

## Hormonal Imbalance and PMS

Many women suffer from hormonal imbalance in the estrogen to progesterone ratio. Our panels can define the hormonal state with exquisite accuracy which, in turn, provides specific insights for appropriate intervention to relieve hormonal imbalance and PMS-related symptoms.

## Customized Hormone Therapy

Presently, female hormone therapy is not individualized to the needs of each woman, because current diagnostic tests do not provide sufficient data. Consequently, most women are empirically treated without regard to their individualized physiology and specific needs. The Female Hormone Panels (FHP™/eFHP™), for the first time, will allow a clinician to customize therapy to each female patient.

## Other Applications

The FHP™/eFHP™ can also be used to detect and monitor the following:

- Functional infertility
- Menstrual problems
- Originating in the brain
- Early pregnancy problems, such as spontaneous miscarriage
- Cycle irregularities, following the use of birth control pills
- Dysmenorrhea, that is painful and heavy periods
- Early Menopause
- Migraine headaches
- Cystic ovarian disease
- Early osteoporosis
- Influence of (diet, exercise) and other lifestyle factors on the cycle

## Advantages of the FHP™/eFHP™

**Convenience:** Requires no blood draws, therefore no repeat clinic visits, and avoids the inconvenience of the 24-hour urine collection.

**Economy:** The fee for the 11-sample test is less than that of two blood determinations or a urine analysis for estrogen and progesterone.

**Physiological accuracy:** Research has demonstrated that the free hormone fraction predominates in saliva. Hormones can be found free or bound to protein. The free hormone fraction is very important, because it is the bioactive fraction that most significantly influences living cells. The salivary female hormone levels correlate at 93% with the free hormones in the tissues.

One or two blood determinations or a 24-hour analysis of urine for these hormones gives only an idea of the ovaries' hormonal productivity. The Female Hormone Panels (FHP™/eFHP™) provide a view of the ovarian capacity over a whole menstrual cycle.

## Do you need the FHP™?

To determine if the FHP™ is the appropriate test for your hormone-related problems, consult with your physician or healthcare provider.

- If either infertility or PMS are of concern to you, ask your doctor about the Expanded Female Hormone Panel™.
- Our expanded panel not only reveals any hormonal imbalances, but also accurately indicates the basis of the problem.
- Hormone balancing is reduced to simple scientific principles using our well-structured report and recommendations.



### Major Accreditation

Diagnos-Techs™ maintains superior test quality and accuracy with a stringent daily QA program and is registered with CLIA, licensed by the Washington State Department of Health, and accredited by the Joint Commission.

### Licensure and Proficiencies

Also accredited and licensed by the State of Washington (License No. MTS-0327), subject to the Clinical Laboratory Improvement Act of 2003 (CLIA-2003) certification. Our Federal CLIA Number is 50D0630141. External proficiency testing obtained from the College of American Pathologists, American Proficiency Institute and American Association of BioAnalysts.

[www.diagnostechs.com](http://www.diagnostechs.com) • 1-800-878-3787



19110 66<sup>th</sup> Avenue South, Building G  
Kent, Washington 98032

**For more information, please contact your healthcare provider.**

## Patient Information



## Female Hormone Panel™

The Science of Laboratory Medicine





## Female Hormone Panels™



The ovaries are a major component of the female reproductive system. The ovaries are located on the right and left sides of the uterus in the pelvic cavity. Each weighs about 15 grams. The human female is born with immature ovaries that gradually mature in stages until the start of menstruation, which signals the start of a functional reproductive system.

### The Cyclical Pacing of the Ovaries

The human ovary releases its hormones in a rhythmic pattern, which is referred to as the female monthly sexual cycle. The average cycle is 26-30 days. The timing and pacing of hormone release is governed by GnRH, FSH and LH, hormones from the hypothalamus and pituitary glands in the brain. The two major classes of ovarian hormones released during the female sexual cycle are estrogens and progesterone, also known as the female steroid sex hormones. The major and most active estrogen released is estradiol, while the major progesterone is progesterone.

#### The female cycle has three physiologic phases (see Figure 1):

1. The follicular phase starts with the onset of menstrual blood flow and is of variable length. This phase is normally characterized by both low estrogen and progesterone output.
2. The ovulatory phase is 1 to 3 days long, and the human ovum (egg) is released in this phase. This phase is preceded by high estrogen and LH levels.
3. The luteal phase is rather constant in length, 12-14 days, and ends with menses. In contrast to the follicular phase, the luteal phase is characterized by high progesterone concentrations and a moderate increase in estrogens.

### Functions of Female Sex Hormones

Estradiol and Progesterone affect several target organs involved in successful conception and pregnancy. Additionally, these hormones maintain a number of secondary sexual characteristics, such as reduced body hair, soft skin texture, a higher voice pitch and possible release of certain pheromones.

### Target Organs of Estrogen and Progesterone

**The Uterus** - Estradiol prepares the uterus for conception, produces a threefold to fivefold increase in the thickness of its inner lining and also promotes uterine gland development and mucus secretion. Progesterone causes a swelling of the uterine lining, an increase in glycogen (a complex sugar) content and an increase in the mucus secreted by the uterus. If conception does not occur, the uterine lining is shed, resulting in the menstrual flow.

**Fallopian tubes** - Sex hormones stimulate the Fallopian tubes to move the egg toward the uterus. The Fallopian tubes also secrete fluids that nourish the egg, the sperm and ultimately the embryo when fertilization occurs.

**Vagina** - Estrogens promote the thickening of the vaginal lining and increase its secretions, which makes the lining more resistant to infections.

**Breasts** - Before puberty, the breasts grow only in proportion to the rest of the body, but under the influence of estradiol and progesterone during puberty, the breasts develop to maturity. During the menstrual cycle, excess estradiol causes breast swelling and tenderness.

**Bones** - In the adult female, Estradiol and Progesterone play an important role in the inhibition of osteoporosis and improve the incorporation of calcium, magnesium and phosphate into bone. This is often why doctors prescribe Estrogen for menopausal women.

**Kidney** - Estrogens cause the body to retain sodium, which results in fluid buildup. Conversely, progesterone causes a loss of excess sodium and retained fluid. Before the period begins, there may be a relative excess of estrogen over progesterone, which commonly leads to several of the PMS-associated complaints.

Patient-specific interpretation and therapy considerations are included in the FHP™ report.

**Liver** - Estradiol has stimulatory effects on liver proteins which may reduce thyroid hormone availability and increases the risk for cardiovascular disease. Estradiol also slows the process of liver detoxification of various harmful substances.

**Miscellaneous** - Estradiol can elevate blood sugar in certain susceptible individuals. Progesterone can increase the appetite and has a general calming effect on the nervous system, especially at night.

### What We Test

The Female Hormone Panel™ (FHP™) is a simple, non-invasive test. Eleven saliva samples are collected during specified time periods throughout the female sexual cycle. Using this panel the first time in routine medical practice, both patients and doctors can view the profiles of estrogen and progesterone simultaneously (see Figure 1). Diagnostic guesswork is minimized, and hormonal balance evaluation and customized treatment becomes a reality. In addition, we report the cycle average for testosterone and DHEA. The expanded panel (eFHP™) also includes seven FSH and LH measurements to see if brain control and stimulation of the ovaries are optimal.

### Applications of the Female Hormone Panel™

#### Detection of Luteal Phase Deficit

There are at least three luteal phase-deficit patterns which are characterized by a progesterone/estrogen imbalance. This imbalance is usually associated with PMS, infertility, fibroids and other female hormone-related problems and can be readily detected by our panels.

