Disorders of the Circulatory System

By Andrea Moritz

For descriptive reasons, I have divided the *circulatory system* into two main parts, the *blood circulatory system* and the *lymphatic system*. The blood circulatory system consists of the heart, which acts as a pump, and the blood vessels, through which the blood circulates.

The lymphatic system consists of lymph nodes and lymph vessels through which colorless *lymph* flows. There is three times more lymph fluid as there is blood in the body. Lymph takes up waste products from the cells and removes them from the body.

The lymphatic system is the primary circulatory system used by all immunological cells: macrophages, T-cells, B-cells, lymphocytes, etc. An obstruction-free lymphatic system is necessary to maintain homeostasis.

Coronary Heart Disease

Heart attacks take more American lives than any other cause. Although it occurs suddenly, a heart attack is actually the final stage of an insidious disorder that has been years in the making. The disorder is known as coronary heart disease. Since the disease plunders only prosperous nations and has rarely killed someone before 1900, we have to hold our modern lifestyle, unnatural foods and unbalanced eating habits responsible for today's heartsick society. But long before the heart begins to malfunction, the liver loses much of its major vitality and efficiency.

The liver influences the entire circulatory system, including the heart. In fact, it is the greatest protector of the heart. Under normal conditions, the liver thoroughly detoxifies and purifies venous blood that arrives via the portal vein from the abdominal part of the digestive system, the spleen and the pancreas. Apart from breaking down alcohol, the liver detoxifies noxious substances, such as toxins produced by microbes. It also kills bacteria and parasites, and neutralizes certain drug compounds with the help of specific enzymes. One of the liver's most ingenious feats is to remove the nitrogenous portion of amino acids, since it is not required for the formation of new protein. It forms *urea* from this waste product. The urea ends up in the blood stream and is excreted in urine. The liver also breaks down the nucleoprotein (nucleus) of worn-out cells of the body. The byproduct of this process is *uric acid*, which is excreted with urine as well.

The liver filters more than a quart of blood per minute, leaving only the acid carbon dioxide for elimination through the lungs. After it is purified in the liver, the blood passes through the *hepatic vein* into the *inferior vena cava* which takes it straight into the right side of the heart. From there the venous blood is carried to the lungs, where the interchange of gases takes

place: carbon dioxide is excreted and oxygen absorbed. After leaving the lungs, the oxygenated blood passes into the left side of the heart. From there it is pumped into the *aorta*. The aorta supplies all body tissues with oxygenated blood.

Gallstones in the bile ducts of the liver distort the basic framework of the lobules. Consequently, the blood vessels supplying these liver units develop kinks, which greatly reduces internal blood supply. Liver cells become damaged, and harmful cellular debris begins to enter the blood stream. This further weakens the liver's ability to detoxify the blood. As a result, more and more harmful substances are retained both in the liver and in the blood. A congested liver can obstruct the venous blood flow to the heart, leading to heart palpitations or even heart attacks. It is obvious that toxins that are not neutralized by the liver, end up damaging the heart and blood vessel network.

Another consequence of this development is that proteins from dead cells (about 30 billion per day) and unused food proteins are not sufficiently broken down, which, in turn, raises the protein concentration in the blood. Consequently, the body tries to store these proteins in the basement membranes of the blood vessel walls (further explanations of this scenario are given below). Once the body's storage capacity for protein is exhausted the extra proteins are forced to remain in the blood stream. This can cause the number of red blood cells to increase, which raises the packed cell volume of the blood called, *hemocrit,* to abnormal levels. The concentration of *hemoglobin* in the red blood cells also begins to increase, giving rise to a red complexion of the skin, particularly in the face and chest. (Hemoglobin is a complex protein that combines with oxygen in the lungs and transports it to all body cells.) As a result, the red blood cells become enlarged, and are, therefore, too big to pass through the tiny channels of the capillary network. Obviously, this causes the blood to become too thick and slow moving, thereby increasing its tendency toward clotting (platelets sticking together).

The formation of blood clots is considered to be the main risk factor for **heart attack** or **stroke**. Since fat has no clotting ability, this risk stems mainly from the high concentration of protein in the blood. Researchers discovered that the sulphur-containing amino acid homocysteine (HC) promotes the tiny clots that initiate arterial damage and the catastrophic ones that precipitate most heart attacks and strokes (Ann Clin & Lab Sci, 1991 and Lancet 1981). Please note that HC is up to 40 times more predictive than cholesterol in assessing cardiovascular disease risk. HC results from normal metabolism of the amino acid methionine—which is abundant in red meat, milk, and dairy products. High concentrations of protein in the blood hinder the necessary constant distribution of important nutrients, especially water, glucose and oxygen to the cells. [Note: high concentrations of protein in the blood cause blood dehydration, i.e., blood thickening— one of the leading causes of high blood pressure and heart disease]. The proteins also undermine complete elimination of basic metabolic waste products (see section *Poor*

Circulation,..). All of these factors combined force the body to raise its blood pressure. This condition, which is commonly known as **hypertension**, reduces the life endangering effect of blood thickening, to some extent. However, this life-saving response to an unnatural situation unduly stresses and damages the blood vessels.

One of the body's first and most efficient tactics for avoiding the danger of an imminent heart attack is to take excessive proteins out of the blood stream and store them elsewhere, for the time being. The only place where protein can be accommodated in large quantities is the blood vessel network. The capillary walls are able to absorb most of the extra protein. They rebuild the protein into *collagen fiber*, which is 100% protein, and store it in their *basement membrane*. The basement membrane has the capacity to increase its thickness by ten times before its storage capacity for protein has been exhausted. But this also means that the cells in the body no longer receive adequate amounts of oxygen and other basic nutrients. The cells affected by the 'starvation in progress' may also include cells that make up the heart muscles. The result is **heart muscle weakness** and reduced performance of the heart, and of course, any kind of degenerative illness, including cancer.

When no more protein can be accommodated in the capillary walls, the basement membranes of the arteries also start absorbing protein. The beneficial effect of this action is that the blood remains thin enough to avert the threat of a heart attack, at least for some time. But eventually, the very same tactic that prevents death damages the blood vessel walls (only the primary survival mechanisms of the body are without major side-effects). The inner lining of the artery walls becomes rough and thick, like rust in a water pipe. Cracks, wounds and lesions show up at different locations.

Smaller blood vessel injuries are dealt with by *blood platelets*. They release the hormone *serotonin*, which helps to constrict the blood vessels and reduce bleeding. But larger wounds, as they are typically found in diseased coronary arteries, cannot be sealed by platelets alone; they require the body's complex process of blood clotting. However, if a blood clot breaks loose, it can enter the heart and result in **myocardial infarction**, commonly called a heart attack. [A clot that reaches the brain results in a stroke. One that blocks the opening into the pulmonary arteries, which deliver used blood to the lungs, can be fatal.]

To prevent the danger before it arises, the body uses an entire arsenal of first aid measures, including the release of the blood chemical *lipoprotein 5* (LP5). Due to it sticky nature, LP5 works as a 'band aid' and creates a firmer seal around the wounds. As a secondary but equally important rescue operation, the body attaches specific types of cholesterol to the damaged sites (more on this in section 'High Cholesterol'). This acts as a more reliable patch-up or bandage. But since cholesterol deposits alone aren't protection enough, connective tissue and smooth muscle cells also begin to build up inside the blood vessel. Called atherscleroti

plaques, these deposits can eventually occlude an artery completely, obstructing the flow of blood and promoting the formation of deadly blood clots. When the blood supply to the heart is cut off, heart muscle activity stops and a heart attack is the inevitable result. Although the gradual destruction of blood vessels, known as **atherosclerosis,** initially protects a person's life against a blood clot-caused heart attack, it is eventually also responsible for causing one.

High Cholesterol

Cholesterol is an essential building block of every cell in the body, required for all metabolic processes. It is particularly important in the production of nerve tissue, bile and certain hormones. On average, our body produces about half of a gram to one gram of cholesterol per day, depending on how much of it the body needs at the time. By and large, our body is able to produce 400 times more cholesterol per day than what we would obtain from eating 3,5 ounces (100 grams) of butter. The main cholesterol producers are the liver and the small intestine, in that order. Normally, they are able to release cholesterol directly into the blood stream, where it is instantly tied to blood proteins. These proteins, which are called lipoproteins, are in charge of transporting the cholesterol to its numerous destinations. There are three main types of lipoproteins in charge of transporting cholesterol: *Low Density Lipoprotein* (LDL), *Very Low Density Lipoprotein* (VLDL), and *High Density Lipoprotein* (HDL).

In comparison to HDL, which has been privileged with the name 'good' cholesterol, LDL and VLDL are relatively large cholesterol molecules; in fact, they are the richest in cholesterol. There is good reason for their large size. Unlike their smaller cousin, which easily passes through blood vessel walls, the LDL and VLDL versions of cholesterol are meant to take a different pathway; they leave the blood stream in the liver.

The blood vessels supplying the liver have a very different structure from the ones supplying other parts of the body. They are known as *sinusoids*. Their unique, grid-like structure permits the liver cells to receive the entire blood content, including the large cholesterol molecules. The liver cells rebuild the cholesterol and excrete it along with bile into the intestines. Once the cholesterol enters the intestines, it combines with fats, is absorbed by the lymph and enters the blood, in that order. Gallstones in the bile ducts of the liver inhibit the bile flow and partially, or even fully, block the cholesterol's escape route. Due to back-up pressure on the liver cells, bile production drops. Typically, a healthy liver produces over a quart of bile per day. When the major bile ducts are blocked, barely a cup of bile, or even less, will find its way to the intestines. This prevents much of the VLDL and LDL cholesterol from being excreted with the bile.

Gallstones in the liver bile ducts distort the structural framework of the liver lobules, which damages and congests the sinusoids. Deposits of excessive protein also close the grid holes of these blood vessels (see the discussion of this subject in the previous section). Whereas the

‘good’ cholesterol HDL has small enough molecules to leave the bloodstream through ordinary capillaries, the larger LDL and VLDL molecules are more or less trapped in the blood. The result is that LDL and VLDL concentrations begin to rise in the blood to levels that seem potentially harmful to the body. Yet even this scenario is merely part of the body’s survival attempts. It needs the extra cholesterol to patch up the increasing number of cracks and wounds that are formed as a result of the accumulation of excessive protein in the blood vessel walls. Eventually, though, the life-saving cholesterol begins to occlude the blood vessels and cut off the oxygen supply to the heart.

In addition to this complication, reduced bile flow impairs the digestion of food, particularly fats. Therefore, there is not enough cholesterol made available to the cells of the body and their basic metabolic processes. Since the liver cells no longer receive sufficient amounts of LDL and VLDL molecules, they (the liver cells) assume that the blood is deficient in these types of cholesterol. This stimulates the liver cells to increase the production of cholesterol, further raising the levels of LDL and VLDL cholesterol in the blood.

The ‘bad’ cholesterol is trapped in the circulatory system because its escape routes, the bile ducts and the liver sinusoids, are blocked or damaged. The capillary network and arteries attach as much of the ‘bad’ cholesterol to their walls as they possibly can. Consequently, the arteries become rigid and hard.

Coronary heart disease, regardless of whether it is caused by smoking, drinking excessive amounts of alcohol, overeating protein foods, stress, or any other factor, usually does not occur unless gallstones have impacted the bile ducts of the liver. Removing gallstones from the liver and gallbladder can not only prevent a heart attack or stroke, but also reverse coronary heart disease and heart muscle damage. The body’s response to stressful situations becomes less damaging, and cholesterol levels begin to normalize as the distorted and damaged liver lobules are regenerated. Cholesterol lowering drugs don’t do that. They artificially reduce blood cholesterol, which coerces the liver to produce even more cholesterol. But when extra cholesterol is passed into the bile ducts, it remains in its crystalline state (versus soluble state) and, thereby, turns into gallstones. People who regularly use cholesterol-lowering drugs usually develop an excessively large number of gallstones. This sets them up for major side effects, including cancer and heart disease.

Cholesterol is essential for normal functioning of the immune system, particularly for the body’s response to the millions of cancer cells that every person makes in his body each day. For all the health problems associated with cholesterol, this important substance is not something we should try to eliminate from our bodies. Cholesterol does far more good than harm. The harm is generally symptomatic of other problems. I wish to emphasize, once again, that ‘bad’

cholesterol only attaches itself to the walls of arteries to avert immediate heart trouble, not to create it.

This is confirmed by the fact that cholesterol never attaches itself to the walls of veins. When a doctor tests your cholesterol levels, he takes the blood sample from a vein, not from an artery. Although blood flow is much slower in veins than in arteries, cholesterol should obstruct veins much more readily than arteries, but it never does. There simply is no need for that. Why? Because there are no abrasions and tears in the lining of the vein that require patching up. Cholesterol only affixes itself to arteries in order to coat and cover up the abrasions and protect the underlying tissue like a waterproof bandage. Veins do not absorb proteins in their basements membranes like capillaries and arteries do and, therefore, are not prone to this type of injury.

'Bad' cholesterol *saves* lives; it does *not* take lives. LDL allows the blood to flow through injured blood vessels without causing a life endangering situation. The theory of high LDL being a principal cause of coronary heart disease is not only unproved and unscientific. It has misled the population to believe that cholesterol is an enemy that has to be fought and destroyed at all costs. Human studies have not shown a cause-and-effect relationship between cholesterol and heart disease. The hundreds of studies so far conducted on such a relationship have only shown that there is a statistical correlation between the two. And there should be, because if there were no 'bad' cholesterol molecules attaching themselves to injured arteries we would have millions of more deaths from heart attack than we already have. On the other hand, dozens of conclusive studies have shown that risk of heart disease increases significantly in people whose HDL levels decrease. Elevated LDL cholesterol is not a *cause* of heart disease; rather, it is a *consequence* of an unbalanced liver and congested, dehydrated circulatory system.

If your doctor has told you that lowering your cholesterol with medical drugs protects you against heart attacks, you have been grossly misled. The #1 prescribed cholesterol-lowering medicine is Lipitor. I suggest that you read the following warning statement, issued on the official Lipitor web site:

"LIPITOR® (atorvastatin calcium) tablets is a prescription drug used with diet to lower cholesterol. LIPITOR is not for everyone, including those with liver disease or possible liver problems, and women who are nursing, pregnant, or may become pregnant. LIPITOR has not been shown to prevent heart disease or heart attacks.

"If you take LIPITOR, tell your doctor about any unusual muscle pain or weakness. This could be a sign of serious side effects. It is important to tell your doctor about any medications you are currently taking to avoid possible serious drug interactions…"

My question is, “Why risk a person’s health or life by giving him/her a drug that has no effect, whatsoever, in preventing the problem for which it is being prescribed?” The reason why the lowering of cholesterol levels cannot *prevent* heart disease is because cholesterol does not *cause* heart disease.

The most important issue is how efficiently a person’s body uses cholesterol and other fats. The body’s ability to digest, process and utilize these fats depends on how clear and unobstructed the bile ducts of the liver are. When bile flow is unrestricted and balanced, both the LDL and HDL levels are balanced as well. Therefore, keeping the bile ducts open is the best prevention of coronary heart disease.

Poor Circulation, Enlargement of Heart and Spleen, Varicose Veins, Lymph Congestion, Hormonal Imbalances

Gallstones in the liver may lead to poor circulation, enlargement of the heart and spleen, varicose veins, congested lymph vessels and hormone imbalance. When gallstones have grown large enough to seriously distort the structural framework of the lobules (units) of the liver, blood flow through the liver becomes increasingly difficult. This not only raises the venous blood pressure in the liver, but also in all of the organs and areas of the body that drain used blood through their respective veins into the portal vein of the liver. Restricted blood flow in the portal vein of the liver causes congestion, particularly in the spleen, stomach, distal end of the esophagus, pancreas, gallbladder, small and large intestines. This can lead to enlargement of these organs, reduce their ability to remove cellular waste products and clog their respective veins.

A **varicose vein** is one that is so dilated that the valves do not sufficiently close to prevent blood from flowing backward. Sustained pressure on the veins at the junction of the rectum and anus in the large intestine leads to the development of **hemorrhoids**. Other common sites of varicose veins are the legs, the esophagus and the scrotum. Dilation of veins and *venules* (small veins) can occur anywhere in the body. It always indicates an obstruction of blood flow.

Poor blood flow through the liver also affects the heart. When the organs of the digestive system become weakened by an increase in venous pressure, they become congested and begin to accumulate toxic waste, including debris from cells that have been broken down. The spleen becomes enlarged while it is dealing with the extra workload associated with removing damaged or worn out blood cells. This further slows blood circulation to and from the organs of the digestive system, which **stresses the heart**, **raises blood pressure** and **injures blood vessels**. The right half of the heart, which receives venous blood via the *inferior vena cava* from the liver and all other parts below the lungs, becomes overloaded with toxic, sometimes infectious material. This eventually causes enlargement of the right part of the heart.

Almost all types of heart disease have one thing in common: there is an obstruction of blood flow. However, blood circulation does not become disrupted easily. It must be preceded by a major congestion of the bile ducts in the liver. Gallstones obstructing the bile ducts dramatically reduce or cut off the blood supply to the liver cells. Reduced blood flow through the liver affects the blood flow in the entire body which, in turn, has a detrimental effect on the lymphatic system.

The lymphatic system, which is closely linked with the immune system, helps to clear the body of harmful metabolic waste products, foreign material and cell debris. All cells release metabolic waste products into, and take up nutrients from, a surrounding solution, called *extracellular fluid* or *connective tissue*. The degree of nourishment and efficiency of the cells depends on how swiftly and completely waste material is removed from the extracellular fluid. Since most waste products cannot pass directly into the blood for excretion, they accumulate in the extracellular fluid until they are removed and detoxified by the lymphatic system. The potentially harmful material is filtered and neutralized by *lymph nodes* that are strategically located throughout the body. One of the key functions of the lymphatic system is keeping the extracellular fluid clear of toxic substances, which makes this a system of utmost importance.

Poor circulation of blood in the body causes an overload of foreign, harmful waste matter in the extracellular tissues and, consequently, in the lymph vessels and lymph nodes. When lymph drainage slows down or becomes obstructed, the thymus gland, tonsils and spleen start to deteriorate quickly. These organs form an important part of the body's system of purification and immunity. In addition, microbes harbored in gallstones can be a constant source of recurring infection in the body, which may render the lymphatic and immune systems ineffective against more serious infections, such as ***infectious mononucleosis, measles, typhoid fever, tuberculosis, syphilis,*** etc.

Due to restricted bile flow in the liver and gallbladder, the small intestine is restricted in its capacity to digest food properly. This permits substantial amounts of waste matter and poisonous substances, such as *cadaverines* and *putrescines* (break-down products of fermented and putrefied food), to seep into the lymph channels. These toxins, along with fats and proteins, enter the body's largest lymph vessel, called *thoracic duct*, at the *cysterna chyli.* The cysterna chyli is a lymph-dilation (in the shape of sacks), situated in front of the first two lumbar vertebrae.

Toxins, antigens and undigested proteins from animal sources, including fish, meat, eggs and dairy food, cause these lymph sacks to swell and become inflamed. When cells of an animal become damaged or die, which happens seconds after it is killed, their protein structures are broken down by cellular enzymes. These so-called 'degenerate' proteins are useless for the body, and they become harmful unless they are promptly removed by the lymphatic system.

Their presence usually invites enhanced microbial activity. Viruses, fungi and bacteria feed on the pooled wastes. In some cases, allergic reactions occur.

When there is lymph sack congestion, the body's own degenerate cell proteins can no longer be removed properly. The result is **lymph edema**. While lying on the back, existing lymph edemas can be felt as hard knots, sometimes as large as a fist, in the area of the navel. These 'rocks' are a major cause of **middle and low back pain** and**abdominal swelling,** and, in fact, of most symptoms of ill health. Many people who have grown a 'tummy,' consider this abdominal extension to be just a harmless nuisance or a natural part of aging. They don't realize that they are breeding a living 'time bomb' that may go off some day and injure vital parts of the body.

Eighty percent of the lymphatic system is associated with the intestines, making this area of the body the largest center of immune activity. This is no coincidence. The part of the body where most disease-causing agents are combated or generated is, in fact, the intestinal tract. Any lymph edemas, or other kind of obstruction in this important part of the lymphatic system, can lead to potentially serious complications elsewhere in the body.

Wherever a lymph duct is obstructed, there is also an accumulation of lymph at a distance to the obstruction. Consequently, the lymph nodes located in such an area can no longer adequately neutralize or detoxify the following things: dead and live phagocytes and their ingested microbes, worn-out tissue cells, cells damaged by disease, products of fermentation, pesticides in food, inhaled or congested toxic particles, cells from malignant tumors, and the millions of cancer cells every healthy person generates each day. Incomplete destruction of these things can cause these lymph nodes to become inflamed, enlarged and congested with blood. Infected material may enter the blood stream, causing septic poisoning and acute illnesses. In most cases, though, the lymph blockage occurs slowly, without any symptoms other than swelling of the abdomen, hands, arms, feet, or ankles, or puffiness in the face and eyes. This is often referred to as 'water retention,' a precursor of chronic illness.

Continuous lymphatic obstruction usually leads to chronic conditions. Almost every chronic illness results from congestion in the cysterna chyli. Eventually, the thoracic duct, which drains the cysterna chyli, gets overburdened by the constant influx of toxic material and becomes clogged up, too. The thoracic duct is linked up with numerous other lymph ducts that empty their waste into the thoracic 'sewage canal.' Since the thoracic duct has to remove 85% of the body's daily generated cellular waste and other toxic material, a blockage there causes back-flushing of waste into other, more distant parts of the body.

When the daily-generated metabolic waste and cellular debris are not removed from an area in the body for a certain period of time, symptoms of disease start manifesting. The following are

but a few typical examples of illness indicators that result directly from chronic, localized lymph congestion:

Obesity, cysts in the uterus or ovaries, enlargement of the prostate gland, rheumatism in the joints, enlargement of the left half of the heart, congestive heart failure, congested bronchi and lungs, enlargement of the neck area, stiffness in the neck and shoulders, backaches, headaches, migraines, dizziness, vertigo, ringing in the ears, earaches, deafness, dandruff, frequent colds, sinusitis, hay fever, certain types of asthma, thyroid enlargement, eye diseases, poor vision, swelling in the breasts, breast cancer, kidney problems, lower back pains, swelling of the legs and ankles, scoliosis, brain disorders, memory loss, stomach trouble, enlarged spleen, irritable bowel syndrome, hernia, polyps in the colon, etc., etc.

The thoracic duct empties its contents into the left *subclavian vein* at the root of the neck. This vein enters the *superior vena cava*, which leads straight into the left side of the heart. In addition to blocking proper lymph drainage from these various organs or parts of the body, congestion in the cysterna chyli and thoracic duct permits toxic materials to be passed into the heart and heart arteries. This unduly stresses the heart. It also allows these toxins and disease-causing agents to enter the general circulation and spread to other parts of the body. There rarely is a disease that is not caused by lymphatic obstruction. Lymph blockage, in most cases, has its origin in a congested liver (the causes of gallstones in the liver are being discussed in the following Chapter). In the extreme eventuality, **lymphoma** or **cancer of the lymph** may result, of which **Hodgkin's disease** is the most common type.

When the circulatory system begins to malfunction as a result of gallstones in the liver, the *endocrine system* also becomes affected. The endocrine glands produce hormones that pass directly from the glandular cells into the blood stream, where they influence bodily activity, growth and nutrition. The glands most often affected by congestion are the thyroid, parathyroid, adrenal cortex, ovaries, and testes. A more severely disrupted circulatory function leads to imbalanced hormone secretions by the *Islets of Langerhans* in the pancreas, and the *pineal* and *pituitary glands.*

Blood congestion, which is characterized by thickening of the blood, prevents hormones from reaching their target places in the body in sufficient amounts and on time. Consequently, the glands go into *hyper-secretion* (overproduction) of hormones. When lymph drainage from the glands is inefficient, the glands, themselves, become congested. This brings about *hypo-secretion* (lack) of hormones. Diseases related to imbalances of the thyroid glands include **toxic goiter**, **graves disease**, **cretinism**, **myxoedema**, **tumors of the thyroid**, **hypo-parathyroidism,** which reduces calcium absorption and causes **cataracts,** as well as **behavioral disorders** and **dementia**. Poor calcium absorption, alone, is responsible for numerous diseases, including **osteoporosis** (loss of bone density). If circulatory problems disrupt secretion of balanced

amounts of insulin in the pancreatic islets of Langerhans, **diabetes** results. Gallstones in the liver can force the liver cells to cut down protein synthesis. Reduced protein synthesis, in turn, prompts the adrenal glands to overproduce *cortisol*, a hormone that stimulates protein synthesis. Too much *cortisol* in the blood gives rise to **atrophy of lymphoid tissue** and a **depressed immune response**, which is considered to be the leading cause of cancer and many other major illnesses. An imbalance in the secretion of adrenal hormones can cause a wide variety of disorders as it leads to weakened **febrile response** and **diminished protein synthesis**. Proteins are the major building blocks for tissue cells, hormones, etc. The liver is capable of producing many different hormones. Hormones determine how well the body grows and heals.

The liver also inhibits certain hormones, including *insulin, glucagon, cortisol, aldosterone, thyroid* and *sex hormones*. Gallstones in the liver impair this vital function, which may increase hormone concentrations in the blood. Hormone imbalance is a very serious condition and can easily occur when gallstones in the liver have disrupted major circulatory pathways that are also hormonal pathways.

Disease is naturally absent when blood and lymph flow is unhindered and normal. Both types of problems, circulatory and lymphatic, can be successfully eliminated through a series of liver cleanses and prevented by following a balanced diet and lifestyle.