Unravelling the Mystery of Natural Hormones

Garrett Swetlikoff, ND

One of the greatest areas of confusion in complementary medicine today is the subject of natural hormones. Consumers, practitioners, educators, manufacturers and the media all contribute to misinformation and misunderstanding. This article will attempt to clarify this topic as well as explain the functions hormones play in our health.

What is a hormone?
Hormones are chemical messengers produced by a variety of glands and organs in the body. Hormones course throughout the bloodstream and enter cells and tissues where they turn on and off various functions. Most responsible for hormone control and production are the pituitary gland, hypothalamus, pineal gland, thyroid gland, adrenals, pancreas, ovaries and testes.

Steroid hormones
Some hormones are composed of large proteins and others of small fatty substances derived from cholesterol. One class derived from cholesterol belongs to a family of hormones termed steroids. The steroid family is broken down into six major categories as follows:

Cholesterol $\rightarrow$ pregnenolone $\rightarrow$ progestagens $\rightarrow$
androgens $\rightarrow$ estrogens $\rightarrow$ glucocorticoids $\rightarrow$
mineralocorticoids

Cholesterol is converted to the mother steroid hormone pregnenolone, which is further converted in the ovaries, testes and adrenals to other hormones as directed from protein-hormone signals from the brain.
What functions do hormones provide?

Pregnanolone is produced in the adrenal glands and also in the brain, liver, ovaries, testes and nerve myelin sheath. Other hormones such as DHEA, cortisol, progesterone, testosterone and estrogens are made from pregnanolone, which is also known to enhance mood, energy and memory.

**Estrogens** (estradiol, estrone, estriol) refer to not just one but a group of hormones. Estrogen is required for the female secondary sex characteristics and menstrual cycle. Estradiol is the most potent estrogen and is most stimulating to breast tissue; it is made mainly in the ovaries. Estrone is most prevalent after menopause and is produced by the adrenal glands and fat cells. Estriol is made during pregnancy and is thought to be the main circulating estrogen in young women; estriol is made from estrone and estradiol and is least stimulating to breast tissue.

Insufficient estrogen levels can lead to hot flushes, vaginal dryness, rapid skin aging, urinary problems and excessive bone loss. Excessive estrogens can cause fluid retention, weight gain, migraines and overstimulation of the breasts, ovaries and uterus, leading to cancer. An excess of estrogen, relative to testosterone, is also thought to play a role in the development of prostate problems, including cancer, in men.

**Progestagens** (progesterone) are hormones that prepare the lining of the uterus for implantation of an ovum and for the maintenance of pregnancy. Progesterone is produced in the ovary just prior to and after ovulation. It is also made in large quantities by the placenta during pregnancy and in small amounts by the adrenal glands.

Progesterone enhances estrogen activity while also moderating symptoms of estrogen excess such as water retention, fat accumulation, uterine bleeding and mood swings. It helps promote thyroid function and may also stimulate cells needed for bone building. As well, it appears that progesterone may be important in men for the maintenance of prostate health. Progestin is the term applied to synthetic derivatives of the natural hormone, progesterone.

**Androgens** (testosterone, DHEA, androstenedione) are responsible for the development of male secondary sex characteristics. In men, they are mainly produced by the testes and, in smaller amounts, by the adrenals. Women produce testosterone in both the ovaries and adrenal glands.

Androgens are involved in the maintenance of lean body mass, bone density, skin elasticity, sex drive and cardiovascular health in both sexes. Men make more of this group of hormones, accounting for their greater bone and muscle mass.

**DHEA** is the principal androgen in both men and women and levels decline with age. Once DHEA enters cells, it may be converted to testosterone and estrogens. DHEA supplementation can restore energy, improve immune function, lift depression and improve mental function.

The androgen **androstenedione** is a precursor for both estrogens and testosterone, especially in females. It can be produced in excess by the ovaries during menopause and can cause women to lose scalp hair and grow facial hair.

**Glucocorticoids** (cortisol, hydrocortisone) promote sugar, fat and protein metabolism. They are produced in the adrenal glands and play an essential role in immune function, fighting inflammation, defending against infection and responding to stressors such as emotional upheaval, exercise, surgery, illness and starvation. Cortisol levels are highest in the morning to combat the stress of overnight fasting and to prepare the body for the day's activities.

**Mineralocorticoids** (aldosterone) affect kidney function, which, in turn, controls blood pressure and blood volume. Mineralocorticoids are produced by the adrenal glands.
What are natural hormones?

“Natural hormones” are generally defined as those hormone medications that are biochemically and molecularly identical to the human hormone form and have been derived from plant sources. The two plants utilized in this process are soy beans and Mexican wild yam. Plant-derived, biochemically identical hormones can be made from either plant. With soy beans, beta-sitosterol is extracted and then, with various laboratory enzymatic reactions, a hormone is made. With Mexican wild yam, diosgenin is extracted and, in the manufacturing laboratory, the same hormone can be made.

What is the difference between a natural hormone and conventional hormone replacement such as conjugated equine estrogens (Premarin) or synthetic hormones such as medroxy progesterone acetate (Provera)? Natural hormones are biochemically identical to ours and match the hormone molecules produced by our own glands. Synthetic hormones or hormones from the urine of pregnant mares are not the same as our hormone molecules. They don’t match and are not natural to what our body is familiar with. The arguable contention is that this difference contributes to some of the short-term and long-term problems of conventional hormone replacement therapy (HRT). The assertion further goes that women may metabolize these foreign hormones differently, taxing their metabolic functions, producing more harmful metabolites and causing interactions with their own physiology. Foreign hormones may be excreted more slowly, and by lingering in the body longer, they may have an opportunity to affect the body in a negative way. In clinical practice, women by and large tolerate natural hormones better than synthetic counterparts.

Progesterone creams

One commonly used natural hormone medicine is topical progesterone cream. Here is another maze of confusion. There are basically two categories of creams on the market—those that contain only wild yam and no progesterone and those that contain actual progesterone converted from diosgenin. Unfortunately, manufacturers are not always clear about which category their cream falls into nor about the strength of their cream, if indeed it does contain progesterone. Absorption of progesterone via the skin is variable from person to person and further study is required to understand its reliable use. Oral micronized natural progesterone is able to deliver suitable pharmacological levels, but is available only by a licensed physician.

There are three dominant estrogens in the body: estriol, estradiol and estrone. Through compounding pharmacies (pharmacies that custom-make drug preparations), wholistic doctors can prescribe a combination of these estrogens to produce what is referred to as a “friendlier” hormone. The theory is that these custom preparations are safer, purer and
Closer to the natural form used and produced by the body. A current practice is to compose a tri-estrogen compound of 80 per cent estriol, 10 per cent estradiol and 10 per cent estrone. This is based on a laboratory determination made by Jonathon Wright, MD, who has claimed that this is the normal physiologic proportion. There is some question as to the basis of this formulation and further study is required to determine the accuracy of these percentages.

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As to supplementation with testosterone and DHEA, more and more doctors are realizing their importance in both men's and women's health. Improvements in sex drive, bone health, sense of well-being and menopausal signs and symptoms have been documented.

Safety of natural hormones
Theoretically, natural hormones should be safer than synthetic counterparts. Many practitioners strongly believe this, and some will vouch for this through both clinical and statistical data. Many deem that cancer risk is much reduced with these types of medications versus conventional choices. However, there are conflicting results from a variety of sources that ascertain an opposite point of view. My current position is that if you don't need to take hormones, don't. If other lifestyle, nutritional or herbal alternatives work for you (visit alive.com for more info), then use them. If these alternatives are not satisfactory, than certainly natural hormones make sense.

Natural hormones deserve more attention and research. Women and men want them, and they offer a potentially safer alternative to HRT with the added advantage of many more options for individualized dosing and formulations to meet the unique needs of each person.

Dr. Garrett Swettlikoff is a naturopathic physician who lives and practises in Kelowna, BC. He is currently BC Naturopathic Association president and is strongly involved in government affairs to retain the right for naturopathic physicians to continue their ability to prescribe natural hormones. He can be reached at 250-868-2205 or at knc@shawlink.ca. For more information, visit alive.com.