at Loma Linda University in California showed that exercise seems to prime the immune system for action. The Institute for Aerobics in Dallas did an eight-year study of 10,000 men and 3,000 women. They found that people who walked briskly for half an hour every day, or an equivalent exercise, were less likely to die of cancer. Moderation appears to be the key in exercise.

Effects of Mental Attitude

Mental attitude also influences health. There is a biochemical connection between the brain and immune system. In 1976, Nicholas Plotnikoff, Ph.D. of Oral Roberts University, found that certain types of immune cells had receptors for endorphins-natural, opium-like substances produced by the brain. Monocytes and macrophages have receptors for virtually every known messenger chemical or neurotransmitter produced by the brain.

ACTH, supposedly an exclusive product of the brain's pituitary gland, is also manufactured by immune system cells, according to J. Edwin Blalock, Ph.D. Candace Pert, Ph.D. and Michael Ruff, Ph.D. of the National Institute of Mental Health, found that glia cells in the brain had receptors for molecules produced by the immune system.

Promise of a Longer Healthier Life

Altering immune system cells in the laboratory to increase their effectiveness holds great promise in the treatment of cancer. More important, taking thymosins in a preventive way beginning in the 20s or 30s can stimulate the immune system and significantly prolong and increase our health in general. A healthful, anti-oxidant-rich diet and a lifelong commitment to regular exercise further strengthens immune function.

A recent eight-year, multi-center study linked atherosclerosis within blood vessel walls with immune system failure. Most longevity studies reveal that life extension depends on cell regeneration, which depends on an intact immune system. An intact immune system depends, in return, on thymus gland support and healthy lifestyle choices.

No question about it; we are standing on the threshold of a new era in health care. It's an exciting time, with limitless possibilities.

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Americans spend many billions of dollars each year on food. Our diet consumes more of our budget than any other living expense, except for the medical care that we may seek as a result of our dietary indiscretions. Not only do we overeat, but the foods that we eat have been largely stripped of their nutritional value- processed and preserved for a longer shelf life. These food trends, coupled with the stress of our modern lifestyle, wreak havoc on our ability to digest foods. This in turn compromises our immune system, making us susceptible to chronic infection and disease.

It is no wonder that the best selling prescription drugs in America are those which mask the symptoms of poor digestion. Over the counter remedies abound, and certain household names have capitalized for years on our ignorance and self-destructive behavior. Instead of masking our symptoms for temporary relief, we must learn to attack the underlying cause of our diminished health.

Many chronic "syndrome" complaints and auto-immune disorders are increasingly being traced back to digestive disorders like irritable bowel syndrome, leaky gut, parasites, and candida overgrowth. Candida albicans is a yeast microbe that lives in our intestinal tract in delicate balance with other more friendly bacteria. The normal balance of intestinal flora may be disturbed by many things, such as antibiotics and other drugs, bad eating habits, drinking chlorinated water, or even stress. Candida overgrowth is often associated with yeast infections, skin problems, bloating and lethargy. Left to flourish untreated, candida can invade the intestinal walls, breaking them down until they begin to leak harmful bacteria and larger proteins into the blood stream. The resulting "leaky gut" toxicity can have devastating consequences to your health.

Such conditions demonstrate how poor digestion can slowly sabotage your health and rob you of your quality of life. Many leading health experts estimate that up to 80 percent of all diseases start in the intestinal tract! Growing up the son of a nutrition pioneer, Carson B. Burgstiner, M.D., I was often told that "the quality of your life depends in large measure upon the quality of your choices". Nowhere is this advice truer than in digestive health. We all need to exercise regularly and limit our intake of fat, alcohol, caffeine, and refined sugar. We need adequate amounts of fiber, rest, and pure, clean water. These are excellent choices for promoting vitality and longevity, but having such foresight and discipline is only half the battle. The benefits of our dedication may be realized only to the extent that our bodies can absorb and assimilate the nutrients that we eat. In other words, we are not what we eat, but what we digest. One of the most important factors in our digestive efficiency is the level of enzymes present to act as catalysts in converting food into energy. Enzymes enable your body to break down vitamins, minerals, proteins, fats, and carbohydrates into the basic building blocks that it needs to function, grow and rejuvenate itself.

Enzymes are found in all living things, plant and animal. All enzymes can be divided into several different groups. Food enzymes are contained naturally in

raw foods, and facilitate the digestion process. Metabolic enzymes control every biochemical function in your body, providing energy, fighting disease and ensuring the smooth functioning of your cells. Digestive enzymes help turn food into fuel. Proteases break down protein, lipases break down fat, and amylases break down carbohydrates.

The typical American diet is drastically lacking in enzymes, while loaded with noxious elements that challenge our every cell. If our meals are not processed, preserved, canned, frozen, or irradiated, they are almost certainly cooked. Cooking any food at temperatures above 116 degrees Fahrenheit kills the natural enzymes. Even raw fruits and vegetables contain limited enzymes if they are picked "green" (often the case in supermarkets because they have to be transported over long distances).

A diet low in food enzymes forces your body to "borrow" from its own metabolic enzymes in order to digest food. This enzyme deficit places an unnecessary burden on your vital organs that can manifest in a multitude of illnesses. As we age, it becomes harder and harder for our bodies to keep up. To make matters worse, as we become enzyme-deficient, we age faster! A newborn baby has a hundred times the enzyme levels of an elderly person. Insufficient enzyme levels result in partially digested food staying in the digestive tract for much longer than it should, creating a perfect medium for harmful bacteria to grow. Gas and bloating are the obvious signs of their proliferation, while the toxins they produce place further burden on the liver.

Fortunately there is a safe and effective deterrent to this vicious cycle of enzyme depletion. In addition to making quality life choices like enjoying organically grown, naturally ripened produce, you can and should supplement your diet with a comprehensive array of digestive enzymes. Your body will reward you with greater vitality when it is released from the bondage of enzyme debt.

When selecting an enzyme supplement, remember that quality is more important than quantity. Look for products with a wide array of plant based enzymes, with delivery systems designed to maximize absorption and assimilation by the body. Products of superior quality will have an unconditional satisfaction guarantee. Individuals with gastric or duodenal ulcers should use caution with any enzyme supplement, taking them under the supervision of their health care practitioner.

In the pursuit of optimum physical and mental health, maintaining the proper balance of intestinal flora is just as important as curbing enzyme depletion. In part II of this article, we will examine the critical role of beneficial bacteria, or "probiotics", in maximizing your health and longevity. In addition to digestive enzymes and probiotics, however, a number of herbs and other plants are known to have beneficial properties in supporting healthy digestion. We will take a look at a few of them, and also address the important role of fiber in our diet.

The information contained in this article is for educational purposes only and is not intended to give medical advice or diagnose, treat, or cure any disease or condition.

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