



**TEST PATIENT**

GUa d'Y'HYghBUa Y  
 Sex : :  
 DUHY Collected : 00-00-0000  
 111 H9GH ROAD TEST SUBURB  
**@AB =8: 0000000** UR#:0000000

**TEST PHYSICIAN**

DR JOHN DOE  
 111 CLINIC STF 99H  
 7@B=7'GI 6I F 6'J =7'' \$\$\$

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 E: info@nutripath.com.au  
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**ENDOCRINOLOGY URINE**

URINE, 24 HOUR	Result	Range	Units	
<b>24 Hr ESTRONE METABOLITES</b>				
<b>Total Volume</b>	<b>2000</b>	693 - 3741	mL	
<b>2-OH E1 (Protective Metabolite)</b>	<b>5.70</b>	2.20 - 10.90	ug/24h	
<b>16-OH E1 (Proliferative Metabolite)</b>	<b>1.50</b>	1.50 - 1.90	ug/24h	
<b>2/16-OH E1 Ratio (Anti-Prolif'tive Index)</b>	<b>3.80</b>	> 2.00	RATIO	
<b>4-OH E1 (Mutagenic Metabolite)</b>	<b>2.62</b>	2.30 - 2.71	ug/24h	
<b>2 Methoxy Estrone</b>	<b>7.48</b>	5.00 - 16.00	ug/24h	
<b>4 Methoxy Estrone</b>	<b>1.83</b>	1.00 - 2.80	ug/24h	
<b>2(OH)E1/2MethoxyE1 RATIO</b>	<b>0.76</b>	0.14 - 2.18	RATIO	
<b>4(OH)E1/4MethoxyE1 RATIO</b>	<b>1.43</b>	0.80 - 2.70	RATIO	



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#### Estrone Metabolites Comments

##### URINE 2OH-E1 METABOLITE COMMENT:

These estrogens have been named "good estrogen" and by some authors are thought to be cancer protective estrogens.

Their role and impact in males has not been adequately researched or published. Most of the research has been done relative to women's breast cancer.

##### URINE 16a(OH)-E1 METABOLITES:

High/Elevated levels of 16aOH-E1 have been associated with an increase risk in breast cancer. 16aOH-E1 is the immediate precursor to the weak estrogen, estriol (E3).

Lowering levels of 16aOH-E1 have been achieved via indole-3-carbinol or one of its metabolites, di-indol methane (DIM). Soy and flax meal have also been shown to lower 16aOH-E1 levels.

Postmenopausal women with high levels of 16aOH-E1 may want to forego estradiol and estrone therapy in favour of E3 and progesterone.

Please also note that 16aOH-E1 is important for maintaining bone mineral density.

##### 2(OH):16a(OH)-E1 METABOLITE RATIO

Target Range:

Ratio > 2.0 Beneficial

Ratio < 2.0 Increased risk of Breast Cancer

Patients with a ratio less than 2.0 may benefit from a modification in diet and lifestyle.

The supplementation of the diet with phytoestrogens may further improve the ratio.

A high protein, low fat diet rich in dietary sources of indole-3-carbinol may also improve the 2/16 ratio. Diindolylmethane (DIM) has also been shown to improve the 2/16 ratio.

##### URINE 4OH-E1 COMMENT:

Along with 2OH-E1, 4OH-E1 comprises what are called the catechol estrogens. However, unlike 2OH-E1, this estrone has been shown to be a free radical generator and a very powerful estrogen.

Elevated levels occur in the urine following severe exercise and may indicate a relative lack of the enzyme, catecholamine methyl transferase.

Increasing dietary folic acid may help rectify this situation. This metabolite may eventually be one of the more important metabolites related to increased risk in female cancers.

##### USEFUL NOTES:

Protective Metabolites: 2-OH E2, 2-OH E1, 2-Methoxy E1.

Anti-Proliferative Metabolites: 2-Methoxy E2.

Carcinogen and Active Estrogen Metabolites: 16 alpha OH E1, 4-OH E1.

Active Estrogens: E2, E1, E3.

The use of DIM/Indole-3-Carbinol supplementation is to shift estrogen metabolism to increase levels of 2 OH and 2 Methoxy metabolites:

E1 conversion to 2-OH E1 and 2-methoxy E1.

E2 conversion to 2-OH E2 and 2-methoxy E2.

##### Hydroxy and Methoxy Estrones:

Following hydroxylation, both 2OH-E1 and 4OH-E1 can undergo another step called methylation. Methylation converts both metabolites into substances that are even more water-soluble. 2OH-E1 becomes 2-methoxyestrone, which may support women's breast



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health, and 4OH-E1 becomes 4-methoxyestrone, which is a very weak estrogen. Literature indicates that the Methoxy Estrones are apoptotic. 4OH-E1 along with 2OH-E1 form what are known as the catechol estrogens and unlike 2OH-E1, this estrone has been shown to be a free radical generator and a very powerful estrogen. High levels occur in the urine following severe exercise and may indicate a relative lack of the enzyme, catecholamine methyl transferase. Increases of dietary folic acid may help rectify this situation. This metabolite may eventually be one of the more important metabolites related to increased risk in female cancers.