The potential impact of estrogen on a woman’s health and wellbeing is enormous. Acting in a seeming paradoxical fashion, this powerful hormone can exert a strong influence in diverse conditions such as breast cancer, osteoporosis, heart disease, and autoimmune disorders. Recent scientific advances into how this hormone is metabolized in the body are shedding new light on estrogen’s dual nature—leading to more effective clinical interventions in estrogen-dependent conditions.

Estrogen is metabolized in two ways. Along one pathway, it is converted into a powerful metabolite, 16alpha-hydroxyestrone (16alpha-OHE1), that acts to stimulate target tissues. Levels of 16alpha-OHE1 can rise in response to obesity, alcohol consumption, and toxic exposure. High levels of this potent metabolite are linked with increased risk and poorer prognosis in conditions associated with estrogen excess, including breast cancer and lupus.

Alternately, the body can break down estrogen into a much weaker metabolite, called 2-hydroxyestrone (2-OHE1). This metabolite binds weakly to cell receptors and may slow cell proliferation. However, excessive levels of 2-OHE1 may increase the risk of developing conditions associated with estrogen deficiency, such as heart disease, depression, and osteoporosis.

A proper balance between 2-OHE1 and 16alpha-OHE1 is the key to optimal health. Measuring these primary estrogen metabolites allows practitioners to develop individualized therapy based on each woman’s unique health risks.

Flaxseed (lignans), soy products (isoflavones), cruciferous vegetables (indole-3-carbinol), vigorous exercise, and omega-3 fatty acids are interventions that may reduce the risk of estrogen-dependent disease by favorably modifying the 2:16alpha-OHE1 ratio. Using this assessment, practitioners can monitor the physiological impact of these and other treatments (including hormone replacement therapy), gaining added insight into their clinical safety and effectiveness.

The Estrogen Metabolism Assessment is designed for both premenopausal and postmenopausal women. It can be performed using serum or urine. Both tests are fully validated and approved for in vitro diagnostic use by the FDA. Serum sampling provides a direct assessment of circulating estrogen metabolites able to act directly on target tissues. Urine testing offers convenient, noninvasive sample collection. In both serum and urine, 2-OHE1 is the primary 2-hydroxyestrogen measured, although urinary analysis also detects small amounts of other 2-hydroxyestrogens. It is recommended that baseline and follow-up analysis be performed using the same specimen type.
Estrogen metabolism in premenopausal and postmenopausal women, focusing on the critical balance between the body's two primary hydroxyestrogens (active and inactive)

Hormonal imbalances that may affect the risk and prognosis of estrogen-dependent health conditions, such as breast cancer, lupus, osteoporosis, and heart disease.

The physiological impact of hormone therapy—including dietary, nutritional, lifestyle, and estrogen replacement interventions.