



Accession Number: **A1001130351**
Reference Number:
Patient: **Sample Report**
Age: 47 Sex: Female
Date of Birth: 02/05/1962
Date Collected: 1/12/10
Date Received: 1/13/10
Report Date: 1/13/10
Telephone: (770) 446-4583
Fax: (770) 441-2237
Reprinted: 1/29/10
Comment:

Ordering Physician:

Metamatrix

3425 Corporate Way
Duluth, GA 30096

0145 Estronex™ Estrogen Metabolites with Bone Resorption - Urine

The method used for this assay has been changed from immunoassay to liquid chromatography with tandem mass spectrographic detection (LC-MS/MS). These changes lead to the following alterations in analytes and interpretations:

Regarding the 2/16 ratio

- 2-Hydroxyestrone (2-OHE1) and 2-hydroxyestradiol (2-OHE2) are now independently determined.
- Relative contributions of each of these 2-hydroxylated estrogens may now be evaluated.
- The sum of 2-OHE1 & 2-OHE2 is calculated from the two independent measurements.
 - o This sum is equivalent to the 2/16 ratio numerator generated by the previous immunoassay method.
- Accurate readings can be now made at very low and very high concentrations that were previously truncated by the immunoassay method.
- These methodological changes result in the new reference ranges shown.

Regarding other metabolites

- Other metabolites with potential relevance to cancer risk are added to the profile.
 - o Elevated 4-hydroxyestrone (4-OHE1) may be associated with increased risk, especially when hydroxyestrogen methylation is poor.
 - o Hydroxyestrogen methylation is evaluated by the ratio of 2-OHE1 to 2-methoxyestrone (2-OHE1 / 2-OMeE1).
 - Poor ability to methylate (and detoxify) 4-OHE1 is indicated when this ratio is high.
 - The methylated form of 4-OHE1 (4-OMeE1) is also assayed, but frequently the values are below the limit of detection, so the ratio cannot be calculated.

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Methodology: UPLC/MS/MS, Colorimetric Assay, Competitive Immunoassay

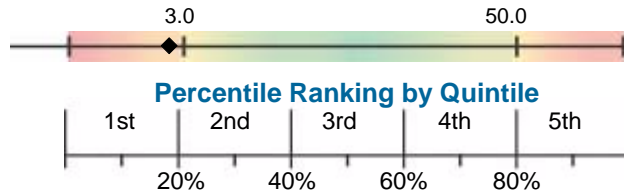
Results

Reference Limits

Hydroxyestrogen Ratio

2-OHE1 & E2 / 16a-OHE1

2.8 **L**



3.0 - 50.0

Methylation Ratio

2-OHE1 / 2-OMeE1

5.7



<= 9.7

*UC = Unable to calculate

2/16 Ratio factors

2-Hydroxyestrone (2-OHE1)

14.0

2-Hydroxyestradiol (2-OHE2)

10.2

2-OHE1 + 2-OHE2

24.3

16a-Hydroxyestrone (16a-OHE1)

8.7

ng/mg creatinine

95% Reference Limits			
Pre-Menopausal Females	Post-Menopausal Females (no hormone therapy)	Post-Menopausal Females (on hormone therapy)	Males
0.6 - 44.2	0.6 - 18.7	0.6 - 121.4	0.6 - 4.8
0.3 - 71.6	0.3 - 87.4	0.3 - 73.9	0.3 - 26.8
0.6 - 89.9	0.6 - 89.1	0.6 - 194.7	0.6 - 29.3
0.2 - 20.4	0.2 - 6.2	0.2 - 73.9	0.3 - 2.2

4-Hydroxyestrone and estrogen methylation factors

4-Hydroxyestrone (4-OHE1)

0.7

4-Methoxyestrone (4-OMeE1)

<0.66

2-Methoxyestrone (2-OMeE1)

2.46

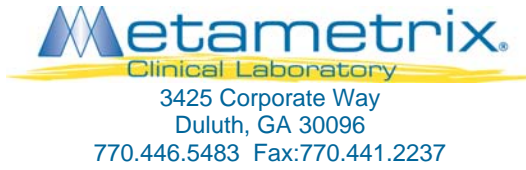
<= 5.7	<= 2.0	<= 10.4	<= 2.0
>= 0.66	>= 0.66	>= 0.66	>= 0.66
>= 0.41	>= 0.41	>= 0.41	>= 0.41

- Low 2/16 ratios may be raised by adding brassica vegetables or supplementing with I3C or DIM. Soy isoflavones, omega-3 fatty acids or flax seed (not oil) may also have favorable effects. However, soy isoflavones are considered mildly estrogenic and may not be suited for patients with hormone sensitive cancers.

- High 2/16 ratios caused by very low 16a-OHE1 may contribute to bone loss due to poor osteoblastic activity. This situation usually occurs when total estrogen is low.

- Methylation ratios may be improved by adding cofactors (vit. B12 or folate) or methyl donors (betaine or DMG).

- These guidelines are intended as a starting point for the clinician who requested the test and are based only on the laboratory results included in this report.
- Final recommendations should be implemented by the clinician with consideration of medical history and current clinical observations.
- These tests are not intended for the diagnosis of specific disorders.



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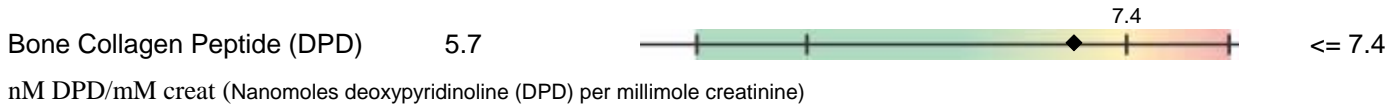
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Methodology: UPLC/MS/MS, Colorimetric Assay, Competitive Immunoassay

Results

Reference Limits



Interpretive Detail:

A DPD value above the Reference Limit indicates that resorption of bone is occurring faster than normal.

A DPD value equal to or below the Reference Limit is considered a normal result. In general, the lower the result the better to avoid development and/or progression of osteoporosis.

Creatinine = 100 mg/dL

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