

Dietary Supplements

Dietary supplements play a very important role in healing from adrenal fatigue. They not only speed your recovery but are also often necessary for complete recovery to take place at all. The supplements described in this section are chosen specifically for their restorative effects on the adrenal glands. The significance of each will be briefly explained because you need to understand why these nutritional supplements are included as part of your rehabilitation program and the absolute necessity of taking them regularly.

Vitamin C

Of all the vitamins and minerals involved in adrenal metabolism, vitamin C is probably the most important. In fact, the more Cortisol made, the more vitamin C used. Vitamin C is so essential to the adrenal hormone cascade and the manufacture of adrenal steroid hormones that before the measurement of adrenal steroid hormones became available, the blood level of vitamin C was used as the best indicator of adrenal function level in animal research studies. Vitamin C is used all along the adrenal cascade and acts as an antioxidant within the adrenal cortex itself.

Vitamin C, as it occurs in nature, always appears as a composite of ascorbic acid and certain bioflavonoids. It is this vitamin C complex that is so beneficial, not just ascorbic acid, by itself. Bioflavonoids are essential if ascorbic acid is to be fully metabolized and utilized by your body. The ratio of bioflavonoids to ascorbic acid should be approximately 1:2, that is 1 mg. of bioflavonoids for every 2 mg. of ascorbic acid. Bioflavonoids basically double the effectiveness of ascorbic acid in your body and allow its action to be more complete. The kind of vitamin C you use makes a difference. Vitamin C is much more than ascorbic acid.

Most ascorbic acid in supplements is synthesized from corn syrup, and some from cane sugar or beet sugar. This does not mean that corn syrup and sugar contain any vitamin C, they do not. It simply means that these are the raw materials most commonly used to commercially manufacture vitamin C. Some people are sensitive to (the source from which the vitamin C supplement has been derived. If you are sensitive to corn, try taking a vitamin C supplement derived from sago palm or beets instead. Sago palm and beet sources of vitamin C seem to be tolerated well by most people.

I have designed a specific vitamin C supplement for those suffering from adrenal fatigue that contains enough bioflavonoids, magnesium, pantothenic acid and other nutrients needed to metabolize and potentiate vitamin C. This supplement is available from suppliers listed on the website.

Because vitamin C is water-soluble and quickly used up or excreted from your body, it should be consumed several times per day. This is particularly true when your body is under any kind of physical, emotional, environmental or infectious

stress. The quantity of vitamin C required varies by person and by stress level. As stressful events increase, the need for many nutrients, but especially vitamin C, also increases. To help provide this, some companies make a time-release vitamin C. A time-released vitamin C is fine except that most of them do not contain enough bioflavonoids.

To find out how much vitamin C your body requires, try a very simple test called the **Vitamin C Loading Test**. On day one take 500 mg. of ascorbic acid with 250 mg. of bioflavonoids. Increase your ascorbic acid by 500 mg. and your bioflavonoids by 250 mg. every hour until your bowel movements become somewhat loose and runny. Once you have achieved this level, then reduce your ascorbic acid by 500 mg. and your bioflavonoids by 250 mg. This is usually the amount of vitamin C your body needs at this time. The most common point for this to occur is about 2,000 to 4,000 mg. (2-4 grams) for people with adrenal fatigue, but I have known people that required 15,000 to 20,000 mg. (15-20 grams) a day in order to reach this point. Typically, the more chronic and severe your illness, the more vitamin C is necessary.

Vitamin C not only increases adrenal function, but also stimulates the immune system. If you feel yourself starting to come down with a cold or respiratory infection, start taking vitamin C at the first signs of distress. This not only aids your immune system in fighting the infection, but it helps your adrenals to respond to the stressful situation in your body created by the infection. If you know you are going to be up late, take extra vitamin C. If you are stressed for an examination or work event, take more vitamin C. If you are going through an emotional crisis or have to push yourself, take vitamin C. If you have eaten food that is bad for you, take additional vitamin C. If you do not make vitamin C available to your body through supplementation and diet, the adrenal hormonal cascade cannot begin or continue. When your adrenal glands cannot make the additional adrenal hormones required to maintain you during stressful times, you will feel worse and be slower to recover. Because there are so many other tissues in the body that also need increased vitamin C during any kind of stress, an adequate supply of it is vital to your body's ability to respond properly.

Humans do not have the ability to convert blood glucose into vitamin C as do most animals. Therefore, we must obtain our vitamin C from an outside source. Food sources of vitamin C include coloured vegetables and fruits such as green leafy vegetables, tomatoes, peppers and oranges with the highest amounts of vitamin C found in sprouts (sunflower sprouts, alfalfa or clover sprouts, and all the sprouts of any seed or grain). In most plants, the younger the plant, the more vitamin C it contains per milligram of plant material. However, the amount of vitamin C available in foods is not sufficient to support the adrenals during stress or during the recovery phase. So if you are hypoadrenic, it is essential that you take a supplement containing sufficient vitamin C during the whole recovery period and extra vitamin C when you start to become fatigued or ill.

There is a myth about the amount of vitamin C in oranges. Not only have there been

questions about the actual content of vitamin C contained in the juice compared to label claims, but the amount of vitamin C contained in the orange dissipates with time. Oranges are typically harvested in the United States in the late fall and early winter. By February, after two months of storage, only a small percentage of the original amount of vitamin C remains. In addition, the bioflavonoids in the fruit are found mostly in the white part on the inside of the rind that is usually not eaten rather than in the juicy part of the fruit that usually is consumed. There are two ways of making orange juice commercially, with and without the rind. Those made without the rind lack the appropriate amount of bioflavonoids. Orange juice made with the rind, (the most common method) contain chemical residues and sprays used on the fruit. I have had many patients who were sensitive to these chemical residues.

Orange juice is specifically not recommended for people suffering from adrenal fatigue because few substances drive the blood sugar up so quickly and drop it so abruptly. Orange juice in the morning is frequently a tragic start to the day for people with hypoadrenia. To test this, take a large glass of orange juice by itself in the morning and see how you feel and function during the rest of the morning. If you do this test, be sure it is not during a day you need to be clear headed, well spoken, well coordinated, or doing anything dangerous.

Cautions with Vitamin C - As you take more vitamin C your body adapts to this higher level of vitamin C. Therefore, when decreasing your vitamin C intake, do it gradually. A sudden drop in vitamin C intake can lead to symptoms of scurvy (severe vitamin C deficiency) even when your actual vitamin C levels are well above the recommended levels. Decrease your intake by 500 mg. every three to five days. Gums that bleed during tooth brushing, swollen gums, or bruising easily are signs of vitamin C deficiency. If you begin experiencing any of these symptoms it means you are decreasing your vitamin C intake too fast. You should temporarily increase the amount of vitamin C and bioflavonoids you are taking, and then step down the dosage more slowly. Just as the body adapts to an increase in vitamin C, it will also adapt to a decrease in vitamin C. However, it takes about twice as long for the body to get used to the decrease as it does to the increase.

This is true too for nursing babies or babies in utero whose bodies also adapt to whatever level of vitamin C their mothers are taking. If a mother has been taking high doses of Vitamin C during her pregnancy, the newborn should be given gradually decreasing amounts of vitamin C/bioflavonoids. This should be done from birth if the baby is not nursed or at weaning if the mother continued to take high doses of vitamin C while nursing.

If you are on blood thinners, monitor your blood clotting. The increased vitamin C may require you to lower your anti-coagulation medication. Vitamin C works with Vitamin E and other antioxidants to decrease blood clotting and coagulation. Therefore, if your blood clotting time increases on blood clotting tests, it may be possible to decrease or eliminate your anti-coagulation medication while taking adequate amounts of Vitamin C by itself or with other antioxidants. As a patient of mine once said, Doctor, I would much rather take antioxidants than rat poison. As a

farmer, he recognized that the substance given to rats to poison them was the same substance given to humans as a blood thinner.

Vitamin E

Vitamin E is a very interesting vitamin in adrenal fatigue. Technically speaking, vitamin E is not required for any part of the adrenal hormone-manufacturing cascade, yet it is essential, indirectly, in at least six different enzymatic reactions in the adrenal cascade. This is because the manufacture of adrenal hormones generates substances called free radicals that can create great damage inside the cells if they are not controlled. An excess number of free radicals slow down the enzymatic reactions and, carried to the extreme, can do physical damage to the adrenal cell structure. Vitamin E absorbs and neutralizes these damaging free radical molecules inside the adrenal glands and elsewhere. Vitamin C enhances vitamin E's activity inside the cell by regenerating the capacity of vitamin E to sequester the free radicals. These two work hand in hand to keep the adrenal cascade functioning. Therefore, high amounts of vitamin E are necessary in order for the adrenals to maintain high levels of steroid production and recover adequately.

It is important to choose the right vitamin E supplement. Vitamin E, in chemical terms, is a "tocopherol." Most vitamin E supplements sold in health food and grocery stores are in the form of d-alpha-tocopherol. Although this is a natural form of Vitamin E, it is only a fraction of the complete vitamin E complex. It is the least expensive to manufacture and the most profitable. Therefore, it is not surprising that the majority of companies promote this type of vitamin E, making it the most available type of vitamin E on the market.

However, the vitamin E necessary for adrenal regeneration is a mixed tocopherols supplement, specifically one high in beta-tocopherols. Recent studies have shown that too much d-alpha-tocopherol can actually suppress the beta and other tocopherols necessary for adrenal rejuvenation. So taking a mixed tocopherols vitamin E is critical if you want to restore adrenal health. Have 800 IU of mixed tocopherols vitamin E per day with meals. You must take this vitamin E for at least three months in the quantities given before you can expect to see any significant improvements in your adrenals. Even though you may not notice any difference when you start taking the vitamin E every day, it is so important to your adrenal health that it is essential to continue taking it consistently, probably for the rest of your life. Vitamin E is not only valuable in healthy adrenal function, but has many anti-aging properties as well. This means that while you are nourishing your adrenals with a mixed tocopherols vitamin E, you are also nourishing the rest of your body, slowing down the aging process, and facilitating a number of other essential functions in your body.

Cautions with Vitamin E - Like vitamin C, vitamin E is a natural blood-thinning agent. If you are taking a blood thinner, monitor your blood clotting. It may be necessary to cut back on your medication. Blood thinning medications often have a caution that Vitamin E may interfere with their action. This is not quite accurate. As mentioned earlier, Vitamin E and other antioxidants can be used to normalize the clotting mechanism, making the consumption of both the antioxidant and the drug

unnecessary. Comparing the benefits and risks of both would make me want to choose the natural alternative, but whatever your decision, if you are taking blood thinners, monitor your clotting regularly.

B Vitamins

B-5 -Pantothenic Acid: Pantothenic acid, one of the B-complex vitamins, is another essential contributor in the adrenal cascade. Like magnesium, it is important for energy production. Pantothenic acid is converted into acetyl CoA, a substance critical to the conversion of glucose into energy. It is present in all cells but in higher quantities in the adrenals because so much energy is needed to produce the adrenal hormones. The combination of pantothenic acid with magnesium, vitamin E and vitamin C increases energy production and takes much of the fatigue out of the adrenals, without over stimulating them. The quantity of pantothenic acid recommended is typically 1,500 mg. per day. Tablets of 500 mg. can usually be purchased in health food stores. Therefore, three tablets per day at this strength are adequate.*

* I have designed an "Adrenal Exhaustion Formula" that contains correctly balanced proportions of B vitamins, including a non-flushing niacin, combined with more vitamins, minerals and other nutrients balanced to work in synergy to optimize adrenal function. Check the adrenal website for details.

Niacin: Niacin, in addition to pantothenic acid, is one of the most important of the B vitamins to the adrenal cascade. Large amounts of niacin are necessary to form the molecular structure of certain niacin dependent coenzymes critical for several steps in this cascade. Therefore, a B complex that is high in niacin is important in facilitating some of the crucial enzymatic reactions that take place during the adrenal cascade. If you cannot find a B complex vitamin that contains more niacin than it does the other B vitamins, you may need to purchase a separate niacin supplement. When you are recovering from adrenal fatigue, 25 to 50 mg. niacin a day is recommended. If niacin's tendency to make people flush (turn red and tingle) bothers you, buy a "non-flushing" type, such as niacin hexanol.

Vitamin B6: Vitamin B6 is also a co-factor in several of the enzymatic pathways in the adrenal cascade. One easy test for vitamin B6 deficiency used by alternative doctors is to ask patients if they can remember their dreams. If they have trouble recalling their dreams, then they often need vitamin B6. When adequate Vitamin B6 is added as a dietary supplement they usually begin to remember their dreams. Typically 50 to 100 mg. a day is plenty. If you find that even with 100 mg. a day of vitamin B6 you still cannot remember dreams, then you may need a special form of vitamin B6 called Pyridoxyl 5 Phosphate (P5P). A small percentage of the population has difficulty metabolizing the regular vitamin B6 supplement (pyridoxine HCL) and as a result requires a P5P vitamin B6 supplement to fully activate these enzymatic pathways. P5P is the natural form of vitamin B6 and can be purchased in health food stores, and some pharmacies and grocery stores. Although it is somewhat more expensive than regular vitamin B6, P5P ensures adequate utilization of vitamin B6.*

B Complex: The entire B complex is needed in small quantities throughout the

adrenal cascade. All the B vitamins work together in concert with each individual B vitamin while it does its "job." Therefore, a small amount of all the other B vitamins are necessary to help the actions of niacin, vitamin B6 and pantothenic acid. Most vitamin B supplements contain synthetic B vitamins. Even though the natural forms are preferred, the synthetic can be used effectively to help restore adrenal function. When buying a B complex vitamin supplement, the key is to look for one that has the B vitamins in the proper proportions for the human body to utilize. For example it should have 50-100 mg of B6, 75-125 mg of B3, and 200-400 meg. of B12. The stress formulas that are composed of equal amounts of most of the Bs are not formulated for the human body to metabolize properly. If you find a B complex from completely natural sources, it will contain much lower amounts of each B vitamin or the individual amounts will not be listed. However, smaller amounts are required when the B vitamins are in their natural form. Food sources of B vitamins include the following: whole grains, brewer's yeast, miso (a Japanese soup stock), Marmite (a vegetable concentrate paste), liver and rice bran syrup. These all contain natural forms of B complex.

Minerals

Magnesium: Magnesium acts like a spark plug for your adrenals and for the energy portion of every cell in your body. It is essential to the production of the enzymes and the energy necessary for the adrenal hormone cascade. Several of the steps that create energy in all of your cells, but especially in your adrenal glands, are so dependent on the presence of magnesium that it is a specific for adrenal recovery. Approximately **400 mg. of magnesium citrate** is the recommended daily dosage for the average person and it is absorbed best when taken at night, before bed. Magnesium works in concert with vitamin C and pantothenic acid to potentiate the action of the adrenals. During times of stress, always increase your intake of vitamin C, magnesium and pantothenic acid. You may also need to do this two to four times per day or even hourly if the stress is severe. Although magnesium is absorbed better after 8:00PM, for best absorption then and at other times of the day, always take magnesium and all other minerals and trace minerals with an acid like tomato juice or apple juice, at meals with whole grapes or meats, or with digestive aids. Food sources of magnesium include brown rice", beans, nuts, seeds and sea vegetables such as kelp (the highest source).

Calcium: Calcium helps settle your nervous system and create inner calm, among other important functions. Although calcium is also absorbed best after 8:00PM, it is better not to take calcium and magnesium together. You can take them on alternate evenings or, if you take them at separate times in the later part of the same day, take the magnesium closer to bedtime. Look for calcium citrate or calcium lactate (if you are not sensitive to milk). The typical recommended amount is **750 to 1,000 mg.** per day.

Cow's milk and dairy foods are commonly considered to be good sources of calcium. However, commercially available cow's milk presents two problems in this regard. 1) The process of pasteurization changes the calcium complexes in

the milk, making them less suitable for your body. 2) The addition of synthetic Vitamin D2 (irradiated ergosterol) to the milk produces a tendency for the calcium in the milk to be deposited in your joints and other areas of your body instead of being taken up by the cells where it is needed. Certified raw milk and goats milk do not have these problems.

There is also the substantial problem of sensitivity or allergy to milk and dairy foods. Other good food sources of calcium include sesame seeds (unhulled) and products made from them such as tahini and humus; deep green vegetables such as kale, collard, swiss chard, parsley and broccoli, beans, nuts; and sea vegetables such as kelp. Fish and meat stews where the bones are cooked in the dish are also excellent sources of calcium.

Trace Minerals

Trace minerals occur only in very small amounts in your body and in food but are very important for your overall health. These include *zinc, manganese, selenium, molybdenum, chromium, copper, iodine* and a host of other minerals in micro amounts. They also typically have a calming effect on the body and are especially valuable if you are jittery, nervous, or easily frightened or upset. When your adrenals fatigue, you may become extremely edgy and trace minerals can help you feel more tranquil. Trace minerals are absorbed and utilized better when they are taken in the evening and/or with an acidic food or drink. Therefore have them with meals when your body's digestive juices are secreted or with something acidic such as tomato juice or vitamin C. If needed, however, trace minerals can be taken throughout the day as a calming influence.

Trace mineral supplements vary in the quality and quantity of each mineral they contain. Generally, liquid trace minerals are easiest to absorb but you should be careful of so called "colloidal" preparations. They often contain toxic trace minerals including lead, mercury, cadmium and arsenic. The best sources of trace minerals are sprouts, young plants, algae and sea vegetables and the trace mineral supplements made from them.

A hair analysis is an inexpensive and fairly reliable way to determine your mineral and trace mineral deficiencies and toxicities. Sources for hair analysis are listed on the website.

Fiber

When you are experiencing adrenal fatigue, mild constipation is sometimes present. Increasing the amount of fiber in your diet not only improves bowel motion and re-establishes normal bowel function but also helps strengthen your adrenal function.

As your adrenals begin to heal and your body's responses become more efficient, your liver often begins to detoxify more rapidly. This means that more toxic constituents are contained in the bile that is secreted by your liver and emptied into

your intestinal tract for elimination. Fiber prevents bile from becoming toxic in your large intestine by binding with it and moving it along the digestive tract. In this way, fiber helps eliminate fat-soluble toxins from your body. Without sufficient fiber present, these poisons may be released from the bile and reabsorbed through your intestines.-

Several different kinds of fibers such as cellulose, hemi-cellulose and pectin are necessary for good health. They all work together to provide many benefits to your whole body, although their primary site of action is in your digestive tract. To make certain that you get a sufficient quantity and variety of fiber each day, include fiber sources in every meal. Fiber comes from plants and good sources include most vegetables, legumes, fruits, seeds and whole grains (not refined grains).

Some dietary supplements are excellent sources of fiber such as psyllium seed, multi-fiber mixtures and a preparation I designed called "Squeaky Clean"* that contains 8 different types of fiber combined with other factors necessary to the health of your digestive tract. However, be cautious of the commercial brands of fiber (bulking agents) available in grocery and drug stores. They may contain artificial colours and flavourings, and large amounts of sugar or sugar-like agents such as maltodextrin (a sweetener derived from corn), sucrose, corn syrup solids, and dextrose which can Stimulate Candida (fungal) growth, upset blood glucose and undermine your adrenal recovery. Even the "sugar free" forms of these products can contain maltodextrin and artificial sweeteners. It is important to read the ingredient label on any product before you use it. Check the website for recommended brands and products.

Herbs

Certain herbs can be beneficial in your recovery from adrenal fatigue. However, other herbs can be quite detrimental, delaying or preventing your progress. The six best herbs to help support your adrenals and assist in their recovery are listed below. Following that are a few words about herbs you should avoid.

Licorice Root (*Glycyrrhiza glabra*) - The herb best known for supporting adrenal function is licorice. Yes, the ingredient that gives that common black twist of candy its flavour is beneficial for your adrenal glands. Licorice is an anti-stress herb known to increase energy, endurance and vitality and act as a mild tonic. It has been used to ease drug withdrawal and stimulate the hormones for anti-inflammatory action. It is known to naturally fortify cortisone levels, arguably the most important hormone in stress and adrenal fatigue. Licorice has also been used to help decrease symptoms of hypoglycemia, a common side effect of decreased adrenal function. Wound healing which can be slowed down by stress, has been improved by using licorice. Licorice can also soothe nervous stomachs, a common occurrence in people under stress. Both blood circulation in the heart and arteries and production of interferon-like substances by the immune system are stimulated by licorice. There has been some concern that licorice increases blood pressure. This is because licorice partially blocks the conversion of Cortisol into cortisone, which can produce higher amounts of circulating Cortisol. Cortisol slightly increases contraction of the

medium arteries and heart muscle causing blood pressure to rise. However, according to Dr. Jonathan Wright, you would have to consume approximately one-quarter pound of licorice candy per day in order to produce any elevation in your blood pressure. In any case, people who suffer from hypoadrenia typically have low blood pressure, so this is not usually a concern. Simply monitor your blood pressure and if you find it rising to levels above 140/90, or if you do happen to be one of the few who have both high blood pressure and low adrenal function, then limit your intake of licorice to less than one-quarter pound a day.

It is best to take licorice as a tea, with a little honey if desired, rather than by eating the candy. The candy usually contains too much sugar and may only contain licorice flavoring and not any actual licorice. Some authentic natural licorice candy, however, is always good to keep on hand in case you suddenly feel your adrenals giving out and need to temporarily boost yourself.

Licorice is available in capsules, as a liquid herbal extract, and in the original dried root which can be chewed or made into a tea.

Ashwagandha Root and Leaf (*Withania somnifera*) -Ashwagandha is an ancient Indian herb with a history of therapeutic use dating back to at least 1000 BC, probably because of its direct beneficial effects on adrenal tissue and function. Although it is also known as Indian ginseng, it is not related to ginseng. Traditionally, ashwagandha has been prescribed as a tonic for all kinds of weaknesses, as well as to promote strength and vigour. It has long been regarded as a rejuvenator and mild aphrodisiac. Because of its anti-inflammatory action, Ayurvedic physicians use it as the treatment of choice in rheumatic pains, inflammation of joints and other related conditions that are commonly seen in states of adrenal fatigue. Ashwagandha is considered to be an adaptogen. An adaptogen is any substance that helps the body function more towards its normal level, for example if Cortisol is too high, it lowers it, and if it is too low, it raises it. Studies have shown Ashwagandha is capable of normalizing Cortisol levels, whether they are too high or too low. Although ashwagandha is not well known in the United States, my prediction is that in the future many people will be using this very valuable herb for its multiple health benefits. It is especially useful in treating adrenal fatigue and is included in my herbal formula for adrenal support and recovery. However, in very high doses (above 35 gms/day) ashwagandha can actually inhibit adrenal function.

Korean Ginseng Root (*Panax Ginseng*) - *Panax ginseng* is an herb more suitable for men than for women. Although it has been shown to help increase Cortisol levels, my experience is that while men can usually take *Panax ginseng* with mild to significant benefits, women should be Careful in its use. This type of ginseng, especially Korean Keel, can have adverse effects in some women, similar to the adverse effects they experience with excess DHEA. These can include an increase in facial hair and acne. In men increased aggressiveness, irritability, or sexual excesses are signs that they are taking too much and should cut down or stop taking it. My advice to men is to use it in small doses at first and build

up gradually. I recommend that women avoid its use altogether.

Siberian Ginseng Root (Eleutherococcus senticosus)-Siberian ginseng, although not from Siberia and not strictly a ginseng, is good for women as well as men. It has a wide range of activities that help support and rejuvenate adrenal function, increase resistance to stress, normalize metabolism, and regulate neurotransmitters (which are important in modifying the stress response). It counteracts mental fatigue and is known to increase and sustain energy levels, physical stamina and endurance. With its antidepressant properties, Siberian ginseng has demonstrated its ability to calm anxiousness, improve sleeping, diminish lethargy, lessen irritability and induce a feeling of well-being. It has been used by Russian workers, deep-sea divers and Olympic athletes for better performance and by cosmonauts for stress and disease resistance, increased vitality and to counter depletion of the adrenal stress hormones. In addition it has been shown to normalize blood sugar, stimulate antibodies to bacteria and viruses, increase resistance to environmental pollutants, improve absorption of some B vitamins and decrease vitamin C loss. Although it has been shown to normalize blood pressure, do not use it if your blood pressure is very high. Siberian ginseng is more normalizing than stimulatory in its effects on your adrenals and, as you can see by its actions, it can be an important healer for anyone trying to recover from adrenal fatigue.

Ginger root (Zingiber officinale) - Ginger root is another adaptogen for the adrenals that helps modulate Cortisol levels, normalize blood pressure and heart rate; burn fat; increase energy and metabolic rate, and stimulate digestive enzyme secretions for proteins and fatty acids. Ginger is great for nausea of any kind and has been used historically for morning sickness during pregnancy. It also decreases lethargy during convalescence from an illness and has been used for centuries for many different health purposes.

Fresh ginger root is available in the produce section of most grocery stores. You can easily make a pleasant spicy tea by following the instructions below in the section on the preparation of herbs.

Ginkgo leaf (Ginkgo biloba) - The adrenals suffer tremendous oxidative stress when under stress themselves, especially when producing excess Cortisol during the stress response. This leads to a significant increase in free radicals within the same adrenal cells that make the needed hormones. If free radicals generated in this process are not neutralized, the production of hormones is slowed and tissue damage increases within the adrenal cells. Ginkgo is a powerful anti-oxidant that sequesters free radical production, thereby protecting the adrenal glands, the brain and the liver from free radical damage.

It also contains several bioflavonoids that improves blood flow to the brain, ears, eyes, heart and extremities. Ginkgo has been shown to lessen tissue damage from inflammation and shock, elevate mood in people prone to depression, and decrease mental fatigue. Its unique qualities make it valuable to any adrenal recovery program. Follow the instructions below on how to take herbal preparations.

The above herbs can be obtained and taken singly or together, in liquid or dry forms. I have designed a liquid formula called "Herbal Adrenal Support Formula"* combining these herbs in the proper portions to support your adrenals. The typical dosage of the liquid extract is 10-15 drops, 2-4 times daily, and of encapsulated powder is 2-4 capsules per day.

How to take herbal preparations

Always take the usual precaution of starting with low doses, and increasing the dosage slowly when using herbal preparations. Because of the varying strength of herbal preparations, it is best to follow the instructions on all packaged herbs. If there are no instructions, a general rule for preparation of herbs is as follows:

Tincture (alcohol extracts) 10-15 drops in liquid 3 to 4 times per day. Unfortunately, some of the most active ingredients in these herbs can only be extracted using alcohol. Water extractions or glycerin-based preparations may not have the potency of alcohol extracts. Many people with low adrenal function are sensitive to alcohol. Therefore, the liquid preparations containing alcohol should first be simmered in tea or water to evaporate the alcohol before taking them.

Fluid extracts - 5-10 drops in liquid 3 to 4 times per day.

Leaves - Steep (cover with boiling water) 1 teaspoon of dry leaves per cup of water for 15 minutes. Strain and drink. Honey or other natural sweeteners can be added to taste.

Root- Simmer (heat in water kept below boiling) 1 teaspoon of grated dry or fresh root for each cup of steaming hot water for 15 minutes. Strain and drink. Honey or other natural sweeteners can be added to taste.

Herbs to be cautious of

Just as there are herbs that are beneficial and restorative to the adrenals, there are herbs you should avoid if **you** have adrenal fatigue because they can worsen your symptoms, increase your recovery time, or prevent your recovery by further exhausting your adrenals. These herbs include Ephedra, (or Ma Huang), cola nut or strong black teas. Also avoid any herbs or teas containing stimulants, sedatives, or hallucinogenic substances, and any teas that over stimulate the nervous system or the adrenals. Just because it is natural does not mean it is good for you. Strychnine, arsenic, aflatoxin and mercury are also all "natural" substances, but I would not want them in my body. So avoid these herbs.

Adrenal Cell Extracts

Adrenal extracts have been recommended and successfully used for a variety of conditions that involve low adrenal function, including asthenia, asthma, colds, burns, depletion from colds, coughs, dyspepsia (poor digestion), early Addison's

disease, hypotension (low blood pressure), infections, infectious diseases, depletion from infectious diseases, convalescence from infectious diseases, neurasthenia (low energy/weakness), tuberculosis, light-headedness and dizziness, and vomiting during pregnancy. (Harrower, '39, pg. 19-22)

History of Adrenal Cell Extracts

The earliest, and still probably the most reliable, way of rebuilding the adrenals from adrenal fatigue is the use of extracts from liquid or powdered bovine adrenal glands. Historically and in many modern clinics, preparations using adrenal cell extracts have been used extensively and are considered to be the most important aspect of the treatment. The first recorded use of an adrenal extract was in 1898 when Sir William Osier administered a crude preparation of adrenal cells to a person with Addison's disease. Since 1918, when they became commercially available, adrenal cell extracts have been a valuable and powerful form of therapy and have been used by thousands of medical doctors in the treatment of non-Addison's type of hypoadrenia.

Their first claim to fame in the United States occurred with the epidemic flu virus of 1918. Respiratory infections are especially hard on the adrenal glands and fatigue them rapidly. This effect was shown by Lucke and his associates at Camp Zachary Taylor in 1919, when he found that adrenal exhaustion was present in 103 of 126 autopsied cases of mortality from the flu epidemic. In 3 other cases he even found adrenal hemorrhages and enlargement of the adrenal glands to twice their size. This means that in 106 of 126 patients who died from influenza, the adrenals were actually damaged by the infection. It is not that the adrenals were infected per se. but that the effort they made to try to restore balance to the body led them to a degree of exhaustion that was physically delectable upon autopsy (Lucke, B., et al., Archives of Internal Medicine, August 1919, XXVIII, pg. 154).

While this flu epidemic was debilitating and even killing thousands around the world, a few hundred of its victims were given a formula containing liquid adrenal cortical extracts (extracts from the adrenal cortex) combined with small amounts of thyroid and gonadal extracts. The formula was found to be unusually effective in overcoming many of the asthenic (weak) and depleted states that were so common to those afflicted with this deadly flu. It also effectively reduced the serious sequeli that usually followed this particular infection. The benefits of this adrenal cell extract formula dramatically drew attention to its practical use. The quick and uneventful recovery experienced by those taking it contrasted to the long period of recuperation normally seen in this flu epidemic. These results made many physicians aware of the possibility for recovery from less severe forms of hypoadrenia as well. It was known even in 1919 that the early functional endocrine disorders, especially adrenal fatigue, are infinitely more common and far more likely to respond to therapy than extreme endocrine diseases such as Addison's (Harrower, '39, pg. 17).

By the mid 1930's, adrenal cell extracts in liquid and tablet forms were produced by several companies. By the late 1930's, they were being used by tens of thousands of physicians. As recently as 1968 they were still being made by some of the leading

pharmaceutical companies (Upjohn and Eli Lilly, among others).

However, in the early 1950's synthetic Cortisol became available. Because the synthetic hormone produced effects that seemed, at first, so much more dramatic than the effects of adrenal extracts, many physicians switched to synthetic Cortisol and its derivatives to treat conditions they had previously treated with adrenal cell extracts. Unfortunately for patients, the profit margins were also more dramatic for the synthetic corticosteroids. This quickly made the synthetics the unquestionable favourite of the pharmaceutical industry. Within a few short years, tin-many detrimental side effects of the synthetics started appearing, but the pharmaceutical industry had made its profitable choice and would never turn back. In fact there has been a concerted effort to discredit adrenal and other cellular extracts and to remove them from the market these valuable cellular extracts, which provide more true benefits to your body without the damaging side effects of synthetic corticosteroids, are still available from a few sources.

Adrenal Cortical Extracts

Also known as adrenal cell extracts, adrenal cortical extracts are the liquid or powder extracts of the adrenal cortex. Their action is to support, fortify and restore normal adrenal function, there by enhancing adrenal activity and speeding recovery. Adrenal cell extracts are not replacement hormones, but instead provide the essential constituents for adrenal repair. They include all the adrenal cell contents, such as nucleic acids (adrenal cell RN A and DNA) and concentrated nutrients in the form and proportion used by the adrenals to properly function and recover, but contain only tiny amounts of the actual hormones in the adrenal gland. Adrenal cortical extracts have been used orally and as injectables since the end of WW1 and have only rarely produced unwanted side effects.

These extracts have been the cornerstone of effective therapy for adrenal fatigue since they were first developed. There are several brands available in both tablet and liquid form. The liquid is generally more powerful than the tablet, however it is more costly. I usually use the liquid in moderate to severe cases, and tablets in milder cases. Dosage for the adrenal cortical extract tablets is 6-12 per day, depending upon severity, taken in three to four intervals throughout the day. Dosage for the liquid form is usually one vial under the tongue 2 to 3 times weekly or as directed by your physician. In severe cases, it may need to be more frequent. Although these extracts are classified as dietary supplements, they must usually be purchased through a physician. Check our website for present suppliers of liquid and tablet forms of adrenal extract. A few sell directly to the public, but it is usually much better to work with a physician familiar with the treatment of adrenal fatigue.

Most medical doctors are unaware of the existence of this type of therapy and do not know how to use it. Because it is a departure from their usual thinking and protocol, they are often reluctant to even explore it. If a patient asks about cell extracts, they are typically negative about the subject. But as my friend, Dr. Leo Roy, the first holistic physician of Canada, said, "Doctors are down on things they are not up on." This is especially true of live cell substances and their use.

The doctors who are up on treating adrenal fatigue find significant value in adrenal extracts for alleviating all levels of adrenal fatigue. Today, by combining our knowledge of adrenal cortical extracts with lifestyle modifications, dietary supplements and herbal formulas, we can stabilize people with adrenal fatigue and accelerate their recovery more efficiently than ever before. Adrenal extracts have been and continue to be a fundamental part of the treatment protocol for adrenal fatigue used effectively for over 80 years.

Cortisol vs. Adrenal Cell Extracts

It is important to understand the difference between adrenal cell extracts and natural or synthetic Cortisol and Cortisol type steroids such as cortisone, prednisone, prednisolone and many other forms of adrenal steroid hormones. Adrenal cell extracts nourish and help rebuild your adrenal cells. As these cells recover, they can once again produce the proper amount of the various hormones needed for the many functions performed by your adrenal glands. By this means they tend to normalize adrenal function. In contrast, corticosteroids, whether natural or synthetic, tend to reduce or shut down the activity of your adrenal glands. This happens because your brain senses the presence of these Cortisol substitutes and, in response, withholds the signal (ACTH) it would otherwise send to your adrenal glands to make more adrenal hormones. (See illustration -"Cortisol vs. Adrenal Cortical Extracts"). Thus corticosteroids suppress the functions of your adrenal glands, over-riding the normal feed back loops that regulate and balance adrenal hormones. In spite of the fact that this action can produce dramatic initial improvements in your symptoms, these symptomatic improvements come with a heavy price.

Although corticosteroids are replacement hormones; that is, they replace the natural hormone (Cortisol) they are designed to mimic, they do not function exactly the same as natural Cortisol because they are not identical to it. For one thing, synthetic corticosteroids are up to 17 times more powerful than the natural form of Cortisol. If taken in excess of the physiological needs of the body (above the equivalent of 20 mg of Cortisol per day), which many prescriptions are, their unfortunate side effects are many and far-reaching. Even after a course of just a few days of corticosteroid medication, it takes several days to several weeks for adrenal function to return to normal. When taken for a long period of time, the adrenals may require anywhere from several months to 2 years to revive and produce their own Cortisol again. Sometimes they never fully recover.

This is why it is so difficult to get off a corticosteroid drug once you have been on one for a while. You get caught in the "catch-22" that if you stop taking the corticosteroids, you crash and your symptoms return worse than ever because your adrenal activity is suppressed. So you keep taking them, but the longer you take them the harder it is for your adrenals to regain proper function.

Because corticosteroids mask the symptoms of adrenal fatigue and, when used in excess, depress immune function, the person taking them is at greater risk from stress and infection. Such therapy can become more hazardous than the original

disease. Corticosteroids may have quick and dramatic symptomatic results, but unless they are used in their natural form and in physiologic doses that mimic the natural secretion of Cortisol, they make the adrenals weaker rather than stronger. In addition, the list of their side effects is sobering for those who care to look them up in the Physicians Desk Reference (PDR). They range from rash to sudden death.

If corticosteroid therapy is necessary, it is best to use the natural form of Cortisol, hydrocortisone, available by prescription. Even though this natural hormone also diminishes or shuts down the adrenals while it is being taken and for several weeks after it is discontinued, it can be used effectively as a therapy for severe adrenal fatigue. When administered in physiological doses of approximately 20 mg per day to emulate the natural daily secretion of Cortisol, it can give the adrenals a rest for a period of time, thereby providing an opportunity to recover.

"I am 47 years old... I was first diagnosed with asthma at age 3 and spent the first 20 years of my life on a continuous regime of prednisone (I was actually addicted for 2 years, ages 11 & 12, because my adrenals had shut down), weekly allergy shots, frequent antibiotics due to multiple upper respiratory infections (supposedly) and all the asthma drugs on top of that (theophylline, isuprel inhalers and more). Also multiple epinephrine injections due to frequent trips to the ER with many resulting in hospitalizations My health is actually improving, slowly but surely. My single biggest problem now is a constant weariness, frequent exhaustion, and a seeming inability to get ahead and on with my busy life. (Oh, and I'm also addicted to my one cup of strong coffee a day which I rationalize because it's organic) So I think adrenal supplementation is the key at this point. I feel like I'm at the end of my rope and that the only thing that will help is a year alone in the tropics somewhere so I can sleep and be warm. Of course, the other thing would be to address my adrenals."

Mrs. DN - Source: quote from letters received.

Elaine was a bright, energetic and athletic young girl with a true desire for competition. However, during a basketball tournament in her junior year, she slammed into a wall. The accident was traumatic both physically and emotionally. Following the accident, I/nine experienced fatigue, decreased stamina, and a loss of focus that negatively affected her academic, athletic and social activities. About six months after the accident, Elaine developed swollen joints that were very painful upon movement, especially in the later part of the day. In addition she had an intermittent fever with no detectable cause. This continued for several years, perplexing her doctors, until finally Elaine was diagnosed with rheumatoid arthritis.

She was placed on corticosteroids, which decreased the inflammation and increased her stamina to some degree so she could function better. The price for her improvement was the development of some common side effects of corticosteroids such as a moon face and buffalo hump, along with some thinning of her skin. After just a couple of occasional rheumatoid arthritis flare-ups, the doctor increased the strength of the corticosteroids and had her take it continuously. For several years

Elaine was able to manage successfully. However, one Friday night while she was out at a local restaurant, she experienced severe diarrhea with a 105° temperature and was taken to the hospital. At the hospital, her kidneys shut down, her blood pressure dropped to 60/30, her liver function diminished and she was placed in ICU. Miraculously, the doctors were able to reverse the systemic shut down of Elaine's body and she was sent home to recover after four days. The diagnosis was toxic shock syndrome precipitated by corticosteroid therapy.

This is an excellent illustration of what happens when someone has adrenal fatigue produced by a sudden trauma and it goes undiagnosed and untreated. The low Cortisol levels resulted in too little anti-inflammatory activity in Elaine's joints and she experienced a mild form of rheumatoid arthritis. The over-treatment with ever increasing doses of corticosteroids shut down her adrenal function even further, as well as severely suppressed her overall immune function. She had been able to manage up until that evening at the restaurant because she had not been exposed to any infectious agents. However eating contaminated food at the restaurant, something that would typically have made someone sick for a day or two, became a life-threatening event for Elaine. She no longer had adequate adrenal or immune function to fight the infection.

*From the book **Adrenal Fatigue The 21* Century Stress Syndrome**, by James Wilson*