

# **A Look Into Hormonal Dysfunction**

Dr. Alex Jimenez D.C.

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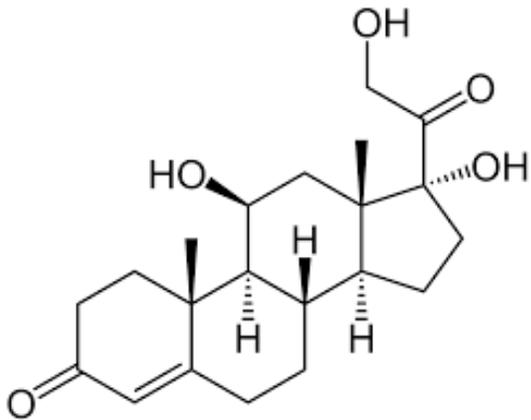
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# An Overview Of Hormonal Expression

Dr. Alex Jimenez, D.C., presents an overview of hormonal dysfunction can affect the various hormones in the body that can increase cortisol levels in this 3-part series. This presentation provides valuable information to many individuals dealing with hormonal dysfunction and how to know the signs and utilize holistic approaches toward their health wellness. Part 1 will look at the overview of hormonal dysfunction. Part 3 will look at various holistic treatments that are available for hormonal dysfunction. We refer patients to certified providers incorporating various hormone therapies to ensure optimal health. We encourage and appreciate each patient by referring them to associated medical providers based on their diagnosis when it is appropriate. We understand that education is an excellent way when asking our providers intricate questions at the patient's request and understanding. Dr. Alex Jimenez, D.C., only utilizes this information as an educational service. [Disclaimer](#)

Dr. Alex Jimenez, D.C., presents: So the classic teaching about hormones is that they're produced in an endocrine gland and then transported to the cells where the body will utilize them. But things are a little bit more complex. So every cell contains the genes necessary for hormone expression and functionality in the body.

And we know this because when de-differentiated from the late stage, unfortunately, cancer cells uncover gene expression. Those cells make hormones in inappropriate locations and at inconvenient times. So that means that any cell can make any hormones in the body. Still, the hormonal expression of certain genes indicates the presence of certain enzymes, which determines what hormones will reproduce.



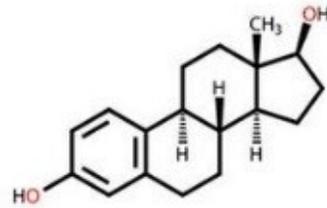
So, for example, you need to have the right precursors and enzymes. So in a reproductive female, the granulosa cells, the luteinize, and the corpus luteum are produced in the body. The granulosa cells are follicles, while the corpus odium is after ovulation. And these cells start the formation of the steroid hormones in response to FSH and LH.

So FSH and LH come from the pituitary glands and stimulate the granulosa cells to start making estrogen. Steroid production will begin if the messaging from FSH and LH gets to the part of the cell that makes estrogen.

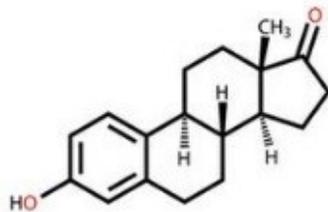
This allows the body to regulate hormonal production and keep it functional. When issues disrupt hormonal regulation, the body can over or underproduce hormonal production, leading to metabolic issues associated with muscle and joint pain.

So this is a complex process, and there are many areas where this can go wrong. So you can have the right amounts of the hormone, but you're not getting hormone production. So the messages must get into the cell first, and FSH and LH are too large to get into the cellular structure. So, they have to activate a membrane-based enzyme called adenylate cyclase to produce cyclic AMP to enter the cellular network and start hormonal formation in the body.

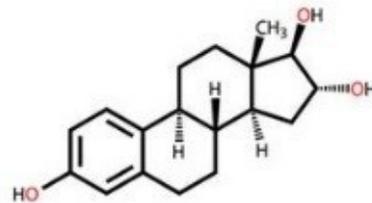
## ESTROGENS



Estradiol



Estrone



Estriol

This is the P, or the production of hormones. So by thinking about cellular membrane health, if a doctor does an essential fatty acid analysis, the patients may be very low in omega-3s; therefore, their cell membranes are more rigid and affect the body's hormonal process. When patients are not taking their omega-3s, it could cause the inflammatory cytokines to cause more joint pain issues when various factors affect the body internally. Since inflammation can be good or bad in the body, it can cause hormonal dysfunction when they attack healthy cellular structures. That will affect this hormonal production process.

# Hormonal Production Process In The Body

Dr. Alex Jimenez, D.C., presents: Once made, estradiol goes directly into the blood and is not stored, but it's bound to SHBG and albumin. And SHBG is changed by obesity and insulin associated with hypothyroidism. So when women are obese or hyperinsulinemic will have less SHBG or hypothyroidism to transport the estrogen to the cells. This tells the body that the hormones are no longer FSH or LH and cyclic AMP, but this is estrogen. And so, estradiol is sensitive since estradiol has to go in and have a cytoplasmic receptor. So the estrogen receptor is in the cytoplasm. After it binds to the receptor, it goes into the nucleus, and it's transcribed and then goes back out and translated to allow the body to make proteins that cause cell proliferation. Estrogen is a proliferative hormone. And once it's acted on the cell after proliferation, it's degraded in the cell with heat shock proteins or released back into the circulation in the body's system.

Let's talk about some of the basics of biochemistry because the steroidogenic pathway in the body has different ways to reduce carbons in the body. The body's system could convert it into estrone or estriol, with less estrogen in circulation. And then estradiol, estrone, estriol, everything is eliminated through the detoxification pathways. So in the Living Matrix, healthy detoxification and estrogen metabolism pathways help the body stay functional. When the body goes through detoxification, it helps reduce the issues by figuring out what is causing the problems affecting the body's system and slowing introducing or taking away the pain that can allow normal hormonal regulation. When the body reduces excessive carbon, it can lower cholesterol from reaching dangerous levels.

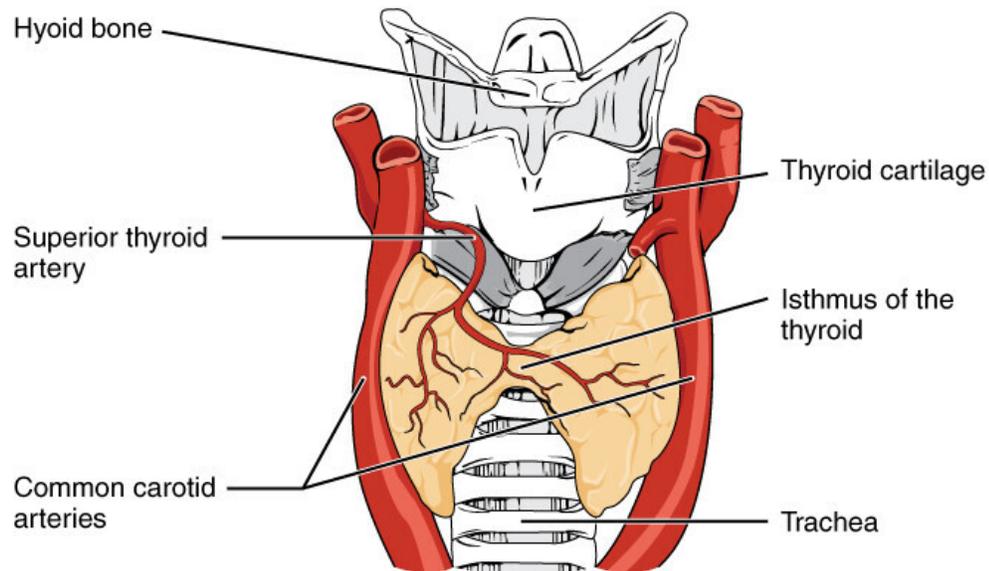
# Cholesterol & Hormones

Dr. Alex Jimenez, D.C., presents: So it all starts with cholesterol, and the body can't make enough cholesterol, so we consume food to allow it to enter the body and begin to biotransform into LDL (low-density lipoprotein) to initiate steroid hormone synthesis. So we need LDL in the body to decrease the carbons since it is a union directional. When it comes to hormone deficiency cases, sometimes women can come in with extremely low LDLs because they're on statins, underweight, or over-athletic; these are connections and pattern recognition.

In a female's body, the ovaries on the left and right side of the female reproduction system produce all three sex steroids: estrogens, progesterones, and androgens, for optimal body function. They are different than the male's reproduction system, which includes the testicles, due to the other enzymes. They differ from the testes in many ways due to additional hormonal output in the body, which is different than adrenal hormones.

For example, if the body can't make aldosterone or cortisol in the endocrine glands, they will be shunted to make sex hormones. And since each body is diverse, male or female, some hormones can't make glucocorticoids or mineral corticoids.

So we must think about mitochondrial health for hormone production, which is critical for producing hormones. For expecting mothers, it allows the formation of pregnancy alone in the mitochondria. So mitochondrial health energy is related to hormone health, which causes cholesterol uptake by the mitochondria in the adrenal glands and ovaries that can stimulate ACTH. So the mitochondria can make hormones as we go while enabling the enzymes in the female's body to induce pregnenolone formation. However, getting the cholesterol to the inner membrane and LDL to the inner membrane to the mitochondria is the rate-limiting step in all steroid hormone synthesis. Now it can develop and go into two different pathways in the body. It can create DHEA, or it can include progesterone when cholesterol is forming pregnenolone and can look diagrammatically in test results.



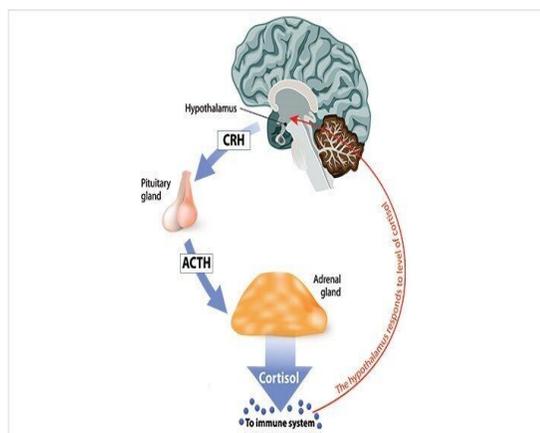
## DHEA & Hormones

Dr. Alex Jimenez, D.C., presents: So if the mitochondria can enable the body's pregnenolone to form DHEA or progesterone, let's start with going over things with developing progesterone since it's hydroxylated. It creates an enzyme called 17 hydroxy progesterone, the immediate precursor of the androgens and estrogens. So the 17 hydroxy progesterone will eventually form androgens or estrogens, and androstenedione can develop testosterone, and both can become estrogens by aromatization. So what does this mean? It means you must be concerned about too many androgens being around because they can become estrogen. The best way to remember this is that androstenedione can become estrone, and testosterone can become estradiol. This can cause progesterone to be the precursor to cortisol in the body and can go in two different directions.

So progesterone is also the precursor to aldosterone, which asks what will happen when the body needs cortisol or aldosterone. The body will then produce less progesterone causing it to be shunned in hormonal production and causing cortisol to overproduce. This is known as cortisol steal, and if it is not treated at the moment, it can cause muscle and joint inflammation in the body, leading to various issues that the person is dealing with.

A decreased formation of androgens and estrogens can inhibit the DHEA pathway. So when the body makes more cortisol, it can cause the hormones to develop an estrogen-dominant shape causing the cortisol hormone to stimulate aromatase. To that point, it can lead to breast cancer, fibroids, and endometriosis in the long term. Women can get stress, hot flashes, and decreased libido due to that hormonal decrease in their bodies.

Other issues like stress can cause increased cortisol formation, anxiety, inflammation, simple carbohydrates, et cetera to the body associated with joint and muscle pain. They can also inhibit sex and sex hormone production directly and indirectly. So this is where people have to be concerned if they're giving DHEA because DHEA can convert itself into sex hormones. So that can be a good thing if you're dealing with hormonal deficiency. But if you give too much DHEA, you can overproduce hormonal function.



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