63 Zillicoa Street
Asheville, NC 28801
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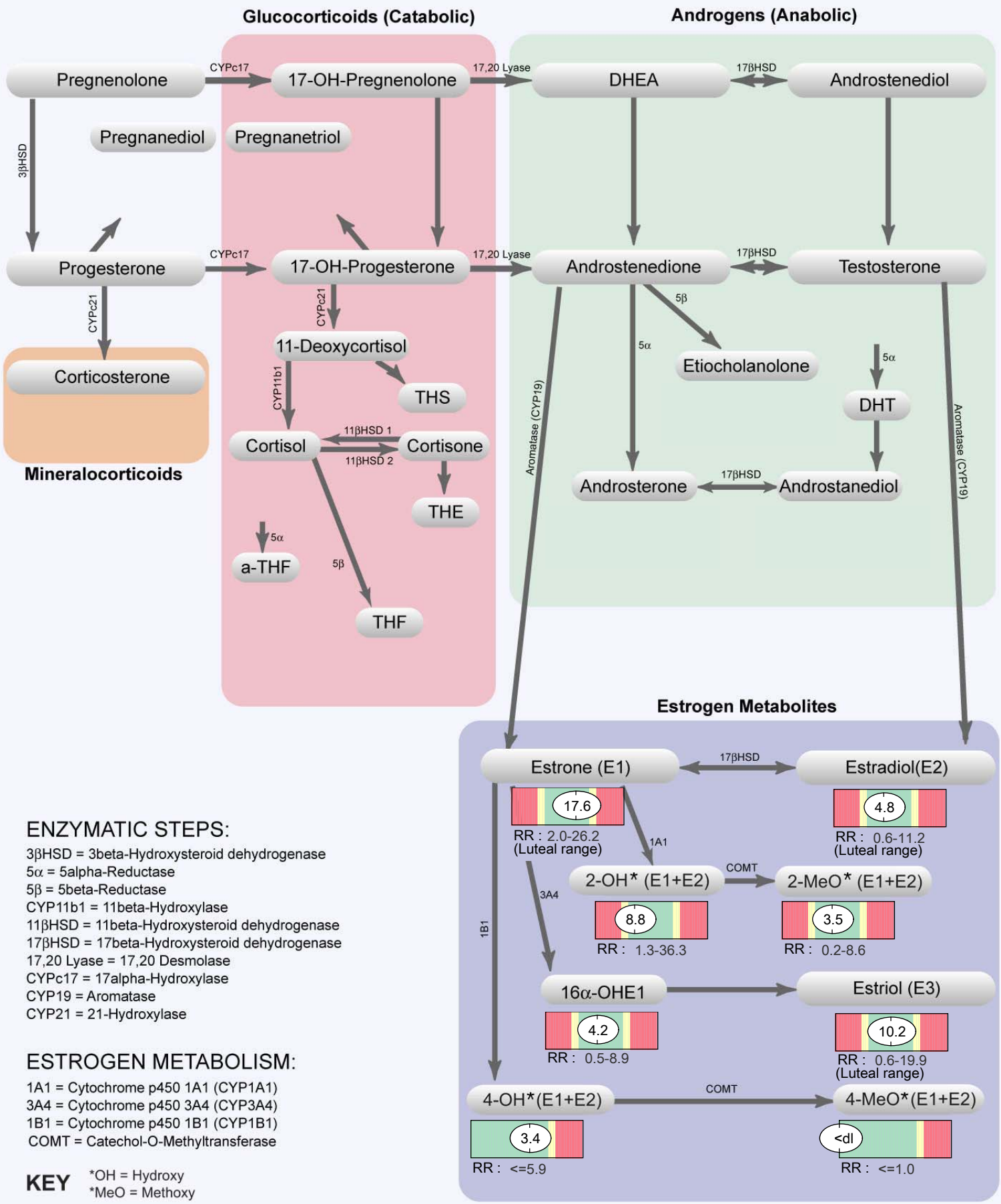
Essential Estrogens 24hr

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

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Interpretation At-A-Glance

Enzymatic Activity

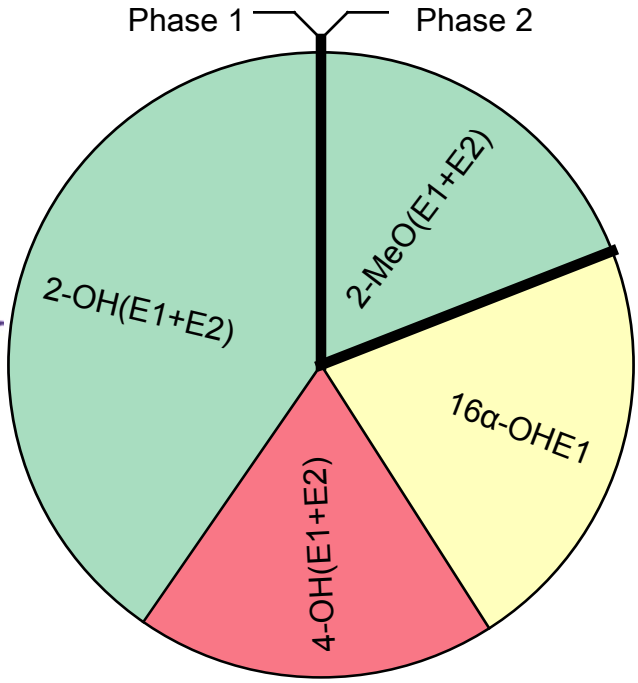
Estrogen Metabolism
2-OH (E1+E2) / 16α-OHE1

Lower 2/16 Ratio — 2.1 — Higher 2/16 Ratio
RR : 0.3-13.7

Methylation Activity
2-OH (E1+E2) / 2-MeO (E1+E2)

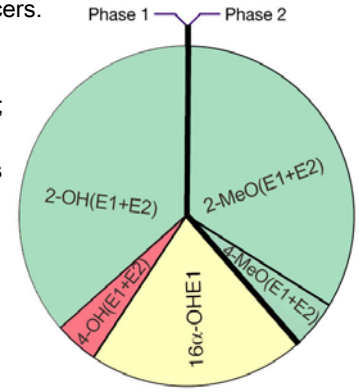
More Methylation — 2.5 — Less Methylation
RR : 1.6-10.7

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

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4210 Essential Estrogens - 24hr Urine

Methodology: LC-MS/MS

Estrogens

Estrogen results are normalized to creatinine.

Estrogens

		Reference Range
Estrone (E1)*	17.6	2.0-26.2 mcg/g Creat.

*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.

Estradiol (E2)*	4.8	0.6-11.2 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.

Estriol (E3)*	10.2	0.6-19.9 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.

Estrogens

Estrogen results are normalized to creatinine.

Estrogen Metabolites

		Reference Range
2-Hydroxyestrone + 2-Hydroxyestradiol [2-OH(E1+E2)] *	8.8	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.

16α-Hydroxyestrone (16α-OH E1)*	4.2	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.

4-Hydroxyestrone+4-Hydroxyestradiol [4-OH(E1+E2)] *	3.4	<= 5.9 mcg/g Creat.

* 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)]*	3.5	0.2-8.6 mcg/g Creat.

* 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.

* 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) / 16α-OHE1*	2.1	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

2-OH(E1+E2) / 2-MeO(E1+E2)*	2.5	1.6-10.7

* Premenopause (luteal) reference range shown

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

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.

>UL = Greater than upper linearity limit