



# Urine Metabolites Hormone Testing

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*Discover True Clinical Utility with the  
Industry's Best Testing*



# Why Test Urinary Metabolites?

Metabolites testing provides a unique diagnostic view that no other hormone testing offers. It shows how a patient is breaking down a variety of hormones – like estrogens, progestogens, androgens, cortisol and melatonin.

Urinary Metabolite testing also gives practitioners insight into whether a patient is fully detoxifying their hormones, making them more or less at risk for a variety of diseases – like cancer.

“...provides a unique diagnostic view unlike any other hormone testing.”

## Urinary Metabolites testing would be beneficial for patients who:

- ▶ Have a risk of hormone-dependent cancers.
- ▶ Have a family history of hormone-dependent cancers.
- ▶ Have symptoms of estrogen dominance.
- ▶ Are considering hormone replacement therapy.
- ▶ Are experiencing stress-related symptoms or symptoms of cortisol imbalance.
- ▶ Have normal saliva cortisol levels but are still experiencing symptoms of adrenal dysfunction.



### MOST CONVENIENT

Discreet dried urine collection eliminates the hassle of jug urine collection



### MOST COMPLETE

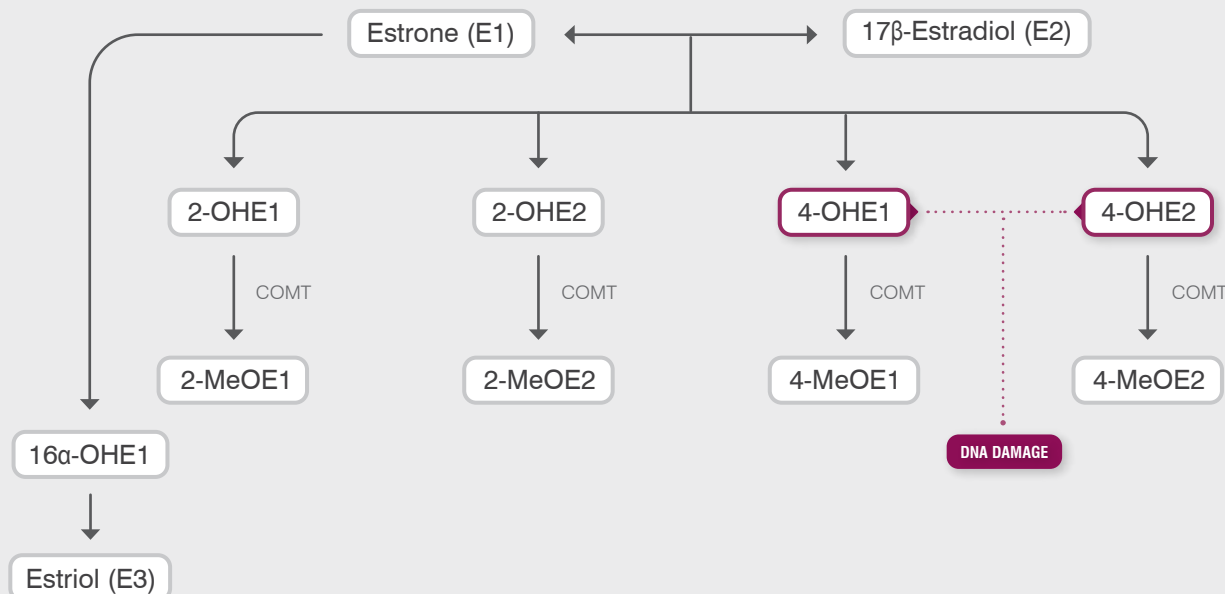
More Estrogens (13), More Cortisols (6), Diurnal Melatonin



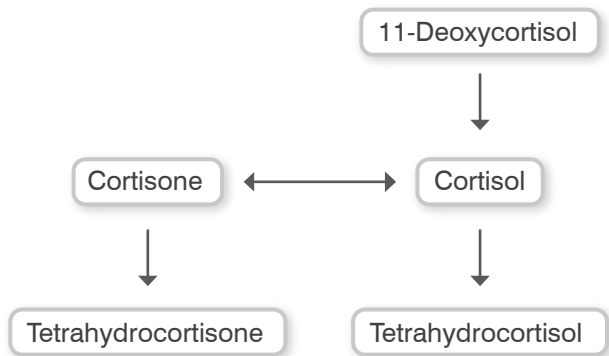
### BEST VALUE

ZRT has the largest commercial profile at the lowest cost per test of any lab

## ESTROGEN CASCADE



## CORTISOL CASCADE

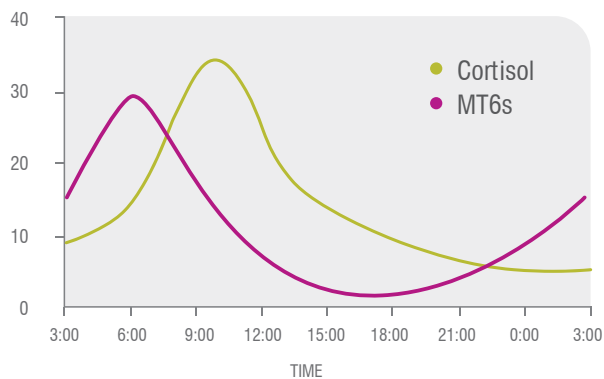


## Total Cortisol, Total Cortisone | Free Cortisol x4, Free Cortisone x4 | Tetrahydrocortisol (ThC) Tetrahydrocortisone (ThCn)

Total cortisol and cortisone, plus levels of their principal metabolites tetrahydrocortisol (THF) and tetrahydrocortisone (THE), indicate the extent of cortisol output from the adrenals.

4-point diurnal free cortisol and cortisone, graphed on test reports, indicates effects of stress and HPA axis dysfunction. High levels throughout the day show **HPA axis hyperactivation**, while loss of the morning peak indicates **adrenal suppression**.

## URINARY FREE CORTISOL & MELATONIN



## Melatonin (MT6s) | Melatonin (MT6s) x4

High melatonin metabolite (MT6) levels during the day can reflect melatonin supplementation or increased melatonin synthesis. **Poor sleep quality** can be the result of low evening melatonin or high night cortisol.

Low levels of melatonin are associated with **increased risk of cancer, type 2 diabetes and obesity**.

## 2-MeO Estrogens | 4-MeO Estrogens

Healthy Phase II metabolism methylates 2-hydroxy (2-OH) estrogens to the more cancer-protective 2-methoxy (2-MeO) forms, and neutralizes the potentially carcinogenic 4-OH estrogens to their 4-MeO forms.

Low ratios 2-MeO E1/2-OH E1, 4-MeO E1/4-OH E1, and 4-MeO E2/4-OH E2 can indicate inadequate methylation and therefore may be associated with an **increased breast cancer risk**.

## 2-OH Estrogens | 4-OH Estrogens | 16 $\beta$ -OH Estrone

Healthy Phase I metabolism produces higher levels of 2-OH E2 and 2-OH E1 compared to 4-OH E2 and 4-OH E1. Excess of the 4-OH forms, particularly 4-OH E2, is associated with **increased breast cancer risk**. High 16-OH E1 relative to 2-OH E2 and 2-OH E1 may be linked with increased breast cancer risk in premenopausal women, but decreased risk in postmenopausal women.



YOUR LAB *of* CHOICE

# Metabolites you should know...

## ▶ Parent Estrogens

Estrone predominates in urine, followed by estriol then estradiol. Excessive estrone and estradiol compared to estriol can mean an increase in breast cancer risk.

## ▶ Hydroxy Estrogens

Excess hydroxy estrogens – in particular 4-OH E2, not tested by some other labs – signify increased breast cancer risk. Healthy metabolism methylates these estrogens to the more cancer-protective methoxy forms.

## ▶ Methoxy Estrogens

Low ratios of 2-MeO E1/2-OH E1, 4-MeO E1/4-OH E1, and 4-MeO E2/4-OH E2 can indicate inadequate methylation and therefore increased breast cancer risk.

## ▶ Bisphenol A

High levels indicate excessive exposure to this environmental endocrine disruptor, particularly dangerous to the unborn fetus and young children.

## ▶ Progestogens

The predominant metabolite of progesterone (Pg), Pgdiol is a surrogate marker of endogenous Pg synthesis, but is not increased by topical progesterone treatment.

A low Pgdiol/E2 ratio indicates estrogen dominance. Allopregnanolone is well known for sleep-inducing and calming effects on the brain. 3 $\alpha$  and 20 $\alpha$ -dihydroprogesterone, have tumor-inhibitory properties in breast cancer. DOC is a weak mineralocorticoid; both DOC and corticosterone are precursors to aldosterone, which regulates water balance and blood pressure. High levels could lead to water retention symptoms/increased blood pressure.

## ▶ Androgens

DHEA and androstenedione are androgen precursors; low DHEA suggest inadequate production by the adrenals. T and Epi-T are produced in relatively equal amounts endogenously, so a high T/Epi-T ratio indicates exogenous testosterone supplementation. High aromatase activity in fat tissue leads to excessive conversion of T to E2, increasing cancer risk.

Excess DHT contributes to scalp hair loss, acne, and hirsutism, and raises risk for prostate cancer in men when estrogens are excessive. 5 $\alpha$ ,3 $\alpha$ -androstenediol is a neuroactive steroid that enhances dopamine activity, important for mood elevation.

## ▶ Glucocorticoids

Relative amounts of total cortisol and cortisone and levels of their principal metabolites THF and THE indicate the extent of cortisol output from the adrenals. 4-point diurnal free cortisol and cortisone are graphed on test reports to show whether daily fluctuations are being affected by stress or adrenal dysfunction.

## ▶ Melatonin

First morning MT6s levels reflect night-time melatonin secretion, capturing the early morning peak. Low levels are associated with increased risk of cancer, type 2 diabetes and obesity. Diurnal MT6s tracks levels throughout the day and is graphed on test reports.

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