

**Ordering Physician:**  
**John Doe, MD**  
**1234 Main St**  
**Anywhere, GA 30096**



## 0142 Estronex™ 2/16 OH Ratio

Methodology: UPLC/MS/MS, Colorimetric Assay

### Test Explanation

The Estronex report is organized to help you find answers to the following clinically relevant questions:

- 1. Is the 2/16 ratio low? If so, then...**
  - There may be an increased risk for cancer in estrogen-sensitive tissue.
  - The 2/16 ratio may be increased 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.
- 2. Is the 4-hydroxyestrone level high? If so, then...**
  - This is another result that may be associated with increased cancer risk.
  - Methylation factors may be evaluated (vitamin B12, folate, COMT SNPs, methyl donor supply).
- 3. Is the 2-OHE1/2-OMeE1 ratio high? If so, then...**
  - Catecholestrone methylation status is poor.
  - The methylation ratio may be improved (lowered) by adding cofactors (vitamin B12 or folate) and methyl donors (such as betaine or DMG). Testing functional need for Vitamin B12 or folate is recommended.

### The 2/16 Ratio Range

Numerous studies have established that the relative risk of cancer in estrogen-sensitive tissues is increased for individuals with 2/16 ratios less than 2.0 when hydroxyestrogens are assayed by an immunoassay method(1). The UPLC/MS-MS analytical method now used at Metamatrix gives superior analytical results and allows additional metabolites to be determined(2). The 2/16 ratio cutoff value of 5.2 (5.6 for men) shown on this report is the point at which the percentage of low results is equivalent to that for the immunoassay method.

### References

1. Sepkovic DW, Bradlow HL. Estrogen hydroxylation-the good and the bad. *Ann NY Acad Sci.* Feb 2009;1155:57-67.
2. Falk RT, Xu X, Keefer L, Vennstra TD, Ziegler RG. A liquid chromatography-mass spectrometry method for the simultaneous measurement of 15 urinary estrogens and estrogen metabolites: assay reproducibility and interindividual variability. *Cancer Epidemiol Biomarkers Prev.* Dec 2008; 17(12):3411-3418.

## 0142 Estronex™ 2/16 OH Ratio

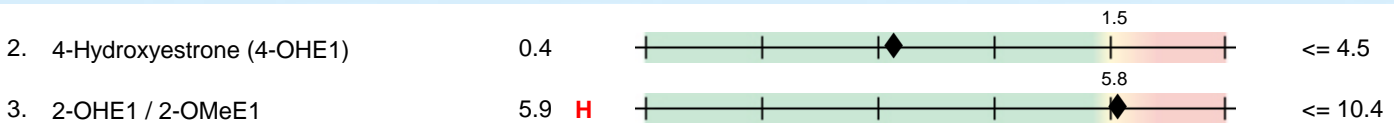
Methodology: UPLC/MS/MS, Colorimetric Assay



### 2/16 Hydroxyestrogen Ratio



### 4-Hydroxyestrone and Methylation Ratio



	Results		95% Reference Limits		
	ng/mg Creatinine	Pre-Menopausal Females	Post-Menopausal Females (no hormone therapy)	Post-Menopausal Females (on hormone therapy)	Males
<b>Hydroxyestrogens</b>					
2-Hydroxyestrone (2-OHE1)	<b>9.4</b>	0.2-25.9	0.2-9.8	0.2-59.8	0.2-6.7
2-Hydroxyestradiol (2-OHE2)	<b>6.8</b>	0.1-11.3	0.1-9.7	0.1-19.9	0.1-13.5
2-OHE1 + 2-OHE2	<b>16.2</b>	0.4-32.0	0.2-14.6	0.5-76.3	0.2-15.6
4-Hydroxyestrone (4-OHE1)	<b>0.4</b>	<= 3.2	<= 2.1	<= 5.7	<= 0.8
16a-Hydroxyestrone (16a-OHE1)	<b>5.8</b>	0.2-14.2	0.1-3.2	0.1-37.6	0.1-3.3
<b>Methoxyestrogens</b>					
2-Methoxyestrone (2-OMeE1)	<b>1.6</b>	0.1-6.4	0.1-3.6	0.1-18.5	0.1-3.1
4-Methoxyestrone (4-OMeE1)	<b>&lt;0.23</b>	<= 0.3	<= 0.4	<= 0.3	<= 0.2

Creatinine = 150 mg/dL

<DL = less than detection limit

\*UC = Unable to calculate