

2 & 16 Urinary Oestrogen Metabolites



This test monitors oestrogen metabolism in men and women, which may be of great importance in determining those patients at high risk of hormone imbalance. High levels of circulating oestrogens are proliferative and potentially dangerous, so it is important that they are broken down efficiently and effectively removed from the body.

Oestrogens are metabolised in two ways: the first pathway (2-hydroxyoestrone) is protective whilst the second pathway (16 α -hydroxyoestrone) is more potent. This test identifies which is the dominant pathway (2 or 16) for oestrogen metabolism. The aim is to ensure that the ratio between the 2:16 pathways is maintained at the ideal of 2.0.

A low ratio (reduced 2-hydroxy metabolite production), indicates a state of oestrogen excess which may be a contributing factor to oestrogen-dependant cancers, such as those of the breast, head/neck and the prostate.

A high ratio indicates an oestrogen deficient state which may indicate an increased risk of osteoporosis.

Markers Tested

- 2-Hydroxyoestrone (2-OHE1)
- 16 α -Hydroxyoestrone (16 α -OHE1)

Test Kit

Once the practitioner has given the patient their request form the patient can order their test kit online at www.functionalpathology.com.au or by calling Healthscope Functional Pathology customer service on 1300 55 44 80 between the hours of 8.30am and 5.30pm AEST. The test kit contains full instructions.

Specimen Requirements

- A urine specimen is collected from the first morning void. The test kit provided contains everything required to complete this test.

Patient Preparation

- Patients must fast from 10pm the evening before the morning urine specimen is taken (water may be consumed during this time)
- For women with a regular menstrual cycle, urine collection is recommended between days 18-25
- Do not collect urine during menstruation
- Men may collect their specimen on any day

Turnaround Time

The standard turnaround time for this test is 7 – 10 working days from the date the patient's specimen/s are received at our laboratory.

Test Results

Patient results will be delivered via mail, unless requested otherwise. However, we can also issue results via:

- Fax
- Electronic Download
- Web Based Results

Technical Support

All Healthscope Functional Pathology tests are accompanied by an Interpretive Guide to assist practitioners in their clinical understanding and patient management for each result. Healthscope Functional Pathology also has experienced full time Technical Advisors available for practitioners to discuss appropriate test selection, interpretation of test results, individual cases and other technical matters. Please call 1300 55 44 80 between the hours of 8.30am and 5.30pm AEST or email infofp@healthscope.com.au

Companion Tests

- Osteoporosis Risk Assessment (NTx)
- Adrenal Hormone Profile
- Baseline Hormone Profile
- Functional Liver Detoxification Profile (FLDP)

The results of the 2 & 16 Urinary Oestrogen Metabolites test may be further supported by additional Healthscope Functional Pathology tests. A high ratio result for 2:16 may indicate an increased risk of osteoporosis. This could be further defined and bone resorption monitored by the Osteoporosis Risk Assessment (NTx) test.

Prolonged stress may also contribute to hormonal imbalance. The Adrenal Hormone Profile which measures Cortisol and DHEA-S over a 24 hour period may therefore be a useful adjunct to the 2 & 16 Urinary Oestrogen Metabolites test.

The Baseline Hormone Profile may also provide additional important information on hormonal imbalance, which may contribute to the result of the 2 & 16 Urinary Oestrogen Metabolites test.

Given the breakdown of oestrogens occurs primarily in the liver, it may also be necessary to do a Functional Liver Detoxification Profile test to assess liver detoxification capacity.

2 & 16 Interpretation

Note: the normal mean ratio is approximately 2.0

<i>Result</i>	<i>Interpretation</i>
< 2	Associated with pathologies of oestrogen excess such as oestrogen-dependant cancers, particularly those of the breast, head/neck and prostate
> 2.8	Indicates oestrogen deficiency and possible increased risk of osteoporosis. If there is a surplus of the inactive metabolite 2OHE, the body may lack the stimulatory oestrogenic "fuel" to adequately maintain bone tissue

Treatment Considerations

<i>Improve the 2:16 Ratio</i>	<i>Action</i>
Indole-3-carbinol (I3C) and/or Diindolylmethane (DIM)	I3C and DIM induce the hepatic CYP4501A1 enzyme which increases 2-hydroxylation enzymes
Phyto-oestrogens, such as lignans (found in flaxseeds, whole cereal bran and legumes) and iso-flavones (e.g. quercetin)	Phyto-oestrogens have weak oestrogenic activity and can act on oestrogen receptors in the cell membrane. The lignans within flaxseed are known to stimulate sex hormone binding globulin (SHBG) synthesis and inhibit aromatase activity
Decrease exposure to environmental toxins, including xeno-oestrogens	Reduces total level of circulating oestrogens
Lifestyle factors, including weight loss, exercise and a healthy diet	Helps to normalise hormone levels

<i>Companion Tests</i>	<i>Rationale</i>
Functional Liver Detoxification Profile (FLDP)	Assesses Phase I and Phase II liver detoxification pathways
Salivary Hormone Profiles (Baseline Hormone Profile/ Female Hormone Profile/ Adrenal Hormone Profile)	For a detailed profile of sex hormones, including oestrone, oestradiol, oestriol, progesterone, testosterone, DHEA-S

References

Michnovicz, JJ. Bradlow, HL. Induction of estradiol metabolism by dietary indole-3-carbinol in humans. J Natl Inst, 1990; 71:947-949.
 Haggans, CJ. Hutchine, AM. Olson, BA et al. Effect of flaxseed consumption on urinary oestrogen metabolites in premenopausal women. Nutr Cancer, 1999; 33:188-195.