



EX5

Human Hormone and its Functions

Human body contains more than one hundred different types of hormones, and they run in our bloodstream at the rate of thousands of billions on units a day. Hormones regulate your heartbeat and your breathing. Hormones make men men and women women. Hormones put you to sleep at night and they wake you up in the morning. They control your blood pressure, build up bone, maintain muscle tone and lubricate joints. Hormones govern growth; they make the body produce energy and heat. Hormones burn fat. Hormones govern the menstrual cycle and allow pregnancy (and birth) to occur. They fight stress, prevent fatigue, calm anxiety and relieve depression. Hormones make and keep memories. Hormones maintain the correct level of sugar in the blood and tissues. They resist allergic reactions and infections. They soothe pain. Hormones control your sex drive, virility and fertility. They stimulate your brain and your immune system.

Sometime during our 20's, our hormones begin a process of degeneration. This degeneration eventually produces the signs and symptoms of premature aging. Hormones are really quite complex, but if you understand that they are critical to growth of cells and system processes, then you can imagine their importance in the Age Management Treatment program.

During youth, hormones are key in our "growing up" process: we build strong bones, increase lean muscle, build strength and endurance and combat disease. Essentially, hormones help us mature to adulthood.

What exactly are these hormones? A few of our essential hormones:

Estrogen - Main sex hormone of the female body, in females, it causes puberty. Causes menstrual cycle, prepares uterus for fertilization

Progesterone - Not main, but similar to Estrogen. Helps maintain menstrual cycle

FSH - Causes menstrual cycle to START

LH - Midway through menstrual cycle, triggers ovulation and creates corpus luteum. In guys, it is responsible for production of testosterone

Insulin - Decreases Blood Sugar, created by Pancreas

Glycagon - Increases Blood Sugar

Testosterone - Makes guys grow male body parts, muscles

Thyroxin - Promotes Metabolism

Aldosterone - Regulates Kidney functions

Oxytocin - Triggers childbirth

Anti-diuretic Hormone - Regulates water retention

When the topic of hormones gets brought up with women, it can often be treated like a bad word. We have been conditioned to think that hormones are the "enemy" - affecting our functioning and well-being once every month of our lives from puberty to menopause. In reality, hormones are very important chemicals in our bodies that interact and control so many of our bodily functions. The more we, as women, understand how these hormones work within our bodies, the more we can maximize our well-being.

The actual definition of a hormone is a "chemical communicator or connector" that carries messages to and from all the organs in the body. This type of inter-organ communication helps the body to remain balanced and function optimally. A hormone acts like a key that fits into a specific lock or receptor site at each organ. For example, the thyroid secretes thyroxine and triiodothyronine; the adrenal glands secrete norepinephrine, epinephrine, cortisol, aldosterone and DHEA; while the pancreas is associated with glucagons and insulin.

The most important group of hormones for women is found in the ovaries, which secrete estrogen, progesterone and testosterone. It is the subtle changes in estrogen and progesterone that characterize a woman's monthly menstrual cycle and are associated with the experience of PMS. During the first half of the menstrual cycle there is an increase in estrogen, which is associated with a state of well-being characterized by optimal energy level, normal sleep, elevated mood, clarity of thinking, sharp memory and the ability to concentrate. Estrogen has often been described as one of the best natural anti-depressants.



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Actually, the female body produced three types of estrogen: Estrone (E1), which is made in the ovary, liver and fat tissue; 17-Beta Estradiol (E2), which is premenopausal estrogen made in the ovary and E3, which is produced by the placenta during pregnancy. One of the reasons that premenopausal women tend to gain an extra five to 10 pounds as they get closer to menopause is that the body is trying to produce and store the estrogen from fat cells in anticipation of less estrogen from the ovaries. Although this is not a good reason to go out and gain weight, it is justification for not getting overly worried about a few extra fat cells on our body as we march towards menopause!

It is the latter part of the menstrual cycle that is associated with physical and emotional disruption for 40% of women. Premenstrual Mood Syndrome (PMS) is associated with a disruption in the level of progesterone levels in the body. Because each sequential hormone is triggered by the level of the preceding hormone, any failure or defect in the system can set the stage for the development of PMS. When something in a woman's life (i.e. pregnancy, trauma or oral contraceptives) interferes with the pituitary-ovarian feedback loop, it causes the natural supply of progesterone to decrease.

Low progesterone causes a disruption in the fuel supply of glucose to the brain. The brain is the most fuel-demanding organ in the body. This decrease in "brain fuel" contributes to the most common psychological/emotional symptoms of PMS, i.e. irritability, rage, depression, tension, anxiety, confusion, fatigue, memory lapses and loss, inability to concentrate and decreased stress tolerance. It is clear that the hormones estrogen and progesterone have a strong effect on the serotonin, norepinephrine, dopamine and endorphine receptor sites, which are involved in mood regulation. Therefore, any subtle disruption of the balance of these hormones can contribute to these difficult psychological symptoms.

One of the suggestions of researchers in the area of PMS is to pay close attention to one's premenstrual diet, in addition to maintaining a regular exercise schedule and self-nurturing behaviors. In particular, it is important to maintain balanced blood sugar levels, which may require eating smaller, more frequent meals throughout the day that are high in fiber and protein and low in simple carbohydrates and sugars. One of the mistakes that many women make is to skip meals and eat junk food during this time of the month. This further complicates the blood sugar levels in the body, which contributes to the emotional symptoms outlined above.

By understanding the intricate connection between our behaviors and the hormones flowing in our bodies, we can better maximize our monthly experience and avoid being frustrated and irritable. Although we cannot affect the overall levels of hormones in our bodies, we can make sure that we are creating a healthy environment in which they can travel and communicate.