

# ESTROGEN METABOLITES – Level 2 (24 hour urine)

*The measure of estrogens and its metabolites is designed to assist in the prevention of estrogen and hormone related conditions. Estrogens, predominantly Estrone, Estradiol and Estrone are found in varying quantities with its own unique function. The estrogens are metabolised to its excretory by-products which have their own biological actions; some have the stimulatory properties of estradiol, whilst others are weak and protective estrogen molecules. This test provides a focused overview of estrogen metabolites: **E1, E2, E3, 2OHE1, 16αOHE1, 2:16 ratio, 4OHE1.***

An imbalance in estrogen metabolism has been associated with osteoporosis, high blood pressure, lupus and cancer (breast, endometrial, prostate, thyroid, head and neck). As the estrogen metabolites are modifiable by lifestyle and nutritional changes, this test is useful for not only establishing risk but monitoring therapies which can reduce the probability of these disorders.

## The Risks and Benefits of Estrogen

Estrogens are secreted from the ovaries pre-menopausally. They are aromatized from adrenal androgens post-menopausally. Deficient estrogens can stimulate bone resorption, collagen breakdown, cardiovascular dysfunction and menopausal symptoms.

Understanding the metabolism of estrogen is very important since this hormone is known to have benefits and risks associated with it. Estrogen has positive effects on the cardiovascular system, bone, brain, skin as well as reproductive organs. The issues experienced at menopause such as memory loss, osteoporosis and vaginal dryness validates the importance of maintaining optimal estrogen levels. The downside however of having too much estrogen is that it may increase the risk of hormone-related cancers such as endometrial, prostate and breast cancer.

### SIGNS AND SYMPTOMS ASSOCIATED WITH ESTROGENS

DEFICIENCY of Estrogen	EXCESS Estrogen
Osteoporosis	Menorrhagia
Amenorrhea	Uterine fibroids / Endometriosis
Menopausal symptoms	Anxiety / Irritability

## Measuring & Monitoring Estrogen Metabolites

The view that all estrogens are 'bad' and cause cancer however, is a simplistic one. Not all estrogen molecules have the same properties. Estradiol (E2) and estrone (E1) are metabolised into at least 14 different species. These breakdown products have their own specific biological actions; some have the stimulatory properties of E2 such as 16 $\alpha$ -hydroxyestrone (16OHE1), 4-hydroxyestrone (4OHE1) and 4-hydroxyestradiol whilst others are weak and antagonistic to other estrogen molecules such as 2-hydroxyestrone (2OHE1), 2-hydroxyestradiol, 2-methoxyestrone (2MeOHE1), 2-methoxyestradiol, 4-methoxyestrone (4MeOHE1) and 4-methoxyestradiol.

An imbalance of the stimulatory versus weak estrogen metabolites have been observed to be associated with many different health disorders. Whilst high levels of the 16OHE1 stimulatory estrogen raise cancer risk, lower levels are associated with osteoporosis. In contrast, if the weak estrogens are high they protect against cancer but inhibit bone growth. Therefore the estrogen metabolites are not inactive excretion products, but are powerful molecules in their own right and should be monitored.

CONDITIONS ASSOCIATED WITH LOW/ HIGH ESTROGEN METABOLITE RATIOS	
LOW 2:16OHE	HIGH 2:16OHE
Breast or Endometrial cancer	Osteoporosis
Hypertension	

## ESTROGEN METABOLITES - LEVEL 2 (24 hour urine) [Test code: 1208]

❖ 2OHE1, 16 $\alpha$ OHE1, 2:16 ratio, 4OHE1

### Other estrogen metabolite tests available

- **Estrogen Metabolites - Level 1 (spot and 24 hour urine):** 2OHE1, 16 $\alpha$ OHE1, 2:16 ratio
- **Estrogen Metabolites - Level 3 (24 hour urine)[1209]:** 2OHE1, 16 $\alpha$ OHE1, 2:16 ratio, 4OHE1; 2OMeE1, 4MeOE1, 2OHE1:2OMeE1, 4OHE1:4OMeE1 ratios
- **Estrogens Profile (spot or 24 hour urine):** E1, E2, E3, 2OHE1, 16 $\alpha$ OHE1, 2:16 ratio, 4OHE1
- **Female Hormone Profile - Extensive (24 hour urine)[1213]:** T4, T3, T4/T3 ratios, Cortisol, DHEA, Testosterone, Progesterone, E1, E2, E3; 17-ketosteroids, Total OH corticoids, ratios, Allo-tetrahydrocortisol, Tetrahydrocortisol, Tetrahydrocortisone, Tetrahydrodeoxycortisol, Aldosterone, Androsterone, Etiocholanolone, 11OH-androsterone, 11OH-etiocholanolone, 11-ketoetiocholanone, 11-ketoandrosterone, Pregnanetriol (Pregnenolone), DHT metabolite, 2OHE1, 16 $\alpha$ OHE1, 2:16 ratio, 4OHE1, Melatonin, HGH
- **Advanced Hormones (dried urine) [1501]:** Estradiol, Estrone, Estriol, 2OHE2, 2OHE1, 4OHE2, 4OHE1, 16 $\alpha$ OHE1, 2MeOE2, 2MeOE1, 4MeOE2, 4MeOE1; Pregnanediol, Allopregnanolone, Allopregnanediol, 3 $\alpha$ -Dihydroprogesterone, 20 $\alpha$ -Dihydroprogesterone, Dexocyclocosterone, Corticosterone; Testosterone, Epi-Testosterone, 5 $\alpha$ DHT, Androstenedione, DHEA, 5 $\alpha$ 3 $\alpha$ -Androstenediol; Total Cortisol, Free Cortisol (x4), Total Cortisone, Free Cortisone (x4), Tetrahydrocortisol, Tetrahydrocortisone; Melatonin (x4)
- **Intermediate Hormones (dried urine) [1502]:** Estradiol, Estrone, Estriol, 2OHE1, 4OHE2, 4OHE1, 16 $\alpha$ OH E1, 2MeOE1, 4MeOE2; Pregnanediol, Allopregnanolone; Testosterone, Epi-Testosterone, 5 $\alpha$ -DHT, Androstenedione, DHEA; Total Cortisol, Free Cortisol (x4), Total Cortisone, Free Cortisone (x4), Tetrahydrocortisol, Tetrahydrocortisone; Melatonin
- **Estrogen Elite Dried Urine [1505]:** Estradiol, Estrone, Estriol, 2OHE2, 2OHE1, 4OHE2, 4OHE1, 16 $\alpha$ OHE1, 2MeOE2, 2MeOE1, 4MeOE2, 4MeOE1; Pregnanediol, Allopregnanolone; Testosterone, 5 $\alpha$ DHT, Androstenedione, DHEA, 5 $\alpha$ 3 $\alpha$ -Androstenediol
- **Estrogen Essential Dried Urine [1506]:** Estradiol, Estrone, Estriol, 2OHE2, 2OHE1, 4OHE2, 4OHE1, 16 $\alpha$ OHE1, 2MeOE2, 2MeOE1, 4MeOE2, 4MeOE1

### How to order a test kit:

To order a test kit simply request the test name or test code on a NutriPATH request form and have the patient phone **NutriPATH Customer Service on 1300 688 522**.