The science of hormones is an ever-evolving field in which information is continually being discovered and our understanding repeatedly refined or completely redefined.

Most of the problems with misinformation about menopause originate in the late 1930's when the first synthetic Estradiol was derived. Since that time, physicians have been teaching women that menopause is a 'deficiency disease' (a deficiency of Estradiol) rather than a NATURAL and HEALTHY process.

After spending considerable time studying the subject of hormone balance, I cannot emphasize enough how brilliantly engineered the inherent process of menopause is. It is truly astounding how perfectly our bodies are programmed.

To understand the genius of this biological engineering we need to realize that Estradiol is not the only estrogen in the body, in fact, there are quite a number of estrogens and each plays a specific role in the body. See the list to the right:

1. Estrone (E1)
2. Estradiol (E2)
3. Estriol (E3)
4. Estertrol (E4)
5. 27-hydroxycholesterol
6. Dehydroepiandrosterone
7. 7-oxo-DHEA
8. 7a-hydroxy-DHEA
9. 16a-hydroxy-DHEA
10. 7β-hydroxyepiandrosterone
11. ^4 androstenedione
12. ^5 adronstenediol
13. 3a-androstanediol
14. and 3β-androstandediol.
Most of the time when we hear physicians speaking about estrogen, they are referring to Estradiol (E2). This is because Estradiol is the most prevalent estrogen that pharmaceutical companies are synthesizing and because Estradiol is the hormone that is associated with menses. When our bodies begin producing Estradiol, we have our first menstrual cycle. As our bodies produce less and less Estradiol, we go through menopause.

Now, I think it is very interesting to note that Estradiol levels slowly begin increasing around the age of 12 and continue to increase to the age of about 25. Then Estradiol levels slowly begin to decline. So a woman never ever experiences a constant, consistent level of Estradiol during the entire time she is menstruating. Sex hormone levels are fluid, fluctuating and adaptive depending upon what our bodies are experiencing. Not only is each specific hormonal cycle different from the next for each individual woman, but, each woman has a completely unique hormone profile that is not like anyone else’s.

Also, consider this, the process of menopause actually begins occurring around the age of 25!

And, this is what is really exciting to realize about Estradiol (E2) and Estrone (E1) in terms of menopause. In excessive amounts Estradiol is associated with causing cancer. So, as we age, and as our bodies become more prone to developing cancer due to every day wear and tear, our exquisitely designed bodies begin producing less and less Estradiol to mitigate the risk of developing cancer! Is that not incredibly brilliant? Talk about the wisdom of nature! And it only gets better ... medical science is now beginning to discover that Estrone (E1) the type of estrogen that is predominant during menopause is protective against cancer! Wow! Right!

So why would we want to mess with Mother Nature?

Additionally, Estrone (E1) is made by our adipose tissue ... our FAT! So it is actually incredibly important that a woman gains around 10 pounds during the ‘life change.’ This will enable her body to maintain excellent health. This is also why it is so important to stay fit and lean during the years leading up to menopause, so that when it arrives, that extra 10 pounds will still place you within a healthy reference weight and not push you over into obesity. Researchers have found that there is a goldilocks zone when it comes to body fat, too little is just as deleterious to the health as too much.

Many of my clients experience frustration during peri-menopause when they gain about 5-10 pounds that they can’t seem to lose, no matter how much they exercise or diet. Now you understand that there is a very good reason for this: our brilliantly designed bodies are naturally protecting us against cancer!
If you want to experience a pleasant transition into menopause, the first step is to accept the fact that you must learn to reduce stress in your life. Optimum hormone levels are essential to optimal health. And optimum hormone levels hinge on proper functioning adrenal glands.

The adrenals are tiny hormone producing glands that sit atop of the kidneys. Their primary responsibility is to release hormones in response to stress, regulate mineral balance and produce sex hormones.

The adrenals synthesize anti-inflammatory cortisol, epinephrine (adrenaline), norepinephrine (noradrenaline) and androgens. Androgens are the precursors of all estrogens. The primary androgen is testosterone.

The interesting thing about the adrenals is that they respond to all different types of stress in the same way ... it doesn’t matter if you are being chased by a man eating tiger, or if you eat too much sugar, or if you work too many hours and get too little sleep, or if you tend to worry about world events ... it doesn’t matter ... your adrenals respond to all stressors in the same way: by releasing adrenaline, noradrenaline and cortisol.

When a person leads a stressful life, they expose their system to long-term chronic stress.

Our bodies did not evolve to deal with long-term chronic stress. Primitive emergencies were short in duration, followed by a time of recuperation.

Exposure to chronic stress results in a chronic output of cortisol. The primary functions of cortisol are to suppress the immune system, prevent the release of substances in the body that cause inflammation, aid in fat, protein and carbohydrate metabolism, and increase blood sugar.

A Little Extra About The Four Main Estrogens

 Estrone (E1) is secreted by the ovaries and adipose tissue. It is the predominant estrogen in postmenopausal women. It is synthesized from a derivative of progesterone. “An expanding body of evidence indicates the possible role of estrone derivatives as useful anticancer agents.” [PMID: 23127813 [PubMed - indexed for MEDLINE]

 Estradiol (E2) is produced within the follicles of ovaries but also in fat, liver, adrenal, breast and neural tissue. It is synthesized from progesterone. It acts as a growth hormone for reproductive tissue and is responsible for the development of secondary sex characteristics in women initiated at puberty. The strongest, most potent of the estrogens (approximately 80 times stronger than Estriol) Estradiol activates certain oncogenes and supports breast and endometrial cancer. “The natural hormone 17 beta-estradiol (E2) induces tumors in various organs of rats, mice, and hamsters. In humans, slightly elevated circulating estrogen levels caused either by increased endogenous hormone production or by therapeutic doses of estrogen medications increase breast or uterine cancer risk.” [PMID: 10696569 PubMed - indexed for MEDLINE]

 Estril (E3) is produced by the placenta during pregnancy. It is the most plentiful of the 3 main estrogens, and it is also the weakest.

 Estertrol (E4) is produced exclusively during pregnancy by the fetal liver and the role it plays in embryonic physiology or pregnancy is currently not known.

Continued...
When cortisol levels are too high over long periods of time cognitive performance is impaired, thyroid function is suppressed, blood sugars rise, bone density decreases, muscle tissues atrophy, blood pressure raises, immunity is suppressed, inflammation is raised and abdominal fat is increased leading to increased risk of heart attack, stroke and type II diabetes.

When cortisol stores are depleted the body switches to the next best tools: epinephrine (adrenaline) and norepinephrine (noradrenaline). When adrenalinines are used to do a job that cortisol should be doing, the result is a ‘panic attack.’

Our ancestors survived and thrived because their bodies evolved to prioritize the fight or flight response. The result for us today is that our bodies continue to prioritize the stress response over sex hormone production. And since our stressors are chronic, and not short lived like primitive mans, modern man is prone to depletions in the sex hormones.

The body will cannibalize the precursors of the sex hormones in order to maintain adequate stores of life preserving cortisol, adrenaline and noradrenaline. Therefore when a person has a hormonal imbalance, supplementing with pregnenolone, progesterone or DHEA (the precursors for stress and sex hormones) will fuel the stress response, further increasing cortisol production and inflaming the sex hormone imbalance in a self-perpetuating cycle of increasing dysfunction.

Normal blood glucose levels are a delicate balancing act between two hormones produced by the pancreas: insulin and glucagon. Insulin drives nutrients into cells for storage, while glucagon mobilizes cellular energy stores.

Insulin lowers blood glucose levels by causing the liver to convert blood sugar (glucose) into stored sugar (glycogen) and glucagon raises blood sugar levels by causing the liver to convert glycogen into blood glucose.

The ideal range for blood glucose is 89.9 mg/dL. When you eat, blood glucose elevates and insulin is released, ideally never letting blood glucose to peak above 100 mg/dL. Between meals blood glucose decreases causing glucagon to be released and ideally keeping blood sugar from falling below 80 mg/dL.

Trouble occurs when you eat too many carbohydrates or sugars for your metabolism. This causes the body to release insulin to lower blood glucose levels, AND at the same time high insulin levels cause the body to release the stress hormones cortisol, adrenaline and noradrenaline that increase glucagon and tell the liver to convert glycogen to glucose.

So the liver gets two diametrically opposed signals simultaneously, one to store sugar and one to make sugar available. This puts a great deal of strain on the liver, contributing to liver congestion and dysfunction, which in turn contribute to hormonal imbalances.

Additionally, as we know from studying the adrenals, excess cortisol production caused by high insulin levels leads to the “pregnenolone steal” (when the body cannibalizes the precursors used to make sex hormones and diverts them into the production of stress hormones).

As you can see, adrenal imbalances and blood sugar imbalances are closely linked. When one goes out of balance, it causes imbalance in the other in a self-perpetuating cycle of dysfunction.

“Another critical component in natural hormone optimization is maintaining insulin levels within ideal ranges.”

Mike Mahler, strength trainer
WHY ISN’T SYNTHETIC OR BIO-IDENTICAL HORMONE THERAPY WORKING FOR ME?

As we have learned, adrenal function and blood sugar handling mechanisms must be working properly for hormone balance to occur. Any attempt to normalize hormonal imbalances by using synthetic or bio-identical hormone therapy is futile if the adrenal issues are not addressed and blood sugar is not balanced.

The liver is responsible for deactivating hormones that are in excess or are no longer functional. These hormones have to be broken down, conjugated and removed from the body. Elevated cortisol levels (caused by stress or blood sugar imbalance) decrease the effectiveness of the liver pathways that perform conjugation, resulting in liver congestion.

Additionally, there is a phenomenal range in the way each individual’s liver functions in order to perform detoxification. The diversity is truly astounding, and we are only now starting to decode some of the reasons for this impressive variety. What we are beginning to learn is that the MAJORITY of people have genetic polymorphisms that effects methylation. This is known as a MTHFR genetic mutation. Methylation is required for many processes in the body, from turning DNA on and off to conjugating hormones during Phase II detoxification in the liver.

If a woman has inadequate detoxification processes in the liver due to blood sugar imbalance, adrenal fatigue, genetic polymorphisms or simply due to the typical toxic modern environment then taking exogenous hormone only adds fuel to the fire, exacerbating liver congestion and contributing to hormone receptor site resistance. When receptor site resistance occurs, a person will experience symptoms of hormone deficiency in the presence of excess. This is when a physician might begin increasing your dosage of hormone in a futile attempt to assuage the escalating symptoms.

Whenever possible it is wise to provide an environment in which the natural wisdom of your body can assert its acumen and achieve the hormonal balance that is right for you. There is no way that any other method or approach can approximate the hormonal balance that is right for you. Only your body can do this correctly. Remember, your hormonal balance is unique to you AND it changes on a daily basis, throughout your entire existence. Your body needs the flexibility to be adaptable and create the correct hormonal fluctuations that will keep your body health and strong for a lifetime. Medical science does NOT have this knowledge or finesse at this time.

One of my nutritional therapy teachers explained hormone therapy to me in this way. She said, imagine a coal train of 100 cars. Imagine each car is filled with sand. Our bodies use hormones on the scale of one grain of sand at a time. Low dose HRT and B-HRT is like getting hit with multiple cars of sand, high dose HRT and B-HRT is like getting hit with an entire train load of sand when your body needs only one grain at a time. It is truly impossible and fool hardy to attempt to mimic or improve upon nature when we do not have the appropriate tools or knowledge.
As my Botanical Medicine teacher states “menopause is a time of quiet power and mature strength;” but the transition into this
venerated phase of life can be quite turbulent and uncomfortable for many women. The cause of the discomfort is most often related to our tendencies to overwork, put others before us and get caught up in the modern dietary and lifestyle factors that contribute to Adrenal Fatigue. Fortunately there is a long history of herbal use to make our evolution into the fullness of our mature strength as comfortable and enjoyable as possible.

And, the wonderful thing about herbs is that a trained herbalist can specifically formulate a remedy to suit your exact needs. They are extremely affordable and easy to modify as your body progresses through the transition.

**Hot Flashes**

Hot flashes or flushing occurs in an estimated 75% of women during peri-menopause and menopause. Even though it is a very common experience there is little similarity in hot flash timing or duration from woman to woman. Some women have hot flashes that can last for 30 minutes or more, for others the flash will last for only a few seconds. Some women have hot flashes with regularity, like clockwork, for others they are completely unpredictable. Interestingly the mechanisms that trigger hot flashes are still not readily understood by medical science. There are several hypotheses ranging from vasomotor instability to pituitary hyperfunction to blood vessel and nerve irritation. Regardless of the cause, there are herbs that have been used for centuries to bring reliable relief. Black Cohosh Root (*Cimicifuga racemosa*) is the herb that has the best track record in alleviating hot flashes in the majority of women. Ginseng Root (*Panax ginseng*) also normalizes the body’s ability to respond to hot and cold and is very helpful when taken daily.
Bloating
Bloating is related to water retention in the abdomen. According to naturopathic medicine, water retention happens when the digestive system is weak and cannot ‘move the water’ to the kidneys and bladder to be excreted. Gentle herbal diuretics such as dandelion and burdock, and digestive warming and stimulating herbs such as ginger, centaury and wormwood can help remedy this problem.

Studies have shown that Evening Primrose Oil (*Oenothera biennis*), when taken consistently for at least two-three months (500mg 2-4 times daily), has been shown to decrease bloating, as well as helping to alleviate depression and irritability associated with PMS, peri-menopause and menopause.

Depression
About a week before menstruation, estrogen and serotonin levels fall drastically. This contributes to depression, insomnia, and other mood changes. St. John’s Wort (*Hypericum perforatum*), when taken long-term, functions as an antidepressant preserve serotonin levels in the brain, without the adverse side effects often associated with pharmaceutical drugs.

Hormone Regulation
Vitex Berries (*Vitex agnus castus*) and Black Cohosh Root (*Cimicifuga racemosa*) have both been scientifically proven as useful for assisting the body to maintain proper hormone levels and function by acting directly on the hypothalamus and pituitary glands to effect a balance of estrogen and progesterone in the body.

Vital Energy
Vital Energy Herbs contribute to a slow, steady surge of energy by aid in the assimilation of nutrients and processing of food into energy. Probably the most well know are Ginseng Root (*Panax ginseng*) and Ginger Root (*Zingiber officinalis*). The combination of Ginseng and Ginger is extremely effective for women who feel cold and fatigued experience digestive symptoms of any kind.
No published scientific proof of hormonal activity, but history of use suggests these effects:

<table>
<thead>
<tr>
<th>HERB</th>
<th>FUNCTION</th>
</tr>
</thead>
<tbody>
<tr>
<td>Wild Yam</td>
<td>helps reduce cramps (antispasmodic) (biliary colic, spasmodic asthma, hiccup; dysmenorrhea to relieve cramps; although advertised by some manufacturers for its progesterone-like properties, this effect has not been proven; “natural progesterone” creams can contain up to 0.5% synthetic progesterone, which need not be mentioned on the label</td>
</tr>
<tr>
<td>Dang Qui</td>
<td>nourishes the blood, tonifies female organs (but is not hormonal, meaning it does not contain phytoestrogens)</td>
</tr>
<tr>
<td>Cramp Bark</td>
<td>helps relieve uterine and intestinal cramps</td>
</tr>
<tr>
<td>Sarsaparilla</td>
<td>Considered a blood purifier by western herbalists; studies show that its use can increase excretion of nitrogenous waste products from the urine. Contains diosgenin, which has no proven hormonal effects in humans</td>
</tr>
<tr>
<td>Blue Cohosh rz.</td>
<td>a nourishing, mildly stimulant uterine tonic; relieves pain</td>
</tr>
<tr>
<td>Dandelion rt.</td>
<td>promotes milk flow, clears the liver</td>
</tr>
<tr>
<td>Partridge Berry hb.</td>
<td>traditionally used to stimulate uterine contractions and help induce labor</td>
</tr>
<tr>
<td>False Unicorn rt.</td>
<td>contains phytosterols and is used as a uterine and menstrual-regulating herb</td>
</tr>
<tr>
<td>Beth rt.</td>
<td>contains phytosterols and is used as a uterine-regulating and parturition herb</td>
</tr>
<tr>
<td>Red Raspberry lf.</td>
<td>taken during pregnancy to gently increase tone of uterus and facilitate birthing</td>
</tr>
<tr>
<td>Fennel sd.</td>
<td>traditionally used to stimulate mother’s milk (galactagogue), some evidence of estrogenic effect</td>
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</tbody>
</table>

Published scientific proof of hormonal activity in humans, and history of use suggests these effects:

<table>
<thead>
<tr>
<th>HERB</th>
<th>FUNCTION</th>
</tr>
</thead>
<tbody>
<tr>
<td>Saw Palmetto fr.</td>
<td>nourishes the female organs, relieves inflammation</td>
</tr>
<tr>
<td>Black Cohosh rz.</td>
<td>warms and stimulates the uterus, relieves pain; relieves hot flashes, regulates estrogen</td>
</tr>
<tr>
<td>Vitex fr.</td>
<td>regulates synthesis of sex hormones; helps relieve hormone-related symptoms</td>
</tr>
<tr>
<td>Ginseng rt.</td>
<td>red Chinese and Korean ginseng are used traditionally to support sexual hormone production in men and women over 40 or 50; hormone-like effect noted in animal studies, questionable in humans</td>
</tr>
<tr>
<td>Hibiscus fl.</td>
<td>traditional use as a birth-control herb suggests hormone-like activity; estrogenic effect in animal studies</td>
</tr>
</tbody>
</table>

Hormonal activity in animals, history of use does not suggest hormonal effect:

<table>
<thead>
<tr>
<th>HERB</th>
<th>FUNCTION</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hops</td>
<td>estrogenic effect in animals; possible hormonal effects noted in humans</td>
</tr>
</tbody>
</table>