Salivary Analysis of Hormones

Numerous studies support the use of salivary hormone analysis to map out menstrual cycle hormone profiles.1-7 A study by Gandara measured estradiol and progesterone in serum and saliva and rated menstrual cycles as normal or abnormal according to the results. There was good agreement between serum and saliva, with both sample types finding normal or near normal cycles in 78% of women studied. The author concluded that “whole saliva samples … provide a noninvasive, feasible method of determining menstrual cycle profiles.”2

Month-Long Hormone Assessment

The month-long assessment requires the collection of eleven saliva samples over 33 days. Progesterone and estradiol for all 11 samples plus an average testosterone are reported. Women with erratic bleeding, amenorrhea, fertility issues or cycle-specific symptoms such as migraine headaches, hot flushes, and mood disturbances may benefit from a Month-Long Assessment. In the Month-Long Hormone Assessment, women report any significant symptoms that arise on sample days. By correlating the patient’s self-reported symptoms with hormone levels throughout the menstrual cycle, it is often possible to find hormone imbalance underlying a symptom or issue. Cases presented on the following pages illustrate the benefit of knowing the correlation between symptoms and hormone levels.

Fertility issues

- inadequate, early, or late progesterone surges in the luteal phase can affect ability to conceive.
- menstrual cycle length may affect fertility. For example, a woman whose progesterone peaks on day 14 will have difficulty conceiving if she assumes she is ovulating at that time.

Erratic bleeding

- heavy bleeding is usually associated with high estradiol levels, but may also occur as a result of low estradiol, a relative imbalance of estrogen and progesterone, anovulation or androgen excess. The month-long hormone assessment helps identify many of the causes of erratic bleeding.

Amenorrhea

- month-long assessment shows if high androgens and/or anovulation are potential underlying causes of amenorrhea.
- the month-long assessment illustrates the effect of oral contraceptives on hormone production.

Mood swings

- by tracking mood-related symptoms with hormone levels, underlying hormone imbalances may be identified.

Cycle specific symptoms

- certain symptoms may occur at specific times in the menstrual cycle. For example: hot flashes may occur late in the luteal phase when Pg is falling and E2 rises unexpectedly.

Clinical utility and ease of sample collection makes salivary hormone analysis ideal for a month-long assessment. Samples can be kept in the freezer as collections proceed, and all eleven samples can be mailed together in the pre-paid mailer when collection is complete.
**Estradiol**

- High estradiol levels may impair thyroid function, and/or contribute to erratic bleeding.
- Low estradiol levels may contribute to erratic bleeding and difficulty conceiving.

**Progesterone**

- Insufficient progesterone relative to estradiol can result in estrogen dominant symptoms like weight gain at hip, breast tenderness, anxiety, fluid retention and fibrocystic breasts.

**Clinical Presentation**

**Normal/Regular:** A regular menstrual cycle typically displays two distinct estradiol peaks. The first peak occurs at ovulation, and the second peak coincides with the mid-luteal progesterone surge.

A woman may have regular periods yet have an ‘abnormal’ menstrual cycle pattern. In the absence of issues like premenstrual syndrome, infertility or hormone-related symptoms, there is generally no need to map out the menstrual cycle hormones.

If menstrual cycle specific problems arise, investigation via a Month-Long Hormone Assessment is worthwhile.

**Possible Interventions**

- women with a normal cycle but experiencing symptoms may require further laboratory investigation.

Choice or additional lab test(s) depends on patient symptoms.

Lab tests for consideration:
- Adrenal Function Panel
- Food Sensitivity Test
- Urine Elements
- Urine Steroids
- Urine Thyroid

**Testosterone**

- High testosterone correlates with insulin resistance and metabolic syndrome. Low testosterone may be responsible for symptoms like low sex drive, vaginal dryness and bone loss.

**Hormones**

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**38 year old female, regular menses, difficulty conceiving.**

- Symptoms include: feeling burned out, morning sluggishness, fatigue, sleep disturbances, feeling ‘tired but wired’.

**Month-Long Hormone Assessment**

- progesterone peak is shifted right (late luteal phase). Ovulatory E2 surge is minimal and luteal E2 surge is absent.

Low estrogen and a delayed progesterone surge are likely contributing factors to difficulty conceiving.

**38 year old with difficulty conceiving**

- Literature shows the botanical Vitex agnus castus normalizes progesterone in luteal phase and helps with infertility.

Lab tests for consideration:
- Adrenal Panel: a flat diurnal cortisol profile may contribute to hormone imbalance and difficulty conceiving.
- Urine Steroids: may offer additional insights into hormone metabolism.
- Urine Thyroid: insufficient thyroid hormone may impact ability to conceive.
### Clinical Presentation

**49 year old, irregular menses, hot flashes, BMI <20**
- Symptoms include: foggy thinking, memory lapses, decreased sex drive, fatigue.

**Month-Long Hormone Assessment**
- Menses ceases when Pg levels crash.
- Anovulatory cycle.
- Erratic Pg output - two significant peaks.
- E2 not coordinated with Pg: hot flashes appear when Pg falling/E2 rising.

**46 year old, regular menses, BMI >30**
- Symptoms include: feeling burned out, pressed for time, ‘tired but wired’, fatigue, anxiety.

**Month-Long Hormone Assessment**
- Moodiness and irritability coincide with progesterone peak.
- Pg is ten times normal.

General complaints of foggy thinking and fatigue consistent with very high Pg levels.

Usually associate irritability with low Pg, but opposite is true in this case. Profile demonstrates value of knowing hormone levels, rather than treating based on symptoms.

**44 year old, irregular menses, normal BMI**
- Primary complaint is heavy bleeding.

**Month-Long Hormone Assessment**
- Bleeding ceases when E2 rises above 1pg/mL.

Usually associate heavy bleeding with high E2, but opposite is true in this case. Profile demonstrates value of knowing hormone levels, rather than treating based solely on symptoms.

**37 year old female, no menses, BMI >25**
- Symptoms include: breast tenderness, water retention, sleep disturbances.

**Month-Long Hormone Assessment**
- Anovulation
- Erratic E2 output
- E2/Pg imbalance

Profile shows imbalance between E2 and Pg. High estradiol relative to progesterone can lead to symptoms of breast tenderness, water retention and sleep disturbances.

### Possible Interventions

- **Vitex agnus castus** to normalize progesterone throughout cycle.
- Pg supplementation for 14 days per cycle.
- Low BMI may be contributing to erratic cycle. Modest weight gain might help.

- Additional Pg is not recommended if cycle-specific symptoms worsen when Pg is high.
- Use botanical or homeopathic hormone balancing agents.
- Weight loss/decrease body fat to reduce estrogen stores.
- Improve estradiol elimination by increasing fiber.

**Lab tests for consideration:**
- **Adrenal Panel:** A flat diurnal cortisol profile can lead to symptoms of fatigue and burn-out.

- Cyclic progesterone may ‘resynchronize’ Pg and E2, and induce ovulatory cycles.
- Phytoestrogens offer some estrogenic effects:
  - Flaxseed lignans
  - Soy isoflavones
  - Red clover isoflavones

- Giving progesterone cyclically may ameliorate estrogen dominance symptoms.
- Giving cyclic progesterone in this circumstance is not known to impair contraceptive effect, but formal studies are lacking.
Month-Long Hormone Assessment

Frequently Asked Questions

What if a woman has a shorter than average menstrual cycle length?
For example, a woman with a 25 day cycle can collect every third day in the first half of her cycle, then every other day in the latter half of the cycle. In other words, she collects as follows: Days 1 (first day of bleeding), 4, 7, 10, 13, 16, 17, 19, 21, 23, and 25.

Is testing useful if a woman is using progesterone cream the last two weeks of her cycle?
If a woman is using progesterone cream, the results will reflect progesterone cream levels, not the endogenous progesterone level. Therefore, the progesterone levels reported will provide no useful information regarding ovarian production of progesterone.

Is the month-long assessment useful for post-menopausal women?
At this time, we have no data to suggest that the month-long assessment is clinically useful for post-menopausal women.

What if patient forgets to collect one day?
Have patient collect the next day and adjust the remaining collection days.

What if patient is on the birth control pill?
Generally, the use of synthetic hormones such as those in oral contraceptives suppress endogenous production resulting in lower levels of estradiol and progesterone. The month-long hormone assessment numbers will reflect the lower levels, and ranges for an oral contraceptive user will be applied.

References


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