

GERMANIUM

A NEW APPROACH TO IMMUNITY

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Introduction

Although germanium had its beginnings in this country (it was used here successfully in 1922 to treat anemia), it "grew up" in Japan, where it is now consumed extensively as an adaptogen - a substance that does not cure, but helps the body to help itself.

No one can predict how effective organic germanium might be for you or for anyone else. We do know that it's safe. The evidence validating its benefits has been increasing daily. The amounts chosen for use are arbitrary -just like those established for most vitamins and minerals but they appear to work clinically.

Germanium's remarkable effects on the immune system have been documented in medical journals. It has also been selected as one of six substances to be studied in the treatment of AIDS, chosen at the International AIDS Treatment Conference held in Tokyo, Japan in February, 1987. Humanity waits anxiously for the results of this research.

In true adaptogenic style, organic germanium appears to work to alleviate minor or major health imbalances, or to keep you free of problems. So it appears to be both therapeutic and preventive. Germanium is as old as the earth's crust, but its application is in tune with our new and increasing understanding of energy medicine.

Chapter 1

The Discovery of Organic Germanium

When I learn about a substance used successfully in other countries to cure disease or to maintain health, my curiosity is aroused. When I discover that this substance has been almost totally ignored here, I am driven to action. That's what started my research on organic germanium, a mineral which has been found to enhance the immune system.

Cures from nature are historic and varied. Those who think that the beneficial effects of garlic are no more than grandma's myth, may find the healing properties of aloe more convincing. Those who are not aware of aloe may grow comfrey or take it in supplemental form - because it, too, is a health-promoter. And those who may not relate any of these to disease prevention may consume chlorella - the ancient one-celled algae on record for helping to maintain health. Ginseng and watercress are also known for therapeutic properties. Needless to say, hundreds of plant foods can be added to this list. I have chosen to highlight garlic, aloe, comfrey, chlorella, ginseng, and watercress for a particular reason - they all contain germanium.

Why haven't you heard of germanium (not to be confused with the flower, geranium) before? The answer is that it takes many years from the time a discovery is recognized to the time the significance of that revelation is applied. In fact, medical historians inform us that the average delay from journal reporting to actual clinical use is seventy or more years. TV satellites and widespread media exposure have not had a significant effect on expediting this process.

The wisdom of the ages has helped people to know what is good for them long before science figures out why. In the sixteenth century, Francis Bacon wrote, "Cures are discovered before they are understood," and an old Chinese master explained that "healing is the intuitive art of wooing nature." Einstein told us, "The perception of mystery is the source of every learning and discovery." The more we examine organic germanium, the more pertinent all these prophetic statements appear to be.

Germanium Discovery

About a hundred years ago, a German chemist noticed the appearance of an unidentified chemical - a mineral occurring in small quantities in foods, coal deposits, and the earth's crust. He called the substance germanium. If you are old enough to have assembled a crystal radio in your youth, you may remember the germanium diode crystal, the active ingredient that was responsible for bringing in the radio signal that you heard in your earphone. The germanium atom is so structured that it accepts and transmits electrons, giving it a semiconductor capability. This means it becomes an electro-stimulator, inducing the flow of electricity. In its pure metallic form, germanium is used extensively in the electronics industry for transistors, fiber-optics, and other diverse applications. Biologically, it appears to be highly effective in stimulating electrical impulses on a cellular level and in its apparent role as an "oxygen catalyst," explained more fully later. In 1950, Dr. Kazuhiko Asai, a brilliant Japanese chemist, discovered traces of germanium in fossilized plants. The next news about germanium came from Russia, where reports suggested that germanium had anticancer activity. A few years later, Dr. Asai associated healing plants, medicinal herbs, and special waters with this common germanium bond: plants and waters known to have special therapeutic properties have relatively high concentrations of germanium. These plants, mentioned earlier, are garlic, aloe, comfrey, chlorella, ginseng, and watercress. Some additional plants also have significant quantities of germanium, but they are herbals that are not familiar to most people. For the herbologists, they are:

shelf fungus (a variety of Reishi mushroom), shiitake mushrooms, pearl barley, sanzukon, sushi, waternut, boxthornseed, and wisteria knob.

The holy water of Lourdes, known for its therapeutic value, also contains germanium. Other edible products contain germanium, but the ones I have listed have enough germanium to be worthy of notice, ranging in amounts from 100 to 2,000 parts per million.

By 1967, Dr. Asai managed to synthesize a new compound of germanium and found that the manufactured substance itself (bisbeta-carboxyethyl germanium sesquioxide) has amazing curative powers. The product has come to be known as organic germanium. (You may wonder how something that is produced synthetically can bear the title "organic." Anything that contains carbon in its molecular architecture is organic, so synthetically derived germanium is organic, according to definition.)

Early Experiments

One researcher in Japan used germanium in an experiment to grow ginseng. The results were quite fascinating. The plants receiving the germanium treatment exhibited improved growth as compared with those that were not getting such special exposure.

In another experiment, this time with rice, it was discovered that germanium-treated plants had an increased resistance to cold. At a particular point in growth, greenhouse temperature was lowered; plants not treated with germanium withered and died, but the germanium-treated rice plants continued to thrive.

Soon experiments were done with animals. In one study, animals submerged in water survived longer when they had been fed organic germanium. Organic germanium compounds were tested on cats, dogs, and horses, and found to have remarkable curative effects.

When germanium is used as a stabilizing agent for tofu, the life of the tofu is extended - it simply doesn't spoil as rapidly.

Some of you may remember when coca cola was bottled in plastic. The use of plastic bottles for coke was banned because of leaching problems. It was discovered, however, that the addition of germanium prevented the contamination. One Japanese researcher uses the cola story as analogous to our "polyester" lifestyle. "Taking germanium," he says, "eliminates or mitigates the deleterious effects of the plastic we wear, sit on, look at, and generally are enclosed in."

In the last 20 years, germanium has become a household word in Japan. Frequently purchased in drug stores, it is to this day the subject of many trials and new studies. The early work on organic germanium proved to be the harbinger of a new nutrient star.

Chapter 2

The Need for Organic germanium

Germanium appears to play a role as an oxygen catalyst, an antioxidant, an electro-stimulant, and an immune enhancer. Before explaining how its use is correlated with these functions, and what these functions mean, background information on certain aspects of lifestyle and degenerative disease is important.

The Beginning of Disease

I have a fantasy. I wish that every time anyone consumed highly processed foods, body cells would emit flashing red lights, bazooka noises, and fireworks, after which we would go TILT- just like a pinball machine which has been excessively manipulated. Can you imagine the colorful and noisy scenes in every restaurant serving high-fat, highsalt, high-sugar, over-processed meals? In my dream this would call attention to the root beginnings of the disease state. Your body would scream "no," or give you warning signals you couldn't ignore.

Unfortunately, disease starts very quietly, without fanfare, on a cellular level. There are no flags or whistles when one cell becomes impaired, even though it is unable to function properly. There is no pain, distress, or discomfort when a cell dies and you are one cell older. As the process continues, you become several cells older, then many cells older. When enough cells malfunction, tissue is affected. When enough tissue has been compromised, disease is noticed. Too little, too late, as the saying goes. What is the metabolic pathway that has caused that cell to die?

A classic definition of cellular injury, as defined in Pathologic Basis of Disease, is "any adverse influence which deranges the cell's ability to maintain a steady, normal, or adaptive homeostasis." Homeostasis is the ability to compensate for any changes caused by physical, emotional, or environmental stress in order to maintain optimal health.

The physicians describing cellular injury conclude that "Lack of cellular oxygen supply is probably the most common cause of cell injury and may also be the ultimate mechanism of damage. "

Other researchers share the view that lack of oxygen to your cells, regardless of cause, leads to disease unless appropriately checked. Among the proponents of this view are giants in the scientific community: Hans Selye, Albert Szent-Gyorgyi, Otto Warburg, and more recently, Stephen A. Levine and Parris M. Kidd. It may be that organic germanium can bring much needed oxygen to your cells.

Because oxygen is so reactive, it takes a healthy organism to maintain adequate oxygen levels. Examples of causes of diminished oxygen supply are atherosclerotic plaques or thrombi, which restrict the flow of blood. Heart attacks and strokes represent cell death caused by lack of oxygen as a result of the obstruction of blood to the heart or brain.

Other situations which are responsible for lack of oxygen are extremes in temperature, sudden changes in atmospheric pressure (as experienced by deep sea divers), and poisoning of enzymes by toxins and environmental pollutants (especially lead, cadmium, and mercury). At no time in the history of humankind have we been exposed to more toxins and pollutants in the air we breathe, the water we drink, and the food we eat. Lifestyle in the late twentieth century has imposed a burden on our bodies by reducing the oxygen supply to our cells. This has occurred mainly through free radical reactions, the ultimate damage that starts with adverse exposures in an unnatural world.

Free Radicals

Free radicals are highly reactive molecules. Although they are important for normal biological processes, they become destructive when they are out of control. In fact, free radicals are considered to be the mainspring of endless disease processes, and the major cause of aging. They can be detrimental by bonding with life-giving protein tissue, so that the tissue no longer performs its rejuvenating tasks. Free radicals attack cell membranes, accumulate in fat cells, and damage nucleic acids (RNA and DNA).

Where do free radicals come from? Let me count the ways:

- All forms of radiation produce free radicals. This includes radiation from computers, radios, TV screens, microwaves, x-rays, radioactive fallout, and food irradiation.
- Any stress -whether it is caused by infections, emotions, or physical trauma - results in an increase of free radicals, which ultimately waste oxygen.
- Ground meats such as hamburgers, hot dogs, and sausages are at risk of peroxidation (the breakdown of fat in their membranes), thereby causing free radicals. The same is true of foods that contain a high oil content (nut butters, salad oils and dressings, whipped topping mixtures, foods fried in oil - potato chips, french fries, doughnuts).
- Sunlight, smog, ozone and other environmental pollutants (photochemicals, cigarette smoke, herbicides) are additional causes of free radical formation. Even normal metabolism causes "internal radiation," resulting in free radicals.

The point is that free radicals abound, and they have an intimate relationship with oxygen. Free radicals, because they react with oxygen, may reduce your oxygen supply. And reduced oxygen may cause free radical damage.

The exact mechanisms for reduced oxygen vary with the causes. Here are some examples of how oxygen resources may be inadequate:

1. There may be a deficiency of oxygen supplies. You're just not getting enough oxygen to meet your needs.
2. You may have disturbed oxygen utilization. Something has gotten in the way of your use of oxygen.
3. Because of damaged electron flow, oxygen may not be transported properly. This phenomenon is not entirely understood, but we know it happens.

The ultimate consequence is the same. As so eloquently stated by R. B. Hill in Pathobiology and Disease, "It is the reaction to injury, not the injury itself, that produces the manifestations of disease." Again I want to emphasize that reduced oxygen appears to be the common denominator in many disease states. And once again, it is the reaction to injury, not the injury itself, that produces the disease state -the cellular death. Germanium may help to alleviate oxygen depletion.

Antioxidants

Not every toxin taking a trip through your blood stream affects your cellular health. You do have a built-in protection system. Antioxidants are compounds or enzymes that oppose the enemy. (Among the antioxidants are: vitamins A, C, and E; the minerals selenium and zinc; and the enzyme SOD, super oxide dismutase.) You need antioxidants for guard duty - to control the oxidative reactions that burn food and create energy. It is when the two conditions - the free radicals and the antioxidants - are out of balance, that problems arise. that's when cells cannot operate in the

normal fashion of healthy aerobic respiratory metabolism.

An antioxidant is like the screen in front of your fireplace. It quenches the sparks as they form. If the fire in the fireplace is out of control, the screen is useless.

Another analogy of antioxidant free radical metabolism is that of the automobile engine and its cooling system. The engine runs on the burning (or oxidation) of fuel, creating energy and heat, giving your car power to move. If this process is uncontrolled, the engine destroys itself because of the heat it has generated. The cooling system keeps the temperature within a normal operating range. The oxidative reaction is the burning of the fuel; the antioxidant is the cooling system. Balance between these two functions is the critical factor, both for your car and for you.

So you see that oxygen is double-dealing. It can be flower or serpent, blowing hot and cold, supporting the very life it could destroy. The fireplace can provide warmth and comfort, but when the fire is out of control, the house may burn down.

The Anaerobic Cell

A cell can, however, survive in the runaway, unhampered growth of cancer cells. This is called anaerobic metabolism, as compared with aerobic metabolism. Aerobic cells live and grow in the presence of oxygen in an orderly, controlled pattern. Anaerobic cells grow in an uncontrolled pattern. Oxygen deprivation is considered to be its prime cause. The oxygen deficit leads to the anaerobic metabolism that sets the stage for malignancy.

The processes involved may have been initiated by inflammation or damage resulting from antioxidant deficits, but, regardless of cause, they require additional oxygen. It's a Catch-22 situation. Cellular oxygen consumption is increased, depleting your supply just when you need it most. Damage may extend to your cell's nutrient transportation system, increasing the potential for nutrient deficiencies. Precancerous conditions are now in motion. Lack of cellular oxygen may be a major contributing factor to malignancies.

Otto Warburg, Nobel prize winner, was the very first to suggest that lack of oxygen is the property of cancer cells that distinguishes them from normal cells. He said, "Cancer, above all other diseases, has countless secondary causes. But even for cancer, there is only one prime cause. Summarized in a few words, the prime cause of cancer is the replacement of the respiration of oxygen in normal body cells by (the abnormal process of the cancer cell)." Szent Gyorgyi also viewed cancer as originating from insufficient availability of oxygen.'

If cancer development is hampered in the presence of normal oxygen metabolism, organic germanium may be the supplement of choice as a cancer preventive. (See medical studies in Chapter 3 that support this concept.)

Vitamin O: The Oxygen Nutrient

No nutrient - whether it is protein, fatty acid, vitamin, or mineral - fulfills its functions in its original form. Nutrients are mechanical substances necessary for converting the dormant or potential energy in your foods into usable energy for living. For this conversion to take place, oxygen is utilized. The process is called oxidation: the combining of a food substance with oxygen to release the stored chemical energy. The nutrients provide the fuel for this process, which is analogous to burning.

Because of its importance, we have actually dubbed oxygen vitamin O, the oxygen nutrient. It is the single most necessary substance for living; we can't live for more than three minutes without it. Oxygen even fits the definition of a vitamin, which is a substance found in foods (or the

environment, like vitamin D) and necessary for life, but not usually manufactured by your body. So now you can add another nutrient to the vitamin alphabet mix: vitamin O, the oxygen nutrient, the very spark of life.

Dr. Stephen Levine points out that complex carbohydrates have 16 parts of oxygen and only 14 parts of carbon and hydrogen, or, says Dr. Levine, "more than half of a complex carbohydrate is oxygen, but the percentage of oxygen in fats is less than 10 or 15 percent, so fats are very low in oxygen. In fact, fats are oxygen robbers because they require so much oxygen to be metabolized.

"Protein is composed of 20 to 50 percent oxygen, depending on the specific amino acid profile. It is obvious that complex carbohydrates have the most oxygen," concludes Dr. Levine. So complex carbohydrates are high oxygen foods. Complex carbohydrates are vegetables, whole grains, seeds, and nuts. (Note that fruits are not included in this list. Fruits contain high amounts of simple sugars, and therefore should not be classified as complex carbohydrates.)

The consumption and quality of complex carbohydrates in the late twentieth century have been drastically reduced. This falling in our foodways system and eating habits may be a major contribution to cellular oxygen deficiency, and the reason why organic germanium is proving to be so beneficial. Even if the quantity of complex carbohydrates in the diet is sufficient, quality is of utmost importance. The physical form of a food alters its nutrient advantages. When peanuts are ground, there is a significant loss of some nutrients plus the possibility of peroxidation. In the nut butter form, overabsorption of fat is another potentially dangerous consideration. An apple is ingested more than ten times faster in the form of extracted apple juice than when it is contained within the fibrous architecture of the whole apple. In the form of apple sauce, it is swallowed nearly three times faster. In addition to faster digestion, other consequences are decreased satiety and disturbed glucose (sugar) balance. These irregular disturbances foster unfavorable "overnutrition" and open the doors for more peroxidation (more free radicals) and/or less efficient cell metabolism.'

Oxygen and the Athlete

The first response to exercise is a depletion of glycogen from muscle. The American Journal of Clinical Nutrition reported a study showing that 48 hours after exercise, the complex carbohydrate diet results in significantly higher muscle glycogen levels than a simple carbohydrate diet. Another study described in Acta Physiologica Scandinavica demonstrated that the capacity to perform heavy exercise increases 300 to 400 percent when the preceding diet is changed from a low carbohydrate diet to one comprised of high complex carbohydrates. This explains the value of carbohydrate loading (eating large quantities of complex carbohydrates) by marathon runners before a race.

Increased glycogen stored in muscles is associated with high carbohydrate diets. The most fundamental limiting factor for performing athletes is cellular access to oxygen. The object of exercise is to improve those organs and systems involved in your body's processing of oxygen in your heart, lungs, and blood vessels. Again, it's a two-way street. You require oxygen to exercise, and exercise is needed for better oxygen utilization.

The first articles extolling the virtues of complex carbohydrate diets appeared in sports journals. It may be that organic germanium will be a preferred supplement for athletes.

Oxygen and Longevity

Dehydration among the elderly is a frequent and serious problem. Although average, it is definitely not normal. (The solution may be simple. Grandma and Grandpa should drink more water. Water is 85 percent oxygen.) For better oxygen metabolism in general, organic germanium may be very helpful.

Toxic chemicals such as pesticides, herbicides, hydrocarbons, and solvents are largely fat-soluble and reside in fat tissue. When you eat a high fat diet, you inevitably consume quantities of these fat soluble toxins and require the utilization of more oxygen to metabolize them. Complex carbohydrate foods are usually lower in toxins. Although they should be considered the select foods for everyone, they are especially imperative for older people. No wonder a diet regimen high in complex carbohydrates has recently been referred to as oxygen nutrition.

An extensive thirteen-year study measuring parameters associated with long life was reported in the Journal of Chronic Diseases. Respiratory capacity - that is, how much oxygen you are able to breathe in - proved to be more significant for longevity than tobacco habits, insulin metabolism, or cholesterol levels. The longer you've lived, the more dangerous free radical accumulation you may have. Free radicals cause age pigment accumulation that result in brownish "age spots" on your skin. Once again, organic germanium may provide a longevity bonus.

More Consequences of Oxygen Deficiency

According to Dr. Levine, most of us do not consume sufficient oxygen in our day-to-day living. He explains examples and consequences of oxygen deficiencies:

1. An acidic condition, caused by the accumulation of acidic byproducts, occurs in poorly oxygenated cells. Consumption of soft drinks, caffeine, and too much fatty red meat leads to systemic - or whole body - acidity. When cells are deprived of oxygen, lactic acid accumulates and the cellular environment becomes acidic. This reduces available oxygen for the primary function of metabolism because more oxygen is required to neutralize the acid.
2. People who gasp for air after minimal exercise demonstrate poor oxygen nutrition.
3. Common yeast infections (candida albicans) occur frequently in an oxygen-poor body. Because of the low oxygen environment, the candida albicans generate a substance that is responsible for cellular damage. This disrupts intestinal absorptive processes and impairs the function of lymphocytes and red blood cells, thereby reducing immune defense.
4. Frequent use of drugs, whether recreational or prescribed, deplete cellular oxygen because oxygen is required to metabolize most toxic chemicals.
5. Indoor environments often become oxygen-depleted as a result of air pollution, insufficient ventilation, or overinsulation to reduce energy costs.
6. Acute allergic reactions often require oxygen by mouth. But inhalation of oxygen is only a short-term solution for an oxygen-deficient lifestyle. Repeated and continued use of concentrated oxygen mixtures eventually damage delicate lung tissue.
7. Cells that become cancerous have lost their ability to utilize oxygen. They have been oxygen-starved so long that they undergo a metabolic shift and revert to ancestral metabolism without oxygen (anaerobic metabolism, as described earlier). This is the ultimate and last stage of degeneration caused by low oxygen lifestyle. People who consume very high quantities of fat have a far greater incidence of cancer as well as other degenerative diseases."

It is unrealistic to assume that the population in general will no longer reach for bags of oil-soaked potato chips, feast on artificially-fattened steak, snack on high-calorie ice cream, or nibble cheese and crackers through an evening of TV-viewing. The metabolism of dense compounds such as fat and protein requires extra oxygen. On such diets, less oxygen is available for active muscle tissue and for optimal cellular health.

The algae that consume carbon dioxide and release oxygen have been decreasing in our lakes and oceans. Increased toxins and pollution, less algae, and SAD - the Standard American Diet place cellular oxygen deficiency at risk. Organic germanium may be one answer.

Chapter 3

Validation of Organic Germanium: Uses in Medicine

The use of germanium is well-established in Japan, with many case histories cited in medical literature. Reports indicate that germanium has been helpful in treating a broad range of problems, including liver disease, hepatitis, cancer, leukemia, cataracts, and heart ailments. If this sounds as improbable as snake oil, let's stop for a moment and note the list of functions for which the isolated form of vitamin C can boast. Ascorbic acid plays a role in antibody production. It inhibits the growth of viruses. It has a protective effect by lowering histamine concentrations. Vitamin C reduces cholesterol in those who have abnormally high levels. The list goes on. Some nutrients, like vitamin C and germanium, appear to work overtime.

Although the Japanese are convinced of the manifest benefits of organic germanium (they keep Dr. Asai's clinics very busy), Americans need to be educated on its behalf. We have ignored germanium just as we have scorned the substances which harbor it. Many are unaware of the values of herbs or adaptogenic healing substances in this country. (Adaptogens are nontoxic substances which help us to adapt in a nonspecific way to life's stresses whether chemical, emotional, physical, or biological. This concept is explained in more detail later on.) Do you have friends who consume boxthorn seed? Wisteria knob? Probably not. And if you are a garlic fancier, chances are it's not because you know it's healthful. We don't understand very much about herbs in this country. Americans are not usually adventurous about consuming products that are unfamiliar. We certainly don't trust anything that hasn't received the acid test of double-blind trials. Even though most medical breakthroughs commence with anecdotes and empirical observation, we demand expensive scientific research before widespread use becomes the order of the day.

In spite of these requirements, a physician in San Diego uses organic germanium both orally and intramuscularly to relieve the problem of impotency. A doctor in New York considers it an obligation to offer it to most of her patients. A Philadelphia physician uses organic germanium as part of a varied immune protocol. A scientist in San Francisco takes a few fifty-milligram capsules when he wants to stay up late and work with a clear mind. A plumber in Alaska, suffering from AIDS, was unable to work for three months. On large doses under doctor's care, he was able to return to work in three days. A woman in Kansas was so lethargic she could only drag around in her housecoat all day. After organic germanium treatment, she was out in her yard in a week and shopping soon after that. Another woman all but eliminated serious radiation burns on her abdomen after several months on organic germanium.

The Department of Microbiology at the University of Texas Medical Branch, in cooperation with the Virology Division of Shriners Burns Institute in Galveston, Texas (and the Department of Microbiology, Kumamoto University Medical School in Kumamoto, Japan) published a paper called, "The Importance of TCells and Macrophages in the Antitumor Activity of Ge-132 [Organic Germanium]." The results of the reported studies demonstrate that the compound confers antitumor activity through immune defense mechanisms.

Fortunately for many sick Americans (and many Americans are sick), organic germanium has come into its own; science has confirmed what Dr. Asai knew for many years. Although Dr. Asai could only theorize about how it is effective, he knew that it was effective. Dr. Asai, through his ingenious intuition, has "wooed nature and discovered one of its healing agents." Because oxygen plays such an important role in immune function, germanium is used extensively in Japan to treat conditions associated with oxygen deficiency.

Studies Confirming Benefits of Organic Germanium

- The Clinical Report (Kiso to Rinsho, in Japanese) 7 (1978):719. Organic germanium was correlated with lowered blood pressure in test animals. Similar results were also reported at the Proceedings of the Japan Cancer Association, 38th Annual Meeting, Tokyo, Japan, 1979, p.112.
- The Journal of Interferon Research 4 (1984):223-233. Organic germanium restores the normal function of T cells, B lymphocytes, antibody-dependent cell toxicity, natural killer cell activity, and numbers of antibody-forming cells. Studies indicate that this compound has unique physiological activities without any significant toxic effects. Organic germanium has the ability to modulate alterations in the immune response.
- International Archives of Allergy 63 (1980):338-339. Organic germanium is considered to restore the impaired immunoresponses in aged mice.
- Mutation Research 125 (1984):145-151. Germanium works as a potent antimutagen induced in Salmonella. Antimutagenic effects were noted in bacteria.
- Asai Germanium Research Institute, Tokyo, Japan, 1984. Organic germanium protects against bone-mass decrease in osteoporosis.
- Microbiology and Immunology 29, 1985:65-74. Positive effects of oral administration of organic germanium are mediated by the inducement of interferon.
- Proceedings of the Japan Cancer Association II, annual Meeting, 1979, p. 193. Germanium compounds work as a significant interferon-inducing agent.
- Tokyo Electric Hospital of Ophthalmology, Dr. Akira Ishikawa. Eye manifestations are closely related with systemic diseases. Decrease in retinal blood pressure was observed with administration of organic germanium. (This was the first report of the use of organic germanium in the field of ophthalmology.) It is also effective in the treatment and prevention of essential hypertension and diabetes by effecting a normalization of the body state.
- Japan Experimental Medical Research Institute, Tokyo, Japan. When administered to test animals with normal blood pressure, the use of organic germanium shows no change. When given to test animals with high blood pressure, the animals returned to normal within 7 to 10 days. The compound has lasting effects for a considerably long period after it is discontinued. This is typical of adaptogenic substances.
- Journal of Pharmacological Dynamics 6 (1983):814-820. Organic germanium has been shown to enhance morphine analgesia in both oral administration and injection. It appears to act by increasing the activity of morphine at the receptor sites, and by releasing self-made endorphins (the morphine-like substances manufactured by humans).
- Cancer and Chemotherapy 6, in Japanese, (1968):79-83. Organic germanium demonstrated antitumor activity.
- Gan To Kagaku Ryoho 12, December 1985:2345-51. A remarkable prolongation in life span is observed after oral administration of organic germanium.
- Anticancer Research 6, March-April 1986:177-82. Organic germanium administered to test animals with tumors resulted in the inhibition of tumor growth.
- Gan To Kagaku Ryoho 12 November 1985:2122-8. Organic germanium-treated test animals showed an inhibitory effect against certain tumors in such a way that suggests that the effect is the result of macrophage activity. (Macrophages are part of the immune system. They attack the enemy.)
- Anticancer Research 5, Sept.-Oct. 1985:479-83. Test animals were inoculated with carcinoma or leukemia cells, and then treated orally with organic germanium. The study demonstrated that the effect of the organic germanium works through the body's defense mechanisms (including macrophages and/or T cells) rather than attacking the cancer itself.
- Gan To Kagaku Ryoho 13, Aug. 1986:2588-93. This study suggests that organic germanium is useful for antitumor combination immunochemotherapy. The results are an inhibition of

tumor growth, enhanced anti-metastatic effect, prolonged survival time, and recovery of lost body weight caused by chemotherapy.

- Tohoku Journal of Experimental Medicine 146, May 1985:97. The antitumor action of organic germanium appears to be related to its interferon-inducing activity.

Most of these citations are reports of controlled studies. Dr. Asai and physicians around the world have been using organic germanium in real life situations. In addition to the disappearance of serious illness, patients have lost warts, corns, and deeply imbedded splinters. Longstanding headaches and backaches disappear. People report the healing of eczemas and similar minor and major ailments. Other reports show that frequent urination is corrected, and organic germanium has proved to be an easy and effective way to reduce fatigue.

A Few More Reports

Dr. Anderson of Mill Valley, California, reported at a recent meeting of the Orthomolecular Physicians that he cured a patient who had diverticulitis (inflammation related to colon pouches) for five years. The patient, under Dr. Anderson's supervision, received 500 milligrams of organic germanium a day along with vitamin C and other orthomolecular modalities. The results impressed Dr. Anderson and thrilled the patient. Another physician reported that she herself suffers from food allergies, but when she takes organic germanium she can "cheat" without ill effects. Yet another physician reported that organic germanium is powerful in the control of candida, and that the resulting sense of well-being exceeds that of any other medication. It was also reported that one-third of those with sleeping problems have been relieved of their difficulties.

The Journal of Microbiology and Immunology has recently confirmed that organic germanium compound promotes increased interferon production. This may be why it is effective in attacking viruses. Interferon induction is considered by some of the researchers to be the starring role of germanium.

The International Archives of Allergy and Applied Immunology demonstrates how germanium has helped the restoration of impaired immune responses in aging test animals. In a study of more than two dozen post-surgical patients, it was shown that blood returned to normal with greater speed with the use of germanium.. And surgeons may also be interested in its analgesic effect: it enhances the pain-killing effects of morphine. (Dr. Howard Bezosa, a New York surgeon, has stated that aloe is probably the best local anesthetic around. As already noted, aloe contains a significant quantity of germanium. Isn't it intriguing how the nutrition puzzle pieces fit together?)

An international AIDS treatment conference was held in Tokyo, Japan, on the 13th and 14th of February, 1987. Six substances were authorized to be used intensively for clinical testing. They were selected on the basis of reported success in the treatment of disease over a period of time, and have been confirmed to have low toxicity. Organic germanium is one of the six, chosen primarily for its antiviral action.

Today, many trials and studies testing the therapeutic value of organic germanium are in progress. Most of them involve its use with cancer, and most of them are being done in Japan.

Chapter 4

How Organic Germanium May Work to Maintain or Restore health

The intricate nuances of metabolic pathways involved in health and disease are not fully understood. Scientific studies that focus on substances which encourage a person's self-healing potential reveal only that something barely explicable happens on a cellular level. Although theories abound, there is no unified agreement as to what that force may be.

Despite the lack of understanding, the capacity for repair and health maintenance is greater than most people realize. As stated, one substance that appears to promote that capacity is organic germanium. Again, organic germanium has a reputation for enriching your body's oxygen supply. It is theorized that this is its major force. The substance itself does not cure.

Organic Germanium as an Adaptogen

When a chemotherapeutic agent is added directly to cancer cells in a test tube, the cells are destroyed. When organic germanium is added to cancer cells in the same manner, the cells exhibit no change. The germanium appears to be relatively ineffective. But organic germanium indirectly stimulates anticancer defenses. Although organic germanium doesn't cure, it appears to enhance your body's metabolic ability to do so.

In the case of cancer, it doesn't kill the cells, but stimulates your immune defenses to produce those substances which will, in turn, help to destroy the antagonist. Among its functions is its ability to boost the production and/or efficiency of natural killer cells. (See Chapter 3 for detailed studies.)

Substances which help to normalize body functions indirectly are known as adaptogens. An adaptogen is classified as nontoxic and having a nonspecific effect, enhancing your ability to cope with any stress (physical, emotional, or chemical) as needed. Organic germanium has been reported to normalize acid/alkaline values, glucose curves, cholesterol levels, and blood pressure rates.

In true adaptogenic fashion, studies show that organic germanium has little effect on normal and young test animals, but significantly augments the immune response in aged animals. The immune response normally decreases with age. Organic germanium may help to retard this process. It should also be noted that it's not that difficult to breed healthy test animals. In today's polluted world, however, not too many humans enjoy total, optimal health at any age.

Adaptogens differ from drugs in several ways:

1. No prescriptions are necessary. They answer the need for those who ask, "What can I do at home so that I won't have to go to the doctor, or reduce the deleterious effects of the drug treatment prescribed for me?"
2. They are user-friendly. No high-tech equipment, needles, syringes, or professional expertise are required for use.
3. They are less costly than most drugs.
4. They are not habit forming.
5. A drug continues to work even after a state of normalcy is achieved. An adaptogen regulates, and is held in abeyance when the challenge ceases to exist.

Organic Germanium As An Oxygen Enhancer

It is no news to the physician working with alternative therapies that the right kind of supplements have been known to enhance the function of oxygen in cells and tissues. Nutrients fine-tune metabolism and can often make the difference between health and disease for anyone struggling with a highly stressed lifestyle. Cells use oxygen to perform their various functions. The life of your cells rules the health of your body.

Organic germanium may work as a catalyst, rather than a substitute, for oxygen. For reasons not yet understood, it has an oxygen sparing effect: it has been shown to lower the requirement for oxygen. The single most important substance for life-oxygen - may be the most powerful immune-stimulant of all.

Organic Germanium as Detoxifier

Another role of organic germanium is that of detoxifier: it helps your body to expel pollutants. Because of the chemical structure of this immune-stimulating oxide, it tends to bind or chelate (grab), and then remove toxic compounds- and harmful substances. The chelating effect renders germanium especially helpful for mercury, cadmium, and similar metal poisonings. This fact should be of interest to everyone in general (we are almost all subjected to mercury toxicity because of dental fillings), and to smokers in particular (smoking causes high cadmium toxicity).

Because of its chelating effect, it is believed that organic germanium functions as an antioxidant as well as an oxidant.

Organic Germanium and the Body Electric

The fact that our bodies can generate electricity was proved in the eighteenth century. With the advent of high technology, we can now evaluate health states by measuring various electrical waves. Studying electrical impulses in your brain, for example, helps to discern whether or not your brain is functioning normally. The test that uncovers this information is in widespread use, and is called an electroencephalograph (EKG). When brain tumors are present, variations from the normal brain waves announce their presence. The same is true of heart and muscle areas. Measurements of electrical output can determine just how healthy you are. Delta waves are recorded in people who are enjoying a good, deep sleep.

And we are all familiar with static electricity sparks that fly out or seem to sizzle when we brush our hair, or walk across a carpeted room under certain conditions.

If we had no electricity in our bodies, we couldn't use these parameters as health gauges. One theory that explains the beneficial effects of organic germanium centers around the need for your body's electricity to be in balance. Organic germanium is believed to help your body discharge unwanted electrical current, and to allow much needed current to flow through, thereby establishing the desired electrical balance.

Dr. Levine describes the role of oxygen as it relates to your electrical energy. He says, "Like the electrical circuits in your home, your body is also electrical. Oxygen forms the positive terminal of your cellular battery. Energy from fresh natural foods provide the current. Trace minerals, like selenium, zinc, iron, and manganese provide the wiring for the flow of electrical energy. Insulating material must coat and protect the energy transport machinery. For life, there must be a continuous flow of electricity, and adequate oxygen to draw the current."

It is predicted that energy medicine is the medicine of the future.

Organic Germanium and Hypoxia

Hypoxia is a serious condition that occurs when oxygen supplies to cells and tissues are depleted. Symptoms of aging resemble symptoms of hypoxia. If we can bring more oxygen to tissues, can we forestall mental function decline that occurs so frequently in older people? Organic germanium has been reported to increase mental capacity.

Nothing is ever black or white. The shades of gray between very serious illness and optimal health, or between total senility and minor mental failures, may be correlated with the degree of oxygen supply. In addition to decreased mental function, other symptoms associated with the development of hypoxia are fatigue, acidosis, weakness, and increased susceptibility to infection.

Physicians report that skin takes on a healthy pink color after organic germanium therapy (even in those areas of the body that had suffered from poor circulation), and patients report that they feel as though enveloped by a warm glow, a sense of special well-being. It is believed that the enzyme which inhibits the normal production of endorphins- your body's natural, homemade morphine-is in turn inhibited by organic germanium. Therefore, the high spirits and verve. Organic germanium functions well at human body temperature. As temperature rises, the germanium current appears to flow more efficiently.

Organic Germanium and Immunity

Interferon production is enhanced when organic germanium is used as a supplement in immune-compromised people of all ages. The metabolic pathway involved in the increase of interferon may be its ability to normalize lymphocyte cells, which are important in the production of antibodies. (An antibody protects against antigens, which are harmful toxins.) Organic germanium converts inactive macrophages important immune cells - to activated ones. It increases natural killer cells, brings blood hemoglobin levels up, and white cell counts down. These are some of the functions we are aware of. The researchers believe they are just at the tip of the iceberg. As we learn more about immunity, we should come closer to understanding precisely how organic germanium works. Our knowledge of organic germanium increases daily. At this very time, a few dozen studies are underway in major hospitals, clinics, and laboratories.

Organic Germanium and the American Tradition

A nonspecific medical paradigm doesn't fit our medical milieu. We are inclined to measure values with increasingly delicate instruments in ever more high-tech ways to arrive at more and more exact figures. Anything that doesn't fit this mold is regarded as mystical. Although the manner in which adaptogens may effect cures lacks western scientific explanation, their success does not depend on miracles, nor is it a total mystery. We are coming closer to understanding the metabolic pathways involved.

The use of adaptogens is not old-fashioned, but it is undeniably old. Our scientific community is not kind to ideas that conflict with "modern" ones. Too often, techniques that don't fit basic understanding are abandoned, even if they seem to work. Although research on organic germanium has been excellent, the results and the concept fly in the face of American medical judgement.

The Japanese are far ahead in recognizing the value of organic germanium. This may be because the Asian medical system traditionally considers the strength (or lack of it) and physical characteristics of the specific patient. Symptoms are interpreted on the basis of a patient's total condition, even when an illness appears to be pinpointed - such as a red throat. This does not correspond with the dissection to smaller and smaller and smaller as used in medical practice. We

diagnose, give the sickness a name, and medicate for the masses. A sore throat is a sore throat is a sore throat, and we do not consider different or total physical makeup. Meanwhile, the number of illnesses that are not responding to such highly specialized medicine is on the increase.

But no concepts have grasped the imagination of the American public in recent years as compellingly as the ideas that we can be responsible for our own health, or that the body has amazing curative powers if given a chance to heal itself. The time has come for our medical community to complement its technical advances with self-healing forces and the substances which promote those forces - even as the common denominator of healing remains elusive.

Chapter 5

External Applications of Germanium To Relieve Stress and Pain

What is the unseen energy that spills over from one object or one person and affects another? How can we explain the electrical currents that exist in parts of the nervous system? What gives a cell membrane the energy to pump ions back and forth, in and out of cells? Why does the semiconductor quality of germanium appear to affect areas of injury or pain when applied topically?

At the turn of the century it was shown that when electrical currents pass through an aquarium in which larval salamanders were living, their regeneration was speeded. When small negative voltages are applied to groups of neurons, their sensitivity increases.

"Currents of injury," emitted from all wounds, were described by A. M. Sinyukhin of Lomonosov State University in Moscow. Sinyukhin correlated specific electrical events from wounds with biochemical changes. For example, he noted that as positive currents increased in damaged tomato plants, the impaired cells more than doubled their metabolic rate, became more acidic, and produced more vitamin C than before. When small amounts of current were increased with the use of batteries, plant restoration occurred up to three times more quickly. Injury currents involve phenomena noted in animals as well as plants. Not only are they real, but currents of injury vary in proportion to the severity of the wound.

Robert Becker, M.D., renowned for his work on electromagnetism, discovered that the electrical potential of skin reflects the arrangement of your nervous system. In the 1920s and 1930s, interest was generated in the idea that direct currents guide the growth of cells, especially neurons. In 1946, researchers scientifically confirmed the theory. Neuron fibers do orient themselves along a current flow. Nonetheless, it took many years for acceptance of this information in the scientific community. Human sensations have been correlated with electrical data. It was SzentGyorgyi who taught us that the molecular structure of many parts of the cell support semiconduction. Although the mysteries of electromagnetism have never been fully solved, their existence and complexities are facts of life. These events may explain why supporters and ointments containing germanium tabs are proclaimed as pain killers.

External Applications of Germanium

Germanium is available for external application in the form of ointment, as soft tabs woven into fabric supporters, or as metal tabs for band-aid use.

Ointment specially prepared with organic germanium works wonders on skin rashes and other skin problems. Although anecdotal, you may be as impressed as I was to learn that a dry-lip rash that one of my sons could not shake for two months, regardless of effort, disappeared overnight with one application of germanium ointment.

Because external applications of germanium tabs appear to relieve muscle pain, supporters containing them are available. In Japan, germanium supporters are sold in drug stores and are as familiar to the Japanese as Ben Gay is to us.

Small tabs of germanium may be placed on band-aids and applied at acupuncture points. They have been placed at the tips of the eyes to relieve fatigue when driving or sitting in front of computer screens for long sessions. Specialpurpose supporters for back pain, tennis elbow, muscle strain, foot aches, and PMS are available. The germanium tabs are the same; it is merely the

shapes of the supporters that vary so they can be worn with ease at the appointed place on your body. For example, underpants lined with the tabs have been reported to relieve PMS; knee, ankle, leg, thigh, elbow, wrist, arm, and belly bands are said to relieve pain in those specifically-stressed areas. You can see how helpful these supporters may be for athletes or senior citizens -or anyone with any kind of pain. (I personally wear a leg band to relieve lactic acid discomfort when I walk aerobically.) External use of the germanium tabs for headaches, stiff necks, bad circulation, and arthritis pain have been heralded as beneficial. The tabs themselves remain active indefinitely as long as they are not exposed to hot water or automatic dryers.

Because everyone is an individual, with differing electrical charges, the "force" or effect varies from one person to another. People report that relief may be immediate, or it may take some time. At best, pain is thoroughly eased. At worst, there is no harm done: germanium is not a radioactive material, so there is no need for concern. In rare cases, pain will increase initially. According to the experts, this is a detoxifying reaction, and a sign that the germanium is "working."

The "magic" that penetrates into your skin structure has been conjectured to be an electric current that is helping to discharge and to balance. Electric fields and energies interact in many complex ways that have given rise to much of the natural world, working its wonders unseen and apparently unfelt, and until very recently, not understood. As stated, energy medicine is predicted to be the medicine of the near future. Using supporters containing germanium tabs may be the prescription of tomorrow for the relief of pain and stress. For those interested (or for those willing to try a modality on the cutting edge of tomorrow), it's here today.

Chapter 6

Risks and Limits: Toxicity and Safety

No substance can be used safely at any level, not even water. Some, however, can be used at higher or lower quantities than average and still remain within safety ranges. Nor does every person respond to each and every substance the same way. But a true immunostimulant should be able to work for a wide sphere of people, in a broad range of amounts, influencing a multitude of cell types. Organic germanium is such an immune stimulant.

The term "LD50" is used as a toxicity value. It means that when a substance under surveillance is administered to a particular number and breed of test animals, 50 percent of the animals die at that specific dosage, the LD50. According to Dr. Asai, the sesquioxide, or organic, form of germanium is incredibly safe. In fact, no toxicity has been discovered at dosages ten times greater than the highest dose that Dr. Asai administered. The LD50 for germanium, as demonstrated in test animals, is 10 grams per kilogram of body weight. Obviously, there are no toxic symptoms worthy of particular attention. Researchers have translated the test results in animals to ascertain that organic germanium would be safe for humans even at tens of grams per day. This is many-fold in excess of any amount that any person would ever require. The antioxidant properties of organic germanium may contribute to its nontoxic attributes.

Some of the first tests validating the safety of germanium were actually performed in this country in the 1960s. Germanium proved to be neither tumorigenic or carcinogenic. There were fewer tumors in test animals fed germanium than in the controls.²⁶ Animals were exposed for their lifetimes to small amounts of germanium, cadmium, and several other metals. The substances were added to their drinking water in an effort to find out if human diseases could be reproduced. Disease states developed only in those given cadmium. It is not surprising that an element like germanium that does not accumulate in human tissues with age is not toxic. (Cadmium accumulates in kidneys, arteries, and liver, where it interferes with enzyme systems.)

The clinical effects and safety of organic germanium reported by Dr. Asai have been confirmed by many studies. Research has been done to test for both acute and chronic toxicity. One such study was done at the School of Pharmaceutical Science, Kitasato University, Tokyo, verifying Dr. Asai's claims. This report shows that organic germanium possesses no toxic properties at conventional levels, and almost no toxicity at extremely high dosages. Gross anatomical observation of liver, kidneys, spleen, and other organs exhibited no noteworthy changes after extremely large amounts of organic germanium were administered.

The Japanese journal *Pharmacometrics* also reported that the general effects of germanium compounds were totally nontoxic, even at very high levels. Furthermore, the product was discharged from the body through the digestive tract within 20 to 30 hours. This is rapid clearance for a substance so powerful, and one reason why organic germanium is not considered a drug, but rather a healthgiving product.

Organic germanium is stable against temperature, humidity, and light. No changes occur in appearance, content, solubility, and quantity, nor are any decomposed products detected when organic germanium is kept at room temperature for 36 months.

Dr. Asai never administered more than two or two-and-a-half grams to patients per day, even to those who were extremely ill. As with most nutritional therapeutics, any side effects are not serious and disappear either when treatment stops, or after treatment has progressed for several weeks. Post-surgical patients treated with about two grams of organic germanium daily registered

complaints of symptoms that were minor, and which disappeared in three weeks. Slight skin eruptions, occurring in only about two percent of patients, cleared within a short time.

Because the skin is a major detoxifying organ, skin eruptions after germanium treatment represent the body's reaction to rid itself of toxins. Other avenues of discharge are urine and feces. Urination may be increased, and feces may become softer, watery, and more frequent. (Unlike diarrhea, there are no abdominal pains.)

Although germanium sesquioxide is the safer variety, even germanium dioxide, the nonorganic type, has been shown to be safe at low levels. This is not true at high levels, however. The Journal of Toxicological Science reports on accumulation of germanium dioxide in the tissues of a long-term user who died of acute renal failure. The patient had been taking 600 milligrams of inorganic germanium (germanium dioxide) daily for 18 months.

Be assured that the germanium you purchase is verified by the manufacturer to be organic germanium - or bis-betacarboxyethyl germanium sesquioxide. Reputable manufacturers routinely test expensive raw materials like germanium in their own laboratories to verify the chemical structure of the products before final formulation.

Chapter 7

A Working Plan for Adding Germanium to Your Diet

The development of malignancy in a cell is a long-term process, yet it involves recent events. For example, lung cancer in smokers is precipitated by exposure over many years. However, giving up smoking sharply reduces your risk. No matter what your past medical history, or how old you are, making dietary changes for the better improves life quality.

People who move to new locations often acquire the cancer rates of their new environment. For each cancer known in the United States, some society or group elsewhere has been successful in avoiding it. This emphasizes the role of diet and environment in disease.

An individual's diet is a key factor in the development of even genetically determined diseases, according to Dr. Robert Good, formerly of the Sloan-Kettering Institute for Cancer Research in New York. Dr. Good believes that dietary modification may forestall or even completely prevent development of these diseases and correspondingly lengthen and enhance the quality of life.

The effect of diet on health is no longer debated. Vitamins and minerals, plus the amount of protein, fats, carbohydrates, and fiber have been found to modify the expression of toxicity and carcinogenicity of environmental agents. Slowly, the practice of treating such disease with nutritional intervention is becoming more popular. Nutritional status helps to explain why some people are susceptible to disease while others are apparently spared, even when both are exposed to similar toxins. Evidence points to the fact that nutritional status may be improved with organic germanium, whether it is ingested in age-old healing agents like Siberian ginseng, chlorella, and Reishi and shiitake mushrooms, or in twentieth century supplemental form. It is readily absorbed from water, edible plants, and animal products.

Table Talk

Organic germanium compound is indeed the "new nutrition kid on the block," a landmark development in nutritional medicine. If you want to include it in food sources, here are a few nutrition notes:

- Garlic. This pungent herb enhances the flavor of many cooked dishes as well as cold salads. Cloves of garlic may be cut into slivers or crushed before being added to hearty stews or grain dishes. (To minimize the smell of garlic after eating it, chew a sprig or two of parsley, or sprinkle chlorella granules into some water, and use as a rinse before swallowing the mixture.)
- Ginseng. Ginseng is used occasionally as seasoning; it is more commonly made into a tea. Soviet cosmonauts have been issued pieces of ginseng to take on missions into space as a preventive against ailments.
- Comfrey. Similar to spinach in preparation and taste, comfrey offers excellent nutrient value served raw and is delicious when lightly steamed and buttered.
- Chlorella. Chlorella granules may be added to a variety of recipes such as salads and soups.

My favorite company hors d'oeuvre is something I call "Green-Marine Taco Spread": 2 tablespoons chlorella granules; 2 tablespoons plain yogurt; 1 clove minced garlic; 1 cube bouillon; 2 tablespoons tamari; 1/2 cup tofu; ground pepper; 4 tablespoons sesame seeds. Combine all ingredients and blend well.

A Chlorella Smoothie can be mixed by adding 1/2 tablespoon of chlorella granules to 8 ounces of

apple juice, 1 or 2 tablespoons of lemon juice, and a few dashes of cinnamon.

- Watercress. This is a popular salad garnish with a mild but peppery flavor. In addition to adding watercress leaves to your salads, try chopping them finely to use as seasoning. Or simply place a bunch of watercress in a bowl of water, leave it on your kitchen counter, and nibble the leaves through the day.

Purists who eat meat seek only organic meat products. The health-oriented may soon be able to purchase germanium-raised organic meat in the near future. One organic rancher in Nebraska has started using germanium in animal feed. He claims that organic germanium has the same effect as the antibiotics (the animals grow fatter faster, and so on), but with the use of germanium, his animals remain healthy, if not healthier. Since organic germanium helps detoxification, these animals have fewer toxins. Organic-germanium beef may be one solution to the degradation of our foodways. The Nebraska rancher believes he can stop the cancer in the meat chain.

One company bottles and sells water from Utah's inland sea, the Great Salt Lake, because it contains a significant quantity of germanium. Another company grows vegetable products hydroponically (in water) in a germanium medium to build up the germanium concentration to 800 parts per million. A patent for barley sprouts grown with germanium has been obtained in Japan.

Although germanium is believed to be absorbed more efficiently in food form, the quantities found in food may be too limited for therapy. Small amounts can, however, serve for prevention.

Germanium as a Supplement

Because germanium occurs in such small quantities in plants, and because its synthesis involves a difficult process, the cost of supplemental organic germanium may appear to be high when compared with some other supplements. Needless to say, you could never get large quantities in food. And like so many other nutrients, germanium is lost when foods are grown in tired soils, or when they are processed or overcooked. Germanium is present, for example in a whole grain, but not in refined flours.

The stability of organic germanium, described in Chapter 6, offers many advantages. Like vitamin C, the effective dose spans a wide spectrum. It can be helpful in microgram amounts, yet an optimal quantity for cancer or serious infections is 5 or 6 grams, administered by a physician. And, like vitamin C, it is not stored in your body, but is cleared rapidly.

As a preventive measure, 25 or 30 milligrams a day is usually recommended. For minor problems, 50 to 100 milligrams daily is more effective. For relief of severe pain or for achieving an overall "good" feeling, a gram or gram and a half a day may be prescribed. And for those who are seriously ill, a few grams a day may be recommended by the physician. (Larger amounts should never be taken without consulting a physician.) As stated, Dr. Asai never used more than 2 or 2 1/2 grams, and even reported success with 500 milligrams a day. If he could not cure malignancy with these amounts, at least the pain of advanced cancer was dramatically reduced.

Serafina Corsello, M.D., of the Corsello Centers in Huntington, New York, says, "Because germanium is a powerful stimulator of the immune system, I allow a 'cooling off period for very ill patients. This prevents a 'die-off effect. An alternating protocol gives the system an opportunity to unwind before the next stimulation phase. The recommendation is five days on and two days off. (Take organic germanium from Monday to Friday, and none on the weekend.) The sicker the person, the greater the response. A sick patient may even get a rash, but the cooling down period usually prevents both the die-off effect and other symptoms."

Work up to prescribed dosages gradually. Very ill people those who experience severe fatigue and petrochemical sensitivity - require from 150 to 500 milligrams daily.

"It is also advisable to check the adrenals. If the adrenals are not functioning properly, you are beating a dead horse."

Although sometimes administered intramuscularly and intravenously, organic germanium is very successful when taken orally. The absorption rate is even higher when taken sublingually (under the tongue), quickly affecting your lymph and circulatory systems.

This method increases absorption by 15 to 20 percent. Nasal application (sniffing) is also an efficient method, but some may find that this manner of absorption irritates nasal passages.

Smaller amounts of organic germanium are used for lung cancer because of the rapid circulation and metabolism of that organ. Only 15 milligrams daily have been demonstrated to help those with candida. It has an energizing effect at equally small dosages. For more serious illness, frequent and smaller quantities appear to be better than larger amounts taken less often.

In Conclusion

These are the first facts about life-sustaining organic germanium, common denominator in renowned remedies.

Nutritional supplementation has been accepted as a therapeutic measure in treating vitamin-dependency syndromes. Supplementary oxidant/antioxidant administration may be just as therapeutic in providing protection against free radicals and oxygen deficiencies.

Unfortunately, we cannot always control many factors in our environment. We can, however, control the quality and quantity of our nutrition. As the organic germanium story continues to unfold, we look ahead to more knowledge and uses for "the new nutrition kid on the block" -organic germanium.

APPENDIX A

Food Substances Containing Significant Quantities of Germanium

Herbs

Shelf fungus*	800 - 2000 ppm
Ginseng	250 - 320 ppm
Sanzukon	257 ppm
Angelica	262 ppm
Walnut	239 ppm
Boxthorn seed	124 ppm
Wisteria knob	108 ppm
Pearl barley	50 PPM

Age-old Remedies

Garlic	754 ppm
Aloe	77 ppm
Comfrey	152 ppm
Chlorella	76 ppm

ppm = Parts per million

* Shelf fungus has a history of being an effective treatment for cancer. This was cited by Nobel Prize winner Alexander Solzhenitsyn in Cancer Ward.