

Glandular Research

Throughout history peoples have used glandular nutritional therapy as a natural supplement. Usually they didn't know it was glandular therapy, but they knew that ingesting organs and glands from animals or fish was good for the health and for preventing or treating specific ailments. They ate the liver, kidneys, heart, brain, eyes, pancreas, digestive tract walls, adrenal glands, thyroid glands, thymus gland, bone and bone marrow, and similar portions. Such animal tissues are concentrated sources of nutrients and specific tissues are especially supportive to their parallel tissues in the human body.

The basic premise of using glandular tissues as therapy is "like heals like," a concept which has been in existence for almost as long as historic records have been kept. The modern use of glandular dates back to the turn of the century with the administration of parathyroid cells to a child with a parathyroid problem by Dr. Paul Niehans. Dicing parathyroid glands from a young calf, the doctor fed them to the patient who, in turn, had a positive response within minutes, the results of which lasted for years.

Endocrine glands used nutritionally include the hypothalamus, pituitary, pineal, thyroid, parathyroid, pancreas, thymus, adrenal, and gonads (ovaries and testes). Other organs and tissues, though not glands, are commonly referred to as "glandulars" when used as supplements. Thus, raw tissue extracts or concentrates of brain, heart, prostate, liver, spleen, uterus, skin, stomach, duodenum, kidney, lung, mammary, and bone are also included in the 'glandular' or 'organotherapy' nutritional category.

Generally, glandular products are extracted from bovine (cow), ovine (sheep), or porcine (pig) sources and concentrated by a specific process resulting in a food product possessing high biochemical activity which can elicit specific physiological or nutritional effects. The idea of "like heals like" means that the best possible protein and other synergistic nutrients for a gland, organ, or tissue can be obtained by eating that particular gland, organ or tissue. For example, it has long been known that eating raw liver assists the health, repair, and function of the body's liver when there is need or disease. In the United States, glandulars have been used in nutritional therapy especially since Dr. Royal Lee introduced his first supplement, Catalyn (Standard Process, Inc.), in 1930. Catalyn contained (and still contains) adrenal, liver, kidney, and spleen extracts.

Although some peoples in some countries consume what is now euphemistically called "variety meats" such as kidneys, heart, liver, tripe, sweetbreads, spleen, etc., most peoples from developed countries avoid offal and consume only muscle meats.

Even if such specialty meats were commonly eaten, caution would be needed due to modern mass-production methods including the use of antibiotics and steroid hormones. Also, as meats are high up the food chain, accumulation of pesticide residues can be significant. Liver and other organ meats such as kidneys tend to accumulate toxic metals, antibiotics, and sulfa drugs. The Food and Drug Administration (FDA) Total Diet Study found that beef and calf liver had 49 different pesticide residues. ii

This is unfortunate because gland and organ meats provide vital food factors and are much more nutrient-rich than muscle meats. On the bright side, more meats from organically-raised animals are becoming available without the residues from pesticides, drugs or hormones. Due to the

malnutrition and "foul" nutrition of modern-day processed, refined, chemicalized diets, invaluable nutrients can be obtained from "variety meats" and glandular supplements.

Notably, glandulars made primarily from nucleoproteins (protomorphogens) are far less likely to be contaminated with poisons or drugs since, unlike whole-cell glandulars, they do not contain the fat or other components where such chemicals accumulate.

ARE GLANDULARS EFFECTIVE?

The health of one's glands and organs is influenced by many factors. Biochemical individuality and genetic tendencies determine unique physiological capabilities. Thus, some people may have stronger hearts than others, or perhaps weaker adrenals. Good nutrition -- nutritive-rich, poison-free, whole foods -- can help a person attain the best biochemical potential of their organs and glands in terms of function and repair. When the diet does not adequately provide the specific nutrients needed by glands and organs, the health of those tissues is compromised and susceptibility to insult, injury and stress is increased. Many health professionals employ glandular therapy as an important part of a comprehensive nutritional program.

Some of the pioneers in nutrition believed that raw glandular tissues contain intrinsic protein factors which are separate from, but synergistic with the vitamins, minerals, trace minerals, enzymes, co-enzymes, and fatty acids contained therein. These specific protein factors are organ -- or tissue -- specific. This means that the raw cellular material of a bovine kidney, for example, will be picked up from the lymph of the human kidney when ingested. These tissue-specific particles apparently "target" other cooperative and essential nutrients to the gland or organ for repair and maintenance.

EVIDENTIAL RESEARCH

Volumes of empirical evidence from thousands of clinicians as well as testimonials in the historical literature support the belief in the effectiveness of raw glandular preparations. However, these are usually considered "merely anecdotal." Since the early 1970s, though, scientific evidence has been accumulating which confirms the efficacy of the supplements.

Dr. A. Kment of Germany demonstrated through radioactive isotope tracing that specific factors from glandular tissues are transported by the bloodstream and absorbed by the corresponding glands of the patient. Clinical research data shows that these active factors in glandular concentrates are undisturbed by digestion. In fact, research by scientists such as Dr. Andrew Muir, University of Florida, indicates that the nutritionally beneficial effects of glandulars are lost if they do not go through at least part of the digestive process. This indicates that "eating" the glandular is best.

For example, Dr. Muir orally fed insulin and pancreatic tissue proteins to mice bred to become diabetic. The onset of diabetes was significantly delayed. The tests were so successful that human trials are under way. Animal proteins closely resembling proteins in human pancreatic tissues are being used to treat juvenile (Type I) diabetes. This "particularly innovative approach" to treat diabetes "potentially offers the advantages of oral administration and a high degree of safety," according to Richard DiMarchi, Eli Lilly & Company. iii

Nutritional glandulars, by the way, do not contain hormones, though they may contain hormone precursors which the body can utilize.

Dr. Muir admitted that the use of glandulars is nothing new. His research and that of others is aimed at HOW the therapy works, not IF it works. iv

'Oral tolerization' and 'oral tolerance treatment' are the new terms used for glandular therapy. "Patients eat proteins that are like those in the beleaguered tissues in their own bodies." For instance, Dr. Robert Nussenblatt, National Eye Institute, has been successfully treating patients with uveitis (a serious inflammatory eye disorder) by oral tolerization -- ingestion of bovine eye protein.

Dr. Howard Weiner and colleagues at Brigham and Women's Hospital report that collagen, a natural component of cartilage tissue, reduces symptoms of rheumatoid arthritis. Consumption of bovine myelin (protective nerve sheath) protein produced significant results in animals and is being tried with human victims of multiple sclerosis. Other similar studies have shown animal cartilage substances assist arthritis and brain extracts assist persons suffering with nerve diseases. "All of the animal studies and initial human trials look promising."

"It's not hocus-pocus," says Rachel R. Caspi, immunologist at the National Eye Institute. "We can measure responses and confirm our data. This is real." Dr. Weiner explains: "This method is attractive because it allows us to take advantage of a natural route of exposure and a natural system rather than fighting the body. And there aren't any toxicities involved in treating people."

"Glandulars are a very effective tool for rebuilding and improving the function of glands and tissues." By supplying the specific protein configuration and other raw materials (nutrients known and unknown) needed by a gland, that gland "has a better chance of regulating its hormone output" and thus functioning properly. Such glandular feeding supports biochemical balance of both underactive and overactive conditions, getting to what is often the underlying cause of the imbalance or dysfunction. Conversely, medical administration of a hormone does not correct the problem but treats a symptom. In fact, external hormone therapy actually discourages glandular function, frequently leading to glandular shut-down due to the physiological feedback system. V

Many scientific papers (over 80 in 1996 alone) have been published on oral tolerance. Currently the aim is the development of pharmacological agents -- "a new class of drug therapies" - to medically treat various diseases currently "believed" to be autoimmune. As the experiments have progressed, the animal tissue cells have often been isolated, cloned, expressed, purified, and otherwise processed to yield a protein chemical, an altered isolate -- a far cry from the original gland or organ. The end product resembles a drug more than a nutrient. The results of the refined-protein treatment on human subjects have been mixed: a fraction of the patients experience relief of symptoms, while many others show no demonstration of efficacy.

This is a detour from the nutritional concept of glandular therapy, but, it is the nutritional principle of assisting "vital repair activities" in specific cells. The real nutritional therapy has been used successfully for about a hundred years. Efforts are now being made to turn it into a medical treatment. Vi

Notwithstanding, when nutritional glandulars are tested in standard medical fashion (using blood tests, urinalyses, etc.), they are found to "alter" (improve) biochemistry. Thus a patient given thyroid concentrate will manifest improvement in thyroid blood panels and other tests that demonstrate thyroid activity. Apparently, the body is able to "recognize" the specific "blueprints" (nucleoproteins including DNA and RNA coding), protein configuration, and other

aspects of the specific gland or organ, and receptors of the target gland (e.g. thyroid) pick up the substances from the circulation. Since hormones are not part of the substance, overdosing is not a concern. Even when excess amounts have been ingested, the body can easily deaminate them. Vii

Physiology and biochemistry texts have, for years, described the fact that organs and glands communicate chemically with minute amounts of hormones and polypeptides (small proteins). The blood levels of these chemical messengers are tiny, yet have very significant and positive effects. So, too, the "messengers" in glandular preparations can have definite and positive impact. Viii

Chemist Jeffrey Bland, Ph.D., cites as an example the high activity of the pituitary hormones ACTH, FSH, TSH, vasopressin, and oxytocin, though they are present in minute concentrations. The active portions of the molecules in glandulars, he contends, are just as effective and are often virtually identical in animals (glandular sources) and humans. Even if there are minor differences, "the activity is not dependent upon the total structure, but rather only possibly a portion of the polypeptide." ix

ARE THE PROTEINS ABSORBED?

Each gland, organ and tissue of the body is unique. One cannot describe formational, structural, and functional features that are common to all of them. Thus, each consists of a distinctive protein makeup.

"One of the claims cited by detractors of glandular therapy," says Gary Wikholm, M.D., "is the out-dated belief that the digestive system breaks down the proteins and hormones of the gland into smaller inactive units. However, there is now substantial evidence that large protein molecules can and do pass intact from the human gut into the bloodstream under normal conditions."

It has been demonstrated that the body often recognizes which molecules it needs to absorb intact and which molecules it needs to break down into smaller units. "This phenomenon may help to explain the effectiveness of glandular therapy. Furthermore, proteins and polypeptides (small proteins) that are absorbed intact from the intestines have been shown to exert effects in target tissues.

Modern Nutrition in Health and Disease comments: "The transport mechanism for uptake of peptides by [intestinal] mucosal cells differs from the mechanism for free amino acid uptake, notably by the absence of competition for absorption between these two mechanisms. The absorption of peptides is likely to represent a significant major route of amino acid uptake." To illustrate, children with Hartnup's disease cannot transport free tryptophan into the mucosal cells. Still, they grow almost normally, suggesting that their need for essential tryptophan is adequately met by its absorption in peptide form.

Recent data thus indicate that larger molecules (especially polypeptides exerting hormone-like effects) in glandular products are absorbed intact and produce effects, Current understanding of normal physiology teaches that some enzymes, polypeptides and other macromolecules are absorbed in the blood intact during normal digestion. x

A quality raw concentrate of hypothalamus, for instance, contains important "active principles of a polypeptide nature" that may have an influence on stabilizing, repairing, or regenerating the body's hypothalamus. The whole peptide does not need to survive intact across the intestinal wall, but only a portion (perhaps the nucleoprotein 'blueprint') is "necessary to elicit tissue-specific effects," as is true with hormones.

The exact same protein structure - amino acid components, configuration or arrangement, sequences, and folding - is supplied by a glandular supplement ("like heals like") to allow the body's cells to repair, rebuild, and perform properly. xi

Heart muscle cells, for example, are composed of 18 different amino acids in a specific arrangement. For replication, all 18 amino acids must be present at the same time and in the required numbers. If one amino acid is missing or denatured, needed replication is impaired. A cell cannot duplicate itself or upgrade its proteinaceous cytoplasm toward good health without a constant supply of ALL specifically--needed amino acids, availability of which can make the difference of whether cells are strong or weak.

Any physical illness, tissue insult, injury, or excessive stress -- including chronic malnutrition and/or chronic poisoning -- can increase protein breakdown in the body and, when affecting a particular gland or organ, can result in accelerated protein catabolism in that area. So it is significant that in "certain physiologic (including disease) states, the permeability of the intestine to whole proteins is enhanced, and transfer of whole proteins also occurs by passage between cells of the villus." If an individual experiences adrenal gland fatigue, it would follow that the body innately absorbs more proteins or protein portions specially required to support adrenal tissue health and regeneration. xii

Numerous whole proteins, including enzymes, have been shown in both animal and human studies to be absorbed intact into the bloodstream following oral administration. Moreover, it has been shown that proteins or polypeptides absorbed intact exert effects in specific target tissues. " xiii

NUTRITIONAL ADJUNCTS

Glandulars fit into a comprehensive schedule of nutrients. That is, they are synergistic with other supplementary food concentrates. The glandulars may, by their nucleoprotein and protein factors, direct other needed nutrients to the corresponding gland, organ, or tissue. Thus food sources of essential fatty acids, vitamin A and E complexes, and iodine, for example, would cooperate with and enhance the effects of a thyroid glandular. A variety of nutrients are needed for support when the body's tissues are depleted, insulted, or imbalanced.

Tissue-specific glandular supplements also "provide factors which are suitable for normalizing hormone output" and, accordingly, provide a "proper environment physiologically" for the use of vitamins, minerals, trace elements, enzymes, fatty acids, and other food constituents. Beyond the precursors for cellular repair and maintenance, tissue-specific supplements have often been used to avoid the necessity of taking hormones or synthetic medications. An under-active thyroid is incapable of producing sufficient thyroid hormone. By supplying the protein configuration (glandular) plus other specific nutritional reinforcements required for thyroid health and function, the thyroid can gain sufficient rejuvenation to improve its hormone production naturally. xiv

PROTOMORPHOGENS

Beginning in the early 1950s, Dr. Royal Lee introduced glandular supplements made by a unique process he developed. He called them "protomorphogens" (proto = first or preceding, plus morphogen = able to cause or determine the origination, development, or form).

A protomorphogen (PMG) does not refer to a whole-cell gland concentrate. It denotes the part of the cell which carries the "blueprint" material as found in the nucleus. It is cytotrophic cellular material (cyto = cell, plus trophic = nourishment; thus, cellular nutrition). The nucleus or cellular control center contains large quantities of nucleic acids, deoxyribonucleic acid (DNA) and ribonucleic acid (RNA). Nucleic acids are responsible for the storage, expression, and transmission of genetic information. In this way, the characteristics of the cell's proteins and the control of activities outside the nucleus are determined. Such activities include replication or reproduction of the cell. The translation of the genetic molecular language results in the unique proteins of cellular components in each tissue, gland, or organ. These proteins are the core of cellular nutrition. Thus, even though nucleic acids account for only 2% of the body's weight, they ultimately determine the properties of all cells. xv

The PMG is a tissue extract intended to supply specific determinant factors -- which establish the nature or character of substances -- for repair, maintenance and function of a particular gland or organ. It differs from the whole-cell glandular (which may contain some nucleoprotein, though no claims are made for it and no assays are performed to test for it). The whole-cell glandulars, processed properly, will contain other nutrients normally occurring in such tissue (vitamins, fats, etc.). But the PMG represents a very different nutritional philosophy. It is not for the associated nutrients that the PMG is used. It is for the cellular regulation components, the "blueprint" instructions required when the gland or organ has been fatigued, insulted, or injured in some way so that materials for tissue healing may be produced.

In a patented process, the PMG is extracted by creating an electrolytic solution to split open the cells using solar dried sea salt (sun evaporated) to concentrate the cytotrophic material including the DNA and RNA. Though salt can be tasted in the PMG, the amount is minute. Besides, real sea salt (unrefined), unlike commercial salt, is a naturally balanced source of trace minerals, containing much more than sodium and chloride.

Basically, the PMG supplies concentrated nutrition for the cell's regulation components -- the cellular control center. This separates it from the whole-cell glandular supplements. Areas in which it is apparently of special use involve phagocytosis, autolysis, regeneration, and replication.

IMMUNE RESPONSE AND CELLULAR DIGESTION

Imperative to the immune response is phagocytosis, ingestion and digestion of foreign particles, bacteria, damaged or dead cells, and other cellular debris, as well as their subsequent removal from circulation. Macrophages and some other white blood cells perform this function.

According to immunological theory, a substance that elicits an immune response is an antigen. A specific immunoglobulin (protein) that binds to this substance is an antibody. The antigen is a protein marker that: (1) identifies the cell as "self" (normal, unaltered) or "non-self" (abnormal, altered, damaged, or foreign); (2) identifies the type of cell (e.g., skin, kidney, adrenal, etc.); (3) stimulates the production of 'antibodies' by lymphocytes (a type of white blood cell) which, in turn, can participate in phagocytosis; and (4) stimulates responses by other white blood cells in the immune or inflammation process. An antibody reacts specifically with the antigen,

sometimes to get rid of damaged cell parts or destroy a whole cell. "It is believed that antibodies may also exist naturally, without being present as a result of a stimulus provided by the introduction of an antigen..." Antibodies are not produced against "our own proteins and tissues," at least not against normal, healthy cells, but only against substances that are regarded by the body as foreign or unfit. xvi

Autolysis is digestion of the entire cell when damage to the cell is severe. Lysosomes, organelles throughout the cytoplasm, provide an intracellular digestive system to digest and remove damaged cells or damaged portions of cells. Damage can be the result of heat, cold, trauma, chemicals, or other factors including increased susceptibility to insult or injury due to malnutrition or 'foul' nutrition.

In recent years, many diseases have been referred to as "autoimmune," including those being studied in the oral tolerance trials. This theory proposes that the immune system has lost its normal tolerance of "self" antigens, produces antibodies against these antigens, and destroys normal, healthy tissue. The 'oral tolerization' protein administered to study subjects is thought to serve as a substitute for the tissue proteins being attacked - a decoy. However, a study of physiology and biochemistry emphasizes that all the vital and varied mechanisms of the body have one objective: maintaining or preserving a state of equilibrium or homeostasis. Put another way, each cell works for the well-being and survival of tissues and the body, not their destruction. xvii

In harmony with what nature teaches about preserving and building rather than indiscriminate self-destruction, an alternate viewpoint would be that there is good reason why certain cells or cell parts are phagocytized (destroyed) or autolyzed (digested and removed). As Dr. Lee expressed it: "The body must have as much ability to tear down and discard as to build and repair." xviii

To illustrate, insects are programmed in "the very definite, specific, important chore" of devouring unfit plants. Their special genetic makeup enables them to know exactly what foods they are to eat and destroy. An insect can recognize the difference between a healthy plant, grown on good soil, and an unhealthy one, grown on poor soil. The "kind of nutrition the insect needs is not available in a healthy plant." This creature has the job of getting rid of unsound, inferior plants. xix

In the same way, would not the process of phagocytosis (in this case, cellular destruction) OR autolysis (cellular self-digestion) be caused by the innate recognition by white blood cells (and their products) OR lysosomes of unhealthy, damaged, altered cells that need to be eliminated? Such sickly, debilitated, cells would be treated in the same manner as foreign substances -- something to be cleaned away for the benefit of physiological and biochemical health and equilibrium. Put bluntly, it would be a process of garbage removal. Damaged or infirm cells or parts of cells are removed.

If cellular damage is slight, only a portion of the cell is removed, followed by repair or regeneration. If damage is severe, the entire cell is digested. "In this way, the cell is completely removed and a new cell of the same type ordinarily is formed by mitotic reproduction of an adjacent cell to take the place of the old one." (Emphasis added) This is needed replication -- duplication of the genetic material with cellular division to produce two

cells where there was one -- to replace the cell eliminated. This process depends on the reproductive abilities of neighboring cells.

But what if all the nutrients needed for proper cellular replacement are not present in adequate quantities in the surrounding cells and environment, or if some poison created sufficient disruption of cellular function so that interference in the "ordinary" formation of new cells occurs? In other words, suppose the 'soil' (environment) is not good or neighboring cells are not healthy? Doing the best they can, cells may reproduce, but not ideally, not to desired operating capability. Worse still, the cells may not be able to reproduce a functional replacement. xx

VALUE OF THE PMG

The PMG can enter this picture in several ways. "Degradation of a complex organic molecule is usually a 'downhill' process, proceeding with loss of free energy...". The extra energy needed for removal of cellular debris must come from the surrounding tissue cells and environment. The regeneration of cellular parts or the replication of whole cells also calls for nutrients and energy provided by the surrounding cells and environment.

The body can store fats and carbohydrates for energy, but generally cannot store proteins, nucleic acids, or simple building-block biomolecules, which are made only when needed in the amounts required. The manufacture of nucleic acids and proteins require "instructions" as well as energy sources.

The nucleus of the specific cells - as provided in the PMG -- provides the concentrated central memory bank for assembling the protein and nucleic acid product designs and for utilizing raw materials needed for that unique tissue.

Thus, it helps provide the extra energy required for catabolism (breakdown) and for vital, appropriate, precise cellular regeneration and replication. Where there had been a continual degradation process (phagocytosis and/or autolysis) with consequential glandular or organ fatigue (atrophy), the cellular 'blueprints' and resultant specific proteins produced may interrupt and ideally stop this destruction and removal process so that cellular repair and reproduction can proceed normally.

Although whole-cell glandulars can provide nutrition for the specific tissues, they do not provide the concentrated determinants for production of the needed proteins as PMGs do. Dr. Lee commented that the "basic tissue will follow the pattern being set up by the blueprint material." No wonder multitudes of health professionals report that the PMG brings remarkable clinical results. xxi

MAD COW DISEASE

Bovine spongiform encephalopathy (BSE), commonly known as "mad cow disease," was discovered in 1986 in the United Kingdom (UK) where it has been blamed for the deaths of over 165,000 cattle (by the end of January 1997). Symptoms in the cow include loss of coordination, apprehension, and changes in posture and temperament.

Scientific evidence points to an association between the outbreak of BSE and the practice of feeding cattle manufactured protein derived from carcasses of diseased sheep and/or other ruminants. The bonemeal and meat in the feed often came from sheep suffering with scrapie, another spongiform encephalopathy of the central nervous system.

Feeding cattle any bonemeal or meat is inappropriate as cattle are herbivorous ruminants; that is, their diet is normally grasses and herbs. And feeding them diseased and tainted animal proteins goes beyond inappropriate to dangerous.

BSE in cattle seems to be under control in the UK as numbers of new cases are progressively falling due to legal discontinuance of the above feeding practice. A few other countries reported a slight rise in incidence in 1995, mostly due to importation of UK cattle fed the diseased protein, but this is also declining.

Questions have arisen whether BSE can be transmitted to humans. And some people have expressed concern whether glandular supplements could be a means of transmission. Despite abundant research, BSE 'infection' to humans is entirely "speculative" since "there is still no formal proof of the transmissibility of BSE to man." xxii

It has been conjectured that BSE may occur as Creutzfeldt-Jacob Disease (CJD) in humans. CJD affects adults who are about age 60 at the rate (worldwide) of one person per million. So it is very rare. Early in 1996, "a new neuropathological variant" of CJD was "recognized" in 10 persons in the UK who were under the age of 45. The possibility of a causal link between these cases and BSE via the food chain was widely publicized. The "evidence" was based only on temporal (time) and geographical association "in the absence of any other plausible explanation." Put another way, the link was purely a guess. Actually, the cause of 80% of these cases is "unknown," and the rest have been attributed to "certain medical treatment".

Since the 10 cases were reported in March 1996, only one more case has been reported in the UK and one in France. The idea that the new variant of CJD is due to BSE is "unproven." xxiii

But what of the "certain medical treatment" known to cause at least 20% of the new cases of CJD variant? Not as publicized is the fact that medical treatments with human growth hormone (hGH) caused CJD in a number of people, some of whom died from it. In the UK, 16 people have died of CJD and three more are terminally ill after being treated with hGH. No connection with mad cows! xxiv

"The fact remains that there is as yet no scientific proof to link human encephalopathies with their animal occurrence." Any "link," says William Campbell Douglass, M.D., is probably nonexistent. One reason is the "species barrier" nature created which protects humans from most animal diseases. xxv

No cases of BSE have been reported among cattle in the U.S. And, since 1986 the U.S. Department of Agriculture (USDA) has prohibited importation of cattle, beef, and bovine products for animals from countries with confirmed cases of BSE in cattle. In January 1997, the FDA proposed a measure that would prohibit using tissues from ruminants (such as cows, sheep, goats) in the manufacture of ruminant feeds.

All along the FDA has regularly advised manufacturers of dietary supplements, foods, drugs, cosmetics, human biologics, veterinary drugs, and animal feeds of their responsibility to ensure the safety of these products. Manufacturers may obtain bovine ingredients only from animals raised in countries free of BSE. They must also create and maintain documentation on the country of origin and make the information available to inspectors on request. xxvi

A notable fact was disclosed from an indepth study by the British-based Soil Association. No animals born on a farm after the herd was registered organic have contracted BSE. In addition to not feeding bonemeal or meat products to herbivorous animals and avoiding the routine use of drugs, organically-oriented livestock owners shun the usual intensification of cattle operations as well as intense use of organophosphate pesticides which lower the vitality of animal immune and nervous systems. xxvii

Put succinctly, BSE does not exist in the U.S., and BSE does not present any known health hazard to human.

[Since the information on "mad cow disease" and the hysteria it produced was written, further information has been uncovered by a British researcher. The pesticide manufacturing industry has been desperately trying to suppress the information or else put their own spin on it. He discovered that it is not a disease after all and thousands of cows were slaughtered for no real reason. The "disease" is simply the result of standard commercial farming practices. When their airplanes fly over their fields and release their poisonous sprays, it not only lands on the crops where they hope it will kill all the "bugs" that eat their crops but it also lands on the backs and heads of the herds of cows. From there the poisons are absorbed through their fur and skin and accumulates in their brain and nervous system causing all their symptoms.]

Glandular products have been produced and used in the U.S. for over 60 years with absolutely no reports of microbial contamination or resultant illness. Both the FDA and the USDA requirements assure there is no such contamination. The chances of glandular products transmitting BSE to humans is virtually nonexistent. Since BSE does not exist in the U.S. or any other country from which raw materials for glandulars may be made, there is no need for concern about any link between BSE and human transmission from that source.

CONCLUSION

The accumulating evidence strongly suggests that quality glandular supplements have beneficial influences on tissue function and provide the clinician with valuable nutritive properties to augment a comprehensive program of natural therapy. Dr. Royal Lee wrote that dried glandular materials like PMGs "act by supplying determinants that aid in regenerating the weak gland." Apparently, the worst they can do is help. ^{xxviii}

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