

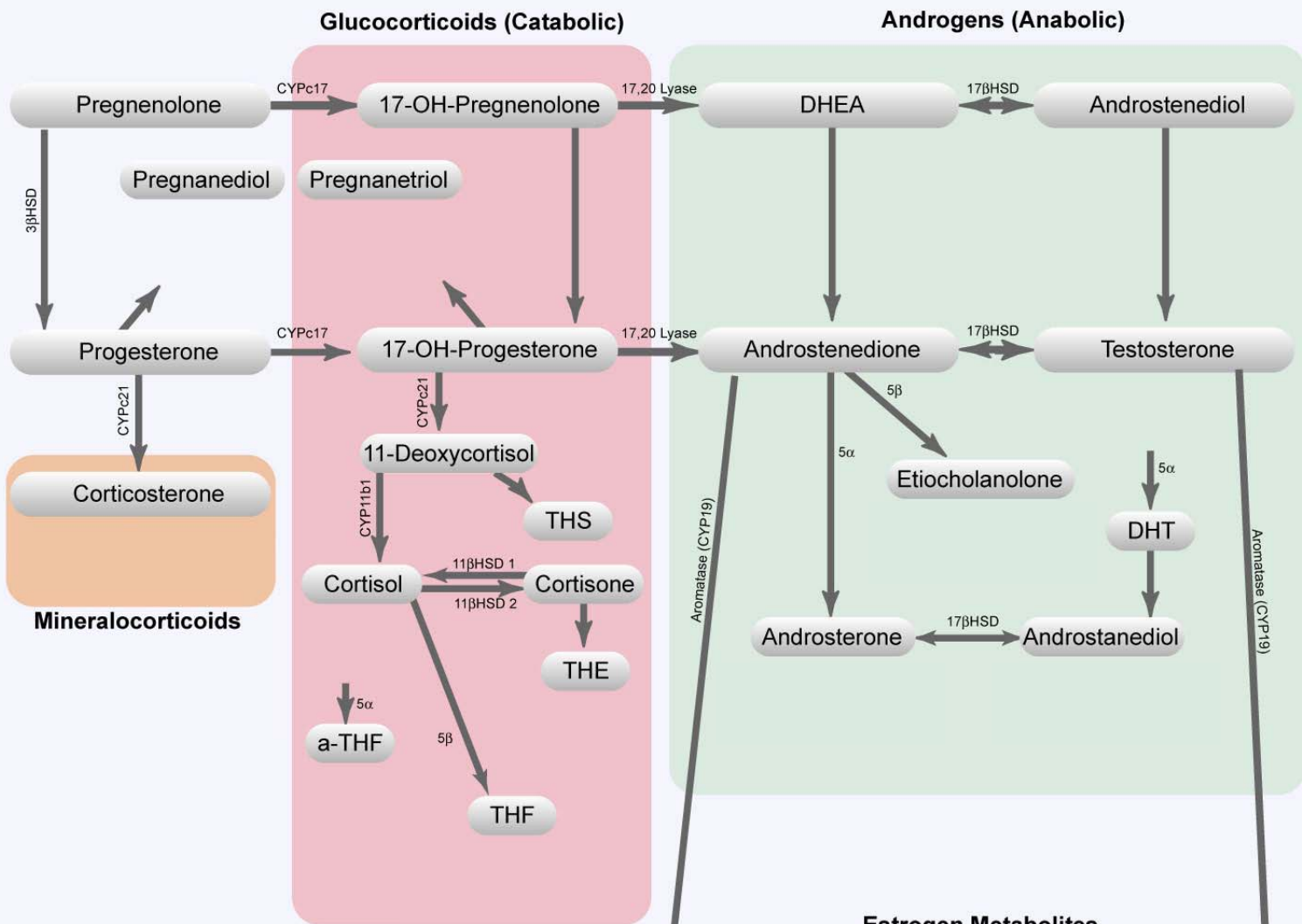


63 Zillico Street  
Asheville, NC 28801  
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# Essential Estrogens FMV

# Steroidogenic Pathway At-A-Glance



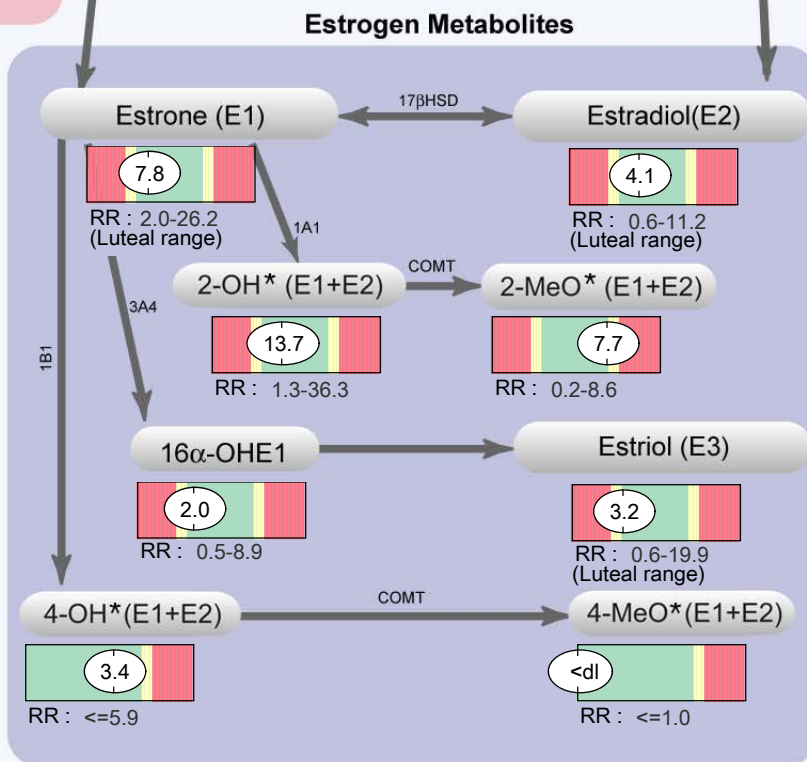
## ENZYMATIC STEPS:

- 3βHSD = 3beta-Hydroxysteroid dehydrogenase
- 5α = 5alpha-Reductase
- 5β = 5beta-Reductase
- CYP11b1 = 11beta-Hydroxylase
- 11βHSD = 11beta-Hydroxysteroid dehydrogenase
- 17βHSD = 17beta-Hydroxysteroid dehydrogenase
- 17,20 Lyase = 17,20 Desmolase
- CYPc17 = 17alpha-Hydroxylase
- CYP19 = Aromatase
- CYP21 = 21-Hydroxylase

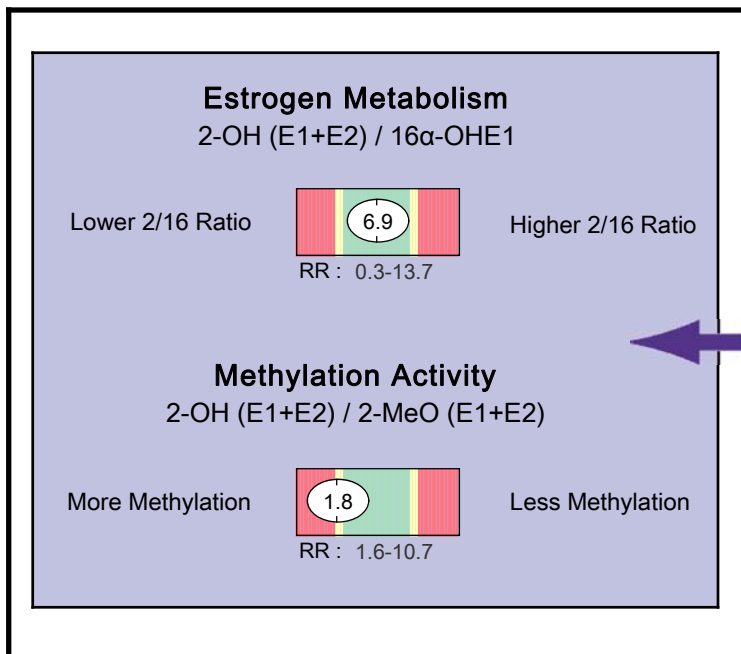
## ESTROGEN METABOLISM:

- 1A1 = Cytochrome p450 1A1 (CYP1A1)
- 3A4 = Cytochrome p450 3A4 (CYP3A4)
- 1B1 = Cytochrome p450 1B1 (CYP1B1)
- COMT = Catechol-O-Methyltransferase

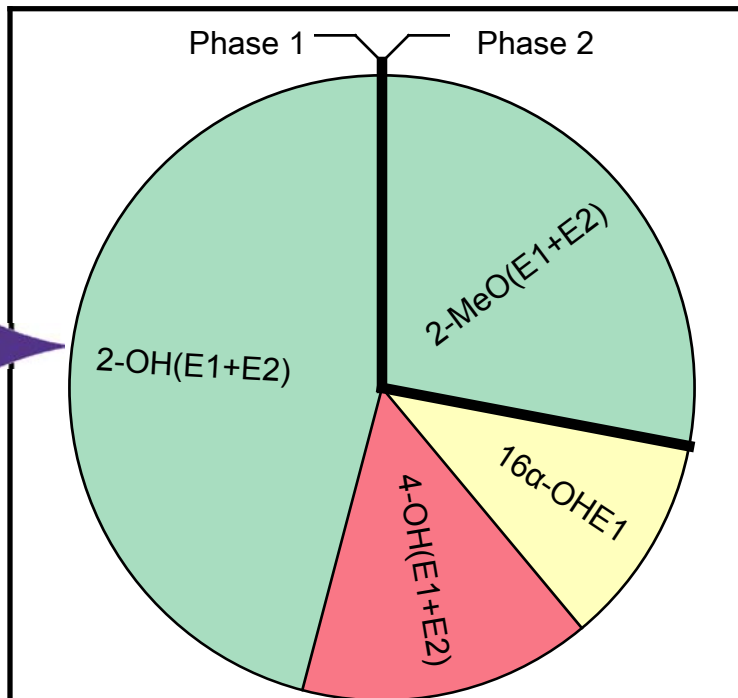
**KEY** \*OH = Hydroxy  
\*MeO = Methoxy



### Enzymatic Activity



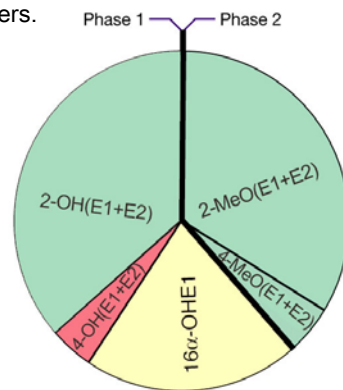
### Estrogen Metabolism



Estrogen metabolite values <DL cannot be depicted in the pie-chart.

This sample pie-chart reflects current scientific understanding of the association of specific estrogen metabolites with disease risk for hormone related cancers.

Metabolites in green have been associated in the literature with decreased risk; those in red, with increased risk. 16-OHE1 (in yellow) has mixed findings, some studies showing an association and many finding no association. The dark line separates Phase 1 and Phase 2 detoxification pathways.



### Key



Methodology: LC-MS/MS; Specimen: FMV urine; Results normalized to creatinine

**Estrogens**

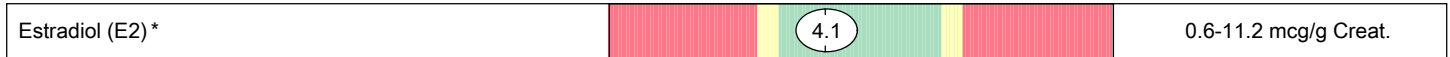
**Estrogens**

**Reference Range**



\*Premenopause (luteal) reference range shown

Reference Ranges	
Premenopause	2.0-26.2 mcg/g Creat.
Menopause	1.1-26.2 mcg/g Creat.
Male	1.6-8.6 mcg/g Creat.



\* Premenopause (luteal) reference range shown

Reference Ranges	
Premenopause	0.6-11.2 mcg/g Creat.
Menopause	0.6-15.4 mcg/g Creat.
Male	0.8-4.3 mcg/g Creat.



\* Premenopause (luteal) reference range shown

Reference Ranges	
Premenopause	0.6-19.9 mcg/g Creat.
Menopause	0.7-30.8 mcg/g Creat.
Male	0.3-5.1 mcg/g Creat.

## Estrogen Metabolites

### Reference Range

2-Hydroxyestrone + 2-Hydroxyestradiol [2-OH(E1+E2)] *	13.7	1.3-36.3 mcg/g Creat.
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\* 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.

16 $\alpha$ -Hydroxyestrone (16 $\alpha$ -OH E1)*	2.0	0.5-8.9 mcg/g Creat.
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\* 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.

4-Hydroxyestrone+4-Hydroxyestradiol [4-OH(E1+E2)] *	3.4	<= 5.9 mcg/g Creat.
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\* Premenopause (luteal) reference range shown

Reference Ranges	
Premenopause	<=5.9 mcg/g Creat.
Menopause	<=8.8 mcg/g Creat.
Male	<=1.6 mcg/g Creat.

2-Methoxyestrone+2-Methoxyestradiol [2MeO(E1+E2)]*	7.7	0.2-8.6 mcg/g Creat.
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\* Premenopause (luteal) reference range shown

Reference Ranges	
Premenopause	0.2-8.6 mcg/g Creat.
Menopause	0.3-5.9 mcg/g Creat.
Male	0.2-2.5 mcg/g Creat.

4-Methoxyestrone+4-Methoxyestradiol [4MeO(E1+E2)]*	<dl	<= 1.0 mcg/g Creat.
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\* Premenopause (luteal) reference range shown

Reference Ranges	
Premenopause	<=1.0 mcg/g Creat.
Menopause	<=1.0 mcg/g Creat.
Male	<=1.0 mcg/g Creat.

## Ratios

2-OH(E1+E2) / 16 $\alpha$ -OHE1*	6.9	0.3-13.7
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\* Premenopause (luteal) reference range shown

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

2-OH(E1+E2) / 2-MeO(E1+E2)*	1.8	1.6-10.7
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\* Premenopause (luteal) reference range shown

Reference Ranges	
Premenopause	1.6-10.7
Menopause	0.4-11.6
Male	1.0-8.8

## Lab Comments

For more information regarding clinical interpretation, please refer to the Endo+ Support Guide at <https://www.gdx.net/core/support-guides/ENDO+Support-Guide.pdf>

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.

<dl = Unable to calculate results due to less than detectable levels of analyte.