



Health Hunters Newsletter

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Conquering Stress by Renewing Your Adrenals

By Dr. Anne Zauderer

Take a moment and imagine this scene with me.

It's a Saturday afternoon, 72 degrees outside with a slight breeze, not a cloud in the sky. It's one of those picture-perfect days that must be enjoyed to the fullest. You have packed a picnic lunch and decided to go for a hike by yourself. You are four hours into your hike and your muscles are just starting to get a little bit sore, when suddenly you come to a clearing. Set before you is a beautiful lake with water as still and calm as glass. You walk over to the water's edge, take a deep breath in and lean down to scoop up a refreshing splash of water. You could not imagine a more peaceful, serene moment. Your stomach starts rumbling when suddenly you hear it... SNAP! The hairs on the back of your neck stand up and your heart starts racing...



We have developed an acute sensory system. All of the sensory information that our brain has to process and integrate is geared toward our survival. We would not be here if we did not have this skill. In the scene described above, we do not know what caused the branch to snap. It could be the wind blowing, a rock falling...or it could be a bear or a mountain lion. However, before the person in that scene knew what caused the sound, a stress alarm had already been triggered. If that person did not have a stress response and continued to stand by the lake, he runs the risk of being eaten by a wild animal. This stress response is critical to our survival. We have learned that it is better to react and be wrong, than to not react and be dinner.

It's this "priming" that our body and brain have toward stress that has made us so successful at surviving as a species. However, this mechanism of stress and our body's physiological response to stress can be triggered so easily in the modern world resulting in us putting more and more stress on our adrenal glands.

In the modern world, we are not often faced with such acute survival situations, yet our body and brain still respond to stress in the same way. That car cutting us off in traffic still causes the same stress response that a bear would cause to our ancestors. This has been hard-wired into our neurology. However, what has changed so dramatically for us are all of the insidious stressors that we are not consciously aware of that

Conquering Stress by Renewing Your Adrenals continues on page 2...

Contact the Editor

Please send any comments or suggestions to newseditor@riordanclinic.org.

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Megan Neathery
Editor

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Health Hunters Newsletter

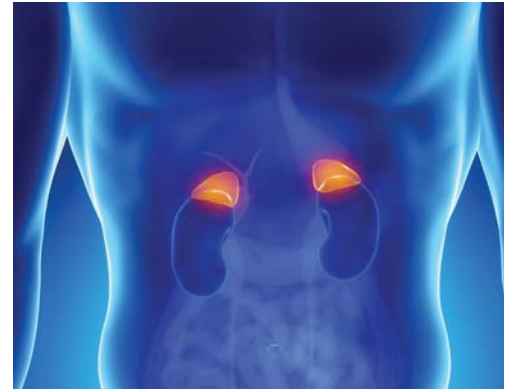
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cause a stress response in the body. That constant stress on our adrenals causes an imbalance in our hormones and, over time, can even cause the adrenal glands to wear out leading to “adrenal fatigue.” This is where the body can’t muster a strong response and produce the stress hormones needed to function optimally. The effects of this can be systemic.

STRESS AND THE BODY

To really understand the impact of stress on the body, let’s take a few steps back and look at the mechanism of stress in the body. The adrenal glands are two tiny glands that rest on top of the kidneys. They are situated very closely to the abdominal aorta, the main artery in the torso. This puts them in a prime position on the super highway of blood circulation. This is advantageous to deliver the hormones quickly when needed.

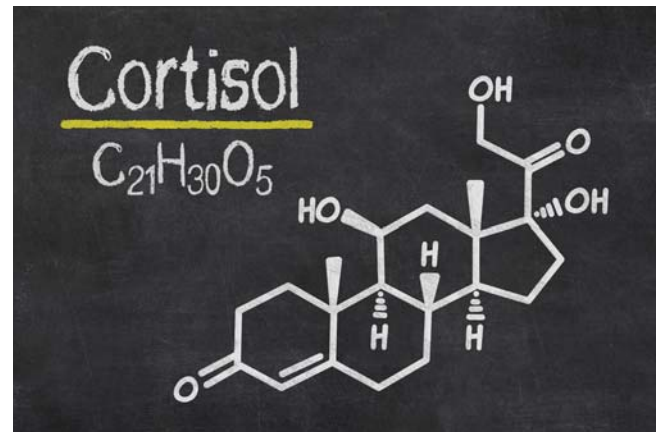


Even though the adrenal glands are tiny, they play an important role in the production of numerous hormones, including:

1. ADRENALINE & NORADRENALINE (*epinephrine & norepinephrine*)—These hormones help us respond to short-term, immediate threats. They are responsible for our “fight or flight” response, where if we encountered a stressful situation we are either going to need the energy to stay and fight or we will need the energy to run away (flight). Imagine that you are getting ready to give a lecture to more than 500 people: your heart rate would increase, your palms would start sweating, and your breath would get shallower. All of these physical symptoms are caused by the release of adrenaline.

2. ALDOSTERONE—This hormone helps to regulate our electrolyte levels. Electrolytes are extremely important for maintaining fluid balance in our body as well as maintaining proper cell function. Aldosterone levels follow the same patterns as our cortisol levels. When our levels go down, such as with adrenal fatigue, the body will crave salt.

3. CORTISOL—Cortisol is one of the primary hormones that most of us associate with the adrenal glands. It has an incredibly important role in the body in regard to regulating metabolism and blood sugar. When the body is under stress, there is a higher demand for energy. Cortisol can react quickly to release stored energy that the body can use when under stress. Cortisol has other numerous effects on the body including: anti-inflammatory, regulation of white blood cells, regulation of blood pressure, contractility of the heart, and excitability in the brain (influencing behavior, mood, and memory).



4. SEX HORMONES (*progesterone, DHEA*)—Some people are surprised to learn that the adrenal glands are responsible for the production of some of our sex hormones. In men, the adrenal glands help produce extra testosterone (the testes are the primary source of testosterone) and most of a man’s estrogen. In women, the adrenal glands help produce extra estrogen (the ovaries are the primary source of estrogen) and

most of a woman’s testosterone. This is why low adrenal function can have hormonal effects, such as: low libido, PMS symptoms, changes in a woman’s cycle, **and loss of muscle mass/weight gain.**

WHERE DO OUR ADRENALS GO WRONG?



If the only stress we encountered in our life was that of our ancestors, we probably wouldn’t be having this conversation about adrenals “fatiguing.” However, in our modern world there are a lot of factors that cause a stress response in the body of which we are not always aware. Below is a list of lifestyle habits, emotions and illness that can cause adrenal dysfunction:

- Emotional stress: fear, negative attitude, depression, anxiety
- Food allergies/sensitivities
- Chronic infection
- Caffeine
- Processed foods
- Excessive/lack of exercise
- Toxins
- Lack of sleep
- Over-exertion
- Pain
- Medications
- Poor eating habits
- Major surgery
- Head trauma
- Abuse of drugs

For most people it isn’t just “one thing” that causes their adrenals to fatigue, but rather the combination of multiple factors. It’s the person who is sensitive to wheat, who also has a chronic Candida infection, who drinks a pot of coffee a day, while only getting 5 hours of sleep. Sound familiar? (*This was me in college!*)

When our body needs to mobilize energy, the brain releases a hormone that signals the adrenals to rev up production of cortisol. However, if that signal is going off all the time, the adrenals become less sensitized to it and they don’t have the ability to produce enough cortisol to keep up. This leads to some common symptoms, of adrenal fatigue:



- Difficulty getting up in the morning
- Fatigue not relieved by sleep
- Craving for salty foods
- Seems to take more energy to do everyday tasks
- Decreased sex drive
- Inability to handle stress (especially stress you could handle in the past)
- Constant anxiety and/or mild depression
- Decreased productivity
- Compulsive eating
- Hypoglycemia (blood sugar drops frequently—leading to a craving for sweets)
- Increased recovery time from illness, injury or trauma
- Feelings of being light-headed when standing/sitting up too quickly
- “Hangry”—getting angry when you are hungry
- Inability to focus, loss of memory

INVEST IN THE VISION

A beautiful array of crystals and geodes are on loan from the collection of the Clinic’s long-time friend, Mrs. Marni Stevens. She and her late husband, Frank, considered themselves “rock hounds” and collected these exquisite artifacts during their 18 years of travel. Their collection is now on display throughout the campus through mid-November for the enjoyment of co-learners and visitors.



In ancient times, it was believed that, crystals and gems could be used for healing and protection. Each crystal had its own significance in the health world. For instance, amethyst was thought to protect and purify, calcite was believed to be for cleansing and healing, while citrine was thought to bring about abundance and emotional balance.

The crystals and geodes create an intriguing ambience for our guests. Thank you, Mrs. Marni Stevens, for adding to our environment of healing!



NOVEMBER NUTRIENT SALE



30% OFF
Riordan Clinic Brand
Adrenal Support Products

Either in store or online
November 1 – 30, 2014

ADRENAL ADAPT

Adrenal Adapt contains essential vitamins to support the immune function, in addition to three potent herbal extracts, and a calming agent (Licorice). This perfect combination, aims to help the natural process of return to homeostasis by correcting cortisol levels. These herbal extracts have been selected in order to provide a targeted, gentle, but effective support for the delicate hormonal balance that is maintained by the adrenal glands. It is our hope that this high quality, pure product will help you reach a new level of vitality and health.

ADRENAL REVIVE

The root extracts present in this formulation (ashwagandha, skullcap, eleuthero and Rhodiola rosea) have been selected by our doctors as the best combination of biologically active compounds that work synergistically to restore endocrine health. Together, they may improve stress-related sleep problems, testosterone levels, immune functions, stamina, cognition, alertness, and mental performance, reduce daily stress and fatigue, and even decrease symptoms of depression. This product was designed to encourage a sustained level of energy in your everyday life.

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Not valid with any other offer.

THE MILLION DOLLAR QUESTION: WHAT DO WE DO IF WE HAVE ADRENAL FATIGUE?

Well, the obvious answer to this question is: we just need to reduce our stress levels! Right, I know, easier said than done. It's not possible for most people to quit their job and move to a tropical island and retire. We can't necessarily escape stress...but we can help our bodies manage it.

FIRST STEP: Remove all stressors to the body that are within our control. This means significantly reducing sugar, all processed foods, caffeine, and alcohol. Basically, if it comes in a box, it's bad news for you. Just stay away from it. While you are at it, remove all household toxins that are within your control. This means replacing your chemical cleaners with natural brands...or better yet, you can use vinegar to clean just about anything!

SECOND STEP: Identify your stress triggers. The way our brains work, it is advantageous for us to form shortcuts in our neuro-circuitry. This means, if you were a child and your father yelled at you every time you turned your music up too loud, you might identify that loud music unconsciously triggers a stress response for you. Or if you use ice cream as a comfort food...identify this and make a new pattern of how to deal with your stress.



THIRD STEP: Find outlets for your stress and schedule time daily to partake in these activities. Some people relieve stress with exercise, yoga, meditation, or other enjoyable activities. Find what works for you and make time each day to, as Nike says, just do it!!

FINAL STEP: Replenish your adrenals. Depending on how long you have been in a state of adrenal fatigue, your adrenal glands might need some extra TLC. There are a lot of nutrients that are important in the optimal functioning of our adrenal glands, including:

- Vitamin C
- Vitamin E
- Pantothenic Acid (B5)
- Niacin
- Vitamin B6
- Magnesium
- Trace Minerals (zinc, copper, chromium, manganese, selenium)

THERE ARE ALSO A NUMBER OF HERBS THAT SUPPORT THE ADRENAL GLANDS:

- Licorice Root (glycyrrhiza glabra)
- Ginseng (Eleutherococcus senticosus, Panax Ginseng)
- Ashwagandha
- Ginger (Zingiber officinale)
- Ginkgo biloba

The best way to know your nutrient levels is to have them tested regularly. The use of these supplements and herbs is best under the direction of a doctor.

Renewing the adrenals is a lifelong journey. There are always going to be periods of life where stress is more prominent. The key with managing stress is learning to understand what is triggering the stress response so that you can find ways to compensate for it. The world we live in does not allow us to be completely stress-free, but we do have a choice how we let it affect us.

Source:

1. Wilson, L.W. (2009) Adrenal Fatigue: The 21st Century Stress Syndrome. Petaluma, CA: Smart Publications

All-Star Maintenance Team

By Sean Osler

The Riordan Clinic is known for many things. Not only are we known for our expertise in nutritional health and wellness, but also for our unique Wichita campus. This month we are recognizing the “un-sung heroes” that keep our campus looking great, the Riordan Clinic maintenance team.



Our maintenance team is headed by Dang Nguyen, and is made up of 5 other members: Kyle Smith, Aaron Kramme, Rubin Jones, Thien Chau, and Roy Riggs (*not pictured*). Together, they improve and maintain the campus, keeping our domes and pyramid looking better than ever. Most recently, they have freshened things up by painting all of the railings that line some of our sidewalks as well as installing new light posts along our drive and in our parking lot. They have also been a part of the clinic becoming more environmentally friendly by helping install the new solar panels that were put in place a few months ago. The maintenance team also plays a major role in the logistics of the clinic, making sure all supplies are transported safely. Even more so, they ensured the transportation and safety of those who attended our 4th IVC Academy and IVC Symposium this year, making well over a dozen trips back and forth between destinations.

Our maintenance team plays a vital role in holding our clinic to a standard that they continue to raise. Keeping over 90 acres of land and building facilities looking great is no easy task, and they have done a marvelous job of it. We, along with our co-learners and visitors to our campus, will continue to admire the work that is done by our maintenance team. You are greatly appreciated.



Herbs to Support Optimal Adrenal Function

By Laurie Roth—Holistic Health Practitioner and Master Herbalist

Adrenal exhaustion occurs when adrenal glands have a low adrenal reserve making your system unable to generate sufficient amounts of adrenal hormones when faced with a stressful situation. Phyllis A. Balch, a nutrition researcher, certified nutritionist and author of "Prescription for Nutritional Healing," states that the indications of adrenal exhaustion include reduced strength, chronic fatigue and abnormalities in your blood glucose levels.



ADRENAL EXHAUSTION

The term adrenal exhaustion was first coined by Canadian endocrinologist Hans Selye in his 1956 book "The Stress of Life." According to Selye, adrenal exhaustion is the final stage in stress-induced adrenal dysfunction, which is preceded by adrenal alarm and adrenal resistance. Some of the most common signs and symptoms of this condition include aches throughout your body, anxiety, and depression with significantly reduced stress tolerance, increased abdominal fat, increased vulnerability to infections and problems with your digestive tract.

THE BEST HERBS TO SUPPORT PROPER ADRENAL FUNCTION

In his book "Plant Medicine in Practice," naturopathic physician and herbalist William A. Mitchell suggests that the best herbs for adrenal exhaustion include borage, Siberian ginseng and licorice root.

Borage helps increase the strength of your adrenal glands, while Siberian ginseng stimulates your adrenal cortex, or the outer portion of your adrenal glands. Licorice root helps modulate your adrenal gland function. Other beneficial herbs for treating adrenal exhaustion may include ashwagandha, kava kava and astragalus. A simple combination of these herbs in a daily herbal tea will support proper adrenal function without the negative side effects of pharmaceutical drugs.



Borage is one of the most popular herbal remedies in the treatment of adrenal exhaustion. According to Balch, the seeds and leaves of the borage plant act as both an adrenal tonic and adrenal gland balancer. Borage seeds and leaves contain important minerals and essential fatty acids, both of which are required for healthy cardiovascular system function. Significant phytochemicals contained in borage include tannin, silicic acid, beta-carotene, rosmarinic acid, calcium and choline.

Adrenal exhaustion may be caused by many factors. In many cases, lifestyle factors—poor diet, home and workplace stress,

Herbs to Support Optimal Adrenal Function continues on page 6...

Patient Profile

By Laura Aronis, RN

What do you do if you feel a lump, but your doctor is not concerned?

One of our co-learners noticed a small, pea-sized lump on her right breast. She mentioned it to two doctors. One doctor could not even feel it, and the other did not seem concerned. She decided to have a breast thermogram, and the images showed an abnormality in the area where the lump was. After further testing and meeting with an oncologist, she underwent a lumpectomy. The surgery was very successful and all of the cancer was removed with the lumpectomy. She continues to come to the clinic weekly for IV Vitamin C and checks in regularly with Dr. Hunninghake. She is very grateful that her cancer was caught at such an early stage, and she plans to continue using thermography to monitor her breast health in the future.

The scientific basis for the use of thermography dates all the way back to the Golden Age. Hippocrates wrote, "In whatever part of the body excess of heat or cold is felt, the disease is there to be discovered." Physicians in that time employed a primitive means of documenting this excess heat or cold by applying a certain type of clay to the body and observing the tell-tale patterns as it dried.

Thermography uses a high-tech infrared camera and computer system to detect gradients of heat throughout the body. The infrared images capture the natural, superficial heat emission of the skin and accurately reflect its temperature.

At Riordan Clinic, thermography is performed by one of our trained nurses or medical assistants. The patient first sits in a room set at about 70 degrees, which allows any heat that is retained by clothing or outside temperatures to dissipate. Then, a series of 6 images are collected. There is no exposure to radiation, and none of the uncomfortable "squishing" that happens with traditional mammography. The entire procedure typically takes about 20–30 minutes.

Herbs to Support Optimal Adrenal Function continued from page

and long-term sedentary living all contribute to a decline in proper adrenal function and the development of adrenal exhaustion. Herbs are a natural method of treating adrenal exhaustion, but they should be used with great caution and under the guidance of a qualified health care professional.

Adrenal exhaustion may best be treated using several therapeutic modalities, instead of herbs alone, and I suggest you consult with your primary care physician for a multi-pronged approach to revitalization of your adrenal function. Be mindful to eat a balanced diet, comprised of whole, organic natural foods, drink plenty of water and get a good night's rest. This will ensure you have the energy you need, when the fight or flight response is truly needed, instead of experiencing continued exhaustion!

SOURCES:

[Livestrong.com](#)

[Prescription for Nutritional Healing by Phyllis A. Balch](#)

[The Stress of Life by Hans Selye](#)

[Plant Medicine in Practice by William A. Mitchell](#)

Natural Breast Health and Detection Tips

By Laurie Roth—Master Herbalist and Holistic Health Practitioner

It is imperative to recognize the symptoms of breast cancer early. Many times, breast cancer is not detected early, as symptoms may not manifest or women do not undertake preventative screenings. Early detection is key to your cancer survival strategy and tools such as thermography can assist in your screening and early detection efforts. However, you need to take an active role in early detection with home screenings for lumps and be on the lookout for these other indicators.

Early indications of breast cancer development:

- Breast or armpit thickening.
- Change in the size or shape of the breast.
- Dimple of breast skin or nipples turning inward.
- Scaling of nipple skin.
- Green or bloody nipple discharge.



Everyone agrees that self-examinations should be done on a monthly basis, however some dispute the pros and cons of the traditional mammogram, which is advised after the age of 40 or later, depending on risk factors. One well-known sign of breast cancer is a hard lump, or nodule that is painless and located within the tissue of the breast. If a lump is discovered, please inform your doctor quickly, as the timely removal of the tumor can greatly increase the chances of recovery.

According to The National Cancer Institute, there are foods and herbs you should eat that deliver high anticancer action. Those foods include the following: garlic, cabbage, ginger, licorice, turmeric, carrots, parsley, cilantro and celery. Please incorporate these all-star foods into your daily diet and eat them as fresh, organic, and as locally grown as possible.

There are several prominent herbs that have been identified as delivering cancer fighting properties and the top two are Blessed Thistle, found in North America and Holy Basil from India. Below are the basics and I encourage you to explore these further!

Natural Breast Health and Detection Tips continues on page 7...

VITAMIN C SYMPOSIUM ADDRESSES METABOLIC ROOTS OF CANCER

Wichita, KS USA, October 2014

The Riordan Clinic hosted its 4th Riordan IVC and Cancer Symposium on October 3rd and 4th, 2014 at the Hyatt Regency, Wichita KS. The symposium explored the metabolic roots of cancer and the use of high dose intravenous vitamin C (IVC) as a therapy. Over 120 medical professionals and research scientists from around the world attended the conference and took a collaborative look at the root causes of cancer and the use of IVC therapy as a safe and effective adjunct to conventional oncologic approaches.

How did this get started?

Thirty years ago, Dr. Hugh Riordan treated his first cancer patient with high doses of intravenous vitamin C. The patient was a 70 year-old gentleman with kidney cancer and metastasis to the liver and lungs. Dr. Riordan offered to treat this cancer patient "palliatively" with 30 grams of ascorbic acid (Vitamin C) intravenously twice a week. After 15 months of therapy, the cancer was gone. The patient died 12 years later...of congestive heart failure at age 84.

How is it relevant today?

Some 70,000 IVC infusions later, Dr. Riordan and his research team demonstrated that there is plausible scientific evidence to support the use of high dose ascorbate in the adjunctive care of cancer patients. Studies at the National Institutes of Health have since replicated and advanced these findings ².

Interest continues to grow through practitioners from around the world who have adopted "The Riordan IVC Protocol" for the administration of high dose IVC for the treatment of cancer, viral infections and other health concerns in a non-toxic fashion.

For more information about vitamin c research and the Riordan IVC Protocol, visit: <http://www.riordanclinic.org/research/research-studies/vitaminc/protocol/>

References:

1. Intravenous Ascorbate as a Tumor Cytotoxic Chemotherapeutic Agent. Riordan, N. H., Riordan, H. D., Meng, X., Li, Y., and Jackson, J. A. , Medical Hypotheses, 44(3), 207-13. 1995. <http://www.ncbi.nlm.nih.gov/pubmed/7609676>
2. Ascorbate in pharmacologic concentrations selectively generates ascorbate radical and hydrogen peroxide in extracellular fluid in vivo. Chen Q1, Espey MG, Sun AY, Lee JH, Krishna MC, Shacter E, Choyke PL, Pooput C, Kirk KL, Buettner GR, Levine M., Proc Natl Acad Sci USA. 104(21):8749-54. 2007. <http://www.ncbi.nlm.nih.gov/pubmed/17502596>



BLESSED THISTLE—is a low annual plant, named because of the ancient belief that it held supernatural properties. They are inherited throughout North America and mature up to two feet height, with a thistle-like appearance. Blessed Thistle, when consumed, has been shown to enhance the flow of gastric juices relieving dyspepsia, indigestion, and headaches, associated with liver congestion. As a medicinal plant, it is used to stimulate appetite, cleanse the liver, stimulate bile flow, aid digestion, and

promote health. It is widely used throughout England, Germany, Russia, China, India, and Africa. Blessed Thistle is also beneficial toward the fights against: internal cancers, gastrointestinal symptoms, diabetes, gallbladder disease, liver disorders, inflammation, jaundice, malaria, gout, and rheumatism.

CAUTION: High doses of Blessed Thistle, greater than 5 gm per cup of tea, may lead to stomach irritation and vomiting. Be aware that the plant contains tannins. Excess use of Blessed Thistle containing greater than 10% tannins may lead to liver disease, gastrointestinal upset, kidney toxicity, or enhanced risk of developing esophageal or nasal cancer and is not recommended for persons who have ulcers or inflammatory bowel conditions.



HOLY BASIL—originally from India and is used in Ayurvedic medicine as an "adaptogen" to counter life's stresses. It is considered a sacred plant by the Hindus and is often planted around Hindu shrines. The Hindu name for holy basil, Tulasi, means "the incomparable one." This herb belongs to the mint family. It is an annual herb. It is bush-like and grows up to one and a half feet tall. The plant has numerous small leaves and purple flowers, which grow on hairy stems. Medicine is made from the leaves, stems, and seeds, all readily available online.

Chemicals in Holy Basil are thought to decrease pain and swelling (inflammation). It is an adaptogen, meaning it brings balance to the entire body and protects it from stresses of all kinds. It increases strength and endurance and allows the body to utilize oxygen more efficiently, while it promotes proper protein synthesis in the body. There is interest in using Holy Basil seed oil for cancer. Research suggests that Holy Basil oil can slow progression and improve survival rate in animals with certain types of cancer. Researchers think this benefit may be explained by the oil's ability to act as an antioxidant.

CAUTION: Holy Basil has the ability to slightly thin the blood and shouldn't be taken by people taking blood-thinning medications. It may also lower the blood sugar and shouldn't be taken by anyone with hypoglycemia. It may decrease fertility and should never be taken by women trying to conceive. Never take if pregnant or nursing without first talking to your doctor.

Please be reminded, cancer or tumor development is too serious a condition to self medicate, there are no quick fixes or miracle cures. The herbal world has a variety of natural herbal treatments that fly below the radar of conventional medicine, and are deserving of consideration. As always, consult with your primary care physician before embarking on any alternative health therapy and I suggest you explore the option of thermography as an early detection and health preservation option.

Sources:
Healthalot.com [Secrets of Self-Healing](http://SecretsofSelf-Healing.com)
Herbslist.net by Dr. Maoshing Ni
Webmd.com

Live Webcast— Lunch & Lecture

CONQUER STRESS! RENEW YOUR ADRENALS

Your adrenal glands are vitally important for your body to be able to adapt to the stress in your environment. Stress can take on a lot of different appearances, like work-related stress, lack of sleep, food sensitivities, nutrient deficiencies, toxicity in the environment, or even emotional stress. All of these factors have the same physiological effect on the body. In today's world, we find that it's the combination of multiple factors that leads to the breakdown and fatigue of the adrenals. In this month's Lunch & Lecture, Dr. Anne Zauderer will talk about ways to renew the adrenal glands, prevent adrenal fatigue or what to do if you have it!

Presenter:

Dr. Anne Zauderer

Date: Thursday,
November 13, 2014

Broadcast Times:
12:00 to 1:00 p.m.

Cost: \$10.

(Includes box lunch) Lunches are ordered in advance, so RSVP is required.



Go to <http://www.riordanclinic.org/education/lectures/live/> to view the live broadcast.



Reservations **REQUIRED**

Call 316-927-4723 or email us at reservations@riordanclinic.org

BREAST HEALTH PANEL

By Charles T. Hinshaw, Jr., MD, Director, BioCenter Laboratory at Riordan Clinic

DID YOU KNOW?

We offer a Breast Health Panel, which tests the levels of nutrients which are important for breast health. Below, you will find a brief explanation of why each of these nutrients is included in the panel. The interplay and overlapping of functions is amazing, even in these brief and limited explanations.

VITAMIN A: supports normal cell differentiation, helping prevent cancer; essential in the chemical process whereby cholesterol is converted into female estrogens and male androgens.

VITAMIN B6: increased body demands during pregnancy, lactation, the use of oral contraceptives and with increasing age; of significant benefit for premenstrual syndrome by helping to regulate estrogen and progesterone production.

FOLATE (FOLIC ACID): levels in body reduced by oral contraceptives and hormone replacement therapy; increases sensitivity to estrogen; pregnancy, due to needs of fetus for rapid growth, results in folate deficiency in the mother; up to 80% of neural tube defects and spina bifida may be prevented by adequate folate.

VITAMIN C: important in manufacture of collagen, a connective tissue (supporting, framework tissue); necessary for conversion of folate to its active form, folic acid; hormone replacement therapies and oral contraceptives increase the need for vitamin C; vitamin C raises the level of interferon, the body's natural anticancer and antiviral compound.

VITAMIN D: functions like a hormone, targets tissues including reproductive organs; deficiency may occur in women who have continued pregnancies and periods of lactation, and in the elderly; deficiency may result in reduced bone formation leading to osteomalacia and osteoporosis.

VITAMIN E: low levels, especially when coupled with low selenium, are associated with increased risk of cancer; useful in treatment of premenstrual syndrome, breast tenderness and hot flashes; as an antioxidant, it protects by being oxidized itself—it may be the primary anti-aging nutrient.

SELENIUM: low levels associated with many cancers, including breast; deficiencies of vitamin E and selenium occurring together associated with increased cancer fatalities; primary function as antioxidant by working as a component of glutathione peroxidase; has a role in DNA repair.

COQ10 (COENZYME Q10): works with vitamin E to scavenge free radicals, protecting and repairing damaged DNA molecules, which could otherwise mutate and lead to cancer. Lycopene: a phytonutrient found in the class known as carotenoids, functioning as an antioxidant and helping to destroy cancer causing chemicals; one of the most powerful free radical scavengers found in nature, with high concentrations in tomatoes (especially cooked), pink grapefruit and watermelon.

