



Guide to Your Biology of Functions Indexes

by Jean Bokelmann, M.D. & Annette Davis, C.N.

Endobiogeny is all about BALANCE. As you will see on your **Endo Panel**, you can be high or low in a number of areas. Being physiologically balanced is like trying to walk on a tightrope. You are usually teetering to one side or the other while trying to stay upright. Most imbalances tend to be minor, but a few are clearly significant. Endobiogeny seeks to restore your balance as much as possible, with special emphasis on the more serious imbalances and those imbalances that are thought to be directly contributing to your symptoms or disease. Often, in correcting the major imbalances, the minor imbalances will be able to correct themselves.

It is important to understand that the Biology of Functions indexes relating to hormones do not necessarily reflect the level of hormones circulating in your blood. Rather, they suggest the functional activity of the hormones at the cellular level.

On your **Endo Panel**, a red highlighted value means "high," a blue highlighted value means "low," and a white value means "normal." You will notice that some indexes have two values. The first value means "structural" or how your balance is when your body is at rest or relaxing. The second value means "functional" or how your balance is when your body is in motion. If you are closer to the normal range in structure, it suggests that you would benefit from more relaxation. If you are closer to the normal range in function, it suggests that you would benefit from more physical activity.

Summary of Key Indexes

■ Adrenal Cortex

The adrenal cortex index expresses the level of general endocrine activity of the adrenal gland. The adrenal cortex makes several hormones that are instrumental in your ability to adapt to various kinds of stress. It is the source of cortisol. It is also the source of precursors for other hormones that are modified elsewhere in the body. So the adrenal cortex needs to be in balance in order for you to optimally deal with stress, and for your other endocrine glands to function.

- **If this index is high**, it suggests that your adrenal cortex is under increased demand due to perceived stress or due to need of other endocrine glands to have precursor hormones. If it is high due to ongoing stress, it will eventually lose its reserve and begin to fail.
- **If this index is low**, it suggests that your adrenal gland has been over-taxed by perceived stress and is beginning to fail. This failure leads to feelings of fatigue and impaired immune function. It also leads to malfunctioning of other endocrine glands due to lack of precursor hormones.

• **Note:** Steroid drugs may influence this index.

■ Circulating Cortisol

The cortisol index indicates the amount of cortisol secreted by the adrenal cortex, especially during times of stress or adaptation. Cortisol is the hormone of adaptation. It is important in sustaining blood sugar and blood pressure and in reducing the inflammatory response. Cortisol is produced by the adrenal gland.

- **If this index is high**, it suggests that your adrenal gland is being solicited due to an increase in stress. Stress can be real or perceived, mild or severe. For example, an anxious person will feel stress even if there is no change in the environment, and this will solicit an increase in cortisol production from the adrenal glands. A minor change in environment (such as walking outside for a few minutes on a cold winter day) will also trigger an increase in adrenal cortisol production. High cortisol production reduces immune function, raises blood sugar and blood pressure, and contributes to upper abdominal weight gain.
- **If this index is low**, it suggests that your adrenal gland has become exhausted by ongoing demands, and is beginning to fail. Your body can no longer handle stress – even the minor stress that comes with getting out of bed in the morning! Fatigue, low blood pressure, low blood sugar, and chronic inflammation can result.

• **Note:** Steroid drugs may influence this index.

■ Progesterone Activity

This index expresses the level of activity of progesterone in your body. Progesterone is the “other female hormone”, as it is made in large amounts by the ovarian follicle after ovulation, and by the placenta during pregnancy. More importantly, progesterone is a precursor to all the major adrenal and gonadal (testicular/ovarian) hormones. In women, progesterone is very important in balancing estrogen, maintaining uterine and breast health, preparing for normal menstruation, and sustaining a pregnancy.

- **If this index is high,** it suggests a high demand by the body for other hormones that are derived from progesterone or relative estrogen dominance. This can result in failure to ovulate, failure to conceive, premenstrual syndrome, menstrual irregularities, heavy bleeding, breast tenderness, and mood disturbances.
- **If this index is low,** it suggests a low demand for progesterone due to insufficient estrogenic activity or excessive androgen production. This can result in menstrual irregularity, headaches, and mood changes
- **Note:** Progesterone cream and contraceptive drugs may influence this index.

■ Estrogenic Acitivity

This index expresses the effects of estrogen on the endocrine functions and metabolism of your body. Estrogen is the main "female" hormone, since women tend to make more estrogen than men. However, men also make estrogen - enough to meet their tissue-building needs. Estrogen plays an important role in turning on your genes, something that is instrumental to life, but is also very promotional of cancers.

- **If this index is high,** it suggests that your body is responding as if there is an excess of estrogen available to it. Estrogen comes from a number of tissues. It is primarily made by the ovaries or the placenta (during pregnancy), but is also made by fat tissues from androgen precursors. Excess estrogenic response will result in a number of features such as fat deposition around the hips, thighs, and breasts. High estrogen will result in an increase in certain proteins from the liver, including blood clotting factors and proteins that will bind other hormones (and therefore make those hormones less active). Estrogen prevents bone tissue from being destroyed. If cancer is present, even in the earliest stages before the cancer is detected, the estrogen tends to turn on the genetic machinery that allows the cancer to grow (even cancers that are not “estrogen-sensitive”). Therefore, high estrogen has its risks.
- **If this index is low,** it suggests that your body is lacking stimulation from estrogen. This is usually due to a low production of estrogen from ovaries and fat tissue. Low estrogen results in an increase in activity of other hormones. In particular, the effects of androgens (body hair and acne) are more prominent when estrogen is low. Low estrogen also results in loss of bone density, mood disturbances, and decline in brain function.
- **Note:** Hormone replacement therapy, contraceptive drugs and thyroid medication may influence this index.

■ Bone Remodeling

This index expresses the level of bone remodeling and bone impairment. Our bones are remodeled throughout life. Under the direction of numerous hormones including estrogens, calcitonin, glucocorticoids, progesterone and androgens, old bone is removed by osteoclasts (resorption) and new bone is created by osteoblasts (formation). Osteoporosis results from an imbalance in which the rate of resorption exceeds that of formation.

- **If this index is high,** it suggests increased bone formation, faulty calcium management, and a higher risk for diseases such as osteoarthritis, arteriosclerosis, and arterial calcification.
- **If this index is low,** it suggests that conditions are favorable for osteoporosis (0-1 suggests a low level of bone remodeling, 1-2 suggests high remodeling, 2-2.5 suggests osteopenia).
- **Note:** Antiosteoporosis drugs, hormone replacement therapy, statins, and thyroid medication may influence this index.

■ Androgens

Androgens are considered “male hormones” due to the male characteristics that they produce. Testosterone is the best known androgen, and this is mostly produced by the testicles (in men) and the ovaries (in women). The adrenal gland makes several additional androgenic hormones which can be converted into testosterone in other tissues. Testosterone exerts its effects on body hair, sebaceous glands, muscles, and blood cells. High androgens will result in increased facial and body hair, strong muscles, and acne.

■ Adrenal Androgens

This index expresses the level of activity of androgens that come from the adrenal gland.

- **If this index is high,** it suggests that the adrenal gland is in general overdrive or that there is an overactive androgen pathway in the adrenal gland hormone production scheme.
- **If this index is low,** it suggests that the adrenal gland is either too busy making cortisol in order to handle stress, or is generally exhausted. Adrenal androgen production declines as a person ages.

■ Genital Androgens

This index expresses the level of activity of androgens that come from the gonads (ovaries or testicles). Genital androgens may also be made by other tissues in the absence of testicles or ovaries.

- **If this index is high,** it suggests that the testicles or ovaries are producing an excess of testosterone, or that the peripheral tissues are responding as if there is an excess of testosterone (due to increased sensitivity). Overproduction of testosterone can be due to an excess of luteinizing hormone (LH), which in women suggests a weakness in maturation of the ovarian follicles.
- **If this index is low,** it suggests a deficiency of testosterone production by the testicles or ovaries which occurs with aging and other hormonal imbalances (such as elevated prolactin or estrogen).

■ Thyroid

This index expresses the effect of thyroid hormone on your metabolism. The thyroid gland produces a thyroid hormone (T4) which is turned into T3 in peripheral tissues. These hormones regulate the metabolic rate of cells and promote catabolism (the breaking down of tissues in order to provide energy to the body).

- **If this index is high,** it suggests that your cells are being over-stimulated by thyroid hormone, even if your blood levels of thyroid hormone are in the normal range (your cells might just be more sensitive to the thyroid hormone that is presented to them). Thus, there will be an increase in the catabolism in your cells. Increased catabolism often results in excess of free radicals which can be damaging to healthy tissue. It can also result in a loss of bone density leading to osteoporosis. In addition, increased thyroid activity stimulates the beta sympathetic nervous system and this can result in hyperactivity, nervousness, high blood pressure, and irritability. Increased sympathetic nervous activity will then increase the demand on your adrenal gland, contributing to adrenal exhaustion.
 - **If this index is low,** it suggests that your thyroid gland is not making enough thyroid hormone or that your peripheral tissues are not converting T4 to T3, or that your cells are not adequately receptive to the effects of thyroid hormone. As a result, your body is not able to catabolize adequately, and thus it essentially operates as if it is starving for energy. Fatigue and poor tissue organization/structure result (brittle nails, brittle dry hair, dry fragile skin).
- **Note:** Thyroid medication may influence this index.

■ TRH/TSH

This index expresses the level of TRH activity on tissues relative to TSH activity. Thyrotropin-releasing hormone (TRH) is a hormone produced by the hypothalamus (the endocrine “command center” of the brain). TRH stimulates the anterior pituitary gland to release thyroid-stimulating hormone (TSH) which then stimulates the thyroid to produce the two main thyroid hormones, L-thyroxine (T4) and triiodothyronine (T3). TRH has been shown to have a myriad of other hormonal, psychological and behavioral affects.

- **If this index is high,** it suggests that you have an excess of TRH activity relative to TSH activity on tissues. Since stress increases TRH activity, you are likely being subjected to chronic physical or psychological stress. When TRH activity is significantly increased, the imaginative capacity of your brain can exceed the ability to think realistically. You may also experience nightmares or very colorful dreams. TRH stimulates prolactin release (see prolactin index below) and in combination with psychological stress increases growth hormone which can increase or promote cancer growth.
- **If this index is low,** it suggests that you have a lack of TRH activity relative to TSH activity on tissues. A lack of TRH activity can contribute to metabolic disorders, mood disorders, fatigue, inability to concentrate, etc.

■ Prolactin

This index expresses the activity of prolactin in your body. Prolactin is known as the “breast-milk” hormone because its levels increase at the end of pregnancy and with breast-feeding in order to increase milk production. It is secreted primarily by the pituitary gland in the brain. Prolactin is also increased at times of stress due to a rise in thyrotropin-releasing hormone (TRH). In general, prolactin increases insulin resistance, fat break-down and Vitamin D activity. It inhibits apoptosis, a process of natural cell death that is important in halting cancerous growth. Prolactin also plays a role in post-orgasmic sexual satisfaction.

- **If this index is high,** it suggests that there is an excess of stress-induced TRH or a deficiency in dopamine (which reduces prolactin). High prolactin will interfere with normal ovulation and menstrual function in women. The increased insulin resistance caused by prolactin can be an issue for people with diabetes or insulin resistance. The reduction in apoptosis caused by elevated prolactin creates a cause for concern in cancer-prone people. High prolactin may result in reduced sexual interest and/or impotence.
- **If this index is low,** it suggests an excess of dopamine or a pituitary imbalance. Fat accumulation and vitamin D deficiency could result. Lack of insulin resistance from low prolactin can result in excess free radicals (see insulin-resistance index).

■ Growth Hormone

This index expresses the activity of growth hormone in your body. Growth hormone, also known as somatotropin is synthesized and secreted by cells in the anterior pituitary. It has direct effects such as stimulating fat cells to break down triglycerides, and

indirect effects such as stimulating the liver and other tissues to release insulin-like growth factor-I (IGF-I). Growth hormone stimulates protein anabolism (building) in many tissues. It induces insulin resistance and serves to maintain blood glucose within a normal range.

- **If this index is high**, it suggests that either your pituitary is producing increased levels of growth hormone or your cellular response to it is increased. While growth hormone has been touted as “the fountain of youth,” it can also cause metabolic disorders and stimulate or promote cancers if its activity is increased.

- **If this index is low**, it suggests that either your pituitary is producing sub-optimal levels of growth hormone or there is a reduction in the target cell's response to the hormone. Low growth hormone activity causes the changes that are associated with the normal aging process: decrease in lean body mass, increase in abdominal and total body fat, decrease in muscle strength and bone density.

■ Insulin

This index expresses the level of activity of insulin in its role on metabolism and on other hormonal systems. Insulin is secreted by islet cells within the pancreas. After a meal, sugars are absorbed from the intestines into the bloodstream. The pancreas then secretes insulin in response to the detected increase in blood sugar. Insulin binds with receptors on cells much like a key fits into a lock, thereby opening the “door” allowing glucose to enter and be converted to energy or stored for future use in the form of glycogen in liver or muscle cells. Insulin is essential to life. Without it, you could eat plenty of food and actually be in a state of starvation since most cells cannot metabolize sugar without its action. Type 1 diabetics do not make insulin and are therefore obliged to replace it with shots or an insulin pump.

- **If this index is high**, it suggests that you have an increased level of functional insulinic activity. This means that glucose is readily entering your cells in great quantities, unchecked. High quantities of glucose in the cells can lead to increased oxidation and generation of free radicals, or can lead to increased fat storage and cell growth (which can cause obesity).

- **If this index is low**, it suggests that you have a decreased level of functional insulinic activity. This is either due to a lack of glucose in the blood, or due to increase in insulin resistance at the cell membrane. Eating habits or other hormonal imbalances can lead to low blood glucose. Insulin resistance can be due to imbalances in other hormones or to excess central (abdominal) fat tissue. (See Index of Insulin Resistance). Low insulin activity results in low cellular energy and poor energy stores.

■ Insulin Resistance *see also “Insulin” above*

This index expresses the level of inhibition of insulin activity at the cell membrane. Insulin resistance is characterized by the failure of insulin to stimulate normal glucose uptake into target tissues. When insulin resistance exists, the body compensates by secreting more insulin from the pancreas. Eventually the pancreas may fail to keep pace with the increased insulin demand resulting in Type II diabetes.

- **If this index is high**, it suggests that your cells do not easily allow glucose to enter. Genetic predisposition, excess body weight, lack of exercise, meal skipping, and a diet high in simple sugars and lacking in fiber may all contribute to insulin resistance. It often occurs concurrently with abnormal cholesterol levels, high blood pressure, and upper body obesity which are all risk factors for cardiac disease.

- **If this index is low**, it suggests that sugar is able to enter cells too easily. This may result in hypoglycemia and excessive free radical production as cells are continually forced to “burn” the excess glucose. Low insulin resistance may also promote cancer as cancer cells metabolize glucose at an accelerated rate compared to normal cells.

■ Free Radicals

This index expresses the circulating rate of free radicals. Oxygen (O₂) molecules contain pairs of electrons. During oxidation (burning) of glucose in your cells for energy, the oxygen molecules separate into two individual oxygen atoms which become free radicals. Free radicals possess at least one unpaired electron which makes them unstable and highly reactive with other molecules. They are generated by normal metabolism, air pollutants, sunlight, cigarette smoke, pesticides, certain drugs, chemotherapeutic agents, inflammation, injury, etc. If free radicals are not held in check by the body's built-in antioxidant defenses, their numbers can snowball causing serious oxidative damage. Free radical damage to cell membranes, serum lipoproteins, proteins, and DNA can lead to fatigue, muscle pain, heart disease, accelerated aging and promotion of cancer. It is easy to see why free radicals have come to be known as “villains.” In controlled numbers, however, free radicals are necessary to life. White blood cells use free radicals to fight infection; they are generated by the liver's Phase 1 detoxification system and during energy production. Overdosing antioxidant supplements can be just as harmful as omitting antioxidants in the diet. The goal is to achieve a balanced level of antioxidant and free radical activity in the body.

- **If this index is high**, it suggests that the global rate of circulating free radicals is excessive. This is due to excess oxidation from excess cellular absorption of glucose, due to a hormonal imbalance that demands more oxidation of glucose (such as with hyperthyroidism), or due to a lack of free-radical quenching mechanisms via the liver and cellular mitochondria (power generators).

- **If this index is low**, it suggests a lack of free radical activity. This can be due to low glucose entry into cells, low blood flow to tissues, low rate of tissue breakdown (catabolism), or excess consumption of antioxidants.

■ Ischemia

The ischemia index compares your level of tissue congestion to your level of cellular metabolism. This index relates to blood vessel constriction. Blood vessel constriction is the body's mechanism for managing blood flow selectively to different organs depending on the circumstances and needs of the body. Congestion occurs when the blood vessels leaving an organ or tissue constrict. Congestion serves several useful purposes in bathing the tissue in healing chemicals, or in the case of congested organs, allowing more time for the organ to do its thing (either absorbing more or secreting/excreting more).

- **If the index is high,** it suggests that your body is excessively constricting blood vessels leading to more tissue congestion than is useful for the body's metabolism. Furthermore, the high level of congestion could actually be preventing normal metabolism. This maladaptive congestion can lead to ischemia. Ischemia is basically a shortage of blood supply to organs and tissues which can result in lack of oxygen to the tissues. Tissue damage can occur with extreme ischemia. Ischemia can occur through blood vessel blockage (such as occurs with a heart attack), low blood pressure (such as occurs with shock), thickened blood (such as occurs with dehydration or sickle cell disease), or blood vessel constriction (such as occurs with states of anxiety or stress). Lack of oxygen not only leads to tissue death and lack of healthy metabolism, but it also results in a deficiency of free radical production (see Index of Free Radicals).

- **If this index is low,** it suggests that your organs are very active in producing substances for metabolism without the necessity for much congestion. Alternatively, it may indicate that you have low congestion, and therefore are likely to have low ischemia to your tissues. Your blood flow into and away from tissues and organs is largely unimpeded. Your tissues are receiving an abundance of oxygen - possibly even an excess of oxygen leading to excess free radical production. High beta sympathetic activity, lack of histamine, low alpha sympathetic activity, and other imbalances can be responsible for such high blood flow.

■ Active Histamine

This index indicates the activity of histamine released from special white blood cells (mast cells or basophils) in your body. Histamine is the main component in the allergic response. At the tissue and cellular level, excess histamine dilates blood vessels, constricts airways in the lungs, and calls in chemicals that cause excess fluid to leave the blood vessels and enter soft tissues. The result is vascular congestion and swelling of tissues. As a part of your immune defense system, histamine is important for assisting your body's defense against foreign proteins, but when activity is elevated beyond normal physiologic functioning, allergic symptoms such as congestion and tissue swelling become problematic. Histamine is important in maintaining alertness and increasing secretion of stomach acids. It also plays a role in the sexual response.

- **If this index is high,** it may be due to high exposure to foreign proteins such as plant pollens, animal dander, or even certain food proteins that your immune system has learned to recognize as a threat. Alternatively, you may be eating too many foods that are high in histamine. High levels of histamine are also maintained by an elevated activity of the alpha sympathetic nervous system, so high active histamine may be an indication of high alpha sympathetic activity. High histamine may be playing a role in swelling, nasal congestion, asthma, organ or tissue congestion, or insomnia.

- **If this index is low,** you may be lacking immune response to foreign proteins and abnormal cells, suggesting your body has an increased susceptibility to infection, toxins, and cancer. Improving your immune function and avoiding antihistamines would be helpful. Copper excess can result in histamine deficiency. Dietary lack of foods high in L-histidine (an amino acid), histamine, or folic acid and thiamine may be playing a role. Low histamine may result in drowsiness, sexual dysfunction, and impaired immunity.

■ Inflammation

The index of inflammation expresses the actual level of inflammatory activity of endogenous origin. This index indicates how reactive your immune system is in its present functioning state. A balanced immune response is necessary to eliminate abnormal substances such as virus, bacteria, and fungi, as well as abnormal tissue from your own body. The inflammatory response is the first component of the immune response. It leads to tissue congestion, heat, and pain, in effort to cleanse, repair and protect the involved tissue. Numerous chemicals and immune cells (neutrophils, macrophages, T-cells, B-cells, monocytes) are involved in the inflammatory response.

- **If this index is high,** it suggests that either you have had a recent assault to your body requiring an inflammatory response, or (more commonly) you are in a state of chronic inflammation. Chronic inflammation can be the result of poor adrenal capacity, elevated body mass index (obesity), genetics (autoimmune disorders), and environmental triggers such as inhaled chemicals or an inflammatory diet. High inflammation leads to destruction of healthy tissue through free radicals and other mechanisms. It is associated with an increased risk for degenerative diseases such as arthritis, heart disease and cancer.

- **If this index is low,** it suggests either extremely clean living (uncommon) or a deficiency in one or more of the mechanisms necessary to mount a good inflammatory response to maintain optimal health. This can put you at greater risk for infection and possibly cancer (due to the need for the body to identify and destroy cancer cells when they first arise). Nutritional deficiencies such as vitamin and mineral deficiency may be underlying the low index. This could be due to suboptimal diet or to digestive problems and poor absorption of nutrients.

• **Note:** Anti-inflammatory drugs may influence this index.

■ Serotonin

The serotonin index reflects the level of activity of peripheral (not brain) serotonin. Serotonin is made extensively by the gastrointestinal tract and by platelets. In the central nervous system, serotonin is believed to play an important role in the regulation of mood, sleep, vomiting, sexuality and appetite. Serotonin has been thought to play a part in many disorders such as depression, migraine, bipolar disorder and anxiety. Serotonin also plays an important role in liver regeneration and induces cell division throughout the body. It is also important in platelet function.

- **If this index is high**, contrary to what you might think, it suggests a need for more serotonin; thus it suggests a state of depression requiring more peripheral serotonin and more brain serotonin to compensate for the depressed state. High peripheral serotonin supports cell division; however, this can be a problem in the setting of cancer, where high serotonin should be avoided.

- **If this index is low**, it suggests a lack of need for serotonin (lack of depression), but is also seen in people who are already on antidepressants, especially the serotonin reuptake inhibitors (SSRI's). A low serotonin index can also indicate an inability of the body to make serotonin, thus also resulting in some depression and platelet malfunction.

■ β/α (Beta/Alpha)

This index refers to melanocytic-stimulating hormone, but is used as an indirect measurement of the balance between beta sympathetic nervous system and alpha sympathetic nervous system. Alpha sympathetic activity serves as the alarm system for the body. Whenever a threat to the body erupts, the alpha sympathetic activity prepares the body to deal with this threat by dilating the pupils (to see the threat), constricting blood vessels (so blood goes preferentially to the brain for quick thinking), and halting digestive and urinary muscle activity. It also increases thyrotropin-releasing hormone (TRH) so that thyroid activity can be mobilized for energy supply. Beta sympathetic activity quickly follows alpha, enhancing the body's ability for "fight or flight." Thus, it increases heart rate and blood flow, enhances far vision (to see where you're running to!), dilates the bronchi in the lungs (for heavy breathing) and maintains adequate blood sugar.

- **If this index is high**, it suggests that you have a more active beta response than alpha response.

It is possible that both alpha and beta activity are elevated or that both alpha and beta are diminished, but beta is higher than alpha. This may cause restless muscles (the need to run), increased aggressiveness (the need to fight), high blood pressure, or rapid heart rate.

- **If this index is low** (more commonly seen), it suggests that you have a more active alpha response than beta response. This may result in increased anxiety, jumpiness, and adrenal exhaustion. It will also raise TRH which will then increase prolactin, thereby decreasing apoptosis and causing abnormal menses and infertility in women and (see Prolactin Index).

■ $\pi\Sigma$ (Parasympathetic)

The parasympathetic is a subdivision of the autonomic nervous system. The sympathetic nervous system allows us to deal with stressful or dangerous situations (see β -MSH/ α -MSH index above). When the stress or danger has passed, the parasympathetic nervous system takes over to help us "chill out." Sometimes called the "rest and digest" system, it slows the heart rate, relaxes blood vessels, stimulates digestion, increases intestinal and gland activity, relaxes sphincter muscles, constricts the airways, increases congestion, and clears metabolic waste products such as adrenaline and lactic acid. Parasympathetic dominant people tend to be calm and easy going by nature. As there is no parasympathetic index, we rely mainly on physical signs observed during the exam and/or your health history to help us determine your level of parasympathetic activity.

- **High parasympathetic activity** can contribute to issues such as shyness, low energy, sleepiness after meals, asthma, nasal congestion, bradycardia (slow heart rate), excessive salivation, hyperhidrosis (excessive sweating), diarrhea, and bed wetting.
- **Low parasympathetic activity** can contribute to issues such as inability to deal with stress, "high strung" personality, insomnia (or lack of restful sleep), hypertension, muscle tension, digestive complaints and lack of perspiration.

Reference:

Duraffourd, M.D., Christian; Lapraz, M.D., Jean-Claude (2002). *Traité de phytothérapie clinique: médecine et endobiogénie* (Clinical Phytotherapy Treatise: medicine and endobiogénie). pp 698-708. Paris, France: Masson S.A.

Note: Although Endobiogeny and Biology of Functions have been studied closely and extensively in France, they have not yet been subjected to the requirements of scientific scrutiny according to American medical standards. However, since herbal therapy is available over-the-counter to all Americans, it is our physician's belief that patients are serving themselves well by undergoing an Endobiogenic Evaluation to assist them in selecting the herbal therapy with the greatest potential benefit and the least potential risk to them as unique individuals.