1-Day Progesterone / Oestradiol (Saliva)

GENOVA DIAGNOSTICS EUROPE

Parkgate House
356 West Barnes Lane
New Malden, Surrey KT3 6NB

63 Zillicoa Street
Asheville, NC 28801 USA

Patient:
DOB:
Sex: F
MRN:

Order Number:
Completed:
Received:
Collected:

Analyte	Result		Units	Normal Range
Progesterone : Phase No Cycle				
Follicular Phase :	56		pg/mL	38-186
Peak :	56	L	pg/mL	103-436
Luteal Phase :	56		pg/mL	46-251
Post Menopause :	56		pg/mL	51-210
Oestradiol : Phase No Cycle				
Follicular Phase :	1.14		pg/mL	0.76-2.40
Peak :	1.14	L	pg/mL	1.23-5.20
Luteal Phase :	1.14		pg/mL	0.76-2.23
Post Menopause :	1.14		pg/mL	1.01-2.56
Progesterone / Oestrogen Balance				
Ratio : Follicular Phase Progesterone / Oestradiol:	49		pg/mL	27-184
Luteal Phase Progesterone / Oestradiol:	49		pg/mL	29-163
Post Menopause Progesterone/Oestradiol:	49		pg/mL	38-134

Current Hormone Therapies:

Commentary

Within Normal Ranges

Outside Normal Ranges

Testing performed by Genova Diagnostics, Inc. 63 Zillicoa St., Asheville, NC

Commentary

28801-0174.

Results from this test should be used for research purposes only and should not form the basis of a clinical decision or diagnosis. This assay is not covered under our accreditation scheme with UKAS.

Reference ranges for salivary hormones have been updated. The ranges have been determined using statistical analysis in accordance with regulatory guidelines.

Testosterone (Saliva)

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Patient:
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Results & Ranges

Analyte			Normal Range (pg/mL)
Testosterone	78.7	H	9.8-42.7

Testing performed by Genova Diagnostics, Inc. 63 Zillicoa St., Asheville, NC 28801-0174

Commentary

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Reference ranges for salivary hormones have been updated. The ranges have been determined using statistical analysis in accordance with regulatory guidelines.

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Suspect: Ovarian and Adrenal dysfunction. Consider the following options: Nutrition: Cruciferous vegetables - constituents such as DIM help with metabolism and detoxification of steroids. Calcium D-Glucarate to decrease beta-glucuronidase activity in the bowel and promote steroid detoxification. Herbs: Saw palmetto berries have antiandrogenic activity. Agnus Castus may decrease androgen and oestrogen synthesis also stimulates synthesis of progesterone. Vitamin B6, magnesium, liquorice & inorganic sulphate to optimise detoxification pathways.

Estrogen Metabolism Assessment (Urine)

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Patient:
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Completed:
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Collected:

Methodology: LC-MS/MS; Results normalized to creatinine

Estrogens

Estrogens

		Reference Range
16α-Hydroxyestrone (16α-OH E1)*	2.3	0.5-8.9 mcg/g Creat.

*Premenopause (luteal) reference range shown

	Reference Ranges
Premenopause	0.5-8.9 mcg/g Creat.
Menopause	0.4-7.7 mcg/g Creat.
Male	<=2.0 mcg/g Creat.

2-Hydroxyestrone + 2-Hydroxyestradiol [2-OH(E1+E2)] *	1.3	1.3-36.3 mcg/g Creat.

* Premenopause (luteal) reference range shown

	Reference Ranges
Premenopause	1.3-36.3 mcg/g Creat.
Menopause	0.9-43.8 mcg/g Creat.
Male	0.7-12.5 mcg/g Creat.

2-OH(E1+E2) / 16α-OHE1*	0.6	0.3-13.7

* Premenopause (luteal) reference range shown

	Reference Ranges
Premenopause	0.3-13.7
Menopause	0.3-15.1
Male	0.8-12.9

Creatinine	77.74	27.00-248.00 mg/dL

Lab Comments

The performance characteristics of all assays have been verified by Genova Diagnostics, Inc. Unless otherwise noted with ◆, the assay has not been cleared by the U.S. Food and Drug Administration.

Please note analysis of estrogens and estrogen metabolites is now performed using LC/MS/MS. The reference ranges for these biomarkers have been updated.

Commentary

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Estrogen Metabolites

Estrogens are metabolized by two main pathways: (1) formation of the catechol estrogens 2-hydroxyestrone/estradiol (2-OHE1/E2) via the CYP1A1 pathway and 4-hydroxyestrone/estradiol (4-OHE1/E2) via the CYP1B1 pathway; and (2) formation of 16α-hydroxyestrone (16α-OHE1) via the CYP3A4 pathway.

2/16 Ratio and Hydroxylation pathways

2/16 Ratio - The clinical utility of the ratio of 2-hydroxyestrone (2-OHE1) to 16α-hydroxyestrone (16α-OHE1) – the 2/16 ratio or Estrogen Metabolite Ratio (EMR) – historically reported lower 2/16 ratio levels among breast cancer cases compared to controls (particularly in premenopausal women). Recent studies have been mixed: there appears to be no strong evidence in the literature that a higher urinary 2/16 ratio protects postmenopausal women from breast cancer, and only weak evidence of a protective effect in premenopausal women.

Higher 2-OH (E1+E2)/16α –OH ratios in males have been associated with reduced risk of prostate cancer.

2-OH (E1+E2) - While traditional 2/16 ratio clinical utility may not be as robust as previously thought, a majority of findings indicate that metabolism of parent estrogens through 2-hydroxylation (independent of any relationship to 16α-OHE1) may be considered as a benign or even protective pathway. (Of note: one study found increased breast cancer risk with higher 2-OH levels, but only in a small subgroup of ER-/PR- cases.)

Studies suggest that women with predominant metabolism through the 2-hydroxyl pathway have accelerated postmenopausal bone loss and lower BMD compared to those with predominant 16α-hydroxylation who appear to have reduced risk of bone loss. Increased 2- hydroxylation has been noted in women with a positive family history of osteoporosis suggesting that increased risk of osteoporosis in those with a family history may be related to inherited differences in estrogen metabolism.

16α-OH - Recent findings in the peer-reviewed literature are mixed, with some studies finding an association with increased risk (cancers of the cervix, breast, endometrium, and head and neck, as well as in people with tumors related to the human papilloma virus), but many finding no significant association.

Bone Resorption Assessment (Urine)

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63 Zillicoa Street
Asheville, NC 28801 USA

Patient:
DOB:
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MRN:

Order Number:

Completed:
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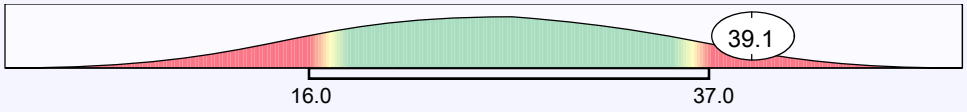
Collected:

Chemistry Parameters

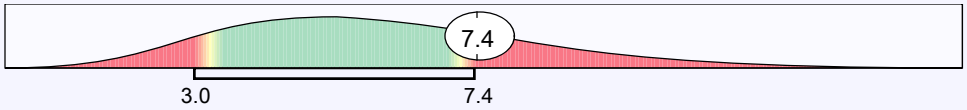
Pyridinium Crosslinks/Creatinine

Ref Range
nmol/mmol



Deoxypyridinoline/Creatinine

Ref Range
nmol/mmol



Commentary

Methodology: EIA and Kinetic (Jaffe)

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Pyridinium crosslinks consist of both pyridinoline and deoxypyridinoline. Deoxypyridinoline is found predominantly in bone tissue, whereas pyridinoline is found in both bone and cartilage. Pyridinium crosslinks are released when bone is broken down (or resorbed). While not diagnostic of osteoporosis, these markers may be used to monitor bone resorption status and therefore are a useful gauge of treatment efficacy.

The level of pyridinium crosslinks is elevated. Abnormally high pyridinium crosslinks in urine suggest increased cartilage, connective tissue, and/or bone resorption. For example, pyridinoline might be elevated secondary to rheumatoid arthritis, lupus and other connective tissue disorders, osteoarthritis, or chronic alcohol ingestion. Similarly, periods of rapid growth or repair of connective issue (adolescence post-trauma) may lead to high levels.

Significantly elevated levels of pyridinium crosslinks have been noted in conditions such as hyperthyroidism, hyperparathyroidism, Paget's disease, multiple myeloma, hypercalcemia of malignancy, and certain cancers, particularly if associated with bone metastases. Elevations have also been seen with liver dysfunction, renal osteodystrophy, spinal cord injury, bone marrow transplantation, gastrointestinal diseases related to nutrition and mineral metabolism, cystic fibrosis, scleroderma, growth hormone disorders, growth hormone treatment, and estrogen deficiency.

Commentary

The level of deoxypyridinoline (DPD) is within normal limits. Normal ranges suggest that at the present time there is not an abnormal increase in bone loss. It IS possible for a person to have osteoporosis (determined by a bone density measurement) and have a normal DPD, reflecting normal bone resorption at the time the test was performed. Because various factors affect bone resorption, follow-up monitoring with serial measurements may be desirable, particularly in the case of established osteopenia or osteoporosis.