Functional Medicine University’s Functional Diagnostic Medicine Training Program

INSIDER’S GUIDE

INTERPRETATION AND TREATMENT: FEMALE HORMONE PROFILE

By Ron Grisanti, D.C. & Dicken Weatherby, N.D.

http://www.FunctionalMedicineUniversity.com

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*Functional Medicine Training Program*

Insider’s Guide – Interpretation and treatment: Female Hormone Profile

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Basic Overview of the Female Cycle

Optimal health in women depends on healthy menstrual function. Abnormal function of the monthly menstrual pattern plays a critical role in infertility, PMS and dysmenorrhea. In addition the following symptoms may be due to a dysfunctional menstrual pattern: emotional fragility, mood swings, anxiety, panic attacks, hot flashes, night sweats, bloating, excessive weight gain or loss, excessively high or low energy, chronic digestive upset, migraine headaches, repeated miscarriage.
The menstrual cycle is under the control of the hormone system and is necessary for reproduction.

An ideal menstrual cycle is defined by three distinct “phases” within the cycle.

1. There must be a demonstrable follicular phase in which progesterone and estradiol are both observed.
2. There must be a midcycle peak of estradiol in which estradiol levels are notably higher than follicular levels.
3. There must be a luteal phase in which progesterone levels are notably higher than follicular levels. These three criteria define a normal menstrual cycle.

Ovulation defines the transition from the follicular phase to the luteal phase. Counted from the first day of menstrual flow, the length of each phase varies from woman to woman and cycle to cycle. The average cycles length is 28 days.

Stimulated by gradually increasing amounts of estrogen in the follicular phase (the main hormone controlling this stage is estradiol), the lining of the uterus thickens. Follicles in the ovary begin developing under the influence of a complex interplay of hormones, and after several days one or occasionally two become dominant (non-dominant follicles atrophy and die). The dominant follicle releases an ovum, or egg, in an event called ovulation.

After ovulation, the remains of the dominant follicle in the ovary become a corpus luteum. This is the beginning of the luteal phase and begins with the formation of the corpus luteum and ends in either pregnancy or luteolysis. The main hormone associated with this stage is
progesterone, which is significantly higher during the luteal phase than other phases of the cycle.

Under the influence of progesterone, the endometrium (uterine lining) changes to prepare for potential implantation of an embryo to establish a pregnancy. If implantation does not occur within approximately two weeks, the corpus luteum will involute, causing sharp drops in levels of both progesterone and estrogen. These hormone drops cause the uterus to shed its lining in a process termed menstruation.

**The Female Hormone Profile**

This test is ideal for mapping female cycles that are 24 days or less or for data collection. This test uses 11 saliva samples to measure the rhythm of progesterone and one of the estrogens [namely, estradiol (E2)] over a complete menstrual cycle. Two measurements of testosterone are also taken. The results from the eleven samples are plotted over a background of an idealized menstrual cycle, presenting a visual representation of estradiol and progesterone activity during the follicular, midcycle and luteal phases.

![Salivary Estradiol & Progesterone Activity plus Testosterone Level graph](image-url)
The physiology of the associated tissues normally fluctuate in a correspondingly predictable pattern within the cycle. The rhythm of each hormone has established norms, and the divergence of any hormone from these values can result in a cascade of compensations involving several other hormones. The effects of such a divergence from normal values can result in adverse changes in the physiology and morphology of target tissues, in other hormone systems not considered part of the menstrual cycle, and in behavior.

Cholesterol forms pregnenolone in the adrenal glands. Pregnenolone then metabolizes into progesterone and DHEA. DHEA readily forms a sulfated metabolite, DHEA-S, which is the species usually measured because of its increased stability. Progesterone also forms cortisol, while DHEA forms testosterone and the three estrogens—estrone (E1), estradiol (E2), and estriol (E3). The progesterone-cortisol pathway acts as a metabolic balance for the DHEA-estrogen/testosterone pathway. All these hormones are either adrenal products or metabolites of adrenal products, giving them a close functional relationship to one another. If the metabolic supply of pregnenolone is adequate, the cycle can nevertheless become disordered when just a single pregnenolone metabolite remains outside its normal range. Because of its prominent and ubiquitous use in tissue cells, cortisol (a direct progesterone metabolite) is often at the heart of menstrual hormone metabolism.
Clinical Treatment of Abnormal Female Hormone Cycle

LOW ESTRADIOL

If low estradiol is reported than ovarian insufficiency should be suspected. It is wise to evaluate for adrenal imbalance as possible co-founding factor.

Clinical Recommendations:

Basic Nutritional Therapeutics
- A high-grade multiple vitamin/mineral formula to support steroid metabolism.
- Boron supplementation may considered. An RBC essential mineral test may be of value.

Herbal Medicine
The following herbs all have been found to have estrogen mimetic like activity and may be of value to increase estrogen levels.
- Korean ginseng (Panax ginseng)
- Black cohosh
- Sage
- Red clover tops
- Soy
- Fenugreek Seeds

** May want to consider prescribing the herb Dong Quai for patients experiencing symptoms associated with low estrogen while the underlying cause of the low estrogen is being treated.

Glandulars
The following glandulars have been found to be effective in enhancing the function of gonadal tissue and at the same time stimulate adrenal steroidogenic function
- Ovarian tissue
- Pituitary tissue
- Adrenal tissue

Bio-Identical Hormone Replacement

Estradiol (E2)
- 0.35 to 2 mg daily (oral)
- 1.5 to 6 mg dose once a day (transdermal gel)
Estriol (E3)
- 0.5 mg/gm: 1 gram intra-vaginal for recurrent UTI or vaginal wall thinning for 1 to 2 weeks, then 2-3 x per week as needed

Triest: (Estrone 10%–Estradiol 10%–Estriol 80%)
- (Use 2 to 4 times the conjugated estrogen dose)
- Oral capsule: 1.25 to 7.5 mg Triest daily (divided into bid to tid doses)
- Creams: 2.5 to 5.0 mg daily, divided bid
- Percutaneous Gel: 2.5 to 5.0 mg/day

DHEA (as a precursor)
- 2 to 25 mg/day: oral capsule or percutaneous gel
**HIGH ESTRADIOL**

If high estradiol is reported than the following should be considered:

- Ovarian and/or adrenal dysfunction
- Increase aromatase activity which is responsible for the conversion of testosterone to estradiol. The most common causes of increased aromatase activity include age, obesity, insulin, gonadotropins, and alcohol.
- Reduced detoxification of estrogen

**Clinical Recommendations:**

**Basic Nutritional Therapeutics**

- Increase consumption of cruciferous vegetables (broccoli, cauliflower, Brussels sprouts, kale, cabbage, and bok choy)
- Diindolylmethane (DIM) is a natural compound formed during the autolytic breakdown of glucobrassicin present in food plants of the Brassica genus, including broccoli, cabbage, Brussels sprouts, cauliflower and kale. Constituents such as Diindolylmethane help with estrogen metabolism and detoxification of steroids
- Calcium D-Glucarate: To decrease beta-glucuronidase activity in the bowel and promote conjugated estradiol elimination
- Promote efficient detoxification. Base clinical decision of proper detoxification evaluation

**Herbal Medicine**

The following herbs all have been found to have Antiestrogenic like activity and may be of value to decrease estrogen levels.

- Saw palmetto berries
- Chaste tree berries
**LOW PROGESTERONE**

If **low progesterone** is reported than **the following** should be suspected.
- Luteal insufficiency
- Adrenal insufficiency

**Clinical Recommendations:**

**Basic Nutritional Therapeutics**
- A high-grade multiple vitamin/mineral formula to support steroid metabolism.

**Herbal Medicine**
The following herb has been found to stimulate synthesis of progesterone:
- Chaste tree berries

**Glandulars**
The following glandulars have been found to be effective in enhancing the function of gonadal tissue and at the same time stimulate adrenal steroidogenic function
- Ovarian tissue
- Pituitary tissue
- Adrenal tissue

**Bio-Identical Hormone Replacement:**

**Progesterone:**
- Continuous therapy: 100 to 200 mg/day
- Cycling therapy: 200 to 400 mg for 10 to 14 days of cycle

**Pregnenolone (as a precursor):**
- 5 to 10 mg/day: oral capsule or percutaneous gel
**HIGH PROGESTERONE**

If high progesterone is reported than the following should be suspected.
- Exogenous progesterone or pregnenolone supplementation
- Adrenal dysfunction

**Clinical Recommendations**

**Basic Nutritional Therapeutics**
- Increase consumption of cruciferous vegetables (broccoli, cauliflower, Brussels sprouts, kale, cabbage, and bok choy)
- Diindolylmethane (DIM) is a natural compound formed during the autolytic breakdown of glucobrassicin present in food plants of the *Brassica* genus, including broccoli, cabbage, Brussels sprouts, cauliflower and kale. Constituents such as Diindolylmethane help with estrogen metabolism and detoxification of steroids
- **Calcium D-Glucarate**: To decrease beta-glucuronidase activity in the bowel and promote conjugated estradiol elimination
- **Promote efficient detoxification.** Base clinical decision of proper detoxification evaluation

**LOW TESTOSTERONE**

If low testosterone is reported than the following should be suspected.
- Ovarian and Adrenal insufficiency

**Clinical Recommendations:**

**Herbal Medicine**
The following herb has been found to increase testosterone levels
- Stinging nettle

**Glandulars**
The following glandulars have been found to be effective in enhancing the function of gonadal tissue and at the same time stimulate adrenal steroidogenic function
- Ovarian tissue
- Pituitary tissue
- Adrenal tissue

**Both Siberian and Chinese ginseng have androgenic activity and may be of value in providing an indirect stimulation of the steroidal pathway.**
Bio-Identical Hormone Replacement

**Testosterone**
- 1-2 mg/day; as oral capsule, percutaneous gel, buccal lozenges, vaginal ointment

**DHEA (as a precursor)**
- 2 to 25 mg/day: oral capsule or percutaneous gel
HIGH TESTOSTERONE

If high testosterone is reported than the following should be suspected.

- Ovarian (primarily) or adrenal hyperactivity

Clinical Recommendations:

Basic Nutritional Therapeutics
Increase consumption of cruciferous vegetables (broccoli, cauliflower, Brussels sprouts, kale, cabbage, and bok choy)

Diindolylmethane (DIM)
Diindolylmethane (DIM) is a natural compound formed during the autolytic breakdown of glucobrassicin present in food plants of the Brassica genus, including broccoli, cabbage, Brussels sprouts, cauliflower and kale. Constituents such as Diindolylmethane help with estrogen metabolism and detoxification of steroids

Calcium D-Glucarate
To decrease beta-glucuronidase activity in the bowel and promote conjugated estradiol elimination.

Promote efficient detoxification. Base clinical decision of proper detoxification evaluation

Herbal Medicine
The following herbs all have been found to have antiandrogenic like activity and may be of value to decrease testosterone levels.

- Saw palmetto berries
- Chaste tree berries

Credit is contributed to the following labs for their advancement in the field of functional medicine:

Metametrix Clinical Laboratory
3425 Corporate Way
Duluth, GA 30096
800-221-4640
www.metametrix.com

Genova Diagnostics
63 Zillicoa Street
Asheville, NC 28801
800-522-4762
www.gdx.net