



WOMEN'S HEALTH TESTING

Estradiol Information Sheet

What is estradiol?

Estradiol is an estrogen hormone also known as E2 and oestradiol. It is naturally produced in both genders, with much higher levels in females.

Estradiol is predominantly produced within the ovarian follicles, but also in other tissues, such as the adrenal glands, fat, liver, breasts, brain, testes, and placenta (during pregnancy) (1).

What are normal estradiol levels in females?

Normal estradiol levels are lowest during menstruation and early follicular phase (20-75 pg/mL). Levels increase during the follicular phase to a midcycle peak of 150-750 pg/mL, and are around 30-450 pg/mL in the luteal phase (2). If conception occurs, estradiol levels continue to rise up to 10,000-40,000 pg/mL during the third trimester (3).

What are the roles of estradiol?

The primary function of estradiol in females is to mature and maintain the reproductive system, including the mammary glands, uterus, and vagina. It is responsible for the development of female secondary sexual characteristics (e.g. breasts, female fat distribution) (4). During each menstrual cycle, estradiol levels increase to trigger the maturation and release of the egg, and the thickening of the uterus lining to allow a fertilized egg to implant (5).

Estradiol also plays important functions in the male reproductive system, skeletal system, skin health, nervous system, and cardiovascular system (4).

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Estradiol and fertility

Estradiol levels are commonly measured as part of fertility testing, with measurements usually taken early in the menstrual cycle. A high basal estradiol level is a sign of poor ovarian reserve (reproductive aging) (6).

Basal estradiol levels alone have a low predictive value for IVF outcome. However, estradiol levels measured in conjunction with FSH levels can be useful for determining medication doses for IVF. Furthermore, estradiol measurements can help clinicians determine the risk of ovarian hyperstimulation syndrome during IVF cycles (7).

Reduced estradiol levels in menstruating females can indicate polycystic ovary syndrome (PCOS), hypopituitarism, premature menopause, or primary ovarian insufficiency. Low estradiol is also more common in females with eating disorders or who practice extreme endurance exercising.

Abnormally high basal estradiol levels in menstruating females (taken at day 2 or 3 in the menstrual cycle) suggest impaired oocyte development, which is a sign of poor ovarian reserve (reproductive aging). High estradiol can also result in an artificially low follicle stimulating hormone (FSH) value, as estradiol reduces FSH secretion from the pituitary gland. Ovarian tumors and liver cirrhosis can also result in higher estradiol levels.

Where can I find more info?

Visit www.genetrackdiagnostics.com for full test information, including specimen collection requirements

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Estradiol and menopause

As females reach menopause, their estradiol levels decrease. This contributes to the symptoms associated with menopause, including mood swings, vaginal dryness, hot flashes, and night sweats. Low estradiol levels also increase the risk of bone fractures (8) and accelerate skin aging (9), two characteristics that are often observed during and after menopause.

Elevated estradiol after menopause may be due to hormone replacement therapy. It has been linked to an increased risk of breast cancer and cardiovascular complications.

References:

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NOTE:

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