Nordic Laboratories

PATIENT:	**Sample Report**			TEST REF:	###-##-#####
TEST NUMBER:	##########	COLLECTED:	dd/mm/yyyy	PRACTITIONER:	**Nordic Laboratories**
PATIENT NUMBER:	##########	RECEIVED:	dd/mm/yyyy		
GENDER:	Male	TESTED:	dd/mm/yyyy	ADDRESS:	
AGE:	57				
DATE OF BIRTH:	dd-mm-yyyy				

TEST NAME: Estronex (estrogen metabolites)

0142 Estronex® Profile - Urine

Hydroxyestrogens

2/16 Ratio

The historic clinical utility of the ratio of 2-hydroxyestrone (2-OHE1) to 16α-hydroxyestrone (16α-OHE1) - the 2/16 ratio or Estrogen Metabolite Ratio (EMR) - was based on research finding lower 2/16 ratio levels among breast cancer cases compared to controls (particularly in premenopausal women). However, several large studies in the peer-reviewed literature now conclude:

• There appears to be no strong evidence that a higher urinary 2/16 ratio protects postmenopausal women from breast cancer, and only a weak protective effect has been seen in premenopausal women. Similarly, overall findings are mixed in males with higher 2-OH (E1+E2)/16α-OHE1 ratio only suggestive of reduced prostate cancer risk.

2-OHE1 + 2-OHE2

While the traditional 2/16 ratio clinical utility may not be as robust as previously thought, a majority of findings indicate that metabolism of parent estrogens through 2-hydroxylation (independent of any relationship to 16α-OHE1) may be considered as a benign or even protective pathway. Note: Moderation should be used, however, in up-regulating the "lesser estrogenic" 2-hydroxylation pathway, particularly in women with a positive family history of osteoporosis, since excessive 2-hydroxylation has been associated with decreased bone mineral density.

4-OHE1

Research focus is shifting toward 4-hydroxyestrone, which is thought to have greater estrogenic and genotoxic potential than either 2-hydroxyestrone or 16α-hydroxyestrone. Recent studies find that proper methylation of hydroxylated estrogens, particularly in the 4-pathway, may play a bigger role for reducing disease risk by lowering the potential for genomic damage from DNA-adduct formation.

16α-OHE1

Recent findings in the peer-reviewed literature are mixed: while some studies have found an association with increased risk (cancers of the cervix, breast, endometrium, and head and neck, as well as in people with tumors related to the human papilloma virus), many have found no significant association. Inadequate 16α-hydroxylation (the "more pro-estrogenic" pathway) has been associated with lower bone mineral density.

Methoxyestrogens

Catechol-O-methyltransferase (COMT) is the enzyme responsible for catalyzing methylation of catechol estrogens to methoxy estrogens. Genetic polymorphisms (SNPs) may impact COMT catalytic activity, contributing to significant differences in catechol and methoxy estrogen levels and the differences in risk for estrogen-mediated breast cancer among individuals.

2-OHE1 / 2-OMeE1 Ratio

There is evidence that methoxylated estrogens, especially the 2-pathway methoxylated estrogens, are associated with decreased breast cancer risk. A high 2-OHE1 / 2-OMeE1 ratio can indicate less methylation activity.

4-OMeE1

Most recent studies also find an increased breast cancer risk associated with less extensive methylation of potentially genotoxic 4-hydroxylation pathway catechols; thus, increased relative levels of 4-methoxyestrogens would be considered favorable.

Commentary is provided to the practitioner for educational purposes, and should not be interpreted as diagnostic or as treatment recommendations. Diagnosis and treatment decisions are the practitioner's respons bility.

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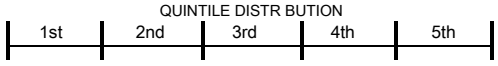
0142 Estronex® Profile - Urine

Methodology: UPLC/MS/MS, Colorimetric Assay



Results — 95% Reference Range

2/16 Hydroxyestrogen Ratio

		Results		95% Reference Range
1.	(2-OHE1 + 2-OHE2) / 16α-OHE1	1.0		0.2 - 41.7

4-Hydroxyestrone and Methylation Ratio

		Results		95% Reference Range
2.	4-Hydroxyestrone (4-OHE1)	1.3	H	<= 0.8 ng/mg creat
3.	2-OHE1 / 2-OMeE1	>UL	H	<= 8.3

Results		95% Reference Limits			
	ng/mg Creatinine	Pre-Menopausal Females	Post-Menopausal Females (no hormone therapy)	Post-Menopausal Females (on hormone therapy)	Males
Hydroxyestrogens					
2-Hydroxyestrone (2-OHE1)	0.3	0.2-25.9	0.2-9.8	0.2-59.8	0.2-6.7
2-Hydroxyestradiol (2-OHE2)	0.5	0.1-11.3	0.1-9.7	0.1-19.9	0.1-13.5
2-OHE1 + 2-OHE2	0.8	0.4-32.0	0.2-14.6	0.5-76.3	0.2-15.6
4-Hydroxyestrone (4-OHE1)	1.3	<= 3.2	<= 2.1	<= 5.7	<= 0.8
16α-Hydroxyestrone (16α-OHE1)	0.8	0.2-14.2	0.1-3.2	0.1-37.6	0.1-3.3
Methoxyestrogens					
2-Methoxyestrone (2-OMeE1)	<DL	0.1-6.4	0.1-3.6	0.1-16.5	0.1-3.1
4-Methoxyestrone (4-OMeE1)	0.2	<= 0.3	<= 0.4	<= 0.3	<= 0.2

Creatinine =131 mg/dL

<DL = less than detection limit
>UL = greater than upper limit of linearity
NR = not reportable

This test has been developed and its performance characteristics determined by Genova Diagnostics, Inc. It has not been cleared by the U.S. Food and Drug Administration.