



What are Bio-Identical Hormones?

Bio-identical hormones have the same chemical structure as hormones that are made by the human body. The key to natural or bio-identical versus synthetic is the molecular structure of the hormone. In order for a replacement hormone to fully replicate the function of hormones which were originally naturally produced and present in the human body, the chemical structure must exactly match the original.

Researchers have long held that there are significant differences between hormones that are natural to humans (bio-identical) and synthetic (including animal-derived) preparations. Structural differences that exist between synthetic or animal and human hormones may be responsible for side effects that are experienced when non-bio-identical hormones are used for replacement therapy.

Side chains may be added to a natural substance to create a synthetic product that can be patented by a manufacturer. A patented drug can be profitable to mass produce, and therefore a drug company can afford to fund research as to the medication's use and effectiveness. However, bio-identical substances can not be patented, so scientific studies are less numerous on these natural hormones.

Goals of Bio-Identical HRT

- Alleviate the symptoms caused by the natural decrease in production of hormones by the body
- Give the protective benefits which were originally provided by naturally occurring hormones
- Re-establish a hormonal balance

The goal of any form of hormone replacement therapy should be to provide an adequate supply of the deficient hormone in a form that is as close as possible to that which the body originally produced, therefore resulting in normal physiologic effects. Every person is unique. Therefore, it is a sensible approach for health care professionals and patients to work together to customize hormone replacement therapy. Bio-identical HRT can be compounded in the needed strength and dosage form and administered via the most appropriate route to meet each individual's needs.

The precise components of each person's therapy need to be determined after physical examination, medical history, symptoms, and laboratory testing are considered. Close monitoring is essential to ensure that appropriate dosage adjustments are made.

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Bio-Identical HRT for women

Estrogens

- are a group of related hormones, each with a unique profile of activity. The three principle estrogens in human females are Estriol (E3), Estradiol (E2) and Estrone (E1).
- are often prescribed in combination to re-establish a normal physiologic balance. The use of one or more of these hormones is referred to as Estrogen Replacement Therapy (ERT).

Bio-identical estrogens have been shown to be clinically effective

- for the treatment of menopausal symptoms.
- for the treatment of postmenopausal problems including vaginal atrophy, dryness, or infections, painful intercourse, and various conditions of the urinary tract.
- in decreasing the risk of osteoporosis and colorectal cancer.

Despite studies reporting the risks associated with synthetic hormones, conjugated equine estrogens remain the most frequently prescribed form of ERT. Published clinical trials have reported that the risk of breast cancer is increased by long-term use of conjugated equine estrogens^{1,2}, and further increases when the synthetic progestin medroxyprogesterone acetate is added to the regimen.^{3,4}

Progesterone

- is commonly prescribed for perimenopausal women to counteract "estrogen dominance."
- minimizes the risk of endometrial cancer in women who are receiving estrogen.
- is preferred by women who had previously taken synthetic progestins, according to a Mayo Clinic study.
- may enhance the beneficial effect of estrogen on lipid and cholesterol profiles⁵ and exercise-induced myocardial ischemia (reduced oxygen supply to the heart muscle) in postmenopausal women (in contrast to medroxyprogesterone acetate).^{6, 7, 8}
- therapy may minimize the side effects associated with synthetic progestins.

Androgens

Testosterone and dehydroepiandrosterone (DHEA) may be added to a woman's HRT to alleviate recalcitrant menopausal symptoms and further protect against osteoporosis, loss of immune function, obesity, and diabetes. A decline in serum testosterone is associated with hysterectomy, and there are age-related gender-independent declines in DHEA and DHEA-sulfate. Additionally, ERT may cause relative ovarian and adrenal androgen deficiency, creating a rationale for concurrent physiologic androgen replacement.⁹

Andropause and Testosterone Replacement for men

Men frequently experience declines in testosterone levels that correlate with the hormonal changes that women experience at menopause; however, men typically have a slower and more subtle hormonal decline, and develop symptoms over a period of time. When hormones are replaced or restored back to physiologic levels considered normal for younger males, men may experience a dramatic reversal of many of these changes.¹⁰

Goals of Testosterone Replacement Therapy in Men

- improvement in psychological well-being and mood
- improvement in erectile dysfunction and libido
- increased muscle mass, strength, and stature
- preservation of bone mass
- and possibly a decrease in cardiovascular risk

Natural testosterone must not be confused with synthetic derivatives or "anabolic steroids," which when used by athletes and body builders have caused disastrous effects, even resulting in heart problems and cancer.

Andropause therapy may also include dehydroepiandrosterone (DHEA), human chorionic gonadotropin (HCG), anastrozole, chrysin, zinc, selenium, and other supplements.

Thyroid Hormone Therapy for women and men

Thyroid Hormone helps the body convert food into energy and heat, regulates body temperature, and impacts many other hormonal systems in the body. More than half of all people affected by thyroid disease are unaware of their condition, and may have many symptoms but not be diagnosed for years. Symptoms of hypothyroidism may include fatigue, cold and heat intolerance, hypotension, fluid retention, dry skin and/or hair, constipation, headaches and/or migraines, low sexual desire, infertility, irregular menstrual periods, aching muscles and joints, depression, anxiety, low self esteem, slowed metabolism and decreased heart rate, memory and concentration impairment, enlarged tongue, deep voice, swollen neck, PMS, weight gain, and hypoglycemia. Hypothyroidism is a leading cause of high cholesterol and triglycerides, and severe hypothyroidism can cause symptoms similar to Alzheimer's disease.

Thyroid Hormone exists in two major forms:

- Thyroxine (T4), an inactive form that is produced by the thyroid gland and converted to T3 in other areas of the body.
- Triiodothyronine (T3), the active form.

Although both T4 and T3 are secreted by the normal thyroid gland, most patients are treated only with levothyroxine (synthetic T4). Some hypothyroid patients remain symptomatic, and a combination of levothyroxine and T3 may be required for optimal thyroid replacement therapy. However, the only commercially available form of T3 for replacement therapy is synthetic liothyronine sodium. Liothyronine is an immediate release formulation which is rapidly absorbed, and may result in higher than normal T3 concentrations throughout the body causing serious side effects, including heart palpitations. Research indicates there is a need for sustained-release T3 preparations in order to avoid adverse effects.

A randomized, double-blind, crossover study compared the effects of thyroid hormone replacement with T4 alone versus the use of T4 plus T3 in patients with hypothyroidism. Two-thirds of patients preferred T4 plus T3, and tended to be less depressed than after treatment with T4 alone. This study concluded that including T3 in thyroid hormone replacement improved cognitive performance, mood, physical status, and neuropsychological function in hypothyroid patients.^{11, 12}

Patients and their physicians may wish to consider the inclusion of sustained-release T3 in the treatment of hypothyroidism, particularly when the response to levothyroxine (T4) has not been complete.

The roles of thyroid hormone and cortisol and consideration of their impact on multiple body systems is emerging as a critical component of

balanced hormone replacement for men and women.

For more Information

about patient-specific bio-identical hormone replacement therapy, please contact our office for a consultation with an anti-aging physician.

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