



sample type: **SERUM**

Using a single **serum** sample, **Hormonal Health** provides a focused overview of sex steroid hormones and their inter-relationships in both pre- and post-menopausal women, helping to better assess the impact of hormonal imbalances on each woman's health.

**• 3 versions of the profile:**

- Pre-menopause Luteal
- Post-menopause
- Menopause & HRT (*This version uses pre-menopausal follicular reference ranges. Non-bio-identical hormones will not be reflected in the report*)

**• Analytes:**

- Estrone
- Estrone Sulfate
- Estradiol
- Estriol
- Progesterone
- DHEA-S
- Sex-Hormone Binding Globulin, Testosterone
- Free Androgen Index
- 2-Hydroxyestrone
- 16alpha-Hydroxyestrone
- 2:16alpha-Hydroxyestrone Ratio

**• Optional Add-On Analytes:**

- FSH (Follicle Stimulating Hormone)
- LH (Luteinizing Hormone)
- Androstenedione
- Prolactin

**• Specimen Requirement:**

- 8 ml serum in SST (shipped frozen)
- Pre-menopause Luteal: Specimen collected Mon-Thurs, Days 19-25 of menstrual cycle
- Post-menopause: Specimen collected on any day
- Menopause & HRT: Specimen collected 8-10 hrs after last dose of oral or transdermal HRT, and 13 hrs after application of a patch. Collection during estrogen phase if cyclic HRT regimen; otherwise any-time

**• Before Patient Takes this Test:**

- Inform practitioner of all medications and supplements
- See instructions inside test kit for details

Sex steroids affect a wide array of functions in the body. All of these hormones are inter-dependent rather than functioning in isolation; hence a comprehensive evaluation is crucial toward an understanding of hormonal imbalance. Furthermore, hormonal imbalances are not always clinically apparent, yet may be associated with a variety of clinically significant disorders.

**Reproductive Conditions:**

- Amenorrhea
- Menstrual irregularities
- Ovarian cysts
- Uterine fibroids
- Endometrial Cancer
- Polycystic Ovarian Syndrome
- Fibrocystic Breast Disease
- Galactorrhea
- Infertility / Miscarriage
- Symptoms of Peri- or Post-menopause
- Sexual dysfunction
- Vaginal Dryness/Dyspareunia
- Incontinence

**Associated**

**Systemic Conditions:**

- Osteoporosis
- Cardiovascular Disease
- Breast Cancer
- Autoimmune Disease
- Hypo- or Hyperthyroidism
- Insulin Resistance
- Chronic stress

**Estrogens (Estrone, Estrone Sulfate, Estradiol, Estriol):**

- Secreted from the ovaries pre-menopausally; aromatized from adrenal androgens post-menopausally.
- Deficient estrogens augment bone resorption, collagen breakdown, dyslipidemia, & menopausal Sx.
- Excessive estrogen affects PMS, ovarian cysts, fibroids, menstrual irregularities, and breast cancer.

**Progesterone:**

- Counters effects of estrogen on the endometrium and serves as precursor to other steroid hormones.
- Low levels pre-menopausally associated with anovulation, infertility, or 'estrogen-excess' conditions; post-menopausally may indicate adrenal fatigue and risk of endometrial hyperplasia.

**Binding Proteins (Sex-hormone binding globulin):**

- SHBG binds steroid hormones, regulating the amount of bioavailable (unbound) hormone in the body.
- SHBG is up- and downregulated by various factors, including testosterone and estrogen.

**Androgens (DHEA-Sulfate, Testosterone, Free Androgen Index):**

- DHEA-S serves as precursor to other androgens that may also be converted to estrogens.
- Maintains immune function, libido, lean body mass, insulin sensitivity, and the stress response.
- Testosterone protects against osteoporosis and helps maintains libido and lean muscle mass.
- Free Androgen Index (calculated using SHBG) represents the amount of bioavailable testosterone.

**Estrogen Metabolism (2-Hydroxyestrone, 16a-Hydroxyestrone, 2:16a-Hydroxyestrone Ratio):**

- 2-OHE1 is a weak metabolite of estrone; 16a-OHE1 is a potent estrogen metabolized to estriol.
- The 2:16a-OHE1 Ratio serves as a gauge of net estrogen activity in the body.
- A low 2:16 ratio correlates with breast cancer risk, a high ratio with risk of osteoporosis.

**Optional Add-On Markers (FSH, LH, Androstenedione, Prolactin):**

- Low levels of FSH and LH are associated with hypogonadism; in peri-menopause, elevated FSH and LH serve as a gauge of declining ovarian function.
- Androstenedione serves as precursor for testosterone and estrone.
- Prolactin has been implicated in hyperandrogenism, visceral fat accumulation, breast cancer risk, and autoimmunity, including celiac disease.

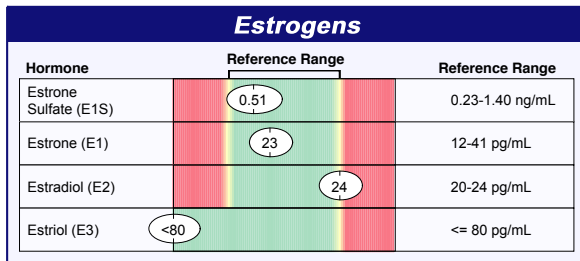
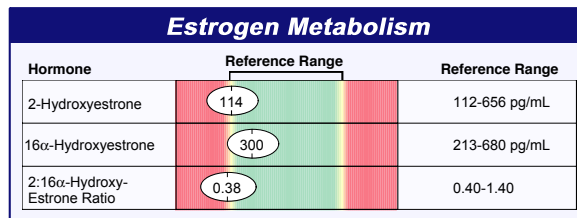
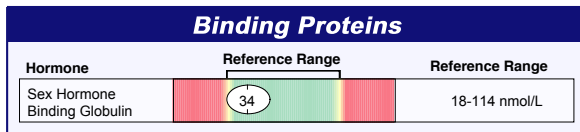
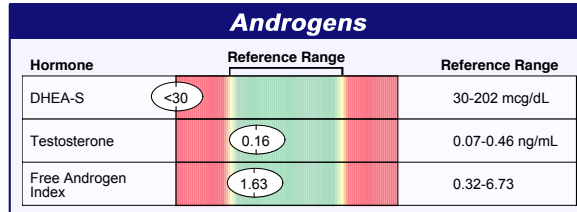
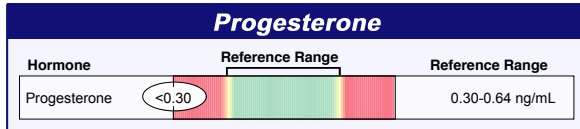
# Hormonal Health

Menopausal



63 Zillicoa Street  
Asheville, NC 28801  
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Patient: **SAMPLE PATIENT**      Order Number:  
Completed: February 22, 2008  
Age: 61      Received: February 20, 2008  
Sex: F      Collected: February 19, 2008  
MRN:



### Reference Range Information

Reference ranges for the estrogen metabolites were determined with serum samples from women with a normal 2:16 $\alpha$ -Hydroxyestrone Ratio. Other reference ranges were determined with serum samples from menopausal women who were not using hormone replacement therapy. These ranges serve as clinical guidelines. However, each individual is unique and evaluation of hormone status should be made within the context of the patient's clinical picture.

This Test reveals important information about:

- **Underlying hormonal contributors to reproductive disorders** (menstrual irregularities, PMS, sexual dysfunction, infertility, etc.) and systemic disorders (breast cancer, osteoporosis, etc).
- **Hormonal changes** in peri- and post-menopause.
- **Interrelationships between the sex steroid hormones**, helping to target key areas of metabolism for customized intervention.
- **Associated risks as well as efficacy of hormone replacement therapy**, using the profile to help identify candidates for bioidentical HRT and to monitor its safety along the way.
- **Evaluation of metabolites** that identify risk of breast cancer.
- **Estrogen Metabolism Assessment also available as sub-panel**, helpful follow-up tool to monitor clinical interventions.
- **Estrogen Metabolism Support Guide** available upon request.

For test kits, clinical support, or more information contact:

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More detailed publications with references are also available: [www.GDX.net](http://www.GDX.net)